May 2015

QC Checklists

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: -5 5 5 - 5				
Boring/Monitoring Well Number: MW-025				
Starting Date: 5-19 -15				
Date: 5-27-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Voc	Nο	<u>N/O</u>	N/A
	103	110	1170	14/14
I. Was boring logged by a geologist or geological engineer?	<u> </u>	· · ·		
1. Was poring logged by a geologist of geological engineer:				
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?	$\overline{}$			Ī
2. Was tog completed and critics printed registy on earlies and an earlies printed registy on earlies and earlies printed registy on earlies and earlies printed registy on earlies and earlies and earlies printed registy on earlies and earlies and earlies printed registy on earlies and earlies				
3. Was the log scale 1 inch = 1 foot?	<b>7</b>			
J. Was die log scale I mei – 1 took				
4. Were logs completed in the field (originals)?				
4. Wele logs completed in the field (originals).		_		
5. Does log contain the following a routine entries?				
5. Does tog contain the following a reason states.				
* Unique well number (as per Work Plan)?				ı .
Offique Well Humber (as per Work harry.				
* Depositional type (alluvium, till, loess, etc.)	1			
Depositional type (anariam, any today ecci)				
* Depths/Heights recorded in tenths of feet?	<b>-</b>			
Deputs/Acignis recorded in control of record				
* Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)	1/	П		
Outer descriptive reactives (beauting) organic meeting -		<u></u>		<u>.                                      </u>
* Soils classified as per USCS and fully described with numerical percents of constituents?	7	П		
) Soils classified as part of the first term of				
* Soil moisture content and texture or cohesiveness?	abla		-	
* Soil color described using the Munsell System?				
6. Was general information (top of form MRK-55) completed?	$\vdash$			
o, the gallet and the				
7. Was the log signed by person preparing the log?	1			
7, rido die leg eigene e 7, com page de la company de la c				
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?	7			
9. Were start and completion dates and time included for boring and well installation activities?				
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed	17			
in cuttings)?	<u></u>	L	<u></u>	
		_		
11. Were depths at which free water was encountered and stabilized water levels recorded?	<u> </u>		<u> </u>	
	<del></del>	т	т—	
12. Were soil sample depths recorded?		<u> </u>	<u> </u>	
	+			<del>,</del>
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter	/			
recorded?	.1	L	L	1
Chalvester was the de mal years was was all a little was the de mal years was a little was the december of	1	П		
14. Were soil sampling methods and recovery recorded?		Щ_	L	

BOREHOLE AND CORE LOGGING CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
)Boring/Monitoring Well Number: ルルーのとら				
Starting Date: 5-19-15				
Date: 5-27-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Yes_	<u>No</u>	<u>N/O</u>	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?				
	<b>a</b>			
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				~
17. Were abbreviations used on log defined?	/			
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?				
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of compressed air filter)?	~			
20. Were drilling pressures and driller's comments recorded?			- 1	
20. Were driving pressures and driver's comments recorded:				
21. Was total depth recorded and marked with a double line?	/			
22. Was monitoring well diagram completed and attached to log?				
Core Logging				
In addition to the items above, the following also apply to core-logging:				
323. Was rock described using standard geologic nomenciature; e.g., rock type, relative hardness, density, texture, color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and filling materials?	/			
	<u>,                                    </u>		1	
24. Was start and stop time of each core run recorded?				
25. Were depths to top and bottom of each core run recorded?				-
25. Here deputs to top and bottom of each core fair fectioned;				$\dashv$
26. Was length of core recovered in each core run recorded?	/	$\square$		
27. Were the size and type of coring bit and barrel recorded?			l	
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?	7	$\neg$	$\overline{}$	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-27-15

**BOREHOLE AND CORE LOGGING CHECKLIST** 

# WELL CONSTRUCTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

Monitoring Well Number: ルルーロこう

Starting Date: 5-19~15 Completion Date: 5-27-15

Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Yes No N/O N/A Actions form. General 1. Was a geologist or geotechnical engineer present during installation of the monitoring well? 2. Were all depths verified during installation by measurement with a weighted tape? Selection and Placement of Screen 3. Was the screen length specified in the Work Plan used in construction of the well? 4. Was the approved screen slot size and filter pack used? 5. Was the screen placed at the depth specified in the Work Plan? 6. Did the rig geologist document the stable water level before installing the well? 7. Was the boring bailed dry during drilling to check for recharge? Construction Materials and Techniques 8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785? 9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping containers? 10. Was the shipping container labeled to identify the materials? 11. Was the location of the markings, the brand and the supplier of the well materials recorded? 12. Did the filter pack material conform to the specifications of the Work Plan? 13. Was the location of the markings, the brand and the supplier of the filter pack recorded? 14. Was the filter pack tremied into the well? 15. Was the elevation of the filter pack accurately monitored during installation? 16. Was the filter pack installed to 2-5 feet above the screen? 17. Was the bentonite seal a minimum of 2 feet thick? 18. Were the brand, supplier, size and location of markings of the bentonite recorded? 19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite pellets and as per manufacturers specifications when using high solids bentonite slurries? 20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

	WELL	CONSTRUCTION	CHECKLIS <sup>1</sup>
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Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

Monitoring Well Number: WW-025

Starting Date: 5-19-15

Completion Date: 5-27-15

Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective

Actions form.	<u>Yes</u>	<u>No</u>	N/O	<u>N/A</u>
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	/			
22. Was Monitoring Well Construction Diagram completed?	~			
23. Was Materials Summary Form completed?				
Monitoring Well Construction Diagrams  24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well installation?	<b>/</b>			
25. Does the construction diagram accurately depict each and every component and their respective vertical positions?	/			
26. Does the construction diagram list the types and quantities of materials used?				

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-27-15

WELL ABANDONMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Monitoring Well Number: みんってひこ				
Starting Date: 5-27-15				
Completion Date: 5-27 - 15	_			
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not	t			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	Voc	No	N/O	NI/A
Actions form.	res	INO	14/0	<u>IN/ PA</u>
Monitoring Well Abandonment:	T /	т	Τ	$\overline{}$
1. Was a geologist or geotechnical engineer present during the monitoring well abandonment?			<u></u>	<u></u>
	<del>1 /</del>			T
2. Were all depths measured prior to monitoring well abandonment?	<u></u>	<u> </u>	<u></u>	L
	1	-	т	т
3. Has all equipment been decontaminated?		<u>L</u>	<u> </u>	<u> </u>
	<del></del>		т	т——
4. Were all meters on site (PID and CGI), calibrated prior to start, and calibration checked?		<u> </u>	<u> </u>	ļ
		<b></b>		
5. Was monitoring well abandoned per the SOP?	<u> </u>	<u> </u>	<u> </u>	<u> </u>
6. If a pump was present, was it removed and decontaminated?	<u> </u>	<u> </u>	<u></u>	/
7. Was the site restored to original condition?	1	$\Box$	Ī-	
77 This die site feet to original to	<del></del>			
8. Was the abandonment information recorded in the fiel logbook?	17	T		Γ
6. Was the abandonment information recorded in the 193				
9. Were any special conditions encountered and the resulting actions noted in the field logbook?	7	T		
13. Well any special conditions encountered and the research notes in the nest regovern				<u></u>

The QC inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 5-27-15

10. Were all materials removed and disposed of properly?

11. Was the Kansas State WWC-5 Form completed and submitted to KDHE?

## FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5
Site: 5-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Yes	Νo	N/O	N/A
	,100	111X	<u></u>	
Field Documentation  1. Was all original field data, except boring logs, recorded in black indelible ink?	T-	ľ		
1. Was all original field data, except borning logs, recorded in older machine mich				
2. Were logbooks filled out properly; accurately recounting the day's events?	7			
2. Were logicooks filled out properly, decemberly recomming the day of the day				
Were all field forms completed and information accurately recorded:				
* DQCR's?				
DQCKS				
* Borehole Logs?				
Bol Choic Logo.				
* Well Construction Diagrams?				
Frei Collad action Diagrams				•
* Well Development Forms?	-			
Well Development 1 of the				
* Sampling Forms?				/
oundaing ( office				
* Water Level Forms?	1			•
Huter Level Forms				
* Chain of Custody Forms?				
Chair of Castody Format				
* Field Log Books?				
1 fold Edg profile				
* Project Photograph Log (in Log Book)?				
Troject i notagistin 205 (w. o.g.s. v.)				
* Daily Air Monitoring Record?				
Dully full Holaton and Records.				
List additional field forms completed:				
4. Was field documentation forwarded to office for peer review and QC? (>QLR)				<u> </u>
THOU HOLD WAS A STATE OF THE ST				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
OC Inspector Signature				
QC Inspector Signature				
Date: 5-26-15				

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#### SAFETY AND HEALTH CHECKLIST

Date: 5.26-15

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Personnel Observed and Locations: 5. Le wide, BMID, Avator, 9 Trant

Complete weekly for each site. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A **Documentation** 1. Is the Site Health and Safety Plan (SSHP) on the Site? 2. Has the SSHP been reviewed, dated, and signed within the last year? 3. Are the tasks being completed reflected in the hazard task analysis? 4. Is there a written acknowledgement that all employees, including subcontractors have been briefed and read the SSHP? 5. Are the following training records current and available: \* 40-Hour HAZWOPER/8-hour refresher for ALL employees and subcontractors? \* 24 Hours Supervised Field Experience? \* 8-Hour HAZWOPER Annual Refresher? \* CPR/First Aid? \* 8-Hour Hazardous Waste Site Supervisor, and refresher? \* Initial Site Health and Safety Briefing? \* Site Health and Safety Briefing for each location or site? 6. Are emergency maps posted at the site and maintained in vehicles? 7. Were daily safety checklists completed and fire extinguishers checked? 8. Were applicable Material Safety Data Sheets at the Site? 9. Are documents current and available that indicate employees and subcontractors are medically fit to work and wear the required personal protective equipment? 10. Were daily air monitoring equipment calibrations recorded? 11. Are respirator fit test records available and current? 12. Are exclusion zones and contaminant reduction zone adequately marked? 13. Is required personal protective equipment available and correctly used, maintained, and stored?

Site: S - 5				
Personnel Observed and Locations: BMCD, Avatar, Trant, site wide				
Complete weekly for each site. Answer each question by checking the appropriate column (yes, no, or N/A) If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.		<u>No</u>	<u>N/O</u>	N/A
14. Is the following emergency equipment located at each site:				
* Fire extinguisher?				
* Eyewash (15 minutes fresh water)?		<u> </u>		I
* Communications (walkie-talkie or phone)?				
* First aid kit?	77			
15. Is the buddy system in use?	T/			
16. Are personnel refraining from drinking, chewing, smoking, taking medications, or other hand-to-mouth contact while working in the exclusion zone?				
17. Is air monitoring equipment being used appropriately?				Γ
18. Is the site organized to allow the use of lifting equipment, and avoid tripping hazards and spreading contamination?				
19. Was a random employee asked if he/she know site hazard and emergency procedures?				
20. Is the drill rig kill switch clearly marked and easily accessible?				
201 25 the drifting fail Smitch clearly marked and easily accessible:	1 1	1 1	, ,	i

SAFETY AND HEALTH CHECKLIST

Date: 5-26-15

IDW MANAGEMENT CHECKLIST  Project Name/Location: Former Forbes Atlas Missile Site S-5  Site: 5-5  Boring/Monitoring Well Number(s): nw-010, nw-020, nw-025, nw-060, 58-02,  Date: 5-27-15  58-07	\$ 13-0.	3, <i>5</i>	`&-0	15(R), s	513-04
Complete weekly. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>	
Investigation-Derived Waste Management  1. Was all IDW managed according to the project plans?	<del>                                     </del>	1	Ī		
1. Was all IDW managed according to the project plans.	I	<u> </u>	L		
2. Were soil cuttings, drilling fluids, decon water, development water, and PPE containerized in 55-gallon drums?	/				
Were all containers properly labeled and placed on pallets?	1				

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-27-15

4. Was the Drum Inventory Worksheet completed?

5. Were all containers in satisfactory condition?

### FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: S-5

checked, provide an explanation on the Noncompliance and Corrective Actions form.	165	<u>140</u>	<u>N/O</u>	IN/F
ield Documentation	<del></del>	<del></del>		
. Was all original field data, except boring logs, recorded in black indelible ink?		<u></u>		<u>L_</u>
				1
. Were logbooks filled out properly; accurately recounting the day's events?		<u> </u>	L	<u> </u>
Were all field forms completed and information accurately recorded:		Т		Г
* DQCR's?		l	L	Щ.
* Borehole Logs?				
* Well Construction Diagrams?				7
Well Construction Diagrams:				
* Well Development Forms?				<u> </u>
* Sampling Forms?	<u> </u>	Т		<u> </u>
Sampling Forms:		<u> </u>		
* Water Level Forms?			L	<u></u>
		Ţ	Г	П
* Chain of Custody Forms?				بار
* Field Log Books?				
* Project Photograph Log (in Log Book)?				~
		Т.	Π-	
* Daily Air Monitoring Record?			L	
list additional field forms completed:		1		
1. Was field documentation forwarded to office for peer review and QC?   Duck 4 COC)		<u> </u>	<u> </u>	<u>L.</u>
The QC inspector shall sign this pheculist upon completion of all items on the checklist.				

Date: 5-20-15

PACKING, STORING, AND SHIPMENT OF SAMPLES CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number(s): 214	5 D ~0	6	50-0	7,
Boring/Monitoring Well Number(s): りん Surface Soll/Sediment/Surface Water Sample Number(s): Sur-oc, sw-o7, sw-o5, sw-o4,				•
Sampling Date: 5-20-15				
Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A)				
If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Packing, Storing, and Shipment of Samples				
Were the samples handled according to the project plans?	<u> </u>			<u> </u>
		<del></del>		
2. Was the pH of samples requiring pH adjustment verified in the field?		$oldsymbol{\perp}$		
		<del></del> .		
3. Did the samples remain on ice from collection until cooler was taped for shipment?		Ш	<u></u>	Щ_
4. Were COC forms filled out accurately and completely including project name and number, sampling date,				···-
sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter,	/			1
and media sampled?				
			<u> </u>	
5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?	<u> </u>	$oldsymbol{ol}}}}}}}}}}}}}}}}}}}}$		<u> </u>
a way of the cooler and the cooler and the cooler cooled with stranging tape?	<b>-</b>			
6. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?				L
7. Was a shipping label attached to the cooler?	1/	T		
7. Was a suppling label attached to the cooler?			<u></u>	
8. Was custody documentation intact until receipt by the laboratory?	77			
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
GAMO PO				
Dotor				

Date: 5-70-15

DECONTAMINATION CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Boring/Monitoring Well Number(s): 心体				
Date: 5-20-15 Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Equipment		т—	т	1
Was all sampling equipment decontaminated properly prior to use and between sample intervals?		<u> </u>	<u>_</u>	1
2. Was each decontamination event recorded in the logbook?		<u> </u>		<u>L</u>
Was IDW (decontamination water) handled in accordance with the approved work plan?	77			

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

Date: 5-20-15

#### INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Date: 5-19-15

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Instrument Calibration	
Were all field instruments calibrated properly?	
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	
3. Did the Field Calibration Forms list all calibration events?	<u> </u>

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:////

Date:

5-19-15

### FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Field Documentation	17	Г	Γ	Π
1. Was all original field data, except boring logs, recorded in black indelible ink?			L	l
2. Were logbooks filled out properly; accurately recounting the day's events?	77	Т		I
2. Were logbooks filled out properly; accurately recounting the day's events:				
O IAL II C. I.I. C and information appropriately reported:				
3. Were all field forms completed and information accurately recorded:	7	1	1	I
* DQCR's?		L	<u>i                                     </u>	l
* Pombolo Logo?	丁 フ			l
* Borehole Logs?			<u>.                                    </u>	l
* Wall Construction Dingrams?	<del></del>	Ι		/
* Well Construction Diagrams?		Щ.	<u> </u>	<u> </u>
* Well Development Forms?	-17	Γ-	I	
well bevelopment roms:		1		1
* Sampling Forms?		_	Г	
* Sampling Points:		<u>.                                    </u>		
* Water Level Forms?	17	П		· · · ·
wydlei Leyel Forms!		<u>.                                    </u>	I	<u> </u>
* Chain of Custody Forms?	77			
* Chalif of Custody Points:	<u> </u>	!	<u> </u>	
* Field Log Books?	77	Γ.	Γ	
Field Log Books:			<u> </u>	
* Project Photograph Log (in Log Book)?	7	<u> </u>	Г	Γ -
** Project Photograph Log (in Log book):	1	<u>.                                    </u>		
* Daily Air Monitoring Record?	17		Γ.	
* Daily Ail Motilloring Records	1 -	<u> </u>	1	L
List additional field forms completed:				
4. Was field documentation forwarded to office for peer review and QC? () QCQ 9-COC)	フノ			
4. Was field documentation forwarded to office for peer review and QC: (1) \( \mathcal{L} \) \( \mathc		1		<u> </u>
The QC Inspector shall sign/this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
Police .				
Date: 5-19-15				
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DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number(s): 58-01   MW-025				
Sampling Date: 5-19-15				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
Corrective Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
General  1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner,	<del></del> :	11		
submersible pumps, Pad water tanks)?				[
Sabinersible pumps, Full vides cursos		<u> </u>		·
Are there any fluid leaks on drilling rig and associated equipment?				Ι -
a. i.e. a. i. i.e. a.				
3. If so, have oil absorbent pads been used to contain leaks?				/
Was sampling equipment transported or stored away from fuel sources or fuel spill areas?				
5. Was clean equipment wrapped in visqueen?				<u> </u>
3. Was clean equipment wropped in visqueon:		l		<u> </u>
6. Were clean and dirty equipment stored or transported separately?				
7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with	<del></del>			ı -
lubricants?		1		<u> </u>
Drilling Rig		_		
8. Was the type and model of the drilling rig recorded?				
	<del></del>	<del></del>		
9. Was the type of lubricating oil recorded?	1/			

9. Was the type of lubricating oil recorded?

10. Were names and titles of crew recorded?

11. Were drill stem augers and bit diameters recorded?

12. Were volumes of drilling fluids lost to fromation accounted for and recorded?

13. Were rig start, stop, down times, and penetration rates recorded?

14. Was split spoon sampler used on deep MW and test holes?

15. Were all drilling tools and cables inspected daily prior to their use?

#### **DRILLING METHODS CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

Boring/Monitoring Well Number(s): 5 β - 0 1 / MW - 025

Sampling Date: 5-19-15

Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Rotary Wash	tes	INO	N/U	<u>IN/A</u>
16. Was a sample of the proposed drilling water analyzed?		1		
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?				
18. Was the water circulated in portable tanks?		_		
19. Was bentonite used?				
20. Were any additives used besides bentonite?				
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log?	/			
22. Was the bentonite supplier, brand and type recorded?				
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?				-
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?	/			
25. Was depth to ground water measurements collected with an electronic tape?		-"		
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?	/		·	
27. Was the Kelly Bar marked to verify depth during drilling?	7			-
28. Was the boring open to the bottom?				

The QC Inspector shall sign this cheeklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 5-19-15

	PACKING, STORING, AND SHIPMENT OF SAMPLES CHECKLIST					
	Project Name/Location: Former Forbes Atlas Missile Site S-5					
	Site: 5-5					
`}	Boring/Monitoring Well Number(s): 58-01 / www.zs					
,	Surface Soil/Sediment/Surface Water Sample Number(s): 58 -01 -0-1, 55 -01 -7-4, 57-01-	3-7	. 5/3	-01	-11-1	2,58-01-1f-11
	Sampling Date: 59-01-17-18,58-01-23-24, >w-01,50-01,5w-03	l Ser	1-02	3 , 54	-0z	
	Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A).					
	If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	No	<u>N/O</u>	<u>N/A</u>	
	Packing, Storing, and Shipment of Samples	·				
	Were the samples handled according to the project plans?				L	
		<del>/</del>	<u>'</u>			
	2. Was the pH of samples requiring pH adjustment verified in the field?				L{	
		1./	1			
	3. Did the samples remain on ice from collection until cooler was taped for shipment?	<u> </u>	1	<u> </u>	<del> </del>	
	4. Were COC forms filled out accurately and completely including project name and number, sampling date,	Γ,	T		$\vdash$	
	sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter,	/				
	and media sampled?				<u> </u>	
		<del></del>	1			
	5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?	<u> </u>	l		<u> </u>	
			T .			
	6. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?	_				
	7. Was a shipping label attached to the cooler?					
	8. Was custody documentation intact until receipt by the laboratory?		1		<u> </u>	
)	The QC Inspector shall sign this checklist upon completion of all items on the checklist.					
,	QC Inspector Signature:					
	Date: 5-19-15					
	Date: 5-19-1					
	) (C-V					

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DECONTA	MINATION	CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5
Boring/Monitoring Well Number(s): \$8-01 | mw-oz \$

Date: 5-19-15

Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is

checked, provide an explanation on the form.

Yes No N/O N/A

Equipment		 
I. Was all sampling equipment decontaminated properly prior to use and between sample intervals?		
2. Was each decontamination event recorded in the logbook?		
	1,	
Was IDW (decontamination water) handled in accordance with the approved work plan?		

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-19-15

### **BOREHOLE AND CORE LOGGING CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Boring/Monitoring Well Number: 513-01 /MW-025

Starting Date: 5-19-15

Date: 5-19-15

Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Borehole Logging	163	140 1	170	МА
New portion of the state o	ΓÝΤ			
1, was borning logged by a geologist of geological engineers	<del></del> ,			
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?	1	$\Box$		
2. Was log completed and chares printed registry on boxists form that object the control of	1			
3. Was the log scale 1 inch = 1 foot?	17	$\neg \Gamma$		
3. Was the log scale I man - I took	<u></u>			
4. Were logs completed in the field (originals)?		T		
4. Were logs completed in the near (originals)?				
5. Does log contain the following a routine entries?				
5. Does log contain the following a resemble character				
* Unique well number (as per Work Plan)?				
Onique Well Hamber (as per front i way).	<u> </u>		'	
* Depositional type (alluvium, till, loess, etc.)		$\top$		
Depositional type (anarrant, an, rocco, etc.)			1	_
* Depths/Heights recorded in tenths of feet?	1/	Т		
Deputs/Heights recorded in tentas or reces	3			
* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes)	17	$\neg \Gamma$		
** Outer descriptive readures (bedding, organic material, son structures) and receives	1 1			
* Soils classified as per USCS and fully described with numerical percents of constituents?	1/	$\neg \top$		
/* Soils classified as per oses and fully described with multicited percents of consideration	<u>, , , , , , , , , , , , , , , , , , , </u>			
* Soil moisture content and texture or cohesiveness?		Т	-	
* Soil Hibisture Content and texture of concentrations:	<u>i</u>			
* Soil color described using the Munsell System?		$\neg$		
** Soil color described using the muriser system:	.1			
6. Was general information (top of form MRK-55) completed?		Т		
6. Was general information (top or form max-55) completed:	1			
7. Was the log signed by person preparing the log?	7	$\neg \tau$		
7. Was the log signed by person preparing the logs	<u> </u>			
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?	7	т		
8. Were special collutions (i.e., intervals of flote histability) and their resolution recorded:	1		l	
Were start and completion dates and time included for boring and well installation activities?				
9. Were start and completion dates and time included for boring and well installation activities:	1			
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed			—т	
in cuttings)?				ı
	-			
11. Were depths at which free water was encountered and stabilized water levels recorded?	1			
12. Were soil sample depths recorded?	/			
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter				
recorded?				
	<del>, , ,</del>			
14. Were soil sampling methods and recovery recorded?	\ <u>'</u>	$\perp \perp$		

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 – 5				
Boring/Monitoring Well Number: SB-01/MW-025				
Starting Date: 5 - 19 - 15				
Date: 5-19-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Yes	<u>No</u>	N/O	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	7	<u> L</u>	<u> </u>	<u> </u>
		,		
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				
17. Were abbreviations used on log defined?	L			Í
				ī
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?				
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of				
compressed air filter)?	/			
	L	<b>!</b>		L
20. Were drilling pressures and driller's comments recorded?	~			
20 Total Carring process as a summer of contract to the contra				
21. Was total depth recorded and marked with a double line?	(3)			/
Boring dot completed yet.	<u> </u>			
22. Was monitoring well diagram completed and attached to log?			·	
				-
Core Logging				
In addition to the items above, the following also apply to core-logging:				
23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture,	,			
color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and				
filling materials?				
	71		-	
24. Was start and stop time of each core run recorded?	/		i	
			— т	
25. Were depths to top and bottom of each core run recorded?	<b>~</b>			
26. Was length of core recovered in each core run recorded?				
27 Mars the standard of standard land and the standard st		- 1		
27. Were the size and type of coring bit and barrel recorded?				
20. Was the doubt to the bettem of the hele many and offer the case was a few and few	<del>/</del> 1		<del></del>	
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?				
The OC inspector shall sign this shouldlet man annulation of all items with the about it				
The QC inspector shall sign this checklist upon completion of all items onthe checklist.				
QC Inspector Signature:				

BOREHOLE AND CORE LOGGING CHECKLIST

Date:

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### SAMPLE COLLECTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Monitoring Well Number: 58 -0 ( /ww -02 \$

Sampling Date: 5-19-15

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the

Yes No N/O N/A

General	<del>- 1 - 7 1 -</del>	-	
Were new protective gloves worn between sampling locations and/or intervals?			┸┈┥
			<del>-</del>
Were samples collected using methods described in the FSP?			┷╌┤
	7/	T	<del>                                     </del>
3. Were sample containers filled in the correct order?			┸
" and the supplied for the supplied and site conditions?	1/	Т.	$\top$
4. Was sampling equipment appropriate for the purpose and site conditions?		3	2
	$\Box$		1 1
5. Was sampling equipment decontaminated or disposable/dedicated equipment used between each sample?			
	1	1.	
6. Were procedures for collecting QA/QC samples followed as per the FSP?	<u> </u>		
	<u> </u>	<u>,                                    </u>	
7. Were sampling locations properly identified by land survey?	- 4		$\perp \perp$
		<u> </u>	
8. Were bottles adequately protected from contamination prior to sample collection?		<u> </u>	
		4	
Ground / Surface Water for Chemical Analysis		<u> </u>	<del></del>
9. Were ground water parameters stable before sample collection (as per FSP)?			$\perp \perp \downarrow$
		3)	
and the second to the second t			
10. Were turbidity readings below 50 NTU (or if all other field parameters are stable and turbidity can not be		<i>3</i> 5.	
lowered below 50 NTU, were turbidity readings within + or - 10% over three, five-minute readings)?  Note: approval must be obtained from the project geologist and project manager prior to sampling in turbid		<u> </u>	+
conditions.			<u> </u>
CONDITIONS		b	
11. Was a field sampling form completed?			
11, 1100 ti liditi dalipini gilani dalipini dali			
12. Were the analytical parameters and QA/QC samples recorded on the field sampling form?			
12. Hoto dio diagnosi para di Ciri di			
13. Was low-flow sampling conducted in accordance with the approved SAP?			
101 Traction non-party			
14. Was headspace in sample containers for volatiles eliminated?			
The free free free free free free free fr			
Sediment for Chemical Analysis		-	
14. Were sample collected according to the FSP?			
15. Was a field sampling form completed?			
16. Were the analytical parameters and QA/QC samples recorded on the field sampling form?			
17. Was headspace in sample containers for volatiles eliminated?			
Soil for Chemical Analysis			
18. Were sample collected according to the FSP?			
19. Was a field sampling form completed?		L_	
20. Were the analytical parameters and QA/QC samples recorded on the field sampling form?		L_	
21. Was headspace in sample containers for volatiles eliminated?	<u> </u>	L	

SAMPLE COLLECTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Monitoring Well Number: SB-01 /MW-025

Sampling Date: 5-19-15

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the

form.

Yes No N/O N/A

**Corrective Actions:** 

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

Date:

### INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-18-15, 5-5

Date:

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Instrument Calibration	·
Were all field instruments calibrated properly?	
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	
3. Did the Field Calibration Forms list all calibration events?	
List instruments used at the Site: Mini Rue 2000 PID	
RKI LEL	

The QC inspector shall sign this checklist upon completion of all items on the checklist.

QC inspector Signature:

5-18-15

### FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Yes	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Field Documentation				
Was all original field data, except boring logs, recorded in black indelible lnk?		<u></u>	<u> </u>	<u> </u>
		_	1	Τ
2. Were logbooks filled out properly; accurately recounting the day's events?		<u> </u>	l	<u> </u>
3. Were all field forms completed and information accurately recorded:	<del></del>	_	<del></del>	<del></del>
* DQCR's?	<b></b> _	<u> </u>		<u> </u>
			_	,
* Borehole Logs?		<u> </u>		<u>L</u>
		}		<del></del>
* Well Construction Diagrams?		Ţ		
				,
* Well Development Forms?	· /	<u>L</u>		<u> </u>
* Sampling Forms?		<u> </u>		/
Company		,		
* Water Level Forms?	$\neg \neg$			
Traces Lord Former				
* Chain of Custody Forms?	17	1		
Chair or Cascay Forms.				
* Field Log Books?	77	П	l	Г
* Field Log Books:	,			
A District Phateswerk Log (in Log Pools)?	$\neg z$	Π		$\Box$
* Project Photograph Log (in Log Book)?		1	·	<u> </u>
	7/	1	1	T
* Daily Air Monitoring Record?	<u> </u>	<u> </u>	<u>.l</u>	
List additional field forms completed:	17	<del>_</del>	$r^{-}$	Τ
4. Was field documentation forwarded to office for peer review and QC? (DOCR & COC)	<del></del>	I	<u>L.</u>	
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
Date: 5-18-15				

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Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number(s): 58-03 9 58 -07				
Surface Soil/Sediment/Surface Water Sample Number(s): 58-03-0-1, 58-03-3-3-4, 58-03-9-	-10 1	513	-03-	11412
Surface Soil/Sediment/Surface Water Sample Number(s): $58-03-0-1$ , $58-03-7-4$ , $58-03-9-8$ Sampling Date: $5-18-15$ $58-03-14-15$ , $58-03-18-17$ , $58-07-0-1$ , $58-07-7-4$ , $58-07-7-7-4$ , $58-07-7-7-4$ , $58-07-7-7-18-18-18-18-18-18-18-18-18-18-18-18-18-$	'-07 -	-9-1	P, 5.	3-07-
Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Packing, Storing, and Shipment of Samples	<del>- /</del>	7		
Were the samples handled according to the project plans?	1	L		<u> </u>
	<del> /</del>	, ,		
2. Was the pH of samples requiring pH adjustment verified in the field?				L
		,		
3. Did the samples remain on ice from collection until cooler was taped for shipment?	<u></u>			
		, I		
4. Were COC forms filled out accurately and completely including project name and number, sampling date, sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter, and media sampled?				
		<del>л Т</del>		
5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?		<u>L</u> _		L
6. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?	/			
7. Was a shipping label attached to the cooler?	7			
		,		
8. Was custody documentation intact until receipt by the laboratory?		<u> </u>		
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
OC Inspector Signature:  Date: 5 - 18-15				

PACKING, STORING, AND SHIPMENT OF SAMPLES CHECKLIST

<b>DECONTAMINATION</b>	CHECKLIST
------------------------	-----------

Project Name/Location: Former Forbes Atlas Missile Site S-5 Boring/Monitoring Well Number(s): \$13-03,58-07

Date: 5-18-15

Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.

Yes No N/O N/A

Equipment	
1. Was all sampling equipment decontaminated properly prior to use and between sample intervals?	
2. Was each decontamination event recorded in the logbook?	
3. Was IDW (decontamination water) handled in accordance with the approved work plan?	
	<u> </u>

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-18-15

#### **BOREHOLE AND CORE LOGGING CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Boring/Monitoring Well Number: 58-03 9- 58-07

Starting Date: 5 - 18-15

Date:

5-18-15 Complete for each boring log. Answer each question by checking the

appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,

provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Borehole Logging				
1. Was boring logged by a geologist or geological engineer?				L
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?	1			l
3. Was the log scale 1 inch = 1 foot?		.		
4. Were logs completed in the field (originals)?				
5. Does log contain the following a routine entries?				
5. Does log correcting a roading criation				
* Unique well number (as per Work Plan)?				
* Depositional type (alluvium, till, loess, etc.)				
* Depths/Heights recorded in tenths of feet?				
* Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)				
Soils classified as per USCS and fully described with numerical percents of constituents?				
* Soil moisture content and texture or cohesiveness?	17		-1	
* Soil color described using the Munsell System?				
6. Was general information (top of form MRK-55) completed?	/			
7. Was the log signed by person preparing the log?	7			
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?				
9. Were start and completion dates and time included for boring and well installation activities?				
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed n cuttings)?	1 /			
1. Were depths at which free water was encountered and stabilized water levels recorded?	T			
12, Were soil sample depths recorded?				
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter ecorded?				
14. Were soil sampling methods and recovery recorded?	<b> </b>			

appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Yes	No	<u>N/O</u>	N/4
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?				
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?	<u> </u>		<del>                                     </del>	
17. Were abbreviations used on log defined?		T		T
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?	~			
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of compressed air filter)?				
20. Were drilling pressures and driller's comments recorded?				
21. Was total depth recorded and marked with a double line?				
22. Was monitoring well diagram completed and attached to log?				
Core Logging In addition to the items above, the following also apply to core-logging: 23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture, color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and illing materials?	_			
24. Was start and stop time of each core run recorded?	<u></u>		<u>_</u> _	
25. Were depths to top and bottom of each core run recorded?	7			
26. Was length of core recovered in each core run recorded?				
27. Were the size and type of coring bit and barrel recorded?	7			
8. Was the depth to the bottom of the hole measured after the core was removed for each core run?	<b>/</b> T		$\overline{}$	

BOREHOLE AND CORE LOGGING CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5
Site: \$-5
Date: 5-17-15

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Instrument Calibration

1. Were all field instruments calibrated properly?

2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?

3. Did the Field Calibration Forms list all calibration events?

List instruments used at the Site: ALL COOL (CEO)

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Data

5-17-15

### FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u> J	<u>No N/C</u>	<u>A\N</u> <u>C</u>
Field Documentation	— л	<del></del>	
1. Was all original field data, except boring logs, recorded in black indelible ink?			
		<del></del>	
2. Were logbooks filled out properly; accurately recounting the day's events?			<u> </u>
Were all field forms completed and information accurately recorded:			
* DQCR's?			
	<del></del>	<del></del>	<u> </u>
* Borehole Logs?			
* Well Construction Diagrams?	_   _ /	!	
			<del></del>
* Well Development Forms?			
	<del>-   -  </del>	<del></del>	1/
* Sampling Forms?			
	17		<del></del>
* Water Level Forms?			
	т т		$T_{\sim}$
* Chain of Custody Forms?		—	
	$\neg \tau \nearrow \tau$		$\neg$
* Field Log Books?			
		T	1
* Project Photograph Log (in Log Book)?			<u> </u>
* Daily Air Monitoring Record?		!	
List additional field forms completed:		$\overline{}$	
4. Was field documentation forwarded to office for peer review and QC? ( DQによ)			
to the state of th			

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 5-17-15

	DRILLING METHODS CHECKLIST  Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5				
}	Boring/Monitoring Weil Number(s): MW-02				
	Sampling Date: AIA				
	Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
	no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
	Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
	General				
	1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner,	/			
	submersible pumps, Pad water tanks)?	<del></del>	<u> </u>		L
		т	1 :	. —	-
	2. Are there any fluid leaks on drilling rig and associated equipment?				<u> </u>
			1		,
	3. If so, have oil absorbent pads been used to contain leaks?	<u></u>			_
	4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas?		<u> </u>		
	5. Was clean equipment wrapped in visqueen?				
	6. Were clean and dirty equipment stored or transported separately?	$\overline{}$			I
	7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with				l
	lubricants?	$oldsymbol{ol}}}}}}}}}}}}}}}}}}$			
	Drilling Rig				_
	8. Was the type and model of the drilling rig recorded?				
	9. Was the type of lubricating oil recorded?	<b>_</b>	1		
•					
	10. Were names and titles of crew recorded?	1			
			1		·
	11. Were drill stem augers and bit diameters recorded?	<b>—</b>	<u> </u>		
	A.F. Troto drin destri dagaro dria dei diametero recordedi.			<u> </u>	

12. Were volumes of drilling fluids lost to fromation accounted for and recorded?

13. Were rig start, stop, down times, and penetration rates recorded?

15. Were all drilling tools and cables inspected daily prior to their use?

14. Was split spoon sampler used on deep MW and test holes?

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number(s): ww-07				
Sampling Date: 🙏 (A				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Voc	Nia	NZO	NI /
Rotary Wash	<u>1es</u>	INO	<u>N/O</u>	<u> </u>
16. Was a sample of the proposed drilling water analyzed?	T-	1	T	П
	ــــــــــــــــــــــــــــــــــــــ	<b></b>	1	<u>.                                    </u>
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?				
				_
18. Was the water circulated in portable tanks?		<u>L</u>	<u> </u>	<u> </u>
19. Was bentonite used?			T	Γ_
20. Were any additives used besides bentonite?	L	<u></u>	<u>L.</u>	L
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the	T /	<del></del>		Γ-
boring log?				
22. Was the bentonite supplier, brand and type recorded?		т	1	
22. Was the bentonite supplier, brand and type recorded?	<u>L</u>	<u> </u>	<u> </u>	L
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?				
24. We the doubt of cook basing position by managing with a fiberalized by stack tens?			1y	
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?		L	Ш	<u> </u>
25. Was depth to ground water measurements collected with an electronic tape?				
		<del></del>	,	
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?	/			

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

5-17-15

28. Was the boring open to the bottom?

27. Was the Kelly Bar marked to verify depth during drilling?

BOREHOLE AND CORE LOGGING CHECKLIST
Project Name/Location: Former Forbes Atlas Missile Site S-5
Site: 5 - 5
Boring/Monitoring Well Number: ~~~~~
Starting Date: 5-17-15
Date: 5-11-15

Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Borehole Logging				
Was boring logged by a geologist or geological engineer?				_
				_
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?				ᅴ
	T / T			$\dashv$
3. Was the log scale 1 inch = 1 foot?			Щ_	_
		<del>-  -</del>		-
4. Were logs completed in the field (originals)?				$\dashv$
				$\dashv$
5. Does log contain the following a routine entries?				ᅱ
* Halana wall rumbay (no now Morle Dinn)?			$\overline{}$	ᅥ
* Unique well number (as per Work Plan)?	<u>, , , , , , , , , , , , , , , , , , , </u>			ᅥ
* Depositional type (alluvium, till, loess, etc.)	1		$\neg$	-
* Depositional type (analyticity, till, locss, etc.)	·			ᅥ
* Depths/Heights recorded in tenths of feet?	1			7
Deputs/reights recorded in terms of feet				$\neg$
* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes)	1			$\neg$
Other description readings of several services and several services and several services are several services and several services and several services are several services are services and several services are several services are several services and several services are several				
Soils classified as per USCS and fully described with numerical percents of constituents?	7			٦
, contract as part of the many	<u></u>	•		٦
* Soil moisture content and texture or cohesiveness?	$\overline{}$		-	
				$\Box$
* Soil color described using the Munsell System?				$\Box$
				$\Box$
6. Was general information (top of form MRK-55) completed?				
				$\sqcup$
7. Was the log signed by person preparing the log?			<u>.                                    </u>	╝
·				_
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?	<u> </u>			$\dashv$
	<del>1                                    </del>			4
9. Were start and completion dates and time included for boring and well installation activities?				_
				_
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed	/			
in cuttings)?	11			ᅱ
11. Were depths at which free water was encountered and stabilized water levels recorded?	T		<del>-   -</del>	ᅱ
11. Welle deputs at which thee water was encountered and stabilized states recorded.				ㅓ
12. Were soil sample depths recorded?	ТΤ		7	乛
12. Were son sample deputs recorded:				ᅦ
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter			$\top$	ヿ
recorded?	<u> </u>			ᆜ
	<del></del> -	_ ,		_
14. Were soil sampling methods and recovery recorded?			L_	_

BOREHOLE AND CORE LOGGING CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number: 🏎 🗢 🔼				
Starting Date: 5-17-15				
Date: 5-17-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Yes	<u>No</u>	N/O	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?				
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				<b>'</b>
17. Were abbreviations used on log defined?				
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?	,			
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of			[	
compressed air filter)?			<u> </u>	
20 W Lillian and dellade comments recorded?				
20. Were drilling pressures and driller's comments recorded?				Ĺ <u>.</u>
24. When taked double recorded and marked with a double line?			<del></del> 1	
21. Was total depth recorded and marked with a double line?		لــــا		
22. Was manifestive well disgram completed and attached to log?				
22. Was monitoring well diagram completed and attached to log?		Ш		
Core Logging  To addition to the items shows the following plea pupily to gave logging.				
In addition to the items above, the following also apply to core-logging:  23. Was rock described using standard geologic nomenciature; e.g., rock type, relative hardness, density, texture,				-
color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and				
filling materials?	<b>V</b>			
24. Was start and stop time of each core run recorded?				
25. Were depths to top and bottom of each core run recorded?	/			
				-
26. Was length of core recovered in each core run recorded?	7			

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

28. Was the depth to the bottom of the hole measured after the core was removed for each core run?

27. Were the size and type of coring bit and barrel recorded?

Date: 5-17-15

	WELL CONSTRUCTION CHECKLIST				
	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: 5-5				
)	Monitoring Well Number: Mw-02				
	Starting Date: 5-17-15				
	Completion Date: 5-17-15				
	Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not				
	observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Vac	Nο	N/O	N/A
	General	,100	<u>,110</u>	11/0	147.44
	1. Was a geologist or geotechnical engineer present during installation of the monitoring well?				I
	1. Was a geologist of geotechnical engineer present during installation of the monitoring from			<u> </u>	1
	2. Were all depths verified during installation by measurement with a weighted tape?	_			T
	2. Well all deputs formed during installation by measurement must a registrating	L	<u> </u>		
	Selection and Placement of Screen				
	3. Was the screen length specified in the Work Plan used in construction of the well? Modified - on if by				
	USALE		<u> </u>		.1
	4. Was the approved screen slot size and filter pack used?				
					<u></u>
	5. Was the screen placed at the depth specified in the Work Plan?	/			
	6. Did the rig geologist document the stable water level before installing the well?				/
	7. Was the boring bailed dry during drilling to check for recharge?				/
	Construction Materials and Techniques				
	8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785?			<u> </u>	<u> </u>
)	9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping	<b>/</b>			
	containers?		I		<u> </u>
	10. Was the shipping container labeled to identify the materials?		<u> </u>		
	10. Was the shipping container labeled to identify the materials:			<u> </u>	J
	11. Was the location of the markings, the brand and the supplier of the well materials recorded?	/			
	11. Was the location of the mentings, the brank and the supplier of the west materials recorded.			<u> </u>	J
	12. Did the filter pack material conform to the specifications of the Work Plan?	/			T .
	Zar Did the finest patertimeters content to the special series and the series and the series and the series are series are series and the series are seri				
	13. Was the location of the markings, the brand and the supplier of the filter pack recorded?	1			
	14. Was the filter pack tremied into the well?				
	15. Was the elevation of the filter pack accurately monitored during installation?				
	16. Was the filter pack installed to 2-5 feet above the screen?				
	17. Was the bentonite seal a minimum of 2 feet thick?	<b>✓</b>			
	18. Were the brand, supplier, size and location of markings of the bentonite recorded?			L	
			<del></del>		
	19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite pellets and as per manufacturers specifications when using high solids bentonite slurries?	<b>✓</b>			
	perieus anu as per manuracturers specifications when using right solius peritorite sinnes:				Ь

20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: Mw-02				
Starting Date: 5/11/15				
Completion Date: 5/17115				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.		B)_	NIG	N/ /
	<u>,res</u>	140	<u>N/O</u>	<u>N//</u>
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	1-			
22. Was Monitoring Well Construction Diagram completed?	1			-
22 W. M. 1.1.0				
23. Was Materials Summary Form completed?				
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well installation?	~			
25. Does the construction diagram accurately depict each and every component and their respective vertical	T .1			_
positions?				
26. Does the construction diagram list the types and quantities of materials used?			<del>- ,</del>	
S and an analysis of materials octar	11			
The QC inspector shall sign this checklist upon completion of all items on the checklist.		<del></del>		
QC Inspector Signature: //////				

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# INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location; Former Forbes Atlas Missile Site S-5

Site: 5-16-15 Date: 4 , 5-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Instrument Calibration	
Were all field instruments calibrated properly?	
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	
z. Were all field find distributed constants	
The state of the s	
3. Did the Field Calibration Forms list all calibration events?  List instruments used at the Site: Mini Ray PED	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-16-15

FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: S-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a N checked, provide an explanation on the Noncompliance and Corrective Actions form.	o is <u>Yes No N/O N/A</u>
Field Documentation	· 1 - 21 - 11 - 11 - 11 - 11 - 11 - 11 -
Was all original field data, except boring logs, recorded in black indelible ink?	
2. Were logbeoks filled out properly; accurately recounting the day's events?	
Were all fleld forms completed and information accurately recorded:	
* DQCR's?	
* Borehole Logs?	
* Well Construction Diagrams?	
* Well Development Forms?	
* Sampling Forms?	
* Water Level Forms?	
* Chain of Custody Forms?	
* Field Log Books?	
* Project Photograph Log (in Log Book)?	
* Daily Air Monitoring Record?	
List additional field forms completed:	
4. Was field documentation forwarded to office for peer review and QC? (りゅこん)	
The QC Inspector shall sign this checklist upon completion of all items on the checklist.  QC Inspector Signature:	

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: S-5				
Boring/Monitoring Well Number(s): MW-04				
Sampling Date: µ1/A				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
General				
1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner,				
submersible pumps, Pad water tanks)?			<u> </u>	L
2. Are there any fluid leaks on drilling rig and associated equipment?		T 🗸	1	1
2. Are there any huld leaks on driving hig and associated equipment:		ـــــــ		<u> </u>
3. If so, have oil absorbent pads been used to contain leaks?	Т	1	T	
or it boy have on about both book to determine the same		<u>.                                    </u>	<u> </u>	<u>.                                    </u>
4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas?	Т	Π		~
5. Was clean equipment wrapped in visqueen?	1/	<u> </u>		
6. Were clean and dirty equipment stored or transported separately?	T/	l .		Ι
o, were dear and only equipment stored of autoported separately.	<u>.</u>	J		<u> </u>
7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with	Т	/	· · ·	
lubricants?		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		<u>L</u>
Drilling Rig				
8. Was the type and model of the drilling rig recorded?	T/	П		
or the die Abe was model of the stilling tig reserves.		<u>.                                    </u>		<u> </u>
9. Was the type of lubricating oil recorded?	1			
	<del></del>			
10. Were names and titles of crew recorded?	1	<u> </u>	<u> </u>	
	1 /	1 :		ι
11. Were drill stem augers and bit diameters recorded?	14	<u> </u>		<u> </u>

12. Were volumes of drilling fluids lost to fromation accounted for and recorded?

13. Were rig start, stop, down times, and penetration rates recorded?

15. Were all drilling tools and cables inspected daily prior to their use?

14. Was split spoon sampler used on deep MW and test holes?

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number(s): Mw-06				
Sampling Date: A(A				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Rotary Wash	<del></del> ;		<del>,</del>	
16. Was a sample of the proposed drilling water analyzed?	1	<u></u>		<u> </u>
	<del> ,</del>			
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?	<u>                                     </u>	<u> </u>		
18. Was the water circulated in portable tanks?	<b>\</b>			
19. Was bentonite used?	<b>V</b>			
20. Were any additives used besides bentonite?	T	<b>V</b>		
				<u> </u>
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the				
boring log?				
	<del></del>		<del></del> -	<b>,</b> -
22. Was the bentonite supplier, brand and type recorded?	<b>V</b>	<u> </u>		<u> </u>
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?	<b>/</b>			<u> </u>
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?	<b>/</b>			
25. Was depth to ground water measurements collected with an electronic tape?				
		<u> </u>		
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?		Ш		
27. Was the Kelly Bar marked to verify depth during drilling?				
28. Was the boring open to the bottom?				

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

### **BOREHOLE AND CORE LOGGING CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5~5

Boring/Monitoring Well Number: MW-06

Starting Date: 5-16-15

Date: 5-14-15

Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Borehole Logging				
Was boring logged by a geologist or geological engineer?				
	<del></del>	·····		
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?				
3. Was the log scale 1 inch = 1 foot?	T 7			$\dashv$
5. Was the log scale 1 littl = 1 loot!			Ł	-
4. Were logs completed in the field (originals)?				
5. Does log contain the following a routine entries?				
* Unique well number (as per Work Plan)?				
* Depositional type (alluvium, till, loess, etc.)				
* Depths/Heights recorded in tenths of feet?	<del>                                     </del>	—Т	1	
Deputs/neights recorded in tentits of feet?			<u> </u>	
* Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)	17			$\dashv$
Other descriptive readines (Seedang) organic materials son stated as spring processing to the research				
* Soils classified as per USCS and fully described with numerical percents of constituents?	TZ	$\top$		
* Soil moisture content and texture or cohesiveness?				
* Soil color described using the Munsell System?		$oldsymbol{\bot}$		
		<del></del>		$\blacksquare$
6. Was general information (top of form MRK-55) completed?			ı.	—
7. Was the log signed by person preparing the log?	1./1			
7. Was the log signed by person preparing the log?	1.			$\dashv$
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?	1/1	Т		
		t		
9. Were start and completion dates and time included for boring and well installation activities?				
	.,			
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed in cuttings)?	1 /			
in cutings):				
11. Were depths at which free water was encountered and stabilized water levels recorded?	$\top$	$\neg \tau$		$\overline{}$
				$\neg$
12. Were soil sample depths recorded?	$\Box$			~
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter	1	T		
recorded?			L	
14. Were soil sampling methods and recovery recorded?	777	$\neg \tau$		$\dashv$
A first con compling mediods and recovery recorded:	<u> </u>			$\dashv$

Starting Date: 5-16-15				
Date: 5-14-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Vac	Nο	<u>N/O</u>	. NI 7
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?				Ï
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?			<u> </u>	V
17. Were abbreviations used on log defined?	7			
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?	1/			
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand compressed air filter)?	of /			
20. Were drilling pressures and driller's comments recorded?	<b>/</b>			
21. Was total depth recorded and marked with a double line?	7			
22. Was monitoring well diagram completed and attached to log?	7			
Core Logging				
In addition to the items above, the following also apply to core-logging:				
23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture, color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and filling materials?				
24. Was start and stop time of each core run recorded?				
25. Were depths to top and bottom of each core run recorded?				
26. Was length of core recovered in each core run recorded?				
27. Were the size and type of coring bit and barrel recorded?				
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?	<del>- / -</del>		_	

Date: 5-16-15

BOREHOLE AND CORE LOGGING CHECKLIST

Project Name/Location: Former Fordes Atlas wissine Site 5-5				
Site: 5-5				
Monitoring Well Number: 🔨 - 0 🖟				
Starting Date: 5~16-15				
Completion Date: 5-16-15				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not				
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	Vec	Nο	<u>N/O</u>	N/A
Actions form.	163	110	1470	11/12
General  1. Was a geologist or geotechnical engineer present during installation of the monitoring well?	T 🗸	_	T	1
1. Was a geologist or geotechnical engineer present during installation of the monitoring wells				<u> </u>
Date that the second state of the second state				т
2. Were all depths verified during installation by measurement with a weighted tape?		<u> </u>	<b>⊥</b>	
Selection and Placement of Screen		وب	737	
3. Was the screen length specified in the Work Plan used in construction of the well? Adjusted lay WALE	<u></u>	m Galler	<u> </u>	<u> </u>
· · · · · · · · · · · · · · · · · · ·				
4. Was the approved screen slot size and filter pack used?		<u> </u>		
5. Was the screen placed at the depth specified in the Work Plan?	/	<u> </u>		
6. Did the rig geologist document the stable water level before installing the well?				
7. Was the boring bailed dry during drilling to check for recharge?		Γ		
		h		
Construction Materials and Techniques				-
Was the well constructed using flush threaded screen and riser conforming to ASTM D1785?	<b>V</b>			
or this the field constituted asing mastral according to the field of				
9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping		Γ		
containers?				
10. Was the shipping container labeled to identify the materials?				
			·	
11. Was the location of the markings, the brand and the supplier of the well materials recorded?			[ ]	
221 1100 210 100 210 100 210 100 210 210				
12. Did the filter pack material conform to the specifications of the Work Plan?				
12. Did the filed pack indicad combinitio die specification of the front fam.				ш.
13. Was the location of the markings, the brand and the supplier of the filter pack recorded?				_
13. Was the location of the markings, the braile and the supplier of the finer pack recorded.	نــــــــــــــــــــــــــــــــــــــ	لبيبا	لــــــا	
t 4 Mars the Cities and broaded into the Mill?				
14. Was the filter pack tremied into the well?	<u> </u>	Ĺ	لــــــا	<u> </u>
The state of the s				ı —
15. Was the elevation of the filter pack accurately monitored during installation?		ш	<u> </u>	L
				г—
16. Was the filter pack installed to 2-5 feet above the screen?	<u> </u>		ш	
17. Was the bentonite seal a minimum of 2 feet thick?				
			,	
18. Were the brand, supplier, size and location of markings of the bentonite recorded?	<u> </u>			<u> </u>
				,
19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite	./			
pellets and as per manufacturers specifications when using high solids bentonite slurries?			ш	L
20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?				

WELL CONSTRUCTION CHECKLIST

WELL CONSTRUCTION CHECKLIST
Project Name/Location: Former Forbes Atlas Missile Site S-

Site: 5-5
Monitoring Well Number: ~~~ 6

Starting Date: 5-16-15 Completion Date: 5-16-15

Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective

Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	/			
22. Was Monitoring Well Construction Diagram completed?	\ <u></u>			
23. Was Materials Summary Form completed?				
Monitoring Well Construction Diagrams  24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well installation?				
25. Does the construction diagram accurately depict each and every component and their respective vertical positions?		····		
26. Does the construction diagram list the types and quantities of materials used?	· /			-

The QC inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-16-15

INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Date: 5-15-15

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Instrument Calibration	
Were all field instruments calibrated properly?	
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	
2. 11. 10. 11. 10. 11. 11. 11. 11. 11. 11	
3. Did the Field Calibration Forms list all calibration events?	
3. Did the Field Calibration Forms list all calibration events?	

The QC inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

# FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Field Documentation	1	т	т—	
Was all original field data, except boring logs, recorded in black indelible ink?				
	<del></del>	т	<del></del>	
2. Were logbooks filled out properly; accurately recounting the day's events?		上		l
				_
Were all field forms completed and information accurately recorded:	<del></del>	т-		
* DQCR's?		上		L
	<del></del>			_
* Borehole Logs?		上	ــــــــــــــــــــــــــــــــــــــ	
	<del>-,</del>	_		ا ا
* Well Construction Diagrams?		<u>L</u>	$oldsymbol{ol}}}}}}}}}}}}}}}}}}$	V
	-,			
* Well Development Forms?		<u> </u>		
* Sampling Forms?		<u>L</u> .	<u> </u>	-
* Water Level Forms?	$oldsymbol{ol}}}}}}}}}}}}}}}}}$	<u> </u>	<u> </u>	
* Chain of Custody Forms?	7			
* Field Log Books?	77	Τ	T	
* Project Photograph Log (in Log Book)?			T	
(Toject Histograph Log (in Log Sorty)				
* Daily Air Monitoring Record?	77		T	
Daily All Floritoring Record.				<u> </u>
List additional field forms completed:				
4. Was field documentation forwarded to office for peer review and QC? (OQCR)	-	Т	T	
4. Was field documentation for warded to office for peer review and Qu. ( ) QC (C)				<u> </u>
The second secon				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
Date: 5-15-15				

1 of 21

PACKING, STORING, AND SHIPMENT OF SAMPLES CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5 - 5 Boring/Monitoring Well Number(s): SU-02 9-50-05R Surface Soil/Sediment/Surface Water Sample Number(s): 53-02/56-0-1, 53-02/53-2-3, 58-02/58-8-9 513-02/513-25-26, 513-051/513-12-13, 58-051/513-20-21 Sampling Date: 5-15-15 Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A Packing, Storing, and Shipment of Samples 1. Were the samples handled according to the project plans? 2. Was the pH of samples requiring pH adjustment verified in the field? 3. Did the samples remain on ice from collection until cooler was taped for shipment? 4. Were COC forms filled out accurately and completely including project name and number, sampling date, sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter, and media sampled? 5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid? 6. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape? 7. Was a shipping label attached to the cooler? 8. Was custody documentation intact until receipt by the laboratory?

The QC inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

No attende

Date:

5-15-15

## **DECONTAMINATION CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5 Boring/Monitoring Well Number(s): 58-02 9-58-057

Date: 5-15-15

Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is

checked, provide an explanation on the form.

Yes No N/O N/A

Equipment		
<ol> <li>Was all sampling equipment decontaminated properly prior to use and between sample intervals?</li> </ol>	- L	
2. Was each decontamination event recorded in the logbook?		<u> </u>
	<del></del>	
3. Was IDW (decontamination water) handled in accordance with the approved work plan?		

**Corrective Actions:** 

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

Date: -5-15-15

## **BOREHOLE AND CORE LOGGING CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Boring/Monitoring Well Number: 5B-01 9 5B-05 R

Starting Date: 5-15-15

Date: 5-15-15

Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Borehole Logging		<i></i>		
Was boring logged by a geologist or geological engineer?	1			T
	<del></del>		<del>,</del>	_
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?				<u></u>
3. Was the log scale 1 inch = 1 foot?		<u> </u>	<u> </u>	$\perp$
				<del></del>
4. Were logs completed in the field (originals)?		<u> </u>	Щ	
5. Does log contain the following a routine entries?				
ALL DIVIDENCE DIVIDENCE DIVIDENCE DIVIDENCE DIVIDENCE DI VIDENCE D			Τ	<del></del>
* Unique well number (as per Work Plan)?	1			
* D . 21 . I (-10	T /		г	т.—
* Depositional type (alluvium, till, loess, etc.)		Ш	<u> </u>	J
* Doothy/Usights vacayded in tenths of fact?	T /	$\overline{}$		
* Depths/Heights recorded in tenths of feet?	1	Ĺ	Ь	
* Other descriptive features (hadding evening material soil structures of root halos)		$\overline{}$	_	
* Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)		L	L	┸——
* Soils classified as per USCS and fully described with numerical percents of constituents?				1
/* Solis classified as per oscs and fully described with numerical percents of constituents?			Щ	
* Soil moisture content and texture or cohesiveness?			<del></del>	T
* Soil Hoisture content and texture of conesiveness:		ш		<u></u>
* Soil color described using the Munsell System?			<u> </u>	$\overline{}$
301 color described using the Marisell Systems		ш.	L	Ш
6. Was general information (top of form MRK-55) completed?			$\overline{}$	$\vdash$
o. Was general information (up of form rink 55) completed:		I	i	1
7. Was the log signed by person preparing the log?				$\top$
Were special conditions (i.e., intervals of hole instability) and their resolution recorded?				П
of the opening contains and the or the original and the o				
Were start and completion dates and time included for boring and well installation activities?				$\Box$
		L		-
10. Were boundaries between soils noted (solld line at appropriate depth or dashed line if transitional or if observed		Ī		Τ
in cuttings)?				
11. Were depths at which free water was encountered and stabilized water levels recorded?				
	<del></del>			
12. Were soil sample depths recorded?				
		<del></del>		
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter	🗸			
recorded?	<u></u> i		<del>-</del>	$\Box$
14. Were soil sampling methods and recovery recorded?		$\neg$		
14. Were son Sampling methods and recovery recorded:				$\vdash$
1				

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number: 58-01 9-58-05-R				
Starting Date: 5-15-15				
Date: 5-15-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	N/0	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?				T
16 March 2011				-
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				~
17. Were abbreviations used on log defined?	T			т—
	<u> </u>	Щ_	<u></u>	<u> </u>
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?		$\Box$	1	T
			—	1
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of compressed air filter)?				ŗ
compressed us mer):	1			<u> </u>
20. Were drilling pressures and driller's comments recorded?	T 21	<del></del> _		· · · · ·
y probable of the dimer o comments recorded:	<u> </u>			l
21. Was total depth recorded and marked with a double line?		_		
The state of the s			Ll	l
22. Was monitoring well diagram completed and attached to log?	<del> </del>			
	<u> </u>	!		
Core Logging				
In addition to the items above, the following also apply to core-logging:				
23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture	Т	_		
color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and				
filling materials?		$\perp$		
24. Was start and stop time of each core run recorded?				
2 t. Was start and stop time of each core full recorded?		ᆚ		
25. Were depths to top and bottom of each core run recorded?		<del></del>		
applie to top and bottom of cach core fan recorded;				
26. Was length of core recovered in each core run recorded?	<del></del>	<del></del>		
Jan 1907 of the Court Core Pain Accorded;	<u> </u>			
27. Were the size and type of coring bit and barrel recorded?	$\overline{}$		—г	$\longrightarrow$
7 Sura Darior Toestaca.				
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?		_		
and and the rest for each core fully		Щ.	<u></u> L	—[
he QC Inspector shall sign this checklist upon completion of all items onthe checklist.				
C Inspector Signature:				

BOREHOLE AND CORE LOGGING CHECKLIST

Date: 5-15-15

12 of 21

INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: \$3-04 4 \$3-05

Date: 5-14-15

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Instrument Calibration

Were all field instruments calibrated properly?	
Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	
2. Wele all field first unierts camprated on the screenie in the work Fight 5511.	
3. Did the Field Calibration Forms list all calibration events?	
List instruments used at the Site: Mini Rac PED	
RKI 4 Gas	

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

## FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: SB-06, SB-05, P Site with

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Yes No N/	0 N/A
Field Documentation		
Was all original field data, except boring logs, recorded in black indelible ink?		
2. Were logbooks filled out properly; accurately recounting the day's events?		
Were all field forms completed and information accurately recorded:		
* DQCR's?		
* Borehole Logs?		
	<del></del>	
* Well Construction Diagrams?		
		7
* Well Development Forms?		
		Т.
* Sampling Forms?		
* Water Level Forms?		1
* Water Level Furnist		
* Chain of Custody Forms?		1
· Chain of Custody Forms:		
* Field Log Books?		
Ticla bog books.		
* Project Photograph Log (in Log Book)?		7/
110ject 110cegreph 20g (ii. 20g exony)	<u> </u>	
* Daily Air Monitoring Record?		
List additional field forms completed:		
4. Was field documentation forwarded to office for peer review and QC? ( O & C R )	/	
The OC inspector shall sign this checklist upon completion of all items on the checklist.		

PACKING, STORING, AND SHIPMENT OF SAMPLES CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 50-10,50-11, 58-05,58-06				
Boring/Monitoring Well Number(s): 5 5 -05, 5 6-0 6				
Surface Soil/Sediment/Surface Water Sample Number(s): Specific Ass 50-10, Sw-1	0120	) ~ I\	1 5	w -11
Sampling Date: 5-14-15				
a to the transfer to the short the conventiate column (von no or not applicable λ/Δ)				
Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Yes	No	N/O	N/A
Packing, Storing, and Shipment of Samples		_		,
Were the samples handled according to the project plans?	T			
2. Was the pH of samples requiring pH adjustment verified in the field?				
	<del></del>			
3. Did the samples remain on ice from collection until cooler was taped for shipment?	1		L	l
	•			
4. Were COC forms filled out accurately and completely including project name and number, sampling date, sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter,	1/			
and media sampled?	•			
and mode sampled.				
5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?				
	1 /			
6. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?	⊥`_		L	<u> </u>
	T			· · · ·
7. Was a shipping label attached to the cooler?	1-		<u> </u>	L
O. Was such the decumentation intest until receipt by the laboratory?	T			
8. Was custody documentation intact until receipt by the laboratory?				l
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
The QC inspector shall sign this checkist upon completion of all hems of the discounts.				

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### **DECONTAMINATION CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5 Boring/Monitoring Weil Number(s): 58-05, 58-06

Date: 5-14-15

Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is

checked, provide an explanation on the form.

Yes No N/O N/A

Was all sampling equipment decontaminated properly prior to use and between sample intervals?		
. Was each decontamination event recorded in the logbook?	/	
Was IDW (decontamination water) handled in accordance with the approved work plan?		1 1

**Corrective Actions:** 

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC inspector Signature:

## **BOREHOLE AND CORE LOGGING CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 313-05, 513-06

Boring/Monitoring Well Number: シローのケ, タローのも

Starting Date: 5-14-15

Date: 5- 14-15

Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Borehole Logging				
Was boring logged by a geologist or geological engineer?	17			
1. Tras borning loggett by a geologist of geological stigmost.				
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?	TZ			
2. Was log completed that critics printed legisly on series ( vin that the series )				<u> </u>
3. Was the log scale 1 inch = 1 foot?	T			
3. Was the log scale 1 liter ~ 1 loot:	<u> </u>			
4. W Laws completed in the field (originals)?	T/			Ι
4. Were logs completed in the field (originals)?				<u> </u>
T. D				
5. Does log contain the following a routine entries?				
The state of the s	T /			Т -
* Unique well number (as per Work Plan)?	10			
	1./			Ι —
* Depositional type (alluvium, till, loess, etc.)				<u>L</u>
	17			
* Depths/Heights recorded in tenths of feet?				L
	1/			Τ
* Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)	] V_			L
	<del></del>			T
* Soils classified as per USCS and fully described with numerical percents of constituents?				
			-	T
* Soil moisture content and texture or cohesiveness?				L
	<del></del>			
* Soil color described using the Munsell System?				<u> </u>
6. Was general information (top of form MRK-55) completed?				l
				т-
7. Was the log signed by person preparing the log?				L
		. —		,,
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?		<u> </u>		
9. Were start and completion dates and time included for boring and well installation activities?				<u> </u>
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observe	<sup>1</sup>   / <sup>1</sup>			
in cuttings)?				L
		· ·		
11. Were depths at which free water was encountered and stabilized water levels recorded?	<u> </u>	Щ.		
	<del></del>	,	<del></del> -	г
12. Were soil sample depths recorded?				l
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter				
recorded?				I
	T./			T
14. Were soil sampling methods and recovery recorded?				Ц

BOREHOLE AND CORE LOGGING CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 58-05 7 58-06				
Boring/Monitoring Well Number: 50-05,5006				
Starting Date: 5-14-15				
Date: 5-14-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	V			
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?	<u> </u>			/
17. Were abbreviations used on log defined?				<b>\</b>
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?		<u> </u>		\
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of				/
compressed air filter)?	<u> </u>		]	
20. Were drilling pressures and driller's comments recorded?				
20. Were driving pressures and driver's comments recorded:	LY	<u> </u>		
21. Was total depth recorded and marked with a double line?				
221 Tres total departees ded and marked mark debate into:				
22. Was monitoring well diagram completed and attached to log?				
and the meaning from day, and completed and accorded to log.			1	
Core Logging				
In addition to the items above, the following also apply to core-logging:				
23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture,		$\neg$	Т	
color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and				

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	_
1/	
	_
	_
11	_

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

### **INSTRUMENT CALIBRATION CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: Forbes S-5 Atlas Date: 5-13-15

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Instrument Calibration  1. Were all field instruments calibrated properly?	
Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	
3. Did the Field Calibration Forms list all calibration events?	
List instruments used at the Site: Whai Kan Lovo PED	
RKI 4 Gas	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

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rici	. 1.) 1.) (.) (.)	TAIL STAIL	AIIUN	CHECK	பப

A CONTRACTOR OF THE PARTY OF TH

Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: For yes Atlas : 5-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.		<u>No</u>	<u>N/O</u>	<u>N/A</u>
Field Documentation				
Was all original field data, except boring logs, recorded in black indelible ink?			<u> </u>	<u> </u>
			1	
2. Were logbooks filled out properly; accurately recounting the day's events?		<u> </u>	<u> </u>	<u> — </u>
Were all field forms completed and information accurately recorded:				
* DQCR's?	V			
* Borehole Logs?			<u> </u>	<u> </u>
* Well Construction Diagrams?	V	<u> </u>		ł
		_		
* Well Development Forms?	-			r
* Sampling Forms?				<u></u>
* Water Level Forms?			I	<u></u>
* Chain of Custody Forms?				   v
Grain of Custody Forms:	!	l	1	
* Field Log Books?				
* Project Photograph Log (in Log Book)?				
* Daily Air Monitoring Record?	L			
List additional field forms completed:				
4. Was field documentation forwarded to office for peer review and QC? (りぬこれ)				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.  QC Inspector Signature:				

5-13-15 Date:

	DRILLING METHODS CHECKLIST				
	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: Forbes 5-5				
)	Boring/Monitoring Well Number(s): \( \square\tau \cdot - 0 \)				
,	Sampling Date: 5-13-15				
	Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
	no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
	Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/
	General				
	1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner,	1	1		Ţ
	submersible pumps, Pad water tanks)?		<u> </u>		<u> </u>
	Are there any fluid leaks on drilling rig and associated equipment?				<del>,</del>
	2. Are there any haid leaks on driving ng and associated equipment?	<u> </u>	~	L	<u> </u>
	If so, have oil absorbent pads been used to contain leaks?				Τ.
	3. It 30, trave on absorbent paus been used to contain leaks:			Ĺ	
	Was sampling equipment transported or stored away from fuel sources or fuel spill areas?				_
	The true sources of fuel spill aleas:		ш	<u></u>	l
	5. Was clean equipment wrapped in visqueen?				Т
	an item equipment in appeal in risquedit.				Щ
	6. Were clean and dirty equipment stored or transported separately?				
					<u> </u>
	7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with	$\Box$	Т		
	lubricants?				
	<u>Drilling Rig</u>				-
	8. Was the type and model of the drilling rig recorded?				П
	9. Was the type of lubricating oil recorded?				
	10. Were names and titles of crew recorded?	1			
Į	11. Were drill stem augers and bit diameters recorded?	V		$\neg \neg$	
Į	12. Were volumes of drilling fluids lost to fromation accounted for and recorded?				
ı					
	13. Were rig start, stop, down times, and penetration rates recorded?				
Į			B	)	
- 1	14. Was split spoon sampler used on deep MW and test holes?		-z		

15. Were all drilling tools and cables inspected daily prior to their use?

<u>DRIL</u>	<u>LING</u>	<b>METHODS</b>	CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: Forbes 5-5

Boring/Monitoring Well Number(s): ~~~ o i

Sampling Date:

AND TO SEE

Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and

Corrective Actions form. Yes No N/O N/A Rotary Wash 16. Was a sample of the proposed drilling water analyzed? 17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site? 18. Was the water circulated in portable tanks? 19. Was bentonite used? 20. Were any additives used besides bentonite? 21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log? 22. Was the bentonite supplier, brand and type recorded? Depth Measurements Precision and Accuracy 23. Was the well installed to the depth defined in the Work Plan? 24. Was the depth of each boring verified by measuring with a fiberglass or steel tape? 25. Was depth to ground water measurements collected with an electronic tape? 26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements? 27. Was the Kelly Bar marked to verify depth during drilling? 28. Was the boring open to the bottom?

The QC inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

5-13-15

Project Name/Location: Former Forbes Atlas Missile Site S-5	
Site: Forbes 5-5	
3oring/Monitoring Well Number: MW-0 (	
Starting Date: 5-13-15	•
Date: 5-13-15	
Complete for each boring log. Answer each question by checking the	
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,	
provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes No N/O N/A</u>
Borehole Logging	
1. Was boring logged by a geologist or geological engineer?	
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?	
3. Was the log scale 1 inch = 1 foot?	
4. Were logs completed in the field (originals)?	
5. Does log contain the following a routine entries?	٠,
DI DOCC NO GUILLAND IN THE CONTRACT OF THE CON	
* Unique well number (as per Work Plan)?	
Craque New Harris (See per Vivi	
* Depositional type (alluvium, till, loess, etc.)	
Depositional type (anarrany this lossy every	
* Depths/Heights recorded in tenths of feet?	
Deputs/Heights recorded in tentils of feets	
* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes)	
Other descriptive readiles (bedding, organic material, son structures) organic materials	
/* Soils classified as per USCS and fully described with numerical percents of constituents?	
/ Soils classified as per oscs and fully described with humanical percents or consideration	
* Soil moisture content and texture or cohesiveness?	
* 50ii Moistule Content and texture of concenteness:	
* Soil color described using the Munsell System?	
* Soil color described using the Muniser Systems	
C. W. C.	
6. Was general information (top of form MRK-55) completed?	
	<del>-                                    </del>
7. Was the log signed by person preparing the log?	
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?	
Were start and completion dates and time included for boring and well installation activities?	
10 11/ handle to be been sails noted (salid line at annual water death or darhad line if transitional or if she	onted
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if obs	(1 YOU
in cuttings)?	
Chapter to the structure of the property was an experienced and stabilized water levels recorded?	
11. Were depths at which free water was encountered and stabilized water levels recorded?	
12. Were soil sample depths recorded?	
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter	
recorded?	
1000 detail	

BOREHOLE AND CORE LOGGING CHECKLIST

14. Were soil sampling methods and recovery recorded?

Sile: FGCVLS / " >				
Monitoring Well Number: www-of				
Starting Date: 5-13-15				
Completion Date:				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	ŧ			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
<u>General</u>		_		
1. Was a geologist or geotechnical engineer present during installation of the monitoring well?	-			
2. Were all depths verified during installation by measurement with a weighted tape?				
Selection and Placement of Screen				
Was the screen length specified in the Work Plan used in construction of the well?	T_	_		
5. Was the screen length specified in the Work Plan used in construction of the Well:			ш	<u> </u>
		<del></del>		
4. Was the approved screen slot size and filter pack used?		Li		
		_		
5. Was the screen placed at the depth specified in the Work Plan?				
6. Did the rig geologist document the stable water level before installing the well?	Γ			
7. Was the boring balled dry during drilling to check for recharge?				
71 Has the bonning bullet try during triming to check for recharge:	J			
Construction Materials and Techniques				
8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785?		Ш	j	l
9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping		$\Box$		
containers?			L	į
10. Was the shipping container labeled to identify the materials?		$\Box$		
11. Was the location of the markings, the brand and the supplier of the well materials recorded?				
	لــــا			
12. Did the filter pack material conform to the specifications of the Work Plan?			$\overline{}$	
12. Did the filter pack material comoth to the specifications of the work Plant	ائا			
		<del></del>		
13. Was the location of the markings, the brand and the supplier of the filter pack recorded?		Í		
14. Was the filter pack tremied into the well?				
15. Was the elevation of the filter pack accurately monitored during installation?				
	<u> </u>			
16. Was the filter pack installed to 2-5 feet above the screen?				
10. Was the lines pack instance to 2-3 reet above the screen:				
27 W. M. J. J. W. J. J. W. G. C. W. J. J. W. G. C. W. J. W. J. W. G. C. W. J. W. G. W. G. W. W. G. W. G. W.		—	<del></del> -	
17. Was the bentonite seal a minimum of 2 feet thick?	<b>/</b>			
18. Were the brand, supplier, size and location of markings of the bentonite recorded?				
19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite		$\neg$	$\overline{}$	
pellets and as per manufacturers specifications when using high solids bentonite slurries?		[		
20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?	Т	一丁	$\neg$	$\overline{V}$
		1	L.	-
Work plan specifies high solids bentonite growt.				

WELL CONSTRUCTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

### WELL CONSTRUCTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-	-5
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Site: Forbes 5-5 A thas Monitoring Well Number:  $\mu \omega - 01$ Starting Date: 5-13-15

Completion Date:

Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective

<u>Yes</u>	<u>No</u>	N/O	N/A
-			
V		L	
<b>/</b>			3
~			
1/			
		TES NO	Yes No N/O

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-13-15

Project Name/Location: Former Pornes Atlas Missile Site 3-5	
Site: 5-5	
Dato: F 12 ml	

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Were all field instruments calibrated properly?	
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	
	······································
3. Did the Field Calibration Forms list all calibration events?	
3. Did the Field Calibration Forms list all calibration events?  List instruments used at the Site: ハル パル アンロー・アン	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

# FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Forr	ner Forbes Atias Missile Site S	3-5
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Site: 5-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Field Documentation			.—	
1. Was all original field data, except boring logs, recorded in black indelible ink?		<u>l</u>		<u> </u>
		<del></del> -		
2. Were logbooks filled out properly; accurately recounting the day's events?		<u> </u>		<u> </u>
3. Were all field forms completed and information accurately recorded:	<del></del>	т—		т —
* DQCR's?		<u> </u>		<u> </u>
	<del></del>	<del></del>	r—	
* Borehole Logs?		<u> </u>	L	
	<del></del>	_	г—-	
* Well Construction Diagrams?	l			
	<del>.   -</del>	T		
* Well Development Forms?	1	<u> </u>	L	
	1	$\overline{}$	г	
* Sampling Forms?	<del></del> _	<del></del>		<u> </u>
* Water Level Forms?		Т	Ϊ	
** Water Level Forms:				.1
* Chain of Custody Forms?	$\Box$	T		-
Citality Castody Farins.	1			
* Field Log Books?	7/	Т		
		-		
* Project Photograph Log (in Log Book)?	Α.			
	4			
* Daily Air Monitoring Record?			<u> </u>	<u> </u>
List additional field forms completed:				<u> </u>
4. Was field documentation forwarded to office for peer review and QC? (DQCR)	<u> </u>	<u>1                                    </u>	<u>L</u>	<u> </u>
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
· · · · · · · · · · · · · · · · · · ·				

5-12-15

SAFETY	AND	HEALTH.	CHECKI	ICT
SAFEIL	MIND	DEWFID.	CUECUL	.101

Date: 5-12-15

Project Name/Location: Former Forbes Atlas Missite Site S-5

Site: 3 - 5

Personnel Observed and Locations: Trant Crew - Site wide

If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
14. Is the following emergency equipment located at each site:				
* Fire extinguisher?	V			
* Eyewash (15 minutes fresh water)?				
* Communications (walkie-talkie or phone)?				
* First aid kit?	/			
15. Is the buddy system in use?				
16. Are personnel refraining from drinking, chewing, smoking, taking medications, or other hand-to-mouth contact while working in the exclusion zone?				
17. Is air monitoring equipment being used appropriately?				
		<u> </u>		
18. Is the site organized to allow the use of lifting equipment, and avoid tripping hazards and spreading contamination?	~			
19. Was a random employee asked if he/she know site hazard and emergency procedures?				
20. Is the drill rig kill switch clearly marked and easily accessible?			i I	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature: Aller

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: MW-01 D				
Starting Date: 5-14-15				
Completion Date: $5-18-15$ Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective		No	<u>N/O</u>	N/A
Actions form.	169	110	117.0	14/11
General List on starting development?	T -	1		Г
Was the grout allowed to set at least 48 hours after placement before starting development?	Ь—	<u>.                                    </u>		
	T	7		_
2. Were methods of development in accordance with the Work Plan?	—		l	
	1	Τ		
3. Was final development water free of sand and drilling fluids?		J		<u>.                                    </u>
	1/	т –	Γ –	T
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?			ļ	'
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during				
development?				

The QC Inspector shall sign this checklist upon completion of all items onthe checklist.

QC Inspector Signature:

6. Was well development information accurately recorded on the well development form?

7. Were color photographs taken of the water after completion of development?

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: ww-o2D				
Starting Date: 5-20-15				
Completion Date: 5-31-15				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not				
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	Yes	No	<u>N/O</u>	N/A
Actions form.				
General  1. Was the grout allowed to set at least 48 hours after placement before starting development?	T -	T		
1. Was the grout allowed to set at least 46 hours after placement before starting decisions.				. —
Were methods of development in accordance with the Work Plan?	$\overline{}$			
2. Were methods of development in decordance man the	-			
Was final development water free of sand and drilling fluids?				
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to the FO NITH on local	-	-		
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?	Ь	ــــــــــــــــــــــــــــــــــــــ	<u> </u>	
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during	T	$T^{-}$	Τ –	<del>-</del> -
development?				
6. Was well development information accurately recorded on the well development form?				
U. 17d3 Note development information described, 1				

The QC Inspector shall sign this checklist upon completion of all items on he checklist.

QC Inspector Signature:

7. Were color photographs taken of the water after completion of development?

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: MW ~025				
Starting Date: 5-30-15				
Completion Date:				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
General				
Was the grout allowed to set at least 48 hours after placement before starting development?		<u></u>	<u> </u>	<u></u>
1. Was the grout another to be a second to be a sec				
2. Were methods of development in accordance with the Work Plan?	/			
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3. Was final development water free of sand and drilling fluids?	<u> </u>	<u> </u>		
		. —		
II				1
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?	<u> </u>			Щ
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during	T -	Τ		
development?				<u> </u>
development:				
6. Was well development information accurately recorded on the well development form?				<u></u> .
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7. Were color photographs taken of the water after completion of development?	1	丄	<u> </u>	<u> </u>
7, There exist prints are				
The QC Inspector shall sign this checklist upon completion of all items on he checklist.				
QC Inspector Signature:				
JAMUX Y				
Date:				

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Monitoring Well Number: WW-03D				
Starting Date: 6-5				
Completion Date:				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
observed (N/O) or N/A). If a No is checked, provide all explanation on the Notice Indiana.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Actions form.				
General  1. Was the grout allowed to set at least 48 hours after placement before starting development?				
1. Was the grout allowed to set at least to house area pre-				
2. Were methods of development in accordance with the Work Plan?				
z. Were methods of development in development				
3. Was final development water free of sand and drilling fluids?	<u>L</u>		<u> </u>	
5. Was titul development titue.				
to the land		ļ		
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?	Ь—	<u> </u>	L	L —
of set less deviling and filter pack placement removed during	т -	$T^{-}$		$\overline{}$
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during				
development?		-		
6. Was well development information accurately recorded on the well development form?	T			
6. Was well development information accurately recorded on the management of the control of the				
7. Were color photographs taken of the water after completion of development?				
7. Were color photographs taken of the water ever complete				
The QC Inspector shall sign this checklist Opon completion of all items onthe checklist.				
QC Inspector Signature;				
QC Inspector Signature /////WWW				

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5-				
Monitoring Well Number: Mw-035				
Starting Date:				
Completion Date:				
Completion Date:  Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.		<u>No</u>	<u>N/O</u>	<u>N/A</u>
General Control of the Manufacture of the Manufactu	Τ_			П
Was the grout allowed to set at least 48 hours after placement before starting development?		<u> </u>	L	<u> </u>
	τ	$\overline{}$		Г
2. Were methods of development in accordance with the Work Plan?	<u>!</u>	1		l
	т —	Τ-		
3. Was final development water free of sand and drilling fluids?	<u> </u>	<u> </u>	<u> </u>	L
	т-	т -		1 -
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?				
		. –		
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during development?				
development				
6. Was well development information accurately recorded on the well development form?	<u> </u>	<u>l.                                    </u>	<u></u>	<u> </u>
O. Was well development anothered a second				
7. Were color photographs taken of the water after completion of development?			<u> </u>	<u> </u>
7, Were color priotographs taken or the fraction distribution of the fraction				
			_	

The QC Inspector shall sign this checklist upon completion of all items onthe checklist. QC Inspector Signature:

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: MW-040				
Starting Date: 6-3-13				
Completion Date: 6-8-15	ł			
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not complete for each monitoring well.	•			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	<u>Yes</u>	No	<u>N/O</u>	<u>N/A</u>
Actions form.	•			
1. Was the grout allowed to set at least 48 hours after placement before starting development?				
1. Was the grout allowed to set at least 46 hours after placement before example.				
in the C. L. Harry white percentages with the Work Plan?	T	Γ		
2. Were methods of development in accordance with the Work Plan?				
and drilling fluids?	T			
3. Was final development water free of sand and drilling fluids?				
	T/			
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?		乚	<u> </u>	<u> </u>
			.—	
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during				1
development?			<u> </u>	<u> </u>
	T:/	_	т	т
6. Was well development information accurately recorded on the well development form?			<u></u>	
			1	1
7. Were color photographs taken of the water after completion of development?		<u> </u>		<u> </u>
The QC Inspector shall sign this checklist upon completion of all items on he checklist.				

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: MW-045				
Starting Date: 6-5				
Completion Date:	÷			
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	•			
	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Actions form.	•			
General  1. Was the grout allowed to set at least 48 hours after placement before starting development?	Tフ	Γ		
1. Was the grout allowed to set at least 46 hours after placement solve search set at least 46 hours after placement solve search set at least 46 hours after placement solve search set at least 46 hours after placement solve search s				
2. Were methods of development in accordance with the Work Plan?	W			
2. Were methods of development in accordance with the Work Ham		-		
The second property of search and drilling fluids?	T			
3. Was final development water free of sand and drilling fluids?				
	Τ	T		
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?	<u> </u>	<u> </u>	l,	<u> </u>
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during				
development?		L.		<u> </u>
		_	1	1
6. Was well development information accurately recorded on the well development form?	ــــــــــــــــــــــــــــــــــــــ	<u> </u>	<u> </u>	<u> </u>
	т	т		
7. Were color photographs taken of the water after completion of development?		<u> </u>	<u> </u>	
The QC Inspector shall sign this checklist upon completion of all items onthe checklist.				
QC Inspector Signature:				
grant and a second				
•				

Date:

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number WW W 3 D				
Starting Date: 6-3-15				
Completion Date: 6-8-15				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
observed (N/O) or N/A). It a No is checked, provide all explanation of the Notice framework and	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Actions form.				
General  1. Was the grout allowed to set at least 48 hours after placement before starting development?				
1. Was the grout allowed to set at least 40 hours over presentations and a set of the se				
2. Were methods of development in accordance with the Work Plan?				
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Was final development water free of sand and drilling fluids?	Ī			
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the state of the s	_			ļ
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?	<u> </u>	L	<u> </u>	<u>.                                    </u>
and filter mack placement removed during		<del>-</del>		Τ
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during				
development?				
6. Was well development information accurately recorded on the well development form?		Π		
6. Was well development information accurately recorded on the wall extension	<u> </u>			
7. Were color photographs taken of the water after completion of development?		$\Box$		
7. Were color photographs taken of the water often competent of the photographs taken of the water often competent of the photographs taken of the water of the photographs.				
The QC Inspector shall sign this checklist upon completion of all Items on the checklist.				
The QC Inspector Significant				
QC Inspector Signature:				
Detail				
QC Inspector Signature:  Date: 6-8-15				

WELL DEVELOPMENT CHECKLIST			
Project Name/Location: Former Forbes Atlas Missile Site S-5			
Site: 5-5			
Monitoring Well Number: MW-04 D			
Starting Date: 5-19-15			
Completion Date:	nf		
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	Yes No	<u>N/O</u>	<u>N/A</u>
Actions form.		_	
General  1. Was the grout allowed to set at least 48 hours after placement before starting development?	T		
1. Was the grout anowed to set at least to hours area passing a			
2. Were methods of development in accordance with the Work Plan?	T-4_		
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3. Was final development water free of sand and drilling fluids?		<u></u>	
or rus inter any management of the second of			
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?			
	_, _,_		
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during			
development?			
6. Was well development information accurately recorded on the well development form?			
6. Was well development information accordingly recorded on the many and the many according to the many accord			
7. Were color photographs taken of the water after completion of development?			
7. Were color photographs taken of the fractioned assistation of activities			
The QC Inspector shall sign this checklist upon completion of all items onthe checklist.			
The QC inspector shall sign this cite than upon completion of an items			

Date:

15 of 21

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Monitoring Well Number: Mw-04\$				
Starting Date: 5-31-15				
Completion Date: 6-8-15				
Answer each monitoring well. Answer each guestion by checking the appropriate column (yes, no, not				
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Actions form.	-			
General  1. Was the grout allowed to set at least 48 hours after placement before starting development?	1			
1. Was the grout allowed to set at least 46 hours after placement bords at the series of the series				
Were methods of development in accordance with the Work Plan?				
2. Were methods of development in accordance was not the methods of the method of the methods of the method of the methods of the method of the methods of the method of the methods of the				
Was final development water free of sand and drilling fluids?				
3. Was final development water nee of sond and annual many				
	-			
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?	<u></u>	<u> </u>	<u> </u>	L
	. –	_		1
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during				_
development?	<u> </u>	Ь	<u> </u>	
t 1 will development form?		Т	Т	Τ.
6. Was well development information accurately recorded on the well development form?	Ц.	<u> </u>		

The QC Inspector shall sign this checklist upon completion of all items onthe checklist.

QC Inspector Signature:

7. Were color photographs taken of the water after completion of development?

Date:

6-8-15

WELL DEVELOPMENT CHECKLIST
Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5 Monitoring Well Number 1075

Starting Date: 5-30-15

Completion Date: 5-31-15

Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective

Actions form.

Yes No N/O N/A

General	コノエ		
Was the grout allowed to set at least 48 hours after placement before starting development?	1-1	L	
	<del>-                                    </del>		
2. Were methods of development in accordance with the Work Plan?	_ [ _ ]		
z, well a mediate of a source.			_, _
3. Was final development water free of sand and drilling fluids?		$\bot$	1
5. Was that development react the extension of the second			
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?			i
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during			-
development?			
			<del></del>
6. Was well development information accurately recorded on the well development form?			
O, Has Holl delister, Marie Control of the Control			
7. Were color photographs taken of the water after completion of development?			l
7. Wele color protographs colors of the fractal colors of the frac			

The QC Inspector shall sign this checklist upon completion of all items onthe checklist.

QC Inspector Signature:

Date:

5-31-15

INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5	
Site: 6-5	
Date: 6-10-15	

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

1 ~ 1 1

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 6-10-15

## FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Field Documentation	<del></del>	<del>í —</del>	. —	
Was all original field data, except boring logs, recorded in black indelible ink?				L
1. Was all oliginal field data, except being to gr				
2. Were logbooks filled out properly; accurately recounting the day's events?		<u> </u>	<u>L</u>	
2. Were logbooks filled out property, decorded, resembly				
Were all field forms completed and information accurately recorded:				
				L
* DQCR's?				
N. D. Halladoro			<u> </u>	
* Borehole Logs?				
Will II Construction Diograms?		L		
* Well Construction Diagrams?				
- T 2	-			/
* Well Development Forms?				
		Τ	$T^-$	/
* Sampling Forms?				
			T	
* Water Level Forms?				
	$\neg$		T	7
* Chain of Custody Forms?			<u> </u>	
	7	Τ	$\Box$	$T^{-}$
* Field Log Books?				<u></u>
		Т	$T^{-}$	77
* Project Photograph Log (in Log Book)?				
	$T_{\overline{z}}$	7	1	T
* Daily Air Monitoring Record?		<u> </u>	<u> </u>	
List additional field forms completed:	- 1 7	4	$T^-$	т—
4. Was field documentation forwarded to office for peer review and QC? (Dack)				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
WINNES				
Date:				
Date: (1-10-15				

INSTRUMENT CALIBRATION CHECKLIS	<u>T</u>
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Project Name/Location: Former Forbes Atlas Missile Site S-5 site: 5-5 Date: 6-9-15

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

6-9-15

Date:

# FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

site: S-5

NIA) If a Nia ia		
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes No</u>	N/O N/A
TILL December 1 on the second		
Was all original field data, except boring logs, recorded in black indelible ink?		
	T 7	Т
2. Were logbooks filled out properly; accurately recounting the day's events?		<u>  </u>
Z. Welle logicolic linea data property		
Were all field forms completed and information accurately recorded:		
		<u> </u>
* DQCR's?		
	TL	
* Borehole Logs?		
* Well Construction Diagrams?	<del></del>	
	77	T T
* Well Development Forms?		1
With Bottophilan		T - T -
* Sampling Forms?		
* Sampling Corns:	<del></del>	<del></del>
* Water Level Forms?		
		<u> </u>
* Chain of Custody Forms?		
	T	
* Field Log Books?		
	$\top$	TI
* Project Photograph Log (in Log Book)?		
Troject motographs 5 V	<del></del>	<del></del>
* Daily Air Monitoring Record?		
* Daily All Pioritoring Records		
, labels		
List additional field forms completed:		
4. Was field documentation forwarded to office for peer review and QC? (DGCR, このに)		
and the shooking		
The QC Inspector shall sign this checklist upon completion of all items on the checklist.		
QC Inspector Signature:///////		
Potos		
QC Inspector Signature:		
(e - 1 · · ·		

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number(s): MW-035				
Sampling Date: / - 7 - / 7				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noticemplance and		No 1	V/O	N/A
Corrective Actions form.				
General  1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner,	丁ノ			
submersible pumps, Pad water tanks)?				
Submersible pumps, Fad Water Comes.				
2. Are there any fluid leaks on drilling rig and associated equipment?				<u> </u>
2. Are there any hold leaks on driving my and observed experience				
3. If so, have oil absorbent pads been used to contain leaks?				
3. If so, have oil absorbert pads been used to contain realist.				
Was sampling equipment transported or stored away from fuel sources or fuel spill areas?	7/	ΓΤ		Γ
4. Was sampling equipment transported or stored away from rect operate a state part of the stored away from rect operate a state part of the stored away from rect operate a state part of the stored away from rect operate a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate as a state part of the stored away from rect operate away from rect				
the standard in standard	$\neg \neg$			
5. Was clean equipment wrapped in visqueen?				
the state of the s	1/	ГΪ		
6. Were clean and dirty equipment stored or transported separately?				
7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with	$\neg \neg$	$\Box$		1
Iubricants?				<u>L</u> .
lunicalits				
Dalling Die				
B. Was the type and model of the drilling rig recorded?				
8, was the type and model of the drining by recorded.				
a Mar the tree of hybridating all recorded?				
9. Was the type of lubricating oil recorded?				
Livity of many vaccov dod?		П		
10. Were names and titles of crew recorded?				
11th Samahaya racaydad?	1	$\Box$		
11. Were drill stem augers and bit diameters recorded?				
a time of the formation accounted for and recorded?	1/	$\top$		
12. Were volumes of drilling fluids lost to fromation accounted for and recorded?				
the standard and the st	77	7		1
13. Were rig start, stop, down times, and penetration rates recorded?				

14. Was split spoon sampler used on deep MW and test holes?

15. Were all drilling tools and cables inspected daily prior to their use?

<u>DRILLING METHODS CHECKLIST</u> Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number(s): MW-033				
Sampling Date: 6 - 9 - 15				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
no, not observed (N/O) or N/A). If a No is checked, provide all explanation on the resistance and confidence of the resistance and the resistance of the res	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Rotary Wash				
16. Was a sample of the proposed drilling water analyzed?	_	<u> </u>	L .	
		т -		
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?			l	L
	Τ/	_	,	
18. Was the water circulated in portable tanks?		<u> </u>	L	L
	$\overline{}$	Τ-	Γ –	<u> </u>
19. Was bentonite used?	<u> </u>	<u> </u>	<u> </u>	<u> </u>
20. Were any additives used besides bentonite?	1		1	
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the				
boring log?	<u> </u>		<u> </u>	L
	<del></del>	Г		T
22. Was the bentonite supplier, brand and type recorded?	<u> </u>		L	<u> </u>
Depth Measurements Precision and Accuracy	T-	1	Γ	
23. Was the well installed to the depth defined in the Work Plan?		<u></u>		
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?	<b>_</b>	П	1	
24. Was the deput of each borning varied by measuring time and a second				
25. Was depth to ground water measurements collected with an electronic tape?				
25. No. doparto 37				
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?	/	1		
20. Welle deput measurements formed by commany are				
27. Was the Kelly Bar marked to verify depth during drilling?	1			
ari trad did dong and manufacturing a second and a second a second and		,		_

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

6-9-15

28. Was the boring open to the bottom?

### SAFETY AND HEALTH CHECKLIST

Date: 6-9-15
Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Personnel Observed and Locations: Site wide - Trant & BMCD

Complete weekly for each site. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A

<u>Documentation</u>				
1. Is the Site Health and Safety Plan (SSHP) on the Site?				
2. Has the SSHP been reviewed, dated, and signed within the last year?				L
	<del></del>	<del>-</del>		
3. Are the tasks being completed reflected in the hazard task analysis?				
4. Is there a written acknowledgement that all employees, including subcontractors have been briefed and read the SSHP?				
Sonry				
and a second authority and available.		_		
5. Are the following training records current and available:	1			
* 40-Hour HAZWOPER/8-hour refresher for ALL employees and subcontractors?				,
			Γ	$\vdash$
* 24 Hours Supervised Field Experience?		<u></u> _		<u> </u>
* 8-Hour HAZWOPER Annual Refresher?		<u> </u>	<u> </u>	<b>└</b>
O Hour talend, Explanation				
	/	!		
* CPR/First Aid?				-"
	<b>T</b>			
* 8-Hour Hazardous Waste Site Supervisor, and refresher?		<u> </u>	<u>.                                    </u>	
	$\overline{}$		Τ	Т
* Initial Site Health and Safety Briefing?		<u> </u>	<u> </u>	Ь
Thurst Old White Park				<del>-</del>
* Site Health and Safety Briefing for each location or site?		<u>L.</u>	<u> </u>	<u> </u>
* Site Health and Safety Briefing for each recedence is seen				
the the state of the project of the	77	$\Box$		
6. Are emergency maps posted at the site and maintained in vehicles?				
	17	$\Box$	$\overline{}$	T -
7. Were daily safety checklists completed and fire extinguishers checked?		Ь—	<del>-</del>	
	<del></del>	т –	т	
8. Were applicable Material Safety Data Sheets at the Site?		<u></u>		<u> </u>
9. Are documents current and available that indicate employees and subcontractors are medically fit to work and	1-	1		
wear the required personal protective equipment?		<u> </u>	<u> </u>	
Wedi tile required personal procession after				
the investigation of the state	1			
10. Were daily air monitoring equipment calibrations recorded?				
	<b>T</b>	T	Т	T
11. Are respirator fit test records available and current?				
Observations	<del></del> -	т-	<del></del> -	<del></del>
12. Are exclusion zones and contaminant reduction zone adequately marked?		上		
12. ALC CACIONON AVIIOU GIRG GOVERNMENT				
13. Is required personal protective equipment available and correctly used, maintained, and stored?	7			
13. Is required personal protective equipment available and correctly used, maintained, and				

IDW MANAGEMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Boring/Monitoring Well Number(s): ww- 03 5				
Date: 6 - 9-15	٠			
Complete weekly. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/Q</u>	<u>N/A</u>
Investigation-Derived Waste Management	T	Τ-		
1. Was all IDW managed according to the project plans?		Ц	<u></u>	L
	т—	_		Γ
A RPE contained in 55-gallon drums?		l		
2. Were soil cuttings, drilling fluids, decon water, development water, and PPE containerized in 55-gallon drums?	ــــــــــــــــــــــــــــــــــــــ	<u>.                                    </u>	l	
	7	Τ	T	
3. Were all containers properly labeled and placed on pallets?	<u> </u>	<u>.                                    </u>	<u>.                                    </u>	
	T/	Τ-	Г	1
4. Was the Drum Inventory Worksheet completed?		Ь_		
	<del>, ,</del>	1		Τ
5. Were all containers in satisfactory condition?		<u></u>	<u> </u>	<u> </u>
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
do mahoror oranimo.				
Date:				

20 of 21

DECONTAMINATION CHECKLIST
Project Name/Location: Former Forbes Atlas Missile Site S-5
Boring/Monitoring Well Number(s): ルル・0 3 5
-

Date: 6 - 7 - 15 Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.

Yes No N/O N/A

uipment	171	- 1	
Was all sampling equipment decontaminated properly prior to use and between sample intervals?	<del></del>		
		—, –	
Was each decontamination event recorded in the logbook?			丄
Trus cueri desarran	,		
handled in accordance with the approved work plan?			
Was IDW (decontamination water) handled in accordance with the approved work plan?		$\Box$	-

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist.  QC Inspector Signature:
Date: 6-9-15

# BOREHOLE AND CORE LOGGING CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5Boring/Monitoring Well Number: ww-035 Starting Date: 6 - 7 - 15 6-7-5 Date: Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A Borehole Logging 1. Was boring logged by a geologist or geological engineer? 2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2? 3. Was the log scale 1 inch = 1 foot? 4. Were logs completed in the field (originals)? 5. Does log contain the following a routine entries? \* Unique well number (as per Work Plan)? \* Depositional type (alluvium, till, loess, etc.) \* Depths/Heights recorded in tenths of feet? \* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes) \* Soils classified as per USCS and fully described with numerical percents of constituents? \* Soil moisture content and texture or cohesiveness? \* Soil color described using the Munsell System? 6. Was general information (top of form MRK-55) completed? 7. Was the log signed by person preparing the log? 8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded? 9. Were start and completion dates and time included for boring and well installation activities? 10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed in cuttings)? 11. Were depths at which free water was encountered and stabilized water levels recorded? 12. Were soil sample depths recorded? 13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter recorded?

14. Were soil sampling methods and recovery recorded?

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number: $\wedge\omega$ ~ $\circ$ 3 \$				
Starting Date: 6-1-15				
Date: 6 - 1-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,	Yes	No	<u>N/O</u>	N/A
provide an explanation on the Noncompliance and Corrective Actions form.  15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	T	T T		<u> </u>
15. Were instrument (e.g., LEE, OVIII) and detector table measurements restricted				
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				
10. 110. 000.1100				.—
17. Were abbreviations used on log defined?	/	<u> </u>	L	
		_	<del></del>	ı
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?		<u> </u>		<u> </u>
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of	T /	1		
compressed air filter)?				
compressed an interf.		_		
20. Were drilling pressures and driller's comments recorded?		<u>L</u> .		
	<del>1 /</del>	_		
21. Was total depth recorded and marked with a double line?		<u> </u>	<u> </u>	
	T -	η .	Т	!
22. Was monitoring well diagram completed and attached to log?		Щ		<u> </u>
Core Logging In addition to the items above, the following also apply to core-logging:				
Was rock described using standard geologic nomenciature; e.g., rock type, relative naroness, density, texture,	T			
color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and	/			1
filling materials?	<u> </u>	<u> </u>	<u> </u>	L
The state of the s	77	Т	Τ	T
24. Was start and stop time of each core run recorded?				.l
25. Were depths to top and bottom of each core run recorded?	<b>_</b>			
25. Were deputs to top and bottom of each core				
26. Was length of core recovered in each core run recorded?			<u> </u>	<u> </u>
27. Were the size and type of coring bit and barrel recorded?	_ـــــــــــــــــــــــــــــــــــــ	<u>L</u> .	<u> </u>	<u> </u>
	<del></del>	<del>_</del> _	т -	Τ-
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?	ــــــــــــــــــــــــــــــــــــــ	ــــــــــــــــــــــــــــــــــــــ		
The state of the s				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
Potos ( A . T. W.)				
Date: (-9-15				

BOREHOLE AND CORE LOGGING CHECKLIST

WELL CONSTRUCTION CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: $S \leftarrow S$				
Monitoring Well Number: ハルィッろう				
Starting Date: 6 - 9 - 07				
Completion Date: G = 1 - 15				
Answer each guestion by checking the appropriate column tyes, no, not				
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective		Na	NI/O	N/A
Actions form.	<u>yes</u>	NO	<u>N/O</u>	<u>147.84</u>
General	г.	τ .		-
Was a geologist or geotechnical engineer present during installation of the monitoring well?		<u> </u>	<u> </u>	<u> </u>
	$\overline{}$	_	т—	
2. Were all depths verified during installation by measurement with a weighted tape?	<u> L</u>	<u> </u>	<u> </u>	<b>!</b>
Selection and Placement of Screen				
Was the screen length specified in the Work Plan used in construction of the well?		<u> </u>		
				<del>,</del>
4. Was the approved screen slot size and filter pack used?	<u></u>		<u></u>	ļ
R HUS die opproven				
5. Was the screen placed at the depth specified in the Work Plan?		<u>L</u>	<u></u>	
3. Was the series placed at the top 1.				<del>,</del>
6. Did the rig geologist document the stable water level before installing the well?	<u> </u>		<u> </u>	
8. Did the hig geologist document the coase				
7. Was the boring balled dry during drilling to check for recharge?			<u> </u>	
7. Was the boring balled dry during driming to check to the same and the boring balled dry during driming to check to the same and the boring balled dry during driming to check to the same and the boring balled dry during driming to check to the same and the boring balled dry during driming to check to the same and the boring balled dry during driming to check to the same and the boring balled dry during driming to check to the same and the boring driming to check to the same and the boring driming to check to the same and the boring driming to check to the same and the boring driming to check to the same and the boring driming to check to the same and the boring driming to check to the same and the boring driming to check to the same and the boring driming the same and the boring drift driming the same and the boring drift driving the same and the boring drift driving drift driving the same and the boring drift driving drift driving the same and the boring drift driving drift dr				
a the Materials and Techniques				
Construction Materials and Techniques  8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785?				
8. Was the Well constructed using host direduced screen and his content and hi				
9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping	1	T		
containers?			<u> </u>	
CONTRIBUTOR	<del>_</del>	<u> </u>		
10. Was the shipping container labeled to identify the materials?	J P		<u> </u>	<u> </u>
10. Was the shipping container reserved to the new				
11. Was the location of the markings, the brand and the supplier of the well materials recorded?	1			
11. Was tile location of the markings, the stand and the trapping				
12. Did the filter pack material conform to the specifications of the Work Plan?	7			
12. Did the filter pack material comorn to the specifications of the				
13. Was the location of the markings, the brand and the supplier of the filter pack recorded?	$\top$	Т		
13. Was the location of the markings, the braild and the supplier of the meet passive and the				
	7		7	1 _
14. Was the filter pack tremied into the well?				
The stand during installation?	1/	$\top$	$T^-$	$T^{-}$
15. Was the elevation of the filter pack accurately monitored during installation?				
	T/	7	T	T -
16. Was the filter pack installed to 2-5 feet above the screen?				
	<del></del>	Т	T	
17. Was the bentonite seal a minimum of 2 feet thick?				
	77		$\neg$	$\neg$
18. Were the brand, supplier, size and location of markings of the bentonite recorded?				

19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite pellets and as per manufacturers specifications when using high solids bentonite slurries?

20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Monitoring Well Number: 275				
Starting Date: 6 - 1 - 15				
Completion Date: 6-9-15				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	ot		•	
Actions (Office	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/#</u>
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	/			
22. Was Monitoring Well Construction Diagram completed?	-			
23. Was Materials Summary Form completed?	-			
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well				
installation?				
25. Does the construction diagram accurately depict each and every component and their respective vertical	<del>,</del>			
positions?	/			
26. Does the construction diagram list the types and quantities of materials used?				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.  QC Inspector Signature:  Date: 6 - 9 - 15				

WELL CONSTRUCTION CHECKLIST

INSTRUMENT CALIBRATION CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5 Date: 6-8-15 Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is Yes No N/O N/A checked, provide an explanation on the Noncompliance and Corrective Actions form. Instrument Calibration 1. Were all field instruments calibrated properly? 2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP? 3. Did the Field Calibration Forms list all calibration events?

The QC inspector shall sign this checklist upon completion of all items on the checklist. QC inspector Signature:

List instruments used at the Site:

### FIELD DOCUMENTATION CHECKLIST

Projec	t Nam	e/Location	: Former	Fornes	Auas	MISSIIC 4
Site:	C ~	ς .				

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Field Documentation	$\neg \overline{\nu}$	т—		
Was all original field data, except boring logs, recorded in black indelible ink?				<u></u> i
1. 1100 011 01151101	<del></del>	<del>, –</del>		
2. Were logbooks filled out properly; accurately recounting the day's events?		<u> </u>	<u> </u>	<u> </u>
Were all field forms completed and information accurately recorded:				
* DOCR's?		Ь	<u> </u>	<u> </u>
* Borehole Logs?			<u>.                                    </u>	V
		T		-
* Well Construction Diagrams?				
	.   /	7	T	
* Well Development Forms?				
		T	Γ	T -
* Sampling Forms?				
	$\neg \neg$	1	$T^-$	<b>—</b>
* Water Level Forms?			<u> </u>	
		$\top$	T	-
* Chain of Custody Forms?			<u> </u>	
		-T	T	T
* Field Log Books?			<u>.i. —</u>	
	$ \Box$	au	$T^{-}$	T
* Project Photograph Log (in Log Book)?				
	<del></del>		Т	1/
* Daily Air Monitoring Record?	L	<u> </u>		
List additional field forms completed:		7	T	$\top$
4. Was field documentation forwarded to office for peer review and QC? (DQCP)				
L				

The QC Inspector shall sign this checklist upon completion of all items on the checklist QC Inspector Signature:

Date:

6-8-15

INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Date: 6-5-15				
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Instrument Calibration	7	1		
1. Were all field instruments calibrated properly?	_!	<u> </u>	·	
		Т		Γ.
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?			<u> </u>	ــــــ
	<del></del>	1	г —	1
3. Did the Field Calibration Forms list all calibration events?		Ш	<u> </u>	L. —
List instruments used at the Site: Pl+, Cond, Tu/5	<del></del>			
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
Date: 6-5-15				

### FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 8 - 5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is	
checked, provide an explanation on the Noncompliance and Corrective Actions form.	
Monte at less than the second	

Yes No N/O N/A

Field Documentation		
Was all original field data, except boring logs, recorded in black indelible ink?		
	<del></del>	
2. Were logbooks filled out properly; accurately recounting the day's events?		i
A HOLO OBSESSION TO THE PARTY OF THE PARTY O		
3. Were all field forms completed and information accurately recorded:		
* DQCR's?	<u> </u>	
DQCK3:		
* Borehole Logs?		
- Boreliole Logs:		
* Well Construction Diagrams?		<u> </u>
** YYOR CONSTRUCTION Magratis:		
* Well Development Forms?		
* Well Development Forms:		
Compling Forms?		
* Sampling Forms?		
		-
* Water Level Forms?		
		-
* Chain of Custody Forms?		
* Field Log Books?		
* Project Photograph Log (in Log Book)?		<u> </u>
* Daily Air Monitoring Record?		
,		
List additional field forms completed:		<del></del>
4. Was field documentation forwarded to office for peer review and QC? (Dace)		<u> </u>

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

6-5-15

#### INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 6-3-15 Date: 5-5 2

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

<del></del>

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

6-3-15

#### FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site:	S	_	5	

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No i	İS
Complete daily. Answer each question by the tring the appropriate statement from	
checked, provide an explanation on the Noncompliance and Corrective Actions form.	

Yes No N/O N/A

Field Documentation	<del>- 1 - 1</del>		
Was all original field data, except boring logs, recorded in black indelible ink?			L
Were logbooks filled out properly; accurately recounting the day's events?			
2. Wele logbooks filled out properly desarted,			
Were all field forms completed and information accurately recorded:			
	1/		
* DQCR's?			
		$\neg$	コン
* Borehole Logs?			
			$ \overline{}$
* Well Construction Diagrams?			
	- 1 - 21		<del></del>
* Well Development Forms?			
* Sampling Forms?		i L	1
* Sampling Forms:			
	$\neg \Gamma \neg$		~
* Water Level Forms?			
* Chain of Custody Forms?			
		$\overline{}$	
* Field Log Books?			
* Project Photograph Log (in Log Book)?		igsquare	
110jocc Hotossup 1-25 (to 5			
* Daily Air Monitoring Record?			
Daily All Pidrittoring Record:			
and the second s			
List additional field forms completed:		ГТ	$-\Gamma$
4. Was field documentation forwarded to office for peer review and QC? (DQCQ)			
			<del></del>

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

### INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site:

Date: 6-2-15

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

checked, provide an explanation on the	
Instrument Calibration	
Were all field instruments calibrated properly?	
Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	
3. Did the Field Calibration Forms list all calibration events?	
List instruments used at the Site: Min: Rac PID	
RKI LEL	
Leading this checklist upon completion of all items on the che	ecklist.

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 6-2-15

### FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

one. 5-5				
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Field Documentation				
Was all original field data, except boring logs, recorded in black indelible ink?				
1. Was all Original ficial data, except being logs, from				
Were logbooks filled out properly; accurately recounting the day's events?		<u>1                                    </u>		
Were all field forms completed and information accurately recorded:		т		
* DQCR's?		<u> </u>	<u> </u>	L
	<del></del>		<del>, —</del>	
* Borehole Logs?		<u></u>	<u> </u>	L _
			<del></del>	Τ
* Well Construction Diagrams?			<u> </u>	<u> </u>
	<del> </del>	7	Γ	IV
* Well Development Forms?		1	<u></u>	1 -
	-1		Г	
* Sampling Forms?				J
* Water Level Forms?			<u> </u>	V
** Water Level Forms:				
* Chain of Custody Forms?				
Citain of Castody Forms.				
* Field Log Books?		Щ.	<u>l</u>	<u></u>
				<del>_</del>
* Project Photograph Log (in Log Book)?		<u></u>	<u></u>	
			т—	-
* Daily Air Monitoring Record?		<u></u>	Ь	<u> </u>
List additional field forms completed:			т	т
4. Was field documentation forwarded to office for peer review and QC? (DRCIZP Coc)		ــــــــــــــــــــــــــــــــــــــ	<del></del>	
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.  QC Inspector Signature:				
Date: 6-2-15				

)	PRILLING METHODS CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: $S-S$ Boring/Monitoring Well Number(s): $S \ge -09 / m \omega - 03D$ Sampling Date: $6 - 2 - 15$ Complete daily for each monitoring well. Answer each quest no, not observed (N/O) or N/A). If a No is checked, provide an Corrective Actions form.
	General  1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used submersible pumps, Pad water tanks)?

-09/mw-03D

Answer each question by checking the appropriate column (yes, checked, provide an explanation on the Noncompliance and

Yes No N/O N/A

Corrective Actions form.	<del></del> '
General	
1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner,	
submersible pumps, Pad water tanks)?	
	<del></del>
Are there any fluid leaks on drilling rig and associated equipment?	
2.7110 tiol tiol tion	
3. If so, have oil absorbent pads been used to contain leaks?	_
3. If so, have on absorbert paus been used to contain reads.	
confined and a second s	
4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas?	
	<del> </del>
5. Was clean equipment wrapped in visqueen?	
6. Were clean and dirty equipment stored or transported separately?	
b. Were clean and unity equipment stored or damsported separates).	
7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with	
lubricants?	
Drilling Rig	<del></del>
8. Was the type and model of the drilling rig recorded?	
or this the type change of	
a W. U. A. a. of habitanting all recorded?	
9. Was the type of lubricating oil recorded?	
/	
10. Were names and titles of crew recorded?	
11. Were drill stem augers and bit diameters recorded?	
TIT Weld dim deen dager.	
C. Lillian Builds look to fromotion accounted for and recorded?	
12. Were volumes of drilling fluids lost to fromation accounted for and recorded?	
13. Were rig start, stop, down times, and penetration rates recorded?	
	<del> </del>
14. Was split spoon sampler used on deep MW and test holes?	
T.1. Mag ablic about partibles grow at anal.	
The second deliverator to their use?	
15. Were all drilling tools and cables inspected daily prior to their use?	

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number(s): 53-09 /m W-03 D				
Sampling Date: 6-2-15				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
Corrective Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
Rotary Wash	<del></del>		T	<del></del>
16. Was a sample of the proposed drilling water analyzed?			<u> </u>	
		<del></del>	<del></del>	т—
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?		Щ.	<u> </u>	l
	T		т—	1
18. Was the water circulated in portable tanks?	<u></u>	<u> </u>		L
10.11/1	17	т.	Γ	1
19. Was bentonite used?			Ш	<u> </u>
20. Were any additives used besides bentonite?	Т	ナン		Г
20. Were any additives used besides bentonite:	ــــــــــــــــــــــــــــــــــــــ	<u> </u>		<u> </u>
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the	17	T		1
boring log?				
22. Was the bentonite supplier, brand and type recorded?				
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?	<u> </u>		<u> </u>	
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?	1	<u> </u>	<u> </u>	
				<del>, ,</del>
35. Was don't to ground water measurements collected with an electronic tane?		1	ı	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 6-2-(5)

26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?

28. Was the boring open to the bottom?

27. Was the Kelly Bar marked to verify depth during drilling?

### PACKING, STORING, AND SHIPMENT OF SAMPLES CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Boring/Monitoring Well Number(s): 58-09

Surface Soil/Sediment/Surface Water Sample Number(s): 58-09-0-1, SB-09-2-3, 58-09-6-7, SB-09-12-13, SB-09-15-16,

Sampling Date:

53-09-17-18

Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A).

If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Packing, Storing, and Shipment of Samples			$\top$
Were the samples handled according to the project plans?		L	
	<del></del>		┰━╌┤
2. Was the pH of samples requiring pH adjustment verified in the field?		<u> </u>	┸—┤
	<del></del>		<del></del> -
3. Did the samples remain on ice from collection until cooler was taped for shipment?			
4. Were COC forms filled out accurately and completely including project name and number, sampling date, sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter, and media sampled?	/		
and media samples.			
5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?			
J. Well Coc forms signed and account			
6. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?			
b. Were signed and dated custody scals properly placed on the			
7. Was a shipping label attached to the cooler?		Д	<u> </u>
	<del></del>		
8. Was custody documentation intact until receipt by the laboratory?			

The QC inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

DECONTAMINATION CHECKLIST
Project Name/Location: Former Forbes Atlas Missile Site S-5
Boring/Monitoring Well Number(s): SB-09/MW-03D
Date: /a - 2 - 15
Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is
checked, provide an explanation on the form.

<u>Equipment</u>	<del></del>	
1. Was all sampling equipment decontaminated properly prior to use and between sample intervals?		
Was each decontamination event recorded in the logbook?		
3. Was IDW (decontamination water) handled in accordance with the approved work plan?		
3. Has 1511 (accontaminate).		

Yes No N/O N/A

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

6-2-15

#### BOREHOLE AND CORE LOGGING CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Boring/Monitoring Well Number: 58-09 / MW-03 O

Starting Date: 6-2-15

Date: 6-2-i5Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

provide an explanation on the residence		
Borehole Logging	TVI	
Was boring logged by a geologist or geological engineer?		<del>. l !</del>
	<del>- , , , -</del>	<del></del>
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?		<u> </u>
Z. Was log completed and oracle primaries - 3-7		
		$\top$
3. Was the log scale 1 inch = 1 foot?		<u> </u>
	<del> </del>	<del></del>
4. Were logs completed in the field (originals)?		
4. Well logs completed in the name (1.55-1.7)		
5. Does log contain the following a routine entries?		
* Unique well number (as per Work Plan)?		
* Official Weit from the Control of		<del></del> -
	TZT	
* Depositional type (alluvium, till, loess, etc.)		<del></del>
* Depths/Heights recorded in tenths of feet?	/	
* Depths/Heights recorded in tenths of recti		
		T T
* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes)		!
* Soils classified as per USCS and fully described with numerical percents of constituents?		
* Soils classified as per USCS and fully described with fruither of School Scho		
	- 12 T	
* Soil moisture content and texture or cohesiveness?		
John Million Carlo		
The Manual Control		
* Soil color described using the Munsell System?		
	<del>- 1 21</del>	<del> </del>
6. Was general information (top of form MRK-55) completed?		ll
o. Was general massing of the control of the contro		
- 10 de la 2		
7. Was the log signed by person preparing the log?		
	<del>-                                    </del>	
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?		
6. West special contains they were the		
La L	$\neg$	
Were start and completion dates and time included for boring and well installation activities?		
		<del></del>
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if obser	vea /	
in cuttings)?		
In carcalgo).		
and stabilized water levels recorded?	100	TTZ
11. Were depths at which free water was encountered and stabilized water levels recorded?		
	<del> </del>	
12. Were soil sample depths recorded?		
12. Hold con bumple department		
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter		
recorded?		
	<del></del>	<del></del>
14. Were soil sampling methods and recovery recorded?		
17. Were son sumpling meaners and reservey		

Site: 5-5				
Boring/Monitoring Well Number: 58-09 ( MW-03D				
Starting Date: 6-2-15				
Date: 6-2-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,	W	81.	N 70	BI / A
provide an explanation on the Noncompliance and Corrective Actions form.	Yes	NO	N/O	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	Ь	<u> </u>		
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				
10. Was observed evidence of contamination in samples, eatings, or animag notes recorded				
17. Were abbreviations used on log defined?	1			
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?	V .	ГТ		
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of	1		·	
compressed air filter)?	l	Ш		
20. Were drilling pressures and driller's comments recorded?				
21. Was total depth recorded and marked with a double line?		П		
21. Was total deput recorded and marked with a double line.		<u>!</u>		
22. Was monitoring well diagram completed and attached to log?				
22. Hus monitoring their diagram completed and attacked to 103.		<u>                                     </u>		<u> </u>
Core Logging				
In addition to the items above, the following also apply to core-logging:				
\23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture,				
color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and				
filling materials?				
24. Was start and stop time of each core run recorded?	7		1	
24. Was start and stop time of each cole full recorded?				
25. Were depths to top and bottom of each core run recorded?		ГТ		
25. Welle deputs to top and bottom of each coloral recorded.				
26. Was length of core recovered in each core run recorded?				-
27. Were the size and type of coring bit and barrel recorded?	/			
			-	
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?				
The QC Inspector shall sign this phecklist upon completion of all items on the checklist.				
QC Inspector Signature:				
you c				
Date: 6-2-15				

**BOREHOLE AND CORE LOGGING CHECKLIST** 

Project Name/Location: Former Forbes Atlas Missile Site S-5

# WELL CONSTRUCTION CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5Monitoring Well Number: MW-03D Starting Date: 6-2-15 Completion Date: 6-2-15 Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Yes No N/O N/A Actions form. General 1. Was a geologist or geotechnical engineer present during installation of the monitoring well? Were all depths verified during installation by measurement with a weighted tape? Selection and Placement of Screen 3. Was the screen length specified in the Work Plan used in construction of the well? 4. Was the approved screen slot size and filter pack used? 5. Was the screen placed at the depth specified in the Work Plan? 6. Did the rig geologist document the stable water level before installing the well? 7. Was the boring bailed dry during drilling to check for recharge? Construction Materials and Techniques 8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785? 9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping containers? 10. Was the shipping container labeled to identify the materials? 11. Was the location of the markings, the brand and the supplier of the well materials recorded? 12. Did the filter pack material conform to the specifications of the Work Plan? 13. Was the location of the markings, the brand and the supplier of the filter pack recorded? 14. Was the filter pack tremied into the well?

13 of 21

15. Was the elevation of the filter pack accurately monitored during installation?

18. Were the brand, supplier, size and location of markings of the bentonite recorded?

pellets and as per manufacturers specifications when using high solids bentonite slurries?

19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite

20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

16. Was the filter pack installed to 2-5 feet above the screen?

17. Was the bentonite seal a minimum of 2 feet thick?

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: へいつろり				
Starting Date: 6-2-15				
Completion Date: 6-2-15				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	t			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	NO	N/O	<u>N//</u>
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	1		ļ <u>.</u>	
	<u></u>	<u> </u>	<u> </u>	<u> </u>
22. Was Monitoring Well Construction Diagram completed?				
23. Was Materials Summary Form completed?				
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well nstallation?	/			
25. Does the construction diagram accurately depict each and every component and their respective vertical positions?	/			
		<b>!</b>		•

#### SAMPLE COLLECTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Monitoring Well Number: ~~ ○ 3 ▷

Sampling Date: 6-2-15

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the

Yes No N/O N/A

<u>General</u>				
Were new protective gloves worn between sampling locations and/or intervals?				
2. Were samples collected using methods described in the FSP?	/			
3. Were sample containers filled in the correct order?				
4. Was sampling equipment appropriate for the purpose and site conditions?				
	\			
5. Was sampling equipment decontaminated or disposable/dedicated equipment used between each sample?	J			L
6. Were procedures for collecting QA/QC samples followed as per the FSP?				
7. Were sampling locations properly identified by land survey?				
8. Were bottles adequately protected from contamination prior to sample collection?	/			
Ground / Surface Water for Chemical Analysis				
9. Were ground water parameters stable before sample collection (as per FSP)?				
•				
10. Were turbidity readings below 50 NTU (or if all other field parameters are stable and turbidity can not be				
lowered below 50 NTU, were turbidity readings within + or - 10% over three, five-minute readings)?	<u></u>			
Note: approval must be obtained from the project geologist and project manager prior to sampling in turbid				
conditions.				
	1	-	1	
11. Was a field sampling form completed?	1	1		
	1			
12. Were the analytical parameters and QA/QC samples recorded on the field sampling form?				
	1			
13. Was low-flow sampling conducted in accordance with the approved SAP?				
14. Was headspace in sample containers for volatiles eliminated?				
Sediment for Chemical Analysis				
14. Were sample collected according to the FSP?				
			_	
15. Was a field sampling form completed?				
16. Were the analytical parameters and QA/QC samples recorded on the field sampling form?				
	•			
17. Was headspace in sample containers for volatiles eliminated?				
17. Hus headspace in sample contained to Teacher simulation				
Soil for Chemical Analysis	<del></del>		-	
18. Were sample collected according to the FSP?	771			
to. Were sample concered according to the Lot :	.11.			
10. Was a field compling form completed?	7			
19. Was a field sampling form completed?		1		
and the field an	1	1	···	
20. Were the analytical parameters and QA/QC samples recorded on the field sampling form?	لـــّــــــــــــــــــــــــــــــــــ		]	
	<del>1 / 1</del>			
21. Was headspace in sample containers for volatiles eliminated?	1			

SAMPLE COLLECTION CHECKLIST

Project Name/Location: Former Forbes Atias Missile Site S-5

Monitoring Well Number: ww-030

Sampling Date: 6-2-15

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the

form.

Yes No N/O N/A

Corrective Actions:

The QC inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 6-2-15

INSTRUMENT CALIBRATION CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5Date: 6-1-15 Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A Instrument Calibration 1. Were all field instruments calibrated properly? 2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?

RKI LEL 6-1-15 The QC Inspector shall sign this checklist upon completion of all items on the checklist.

Mini Ram PID

QC Inspector Signature:

List instruments used at the Site:

3. Did the Field Calibration Forms list all calibration events?

## FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Field Documentation	1	г—		
1. Was all original field data, except boring logs, recorded in black indelible ink?		<u></u>	Ь	
		_	г—	_
2. Were logbooks filled out properly; accurately recounting the day's events?		<u> </u>	L	
3. Were all field forms completed and information accurately recorded:	<del></del>			т -
* DQCR's?		<u> </u>	<u> </u>	Ш.,
* Borehole Logs?		<u> </u>	<u> </u>	
* Well Construction Diagrams?		<u> </u>	L	
* Weli Development Forms?		<u>L</u>		
* Sampling Forms?	• ]			/
·				
* Water Level Forms?				V
* Chain of Custody Forms?	~			<u> </u>
Chair or cascay 15 miles				
* Field Log Books?	7	Π		
Ticlu Edg Books				
* Project Photograph Log (in Log Book)?				\ \
* Project Priotograph Eog (in Eog Book):		-		
* Daily Air Monitoring Record?	17	$T^-$		Τ
* Daily All Plotitioning Record:			J	<u> </u>
the law of California annulated				
List additional field forms completed:  4. Was field documentation forwarded to office for peer review and QC? (DQCR 4 COC)	コレ	T	$\Gamma^{-}$	T
4. Was field documentation forwarded to office for peer review and QC? (DQLR 4 COC)		1		
The state of the s				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
1/4/1/1/4/				
Date: 6-1-15				

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Boring/Monitoring Well Number(s): SB- ロ				
Sampling Date: 6-1-15				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
Corrective Actions form.	<u>Yes</u>	МO	N/O	N/F
General	<del></del>		т—	_
1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner,	/	1		
submersible pumps, Pad water tanks)?	<u> </u>	l	L	
	<b>-</b>	17	Τ	т—
2. Are there any fluid leaks on drilling rig and associated equipment?		I	<u> </u>	ل
		т.		т
3. If so, have oil absorbent pads been used to contain leaks?	_!	<u> </u>	L	
	<del></del>	_	т .	_
4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas?	1	J	<u>L</u>	l
	•			<del></del>
5. Was clean equipment wrapped in visqueen?	1	<u> </u>	<u>l</u>	
				·
6. Were clean and dirty equipment stored or transported separately?	1	<u></u>		
7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with	İ		1	
lubricants?			<u> </u>	l
Drilling Rig			<del> </del>	
8. Was the type and model of the drilling rig recorded?		<u> </u>		<u> </u>
9. Was the type of lubricating oil recorded?		<u> </u>		<u> </u>
10. Were names and titles of crew recorded?				<u> </u>

11. Were drill stem augers and bit diameters recorded?

12. Were volumes of drilling fluids lost to fromation accounted for and recorded?

13. Were rig start, stop, down times, and penetration rates recorded?

15. Were all drilling tools and cables inspected daily prior to their use?

14. Was split spoon sampler used on deep MW and test holes?

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5~ 5				
Boring/Monitoring Well Number(s): SB-1の ( へいっつせら				
Sampling Date: 6~1-15				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and	.,		/0	
Corrective Actions form.	<u>Yes</u>	MO	N/O	<u>N/A</u>
Rotary Wash	Т ,	_	г —	r
16. Was a sample of the proposed drilling water analyzed?				<u> </u>
47 W th	77	т—	1	ı -
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?	<u> </u>	L	L	<u> </u>
18. Was the water circulated in portable tanks?	T	$\overline{}$	Γ	
16. Was the water circulated in portable talks:		L		L
19. Was bentonite used?	T -	Г		Γ
15. Has believing assat	1			
20. Were any additives used besides bentonite?	T	-		
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the				
boring log?	<u>Ľ.</u> .	L!		
	1	<del></del>		
22. Was the bentonite supplier, brand and type recorded?				
De di Marana de Daniela and Assurant				
Depth Measurements Precision and Accuracy  23. Was the well installed to the depth defined in the Work Plan?		$\overline{}$		
23. Was the well installed to the deput defined in the work Plant	1	L		
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?	T/			
27, Was the depart of each borning vernica by measuring that a noting ass of occas cape.	.1			
25. Was depth to ground water measurements collected with an electronic tape?	1			
			<u>.</u>	
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?	/			
				_
27. Was the Kelly Bar marked to verify depth during drilling?				

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

Date: (4-1-15)

28. Was the boring open to the bottom?

PACKING, STORING, AND SHIPMENT OF S	AMPLES CHECKLIST	
Project Name/Location: Former Forbes Atla	as Missile Site S-5	
Site: 5-5		
Boring/Monitoring Well Number(s): 53-	10/mw-043	
Surface Soil/Sediment/Surface Water Samp	ble Number(s): \$5-10-0-1   \$5-10-7-4   \$5	-10-8-9,58-10-12-13,38-10-18-19,
Sampling Date: 6-1-15	53-10-21-22	
	checking the appropriate column (yes, no, or not appli	icable N/A). Yes No N/O N/A

		1
. Were the samples handled according to the project plans?		<u> </u>
	T . I	
. Was the pH of samples requiring pH adjustment verified in the field?		<u> </u>
. Did the samples remain on ice from collection until cooler was taped for shipment?	17	<u> </u>
<ul> <li>Were COC forms filled out accurately and completely including project name and number, sampling date, ampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter, and media sampled?</li> </ul>	/	
	<del>- 1 21</del>	<del> </del>
. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?		<u> </u>
Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?  Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?		

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

6-1+15

DECONT	MINATION	CHECKI	CT
1166611111	WIND A LICENS	CHECKL	ומו

Project Name/Location: Former Forbes Atlas Missile Site S-5

Boring/Monitoring Well Number(s): へんいつべち

Date: 6-1-15

Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is

checked, provide an explanation on the form.

Yes No N/O N/A

<u>Equipment</u>		
Was all sampling equipment decontaminated properly prior to use and between sample intervals?		
Was each decontamination event recorded in the logbook?	/	
3. Was IDW (decontamination water) handled in accordance with the approved work plan?		

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC inspector Signature:

6-1-15

### BOREHOLE AND CORE LOGGING CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Boring/Monitoring Well Number: 3/3-10/MW045

Starting Date: 6-1-15

Date: 6-1-15

Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Powelpale Learning	163	KU	11/0	WA
Borehole Logging	T 7	<del>,                                    </del>		
Was boring logged by a geologist or geological engineer?		Ш		L
	<del>,</del>			γ .
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?		Ш		
				,
3. Was the log scale 1 inch = 1 foot?	/			
4. Were logs completed in the field (originals)?				
				•
5. Does log contain the following a routine entries?				
b. boo log contain the following a reache chalcer				
* Unique well number (as per Work Plan)?			-	
* Unique weil number (as per work Plan)?				
	<del>, ,</del>	······		
* Depositional type (alluvium, till, loess, etc.)				l
* Depths/Heights recorded in tenths of feet?				
* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes)	1	$\Box$	, i	
	<del>!</del>			
)* Soils classified as per USCS and fully described with numerical percents of constituents?	<b> </b>	$\neg$	_	
7. Sons classified as per 03c3 and fully described with fromerical percents of constituents.				
* Soil moisture content and texture or cohesiveness?				
* Soil color described using the Munsell System?				
6. Was general information (top of form MRK-55) completed?				
7. Was the log signed by person preparing the log?				
	· · · ·			
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?		$\neg$	$\neg \neg$	
b. Wele special continuous (i.e., intervals of note instability) and their resolution recorded:	لـنـــا		1	
9. Were start and completion dates and time included for boring and well installation activities?				
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed	/			1
in cuttings)?		L	{	
		<del></del>		
11. Were depths at which free water was encountered and stabilized water levels recorded?		$oldsymbol{\bot}$		
12. Were soil sample depths recorded?	/			
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter	1	$\neg \tau$		
recorded?				
14. Were soil sampling methods and recovery recorded?	7	$\neg$	$\neg \exists$	
			1	

Site: 5-5				
)Boring/Monitoring Well Number: 53-10 (MW-045				
Starting Date: 6 - 1 - 15  Date: 6 - 1 - 15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Voc	No	N/O	N1/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	162	140	1 <u>17/0</u>	N/A
			<u>.                                    </u>	
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				
17. Were abbreviations used on log defined?	T -			
17. Were abbreviously used on log defilled?		<u>l</u>		
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?	_			<u> </u>
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of compressed air filter)?	/			
20. Were drilling pressures and driller's comments recorded?	~			
21. Was total depth recorded and marked with a double line?	/			
22. Was monitoring well diagram completed and attached to log?				
Core Logging In addition to the items above, the following also apply to core-logging:				
\23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture, color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and filling materials?	/			
24. Was start and stop time of each core run recorded?	· · · · · · · · · · · · · · · · · · ·			
21. Was start and stop time of each core ran recorded:				
25. Were depths to top and bottom of each core run recorded?	_			
26. Was length of core recovered in each core run recorded?				
27. Were the size and type of coring bit and barrel recorded?	7			
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?	7			-
The QC inspector shall sign this checklist upon completion of all items on the checklist.  QC Inspector Signature:  Date:				
Date: 6-1-15				

BOREHOLE AND CORE LOGGING CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

# WELL CONSTRUCTION CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5 Monitoring Well Number: ڛڛ-٥५ \$ Starting Date: 4 ~ 1 - 15 Completion Date: 6-1-15 Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Yes No N/O N/A General 1. Was a geologist or geotechnical engineer present during installation of the monitoring well? 2. Were all depths verified during installation by measurement with a weighted tape? Selection and Placement of Screen 3. Was the screen length specified in the Work Plan used in construction of the well? 4. Was the approved screen slot size and filter pack used? 5. Was the screen placed at the depth specified in the Work Plan? 6. Did the rig geologist document the stable water level before installing the well? 7. Was the boring bailed dry during drilling to check for recharge? Construction Materials and Techniques 8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785? 9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping containers? 10. Was the shipping container labeled to identify the materials? 11. Was the location of the markings, the brand and the supplier of the well materials recorded? 12. Did the filter pack material conform to the specifications of the Work Plan? 13. Was the location of the markings, the brand and the supplier of the filter pack recorded? 14. Was the filter pack tremied into the well?

20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite

15. Was the elevation of the filter pack accurately monitored during installation?

18. Were the brand, supplier, size and location of markings of the bentonite recorded?

pellets and as per manufacturers specifications when using high solids bentonite slurries?

16. Was the filter pack installed to 2-5 feet above the screen?

17. Was the bentonite seal a minimum of 2 feet thick?

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: ルルーのイミ				
Starting Date: 6 - 1 - 15				
Completion Date: (4-1-15				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	t			
Actions form.	Yes	No	<u>N/O</u>	N/
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	/			
22. Was Monitoring Well Construction Diagram completed?				
Test Hospital Well Construction Diagram completed?				
23. Was Materials Summary Form completed?				
recentate banninary Form completed:				
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well				
installation?	/		_	
25. Does the construction diagram accurately depict each and every component and their respective vertical				
positions?	/			
26. Does the construction diagram list the types and quantities of materials used?			<u>_</u>	
7) The first this occup				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature: $\mu$ Date: $\mu = 1 - 1$				
Date: $(\mu - 1 - 1)^{-1}$				

#### SAMPLE COLLECTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Monitoring Well Number: Mw-045/55-10

Sampling Date: 6-1-15

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.

Yes No N/O N/A

General 1. Were new protective gloves worn between sampling locations and/or intervals? 2. Were samples collected using methods described in the FSP? 3. Were sample containers filled in the correct order? 4. Was sampling equipment appropriate for the purpose and site conditions? 5. Was sampling equipment decontaminated or disposable/dedicated equipment used between each sample? 6. Were procedures for collecting QA/QC samples followed as per the FSP? Were sampling locations properly identified by land survey? 8. Were bottles adequately protected from contamination prior to sample collection? Ground / Surface Water for Chemical Analysis 9. Were ground water parameters stable before sample collection (as per FSP)? 10. Were turbidity readings below 50 NTU (or if all other field parameters are stable and turbidity can not be lowered below 50 NTU, were turbidity readings within + or - 10% over three, five-minute readings)? Note: approval must be obtained from the project geologist and project manager prior to sampling in turbid conditions. 11. Was a field sampling form completed? 12. Were the analytical parameters and QA/QC samples recorded on the field sampling form? 13. Was low-flow sampling conducted in accordance with the approved SAP? 14. Was headspace in sample containers for volatiles eliminated? Sediment for Chemical Analysis 14. Were sample collected according to the FSP? 15. Was a field sampling form completed? 16. Were the analytical parameters and QA/QC samples recorded on the field sampling form? 17. Was headspace in sample containers for volatiles eliminated? Soil for Chemical Analysis 18. Were sample collected according to the FSP? 19. Was a field sampling form completed? 20. Were the analytical parameters and QA/QC samples recorded on the field sampling form? 21. Was headspace in sample containers for volatiles eliminated?

<del>17 of 21</del>

#### SAMPLE COLLECTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Monitoring Well Number: ww-045/55-10

Sampling Date: 6-1-15

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the

Yes No N/O N/A

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

4-1-15

## INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5

Date: 5-31-15

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Instrument Calibration	
1. Were all field instruments calibrated properly?	
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	
3. Did the Field Calibration Forms list all calibration events?	
List instruments used at the Site: Min: Ray ZOOO PEO	
RKI LLC	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-31-15

## FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Ves	No	N/O	NI/A
Field Documentation	,103	110	1470	777.
Was all original field data, except boring logs, recorded in black indelible ink?	77	Τ		T
11 Hos di Vigital Hod dawy over terriging agreement	<del></del>			
2. Were logbooks filled out properly; accurately recounting the day's events?			<u> </u>	
Were all field forms completed and information accurately recorded:		_	-	
* DQCR's?		<u> </u>	<u> </u>	<u> </u>
* Borehole Logs?			<u> </u>	Ε
* Well Construction Diagrams?				L
* Well Development Forms?	1/		Ι	
* Sampling Forms?			]	
* Water Level Forms?				<u></u>
* Chain of Custody Forms?			T	
* Field Log Books?				
* Project Photograph Log (in Log Book)?			Ι	_
* Daily Air Monitoring Record?				
List additional field forms completed:		_		
4. Was field documentation forwarded to office for peer review and QC?				<u> </u>

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-31-15

#### **DRILLING METHODS CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Boring/Monitoring Well Number(s): ww -040

Sampling Date: 5-31-15

Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,

no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Yes No N/O N/A Corrective Actions form. 1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner, submersible pumps, Pad water tanks)? 2. Are there any fluid leaks on drilling rig and associated equipment? 3. If so, have oil absorbent pads been used to contain leaks? 4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas? 5. Was clean equipment wrapped in visqueen? 6. Were clean and dirty equipment stored or transported separately? 7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with lubricants? Drilling Rig 8. Was the type and model of the drilling rig recorded? 9. Was the type of lubricating oil recorded? 10. Were names and titles of crew recorded? 11. Were drill stem augers and bit diameters recorded? 12. Were volumes of drilling fluids lost to fromation accounted for and recorded? 13. Were rig start, stop, down times, and penetration rates recorded? 14. Was split spoon sampler used on deep MW and test holes? 15. Were all drilling tools and cables inspected daily prior to their use?

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DIVID	LING	1411	เบบจ	OUE.	UNL	101

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 9-5

Boring/Monitoring Well Number(s): ㅆㅆ-ㅇ닉▷

Sampling Date: 5-31-45

Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and

Corrective Actions form.

Yes No N/O N/A

Rotary Wash				
16. Was a sample of the proposed drilling water analyzed?				
17. Was the source of drilling water provened by the USACE in writing by formula U. J. H. C. C.	<del></del>		ı	_
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?			<u> </u>	<u> </u>
18. Was the water circulated in portable tanks?				
19. Was bentonite used?				
20. Were any additives used besides bentonite?				
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log?	Y			
22. Was the bentonite supplier, brand and type recorded?				
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?			.	
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?		$\overline{}$		
25. Was depth to ground water measurements collected with an electronic tape?		_ <u>_</u>		
23. Was departed globalid Water measurements confected with an electronic tape?				
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?				
27. Was the Kelly Bar marked to verify depth during drilling?				
28. Was the boring open to the bottom?	<u> </u>			

The QC Inspector shall sign this phecklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

C-31-15

DEC	CNITA	RAILEAT	LIWNI I	CHECKL	ICT
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Project Name/Location: Former Forbes Atlas Missile Site \$-5

Boring/Monitoring Well Number(s):

Date:

Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.

Yes No N/O N/A

<u>Equipment</u>

1. Was all sampling equipment decontaminated properly prior to use and between sample intervals?	
Was each decontamination event recorded in the logbook?	
Was IDW (decontamination water) handled in accordance with the approved work plan?	

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-31-15

## BOREHOLE AND CORE LOGGING CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

site: 5-5

Boring/Monitoring Well Number: ハルーの4ム

Starting Date: 5-31-15

Date: 5-31-15

Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

provide an explanation on the Noncompliance and Corrective Actions form.	103	110	1470	МЪ
Borehole Logging			ι	
Was boring logged by a geologist or geological engineer?	1			<u> </u>
	1 7	_	г	т —
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?		Щ	<u> </u>	<u> </u>
3. Was the log scale 1 inch = 1 foot?		<u> </u>		
4. Were logs completed in the field (originals)?				
4. Were logs completed in the held (originals):	<u></u>			'
5. Does log contain the following a routine entries?				
			r	
* Unique well number (as per Work Plan)?		L	<u> </u>	<u>.                                    </u>
	_			
* Depositional type (alluvium, till, loess, etc.)				
Depositional type (analyticity toess) every				
				Г
* Depths/Heights recorded in tenths of feet?		Щ_	L	Щ_
	<del></del>			
* Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)		<u> </u>		
* Soils classified as per USCS and fully described with numerical percents of constituents?				
7. Solis dassilied as per 0303 and ruly described with indirection per center of extremely				
			-	
* Soil moisture content and texture or cohesiveness?				<u> </u>
* Soil color described using the Munsell System?	<u></u>	<u> </u>		}
6. Was general information (top of form MRK-55) completed?	$\Box$			
V. Was general information (op or farm) nation, each, each		<del></del>		
10.1.2			Γ	T T
7. Was the log signed by person preparing the log?		<u> </u>		Щ.
·				
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?		<u> </u>	<u> </u>	<u> </u>
	_			
9. Were start and completion dates and time included for boring and well installation activities?				
3, was sait and competion dates and time included for soming and the			·	<u></u>
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed			Ι	Г
	'	ĺ		
in cuttings)?			<u> </u>	
11. Were depths at which free water was encountered and stabilized water levels recorded?	<u></u>	L		1-
12, Were soil sample depths recorded?		<u>L</u> _		<u></u>
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter			I	П
recorded?	*	ĺ		
Tooliuun				
The state of the s	<del>1 /</del>			
14. Were soil sampling methods and recovery recorded?	ــــــــــــــــــــــــــــــــــــــ		L	<u>!</u>

BOREHOLE AND CORE LOGGING CHECKLIST  Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
) Boring/Monitoring Well Number: ቊယ ናዕ ዛል				
Starting Date: 5-31-15				
Date: 5-31-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Yes	No	<u>N/O</u>	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?				
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				
17. Were abbreviations used on log defined?				
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?				
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of compressed air filter)?	/			
compressed all mitery?	ЬІ			
20. Were drilling pressures and driller's comments recorded?		—т	<del></del>	
20. Were drawing pressures and driner's confinents recorded:				
21. Was total depth recorded and marked with a double line?		-	—т	
21. Was total depart recorded and marked with a double lifte:				
22. Was monitoring well diagram completed and attached to log?				$\longrightarrow$
221 Trad monitoring fren diagram completed and attached to log:				
Core Logging				
In addition to the items above, the following also apply to core-logging:				
23. Was rock described using standard geologic nomenciature; e.g., rock type, relative hardness, density, texture,	ı			
color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and				
filling materials?	. 1		1	
24. Was start and stop time of each core run recorded?	$\overline{}$		T	
25. Were depths to top and bottom of each core run recorded?	$\overline{}$	$\top$		
				$\overline{}$
26. Was length of core recovered in each core run recorded?	7	$\neg$	$\overline{}$	

The QC inspector shall sign this checkfist upon completion of all items on the checklist.

QC inspector Signature:

Date: 

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28. Was the depth to the bottom of the hole measured after the core was removed for each core run?

27. Were the size and type of coring bit and barrel recorded?

# WELL CONSTRUCTION CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5 - 5 Monitoring Well Number: ルルーロリウ Starting Date: 5-31-15 Completion Date: 5-31-15 Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Yes No N/O N/A Actions form. General 1. Was a geologist or geotechnical engineer present during installation of the monitoring well? 2. Were all depths verified during installation by measurement with a weighted tape? Selection and Placement of Screen 3. Was the screen length specified in the Work Plan used in construction of the well? 4. Was the approved screen slot size and filter pack used? 5. Was the screen placed at the depth specified in the Work Plan? 6. Did the rig geologist document the stable water level before installing the well? 7. Was the boring bailed dry during drilling to check for recharge? Construction Materials and Techniques 8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785? 9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping containers? 10. Was the shipping container labeled to identify the materials? 11. Was the location of the markings, the brand and the supplier of the well materials recorded? 12. Did the filter pack material conform to the specifications of the Work Plan? 13. Was the location of the markings, the brand and the supplier of the filter pack recorded? 14. Was the filter pack tremied into the well? 15. Was the elevation of the filter pack accurately monitored during installation? 16. Was the filter pack installed to 2-5 feet above the screen? 17. Was the bentonite seal a minimum of 2 feet thick? 18. Were the brand, supplier, size and location of markings of the bentonite recorded?

13 of 21

19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite

20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

pellets and as per manufacturers specifications when using high solids bentonite slurries?

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Monitoring Well Number: へいての4D				
Starting Date: 5-31-15				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.		No	<u>N/O</u>	N/A
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?				
22. Was Monitoring Well Construction Diagram completed?	-			
23. Was Materials Summary Form completed?	1-			<u> </u>
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well installation?				
25. Does the construction diagram accurately depict each and every component and their respective vertical positions?	-			
26. Does the construction diagram list the types and quantities of materials used?				
The QC inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.  QC Inspector Signature:  Date: 5-3(-1)				

### **INSTRUMENT CALIBRATION CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 3-5
Date: 5-30-17

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Instrument Calibration

1. Were all field instruments calibrated properly?

2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?

3. Did the Field Calibration Forms list all calibration events?

List instruments used at the Site: Mini Role Loco PED

CKE LLL

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC inspector Signature:

Date: 5-30-17

## FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

checked, provide an explanation on the Noncompliance and Corrective Actions form.  Field Documentation		,		<del>, .</del>
L. Was all original field data, except boring logs, recorded in black indelible ink?			i	<u> </u>
		_		
2. Were logbooks filled out properly; accurately recounting the day's events?			<u>.                                    </u>	<u> </u>
Were all field forms completed and information accurately recorded:		·	Γ	_
* DQCR's?		<u> </u>	<u> </u>	<u> </u>
* Borehole Logs?				Τ
DOCTION EOGS.				
* Well Construction Diagrams?				
* Well Development Forms?		1		Γ-
ven bevelopment roms:		<u>์</u>	· · · · · ·	
* Sampling Forms?	اکر			
		4	Ι	
* Water Level Forms?		<u> </u>	<u> </u>	<u></u>
* Chain of Custody Forms?				7
* Field Log Books?				<u>L</u>
* During District words Log (in Log Dook)?		Т	T	7
* Project Photograph Log (in Log Book)?	L	<u> </u>	1	<u> </u>
* Daily Air Monitoring Record?				
List additional field forms completed:		_	1	
4. Was field documentation forwarded to office for peer review and QC? (Dack)		L		<u> </u>
	<del></del>			
The state of the s	<u></u>			
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
Oate: 5-30-15				

)	DRILLING METHODS CHECKLIST  Project Name/Location: Former Forbes Atlas Missile Site S-5  Site: 5-5  Boring/Monitoring Well Number(s): Mw-05-D  Sampling Date: 5-30-15				
	Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
	I. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner, submersible pumps, Pad water tanks)?	/			
	2. Are there any fluid leaks on drilling rig and associated equipment?			Ι_	
	3. If so, have oil absorbent pads been used to contain leaks?				_
	Was sampling equipment transported or stored away from fuel sources or fuel spill areas?	7	<u></u>		
	5. Was clean equipment wrapped in visqueen?	7			
	Were clean and dirty equipment stored or transported separately?	17			
	7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with lubricants?				
	Drilling Rig				
	8. Was the type and model of the drilling rig recorded?	1	l		
١	9. Was the type of lubricating oil recorded?				
,	10. Were names and titles of crew recorded?	/			
	11. Were drill stem augers and bit diameters recorded?	/			

12. Were volumes of drilling fluids lost to fromation accounted for and recorded?

13. Were rig start, stop, down times, and penetration rates recorded?

15. Were all drilling tools and cables inspected daily prior to their use?

14. Was split spoon sampler used on deep MW and test holes?

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 ~ 5				
Boring/Monitoring Well Number(s): MW COS D				
Sampling Date: 5-30-15				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<b>37</b>	NI -		
Rotary Wash	<u>Yes</u>	NO	<u>N/O</u>	<u>N/A</u>
16. Was a sample of the proposed drilling water analyzed?		1		T
10. Was a sample of the proposed drining water analyzed:		<u></u>	İ	1
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?	<del></del>	<u> </u>		· · ·
27 True die Gallac of allung fratar approved by the Golder in mining before mobilization to the site:	L	l	J	<u></u>
18. Was the water circulated in portable tanks?		Ι		Ι
				L
19. Was bentonite used?				
20. Were any additives used besides bentonite?				
24.751				
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log?	/			
bonng log:				
22. Was the bentonite supplier, brand and type recorded?				
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?				
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?		·		
25. Was depth to ground water measurements collected with an electronic tape?				
	<del></del> -			
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?				

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 5-30-15

28. Was the boring open to the bottom?

27. Was the Kelly Bar marked to verify depth during drilling?

<b>DECONTAMINATION</b>	CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Boring/Monitoring Well Number(s): Mw-05D

Date: 5-30-15

Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is

checked, provide an explanation on the form.

Yes No N/O N/A

Equipment	
1. Was all sampling equipment decontaminated properly prior to use and between sample intervals?	
2. Was each decontamination event recorded in the logbook?	
3. Was IDW (decontamination water) handled in accordance with the approved work plan?	
	<del></del>

Corrective Actions:

The QC Inspector shall sign this thecklist upon completion of all items on the checklist. QC Inspector Signature:

## **BOREHOLE AND CORE LOGGING CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

Boring/Monitoring Well Number: www ~450

Starting Date: 5-30 - 15

Date: 5-30-15

Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

1. Was boring logged by a geologist or geological engineer?  2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?  3. Was the log scale 1 inch = 1 foot?  4. Were logs completed in the field (ortginals)?  5. Does log contain the following a routine entries?  6. Unique well number (as per Work Plan)?  8. Depositional type (alluvium, till, loess, etc.)  8. Depths/Heights recorded in tenths of feet?  8. Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)  8. Soils classified as per USCS and fully described with numerical percents of constituents?  8. Soil moisture content and texture or cohesiveness?  8. Soil color described using the Munsell System?  6. Was general information (top of form MRK-55) completed?  7. Was the log signed by person preparing the log?  8. Were special conditions (i.e., Intervals of hole instability) and their resolution recorded?  9. Were start and completion dates and time included for boring and well installation activities?  10. Were boundaries between soils noted (soild line at appropriate depth or dashed line if transitional or if observed or cuttings)?  1. Were depths at which free water was encountered and stabilized water levels recorded?	Borehole Logging				
3. Was the log scale I Inch = 1 foot?  4. Were logs completed in the field (originals)?  5. Does log contain the following a routine entries?  * Unique well number (as per Work Plan)?  * Depositional type (alluvium, till, loess, etc.)  * Depths/Heights recorded in tenths of feet?  * Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)  * Soils classified as per USCS and fully described with numerical percents of constituents?  * Soil moisture content and texture or cohesiveness?  * Soil color described using the Munsell System?  5. Was general information (top of form MRK-55) completed?  7. Was the log signed by person preparing the log?  8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?  9. Were start and completion dates and time included for boring and well installation activities?  10. Were boundaries between soils noted (soild line at appropriate depth or dashed line if transitional or if observed a cuttings)?  1. Were depths at which free water was encountered and stabilized water levels recorded?  12. Were esoil sample depths recorded?  13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter coorded?	Was boring logged by a geologist or geological engineer?	/			
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ecorded?	12. Were soil sample depths recorded?				<u> </u>
ecorded?		<del></del> -			
		🗸			
14. Were soil sampling methods and recovery recorded?	recorded		<u> </u>	l	<u></u>
The recit out outspany medicus and receiver resources.	14. Were soil sampling methods and recovery recorded?	~		_ ·	
	A it read out outspiring mornous and record fractions.				

BOREHOLE AND CORE LOGGING CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: S-5				
Boring/Monitoring Well Number: Mw-05D				
Starting Date: 5-70-15				
Date: 5-30-65				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Vos	NI.	NI/O	BI / A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	Tes	140	<u>N/O</u>	1 N/A
201 Note instanting (orgin and of the discount was interested and	<u> </u>	Ц		<u> </u>
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?	T			<b>~</b>
				.1
17. Were abbreviations used on log defined?				
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?		<u> </u>		<u> </u>
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of				
compressed air filter)?				
	1		L	-
20. Were drilling pressures and driller's comments recorded?	7			
				•
21. Was total depth recorded and marked with a double line?				
22. Was monitoring well diagram completed and attached to log?				
Core Logging  To addition to the items shows the following class purity to save leading.				
In addition to the items above, the following also apply to core-logging:  (23. Was rock described using standard geologic nomenciature; e.g., rock type, relative hardness, density, texture,	, ,	_		
color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and	/		i	
filling materials?				
	<del>, , ,</del>			
24. Was start and stop time of each core run recorded?	1		. <b>i</b>	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

28. Was the depth to the bottom of the hole measured after the core was removed for each core run?

25. Were depths to top and bottom of each core run recorded?

26. Was length of core recovered in each core run recorded?

27. Were the size and type of coring bit and barrel recorded?

# WELL CONSTRUCTION CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 site: 5 - 5 Monitoring Well Number: ~~~ってり Starting Date: ケープロール Completion Date: 5-30-15 Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Yes No N/O N/A Actions form. General 1. Was a geologist or geotechnical engineer present during installation of the monitoring well? 2. Were all depths verified during installation by measurement with a weighted tape? Selection and Placement of Screen 3. Was the screen length specified in the Work Plan used in construction of the well? 4. Was the approved screen slot size and filter pack used? 5. Was the screen placed at the depth specified in the Work Plan? 6. Did the rig geologist document the stable water level before installing the well? 7. Was the boring bailed dry during drilling to check for recharge? Construction Materials and Techniques 8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785? 9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping containers? 10. Was the shipping container labeled to identify the materials? 11. Was the location of the markings, the brand and the supplier of the well materials recorded? 12. Did the filter pack material conform to the specifications of the Work Plan? 13. Was the location of the markings, the brand and the supplier of the filter pack recorded? 14. Was the filter pack tremied into the well?

13 of 21

15. Was the elevation of the filter pack accurately monitored during installation?

18. Were the brand, supplier, size and location of markings of the bentonite recorded?

pellets and as per manufacturers specifications when using high solids bentonite slurries?

19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite

20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

16. Was the filter pack installed to 2-5 feet above the screen?

17. Was the bentonite seal a minimum of 2 feet thick?

WELL CONSTRUCTION CHECKLIST  Project Name/Location: Former Forbes Atlas Missile Site S-5  Site: 5-5  Monitoring Well Number: MW -05D				
Starting Date: 5-30-15				
Completion Date: 5-70-15				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	/			
22. Was Monitoring Well Construction Diagram completed?			<u></u>	
23. Was Materials Summary Form completed?	\			
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well	/			
installation?				
25. Does the construction diagram accurately depict each and every component and their respective vertical positions?	/			

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

26. Does the construction diagram list the types and quantities of materials used?

5-30-15

### **INSTRUMENT CALIBRATION CHECKLIST**

Project Name/Location: Former Forbes Atias Missile Site S-5 Site: 5-5

Date: 5-29-15

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Instrument Calibration	
Were all field instruments calibrated properly?	
Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	TAT I
Z, Were all field insufficients campiated on the schedule in the Work Holyson F	
3. Did the Field Calibration Forms list all calibration events?	
List instruments used at the Site: Mini Ray PID	
RILI LEL	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 15-29-15

## FIELD DOCUMENTATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5
Site: 5-5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Field Documentation	<del></del>	<del>, —</del>		_
Was all original field data, except boring logs, recorded in black indelible ink?		<u>L_</u>		<u> </u>
2. Were logbooks filled out properly; accurately recounting the day's events?				
3. Were all field forms completed and information accurately recorded:			<b>,</b>	
* DQCR's?	1		<u> </u>	
* Borehole Logs?				<u>.</u>
* Well Construction Diagrams?				
* Well Development Forms?	-   /			
* Sampling Forms?	7/			
Sumpling Control				
* Water Level Forms?	7/			
Hutes Ecret Forms.				
* Chain of Custody Forms?	77			
Chair or custody (striis)				
* Field Log Books?	<b>T</b>			
Tield Log Dooks:				<del></del>
* Project Photograph Log (in Log Book)?	1/	Γ"		T
* Piblect Photograph Log (in Log book):				1
* Daily Air Monitoring Record?	7			
Daily All Pioritioning Accords	i		<u></u>	
Let - Allifornat State Forms completed				
List additional field forms completed:  4. Was field documentation forwarded to office for peer review and QC? (Dack - Loc)	7	Г		Г
4. Was field documentation forwarded to office for peer review and QC? (Dack - Coc)			<u> </u>	<u> </u>
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
70 7				
Date: 5-29-15				

}	DRILLING METHODS CHECKLIST  Project Name/Location: Former Forbes Atlas Missile Site S-5  Site: S - 5  Boring/Monitoring Well Number(s): SB-08 / MW-06 5				
	Sampling Date: 5-29-15 Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u> N/A</u>
	General  1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner, submersible pumps, Pad water tanks)?				
	2. Are there any fluid leaks on drilling rig and associated equipment?				
	3. If so, have oil absorbent pads been used to contain leaks?				
	Was sampling equipment transported or stored away from fuel sources or fuel spill areas?	~			
	5. Was clean equipment wrapped in visqueen?				
	6. Were clean and dirty equipment stored or transported separately?				
	7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with lubricants?				
	Drilling Rig				
	8. Was the type and model of the drilling rig recorded?	1_			<u> </u>
)	9. Was the type of lubricating oil recorded?	/	,		
•	10. Were names and titles of crew recorded?	1			
	11. Were drill stem augers and bit diameters recorded?	1			
	12. Were volumes of drilling fluids lost to fromation accounted for and recorded?	/			
	13. Were rig start, stop, down times, and penetration rates recorded?	1			

14. Was split spoon sampler used on deep MW and test holes?

15. Were all drilling tools and cables inspected daily prior to their use?

DRILLI	NG	MET	HODS	CHECKL	JST

Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5 - 5 Boring/Monitoring Well Number(s): 33~08/ルルーのよく Sampling Date: 5 -29-15 Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A Rotary Wash 16. Was a sample of the proposed drilling water analyzed? 17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site? 18. Was the water circulated in portable tanks? 19. Was bentonite used? 20. Were any additives used besides bentonite? 21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log? 22. Was the bentonite supplier, brand and type recorded? Depth Measurements Precision and Accuracy 23. Was the well installed to the depth defined in the Work Plan? 24. Was the depth of each boring verified by measuring with a fiberglass or steel tape? 25. Was depth to ground water measurements collected with an electronic tape? 26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements? 27. Was the Kelly Bar marked to verify depth during drilling? 28. Was the boring open to the bottom? The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

Date:

5-25-15

Sampling Date: 5-29-15				7,
Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A) f a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u> No</u>	<u>N/O</u>	<u>N/A</u>
Packing, Storing, and Shipment of Samples	<del></del>			
I. Were the samples handled according to the project plans?	1	L		
	<del></del>	т		
2. Was the pH of samples requiring pH adjustment verified in the field?			Ш.Ш	
the state of the s	17		1	
3. Did the samples remain on ice from collection until cooler was taped for shipment?		<u></u>	<u>i</u>	
4. Were COC forms filled out accurately and completely including project name and number, sampling date, sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter, and media sampled?	/			
5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?	77			
Were coc forms signed and dated by the preparer and the form appear of the motion				
6. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?	-			
7. Was a shipping label attached to the cooler?	1		$oldsymbol{ol}}}}}}}}}}}}}}}}}}$	
	<del></del>		,	
3. Was custody documentation intact until receipt by the laboratory?	1-			

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PACKING, STORING, AND SHIPMENT OF SAMPLES CHECKLIST

<b>DECONTAMINATION CH</b>	<b>IECKLIST</b>
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Project Name/Location: Former Forbes Atlas Missile Site S-5 Boring/Monitoring Well Number(s): \$8-08/MW-063

Date: 5-21-15

Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is

checked, provide an explanation on the form.

Yes No N/O N/A

Equipment	<del></del>	
. Was all sampling equipment decontaminated properly prior to use and between sample intervals?		
2. Was each decontamination event recorded in the logbook?		
Was IDW (decontamination water) handled in accordance with the approved work plan?		T "I

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

Date:

5-29-15

### **BOREHOLE AND CORE LOGGING CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5 Boring/Monitoring Well Number: Ww-065/58-08

Starting Date: 5-29-15

Date: 5-29-15

Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Borehole Logging				
Was boring logged by a geologist or geological engineer?				
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?		T		I
3. Was the log scale 1 inch = 1 foot?		1_		
4. Were logs completed in the field (originals)?			<u> </u>	
5. Does log contain the following a routine entries?				
* Unique well number (as per Work Plan)?				1
* Depositional type (alluvium, till, loess, etc.)			<u> </u>	
* Depths/Heights recorded in tenths of feet?				
* Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)		Ί_		
Soils classified as per USCS and fully described with numerical percents of constituents?				
* Soil moisture content and texture or cohesiveness?				
* Soil color described using the Munsell System?				
6. Was general information (top of form MRK-55) completed?	7			
7. Was the log signed by person preparing the log?		I		
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?	<u> </u>		<u> </u>	
9. Were start and completion dates and time included for boring and well installation activities?				
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed in cuttings)?				
11. Were depths at which free water was encountered and stabilized water levels recorded?	<u> </u>			1
12. Were soil sample depths recorded?		<u></u>	<u> </u>	1
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter recorded?	1			
14. Were soil sampling methods and recovery recorded?	$\Box$			Γ

BOREHOLE AND CORE LOGGING CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 3-5				
Boring/Monitoring Well Number: 33-08/ルルークなら				
Starting Date: 5-21-15				
Date: 5-29-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Yes	No	<u>N/O</u>	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?				
		<del></del> ,		
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				/
	T			
17. Were abbreviations used on log defined?				
	<del></del>			
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?				
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of	<del></del> .			
compressed air filter)?	i /		ı	l
20. Were drilling pressures and driller's comments recorded?				
	<u> </u>			$\dashv$
21. Was total depth recorded and marked with a double line?		$\neg$	т Т	
·				$\neg \neg$
22. Was monitoring well diagram completed and attached to log?				$\neg 1$
Core Logging				
In addition to the items above, the following also apply to core-logging:				
23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture,				
olor, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and				
illing materials?				
24. Was start and stan time of each save was recorded?	<del></del>	<del></del>		
24. Was start and stop time of each core run recorded?				

The QC Inspector shall sign this obeckins upon completion of all items on the checklist.

QC Inspector Signature:

Date: 5-29-15

28. Was the depth to the bottom of the hole measured after the core was removed for each core run?

25. Were depths to top and bottom of each core run recorded?

26. Was length of core recovered in each core run recorded?

27. Were the size and type of coring bit and barrel recorded?

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: Aucobs				
Starting Date: 5 - 2 1 - 15				
Completion Date: 5-29-15				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	t			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	No	<u>N/O</u>	N/A
General	т ;	1		
1. Was a geologist or geotechnical engineer present during installation of the monitoring well?		L		
	<del></del>	,	т —	<del></del>
2. Were all depths verified during installation by measurement with a weighted tape?		<u> </u>	l	<u> </u>
Selection and Placement of Screen	T -	ş	Т-	
3. Was the screen length specified in the Work Plan used in construction of the well?	1	<u> </u>	<u> </u>	L
	<del></del>	•	Т	Т
4. Was the approved screen slot size and filter pack used?		<u> </u>	<u> </u>	<u> </u>
The state of the s	T/		T	1
5. Was the screen placed at the depth specified in the Work Plan?		<u> </u>	l	<u> </u>
6. Did the rig geologist document the stable water level before installing the well?	Τ	Г	1 -	<b>_</b>
6. Did the fly geologist document the stable water sever before installing the well.		L		
7. Was the boring balled dry during drilling to check for recharge?	$\top$		T	1
7. Was the boning balled dry during arming to cheek for routing st				
Construction Materials and Techniques		_		
8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785?	1			
O. Thus are non-considered congression				
9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping				
containers?	<u> </u>		<u> </u>	<u> </u>
	<del></del>			
10. Was the shipping container labeled to identify the materials?			l	<u> </u>
	т —	_		
11. Was the location of the markings, the brand and the supplier of the well materials recorded?	1	<u> </u>	<u> </u>	
	<del>                                     </del>		т -	
12. Did the filter pack material conform to the specifications of the Work Plan?		L	Ь	<u> </u>
and the state of t	T /	,	T	
13. Was the location of the markings, the brand and the supplier of the filter pack recorded?	1	<u> </u>	<u> </u>	I
Ad Alf of the City of the the could be the could		г	<del></del>	
14. Was the filter pack tremied into the well?		<u> </u>	I	
15. Was the elevation of the filter pack accurately monitored during installation?	17		T	
1.5. Was the elevation of the filter pack accurately monitored during installation?		1	Щ.	<u> </u>

16. Was the filter pack installed to 2-5 feet above the screen?

18. Were the brand, supplier, size and location of markings of the bentonite recorded?

pellets and as per manufacturers specifications when using high solids bentonite slurries?

19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite

20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

17. Was the bentonite seal a minimum of 2 feet thick?

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Monitoring Well Number: www-043				
Starting Date: 5-29-15				
Completion Date: 5-29-15				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	:			
Actions form.	Yes	<u>No</u>	N/O	N/A
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	_			
22. Was Monitoring Well Construction Diagram completed?				
23. Was Materials Summary Form completed?		<u> </u>		
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well				_
installation?				
25. Does the construction diagram accurately depict each and every component and their respective vertical				
positions?				

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

26. Does the construction diagram list the types and quantities of materials used?

Date:

### SAMPLE COLLECTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Sampling Date: 5-29-15

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.

Yes No N/O N/A

<u>General</u>				
Were new protective gloves worn between sampling locations and/or intervals?				L
	—			<del></del>
2. Were samples collected using methods described in the FSP?		l	ļ	i
3. Were sample containers filled in the correct order?	77	Γ		
of the contained fined in the contact class.		L		<u></u>
4. Was sampling equipment appropriate for the purpose and site conditions?				
5. Was sampling equipment decontaminated or disposable/dedicated equipment used between each sample?				
of the camping equipment accentaminated of dispension equipment accentaments		l		
6. Were procedures for collecting QA/QC samples followed as per the FSP?				T
•				
7. Were sampling locations properly identified by land survey?				<u> </u>
0. When heldles described we have a subscribed and some subscribed and subscribed	<del></del>	<u> </u>		г
Were bottles adequately protected from contamination prior to sample collection?		<u> </u>		1
Ground / Surface Water for Chemical Analysis				<del>-</del>
9. Were ground water parameters stable before sample collection (as per FSP)?				
				•
10. Were turbidity readings below 50 NTU (or if all other field parameters are stable and turbidity can not be				
lowered below 50 NTU, were turbidity readings within + or - 10% over three, five-minute readings)?				Ì
Note: approval must be obtained from the project geologist and project manager prior to sampling in turbid				l
conditions.				
44. Was a field compling form completed?	<del></del>			1
11. Was a field sampling form completed?				1
12. Were the analytical parameters and QA/QC samples recorded on the field sampling form?				1
	1			<b></b>
13. Was low-flow sampling conducted in accordance with the approved SAP?				
	<del></del>			,
14. Was headspace in sample containers for volatiles eliminated?				L
Sediment for Chemical Analysis				
14. Were sample collected according to the FSP?	$\neg$	T		
The Hote Sumple conceded decorating to the Forti-				L
15. Was a field sampling form completed?	$\Box$			
16. Were the analytical parameters and QA/QC samples recorded on the field sampling form?				
47. Mark and a second containing for collection to 12.	<del></del>			
17. Was headspace in sample containers for volatiles eliminated?	—			L
Soil for Chemical Analysis				
18. Were sample collected according to the FSP?	77			
<u>.</u>				
19. Was a field sampling form completed?				
20. Were the analytical parameters and QA/QC samples recorded on the field sampling form?				
24 11-1-1-1-1	<del>,/-</del>		- 1	
21. Was headspace in sample containers for volatiles eliminated?		$oldsymbol{\bot}$		

SAMPLE COLLECTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Monitoring Well Number: メルレクの多く

Sampling Date: 5-29-15

Complete for each monitoring well sampling location inspected. Answer each question by checking the

appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.

Yes No N/O N/A

**Corrective Actions:** 

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

Date:

5-29-15

INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Date: 5-28-15

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u> <u>1</u>	<u>4/A</u>
Instrument Calibration		<del></del>		
1. Were all field instruments calibrated properly?		╙		
		—,		
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?				
3. Did the Field Calibration Forms list all calibration events?				
List instruments used at the Site: Nin; Roc 2000 PED				
RKI LCL 4 Gas				

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Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Field Documentation	<del></del>	_	<del></del>	
1. Was all original field data, except boring logs, recorded in black indelible ink?		<u></u>		<u> </u>
		<del></del>	<del></del>	г
2. Were logbooks filled out properly; accurately recounting the day's events?		上		
3. Were all field forms completed and information accurately recorded:	<del></del>	л-		T
* DQCR's?	1	丄		
		_		·
* Borehole Logs?				
		_		<del></del>
* Well Construction Diagrams?	1/			
		_		т—
* Well Development Forms?		<u></u>		/
* Sampling Forms?	1	上		
	<u> </u>			·
* Water Level Forms?	1000	<u>L</u>	<u> </u>	
	<del> ,</del>			
* Chain of Custody Forms?		<u>L</u>		<u> </u>
* Field Log Books?				
* Project Photograph Log (in Log Book)?		丄		
* Daily Air Monitoring Record?	/	L		<u>L</u>
List additional field forms completed:				
4. Was field documentation forwarded to office for peer review and QC? (Dack & Loc)				
The QC inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature: /W///////////////////////////////////				
QC Inspector Signature: JMM 78				
Date: 5-28-15				

1 of 21

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Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: S - S

Boring/Monitoring Well Number(s): ぬぃ-oヿs / s 3-o 4

Sampling Date: 5 - 28-15

Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

<u>General</u>			
. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner, ubmersible pumps, Pad water tanks)?			
		1 1	
Are there any fluid leaks on drilling rig and associated equipment?			
3. If so, have oil absorbent pads been used to contain leaks?			~
. Was sampling equipment transported or stored away from fuel sources or fuel spill areas?	/		
. Was clean equipment wrapped in visqueen?			
. Were clean and dirty equipment stored or transported separately?			
. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with ubricants?		/	
Prilling Rig			
. Was the type and model of the drilling rig recorded?			
. Was the type of lubricating oil recorded?			
0. Were names and titles of crew recorded?	/		
Were drill stem augers and bit diameters recorded?	/		
2. Were volumes of drilling fluids lost to fromation accounted for and recorded?	1		
3. Were rig start, stop, down times, and penetration rates recorded?			
4. Was split spoon sampler used on deep MW and test holes?			17
5. Were all drilling tools and cables inspected daily prior to their use?			

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5 Boring/Monitoring Well Number(s): ルルーゥフェータリー				
Sampling Date: ( ? 2 8 - 1)				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
Corrective Actions form.	<u>Yes</u>	No	N/O	N/A
Rotary Wash	-		-	
16. Was a sample of the proposed drilling water analyzed?				
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?				
18. Was the water circulated in portable tanks?	/	<u>L</u>		<u> </u>
	,	<del>,</del>		
19. Was bentonite used?				
		<del></del>	····	<del>,</del>
20. Were any additives used besides bentonite?	<u> </u>			<u></u>
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log?	/			-53
22. Was the bentonite supplier, brand and type recorded?				
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?				
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?		, ,		
25. Was depth to ground water measurements collected with an electronic tape?	2		· 	~
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?	/			

The QC Inspector shall sign this thesklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 5-28-15

28. Was the boring open to the bottom?

27. Was the Kelly Bar marked to verify depth during drilling?

DAGUNG STORING	AND CHIDMENT OF	SAMPLES CHECKLIST
PACKING STORING	i. AND SHIPMENT OF R	SAMPLES CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Boring/Monitoring Well Number(s): 58-04

Surface Soll/Sediment/Surface Water Sample Number(s): 58-04-0-1, 53-04-7-8, 35-04-13-14, 55-04-16-17,

Sampling Date:

513-04-19-20,58-04-20-21

Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A

Packing, Storing, and Shipment of Samples	<del></del>	<del></del> _
Were the samples handled according to the project plans?		
W. H. C. and a subject of the field?	171	$\overline{1}$
2. Was the pH of samples requiring pH adjustment verified in the field?	<u> </u>	
3. Did the samples remain on ice from collection until cooler was taped for shipment?	/	
4. Were COC forms filled out accurately and completely including project name and number, sampling date, sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter, and media sampled?		
5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?	V	
5. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?	V	
7. Was a shipping label attached to the cooler?	7	
8. Was custody documentation intact until receipt by the laboratory?	7/	$T^{T}$

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-28-15

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Project Name/Location: Former Forbes Atlas Missile Site S-5 Boring/Monitoring Well Number(s): ぬいつつらく S ホーロリ

Date: 5-28-15

Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.

Yes No N/O N/A

1 1 1	

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-28-15

#### BOREHOLE AND CORE LOGGING CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

Boring/Monitoring Well Number: ww-075 / 58-04

Starting Date: 5-28-15

Date: 5-28-15

Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

1. Was boring logged by a geologist or geologist engineer? 2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2? 3. Was the log scale 1 inch = 1 foot? 4. Were logs completed in the field (originals)? 5. Does log contain the following a routine entries? 4. Unique well number (as per Work Plan)? 5. Does log contain the following a routine entries?  * Unique well number (as per Work Plan)?  * Depositional type (altuvium, till, loess, etc.)  * Depths/Heights recorded in tentits of feet?  * Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)  * Soils classified as per USCS and fully described with numerical percents of constituents?  * Soil moisture content and texture or cohesiveness?  * Soil color described using the Mursell System?  6. Was general information (top of form MRK-55) completed?  7. Was the log signed by person preparing the log?  8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?  9. Were start and completion dates and time included for boring and well installation activities?  10. Were boundaries between soils noted (soild line at appropriate depth or dashed line if transitional or if observed in cuttings)?  11. Were depths at which free water was encountered and stabilized water levels recorded?  12. Were soil sampling methods and recovery recorded?  13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter recorded?	Borehole Logging			
3. Was the log scale 1 inch = 1 foot?  4. Were logs completed in the field (originals)?  5. Does log contain the following a routine entries?  * Unique well number (as per Work Plan)?  * Depositional type (alluvium, till, Ioess, etc.)  * Depths/Heights recorded in tenths of feet?  * Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)  * Soils classified as per USCS and fully described with numerical percents of constituents?  * Soil moisture content and texture or cohestveness?  * Soil color described using the Munsell System?  6. Was general information (top of form MRK-55) completed?  7. Was the log signed by person preparing the log?  8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?  9. Were start and completion dates and time included for boring and well instalilation activities?  10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed in cuttings)?  11. Were depths at which free water was encountered and stabilized water levels recorded?  12. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter recorded?	1. Was boring logged by a geologist or geological engineer?	/		<u> </u>
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4. Were logs completed in the field (originals)?  5. Does log contain the following a routine entries?  * Unique well number (as per Work Plan)?  * Depositional type (alluvium, till, loess, etc.)  * Dephs/Heights recorded in tenths of feet?  * Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)  * Soils classified as per USCS and fully described with numerical percents of constituents?  * Soil moisture content and texture or cohesiveness?  * Soil color described using the Munsell System?  6. Was general information (top of form MRK-55) completed?  7. Was the log signed by person preparing the log?  8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?  9. Were start and completion dates and time included for boring and well installation activities?  10. Were boundaries between soils noted (soilid line at appropriate depth or dashed line if transitional or if observed in cuttings)?  11. Were depths at which free water was encountered and stabilized water levels recorded?  12. Were soil sample depths recorded?  13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter recorded?				
S. Does log contain the following a routine entries?  * Unique well number (as per Work Plan)?  * Depositional type (alluvium, till, loess, etc.)  * Depositional type (alluvium, till, loess, etc.)  * Depositional type (alluvium, till, loess, etc.)  * Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)  * Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)  * Soils classified as per USCS and fully described with numerical percents of constituents?  * Soil moisture content and texture or cohesiveness?  * Soil color described using the Munsell System?  6. Was general information (top of form MRK-55) completed?  7. Was the log signed by person preparing the log?  8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?  9. Were start and completion dates and time included for boring and well installation activities?  10. Were boundaries between soils noted (soild line at appropriate depth or dashed line if transitional or if observed in cuttings)?  11. Were depths at which free water was encountered and stabilized water levels recorded?  12. Were soil sample depths recorded?  13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter recorded?	3. Was the log scale 1 inch = 1 foot?	~		
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14. Were soil sampling methods and recovery recorded?	ICCVIUCUI			
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	1.4. Were son sampling methods and recovery recorded:			

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5~5				
Boring/Monitoring Well Number: ルル・075 ( 5 で - 0 4				
Starting Date: 5-18-15				
Date: 5-28-15				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?				
		_		_
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				
		_		
17. Were abbreviations used on log defined?				
	<del>-</del>			
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?				
-days to the control of the control		<u> </u>	<del></del>	
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of compressed air filter)?	/			
compressed an interir	لــــــــــــــــــــــــــــــــــــــ	ш	لللا	<u> </u>
20. Were drilling pressures and driller's comments recorded?	т—			r—
20. Were driving pressures and driver's confidents recorded:	لئلا	Щ.		<u> </u>
21. Was total depth recorded and marked with a double line?				
21. Was total depart recorded and marked mar a double mile:	نـــا			<u> </u>
22. Was monitoring well diagram completed and attached to log?	$\Gamma Z^{\prime}$	$\overline{\Box}$		
22. Was mornioring wen diagram completed and accuracy to log.	ــــــــــــــــــــــــــــــــــــــ	ш		
Core Logging	—	—	<del></del>	
In addition to the items above, the following also apply to core-logging:				
\23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture,		$\Box$		
color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and	1/1		1	l
filling materials?		$\Box$	لــــا	
24. Was start and stop time of each core run recorded?				
	<del></del> -	<del></del>		
25. Were depths to top and bottom of each core run recorded?	لــــــــــــــــــــــــــــــــــــــ			
26. Was length of core recovered in each core run recorded?				
	<del></del>		— т	
27. Were the size and type of coring bit and barrel recorded?		Ш		
20 W. H. J. H. L. H. L. H. W. Sille h. L. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h. W. Sille h.	<del>/-</del> 1			:
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?	لــــــــا			

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 5-28-15

**BOREHOLE AND CORE LOGGING CHECKLIST** 

# WELL CONSTRUCTION CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5 Monitoring Well Number: ~~~075 Starting Date: 5-28-15 Completion Date: 5-29-5 Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Yes No N/O N/A Actions form. General 1. Was a geologist or geotechnical engineer present during installation of the monitoring well? 2. Were all depths verified during installation by measurement with a weighted tape? Selection and Placement of Screen 3. Was the screen length specified in the Work Plan used in construction of the well? 4. Was the approved screen slot size and filter pack used? 5. Was the screen placed at the depth specified in the Work Plan? 6. Did the rig geologist document the stable water level before installing the well? 7. Was the boring bailed dry during drilling to check for recharge? Construction Materials and Techniques 8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785? 9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping containers? 10. Was the shipping container labeled to identify the materials? 11. Was the location of the markings, the brand and the supplier of the well materials recorded? 12. Did the filter pack material conform to the specifications of the Work Plan? 13. Was the location of the markings, the brand and the supplier of the filter pack recorded? 14. Was the filter pack tremied into the well? 15. Was the elevation of the filter pack accurately monitored during installation? 16. Was the filter pack installed to 2-5 feet above the screen? 17. Was the bentonite seal a minimum of 2 feet thick?

18. Were the brand, supplier, size and location of markings of the bentonite recorded?

pellets and as per manufacturers specifications when using high solids bentonite slurries?

19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite

20. Was the remainder of the annular space tremie grouted with a 2% to 5% bentonite/cement grout?

### WELL CONSTRUCTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Monitoring Well Number: , , , , , o → 5

Starting Date: 5 - 28 - 15Completion Date: 5 - 28 - 15

Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective

Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	\   			
22. Was Monitoring Well Construction Diagram completed?				
23. Was Materials Summary Form completed?				~
Monitoring Well Construction Diagrams  24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well installation?				
25. Does the construction diagram accurately depict each and every component and their respective vertical positions?	/			
26. Does the construction diagram list the types and quantities of materials used?				

The QC inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: -

5-28-15

# SAMPLE COLLECTION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5
Monitoring Well Number: 500 Mw-075

Sampling Date: 5-28-15

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the

Yes No N/O N/A

General		,	 
Were new protective gloves worn between sampling locations and/or intervals?			
2. Were samples collected using methods described in the FSP?	17	Γ.	 1
2. Were samples collected using methods described in the FSF1			 J
3. Were sample containers filled in the correct order?	7		
4. Was sampling equipment appropriate for the purpose and site conditions?	/		
	<u> </u>	<del></del>	T
5. Was sampling equipment decontaminated or disposable/dedicated equipment used between each sample?	/		
6. Were procedures for collecting QA/QC samples followed as per the FSP?		<u> </u>	
		1	 <del>,                                     </del>
7. Were sampling locations properly identified by land survey?			
Were bottles adequately protected from contamination prior to sample collection?	7		
6. Well's bottless decidately protected from contamination prior to bumple consistent	<u> </u>		 
Ground / Surface Water for Chemical Analysis	. "		
9. Were ground water parameters stable before sample collection (as per FSP)?			1
		1	
10. Were turbidity readings below 50 NTU (or if all other field parameters are stable and turbidity can not be			/
lowered below 50 NTU, were turbidity readings within + or - 10% over three, five-minute readings)?			
Note: approval must be obtained from the project geologist and project manager prior to sampling in turbid			
conditions.			
11. Was a field sampling form completed?			
	<u> </u>		
12. Were the analytical parameters and QA/QC samples recorded on the field sampling form?	<u> </u>		 
13. Was low-flow sampling conducted in accordance with the approved SAP?			 L
14. Was headspace in sample containers for volatiles eliminated?			
14. Was fleadspace in sample containers for volumes circumstates.	<u></u>	L	
Sediment for Chemical Analysis			 
14. Were sample collected according to the FSP?			
15. Was a field sampling form completed?			
16. Were the analytical parameters and QA/QC samples recorded on the field sampling form?			
16. Were the allalytical parameters and QAYQC samples recorded on the new sampling form:			 
17. Was headspace in sample containers for volatiles eliminated?			
Soil for Chemical Analysis			
18. Were sample collected according to the FSP?			 igsquare
40 Mb - Gold country form consoleted?	1 :	ı	 -
19. Was a field sampling form completed?			L
20. Were the analytical parameters and QA/QC samples recorded on the field sampling form?	~		 
21. Was headspace in sample containers for volatiles eliminated?	1		
17 of 21			

SAMPLE COLLECTION CHECKLIST

Project Name/Location: Former Forbes Atias Missile Site S-5

Monitoring Well Number: pw-0.75Sampling Date: y-28-15

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the

Yes No N/O N/A

**Corrective Actions:** 

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

### INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5 Date: 5 - 23 - 15 Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A Instrument Calibration

HOG CHIEF TO THE COLUMN TO THE	
1. Were all field instruments calibrated properly?	
	. <u></u>
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	
2. Were all field instruments calibrated off the schedule in the Work Plany 35th ?	
3. Did the Field Calibration Forms list all calibration events?	
List instruments used at the Site: Mini Place 2000 PID	
RKI LEL	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date: 5-27-15

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Field Documentation	77	Т	$\overline{}$	Γ -
1. Was all original field data, except boring logs, recorded in black indelible ink?		L		
Were logbooks filled out properly; accurately recounting the day's events?	77	Γ	Ι	
2. Were logbooks filled out properly, according the day 5 divines.			J	
3. Were all field forms completed and information accurately recorded:				
* DQCR's?	77			
- Squite:		•	<u></u>	
* Borehole Logs?		Ī		
* Well Construction Diagrams?	<del>                                      </del>			
* Well Development Forms?				_
	$\overline{}$	<del></del>		
* Sampling Forms?		<u> </u>	<u> </u>	L
* Water Level Forms?	TV	Γ		
Hadd 2010 Forms				
* Chain of Custody Forms?	1	Ĺ		/
* Field Log Books?	1_	<u> </u>		<u></u>
* Project Photograph Log (in Log Book)?		<u> </u>	<u> </u>	
* Daily Air Monltoring Record?	77	T		Γ
Dully Air Montoring Record.				
List additional field forms completed:				
4. Was field documentation forwarded to office for peer review and QC?	<u> </u>			
				-
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
QC Inspector Signature:  Date: 5 - 2 7 - 15				

1 of 21

DRILLING METHODS CHECKLIST
Project Name/Location: Former Forbes Atlas Missile Site S-5
Site: <b>5-S</b>
Boring/Monitoring Well Number(s): ルルーのとら

MW-025

Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A **General** 1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner, submersible pumps, Pad water tanks)? 2. Are there any fluid leaks on drilling rig and associated equipment? 3. If so, have oil absorbent pads been used to contain leaks? 4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas? 5. Was clean equipment wrapped in visqueen? 6. Were clean and dirty equipment stored or transported separately? 7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with lubricants? **Drilling Rig** 8. Was the type and model of the drilling rig recorded? 9. Was the type of lubricating oil recorded? 10. Were names and titles of crew recorded? 11. Were drill stem augers and bit diameters recorded? 12. Were volumes of drilling fluids lost to fromation accounted for and recorded? 13. Were rig start, stop, down times, and penetration rates recorded? 14. Was split spoon sampler used on deep MW and test holes? 15. Were all drilling tools and cables inspected daily prior to their use?

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: S - S  Boring/Monitoring Well Number(s): MW-023				
Sampling Date: 人(A Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
Commoditive Building Source	Yes	No	N/O	N/A
Rotary Wash		_		
16. Was a sample of the proposed drilling water analyzed?	~			
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?				<u> </u>
10. Weekba weke single bad is not block to 1.2				
18. Was the water circulated in portable tanks?	<u> </u>			
19. Was bentonite used?	7	7		-
20. Were any additives used besides bentonite?				
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log?				_
22. Was the bentonite supplier, brand and type recorded?		[		
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?	7	1		
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?				
25. Was depth to ground water measurements collected with an electronic tape?	7			

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?

QC Inspector Signature:

Date:

5-27.5

28. Was the boring open to the bottom?

27. Was the Kelly Bar marked to verify depth during drilling?

**DECONTAMINATION CHECKLIST** 

Project Name/Location: Former Forbes Atlas Missile Site S-5

Boring/Monitoring Well Number(s): ぬいっこぎ

Date: 5-27-15

Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is

checked, provide an explanation on the form.

Yes No N/O N/A

Was all sampling equipment decontaminated properly prior to use and between sample intervals?	
	<u>_</u> _
2. Was each decontamination event recorded in the logbook?	 
3. Was IDW (decontamination water) handled in accordance with the approved work plan?	

Corrective Actions: ムイ

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

5-27-15

May 2016

QC Checklists

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site:	<u> </u>	~
JILE.	<i>-</i> ر	•

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes No</u>	<u>N/O</u> <u>N/A</u>
Field Documentation	<del>- 1- /1- 1</del>	
Was all original field data, except boring logs, recorded in black indelible ink?		
	<del></del>	
Were logbooks filled out properly; accurately recounting the day's events?		
3. Were all field forms completed and information accurately recorded:		
* DQCR's?	/	
* Borehole Logs?		
	<del></del>	
* Well Construction Diagrams?		l
* Well Development Forms?	<u> </u>	
* Sampling Forms?		
* Water Level Forms?		
* Chain of Custody Forms?		
* Field Log Books?		
* Project Photograph Log (in Log Book)?	1	
* Daily Air Monitoring Record?		
List additional field forms completed:		
Was field documentation forwarded to office for peer review and QC?		
THE TOTAL CONTROL OF THE TOTAL		
The QC Inspector shall sign this checklist upon completion of all items on the checklist.		
QC Inspector Signature		
Date: $-2\sqrt{-1/2}$		

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5				
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is	•			
checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Field Documentation	$\overline{}$	<del></del>		
1. Was all original field data, except boring logs, recorded in black indelible ink?				└
	<del>- 7</del>	—т		
2. Were logbooks filled out properly; accurately recounting the day's events?	121			Щ
3. Were all field forms completed and information accurately recorded:	77	$\neg$		
* DQCR's?	لئل			
	十ブ			
* Borehole Logs?				
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* Well Construction Diagrams?				
* Well Development Forms?	.			
Well Development Comis:				
* Sampling Forms?				
Sumpling Forms.				
* Water Level Forms?				
* Chain of Custody Forms?				
* Field Log Books?				l
* Project Photograph Log (in Log Book)?			L	
		<del></del>		
* Daily Air Monitoring Record?			<u> </u>	<u> </u>
List additional field forms completed:		r—		ī
4. Was field documentation forwarded to office for peer review and QC?			<u> </u>	<u> </u>
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				

QC Inspector Signature:

Date:

5-25-16

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: Y-1
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Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Field Documentation	<del>/</del>	· ·		
Was all original field data, except boring logs, recorded in black indelible ink?	بنا	Ш		
	<del>-/</del>			—
2. Were logbooks filled out properly; accurately recounting the day's events?		Ш		
3. Were all field forms completed and information accurately recorded:		1		
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* Borehole Logs?	1/	<u> </u>		
		<u>,                                     </u>		
* Well Construction Diagrams?	1/			
* Well Development Forms?				
* Sampling Forms?	丁了			
Sampling Forms:				
* Water Level Forms?	77			
Water Level Forms:				
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* Chain of Custody Forms?				
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* Field Log Books?	<u> </u>		·	
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* Project Photograph Log (in Log Book)?			L	
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* Daily Air Monitoring Record?		<u> </u>	<u> </u>	
List additional field forms completed:	<del>-/</del>	_		
4. Was field documentation forwarded to office for peer review and QC?				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature://////				
I MINUSTY				
Date:				
5-26-14				

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site:	_	_
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Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is Yes No N/O N/A checked, provide an explanation on the Noncompliance and Corrective Actions form. Field Documentation 1. Was all original field data, except boring logs, recorded in black indelible ink? 2. Were logbooks filled out properly; accurately recounting the day's events? 3. Were all field forms completed and information accurately recorded: \* DQCR's? \* Borehole Logs? \* Well Construction Diagrams? \* Well Development Forms? \* Sampling Forms? \* Water Level Forms? \* Chain of Custody Forms? \* Field Log Books? \* Project Photograph Log (in Log Book)? \* Daily Air Monitoring Record? List additional field forms completed: 4. Was field documentation forwarded to office for peer review and QC?

The QC Inspector shall sign this electrist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

6-1-14

6-2-14

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site:	5-	5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A **Field Documentation** 1. Was all original field data, except boring logs, recorded in black indelible ink? 2. Were logbooks filled out properly; accurately recounting the day's events? 3. Were all field forms completed and information accurately recorded: \* DQCR's? \* Borehole Logs? \* Well Construction Diagrams? \* Well Development Forms? \* Sampling Forms? \* Water Level Forms? \* Chain of Custody Forms? \* Field Log Books? \* Project Photograph Log (in Log Book)? \* Daily Air Monitoring Record? List additional field forms completed: 4. Was field documentation forwarded to office for peer review and QC? The QC Inspector shall sign this one of the checklist upon completion of all items on the checklist. QC Inspector Signature: Date:

Project Name/Location: Former Forbes Atlas Missile Site S-5

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Site:	<b>-</b>	٠.

Date:

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Field Documentation				
Was all original field data, except boring logs, recorded in black indelible ink?	V	<u>1</u>	<u> </u>	<u> </u>
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2. Were logbooks filled out properly; accurately recounting the day's events?		<u>L</u>	<u></u>	Щ
3. Were all field forms completed and information accurately recorded:	7	<del>1</del>	Τ-	
* DQCR's?			<u></u>	L
* Borehole Logs?	7			
* Well Construction Diagrams?	丁 フ	1	1	Γ
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* Well Development Forms?		$oxed{oxed}$		
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* Sampling Forms?		<u> </u>	<u> </u>	<u> </u>
* Water Level Forms?	77	Т	Τ	
Trace Estat Sillo		<u>.</u>		<u> </u>
* Chain of Custody Forms?	IZ			•
		<del>,</del>		т—
* Field Log Books?			<u> </u>	<u></u>
* Project Photograph Log (in Log Book)?	7-	1		
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* Daily Air Monitoring Record?		1_		<u> </u>
List additional field forms completed:				
4. Was field documentation forwarded to office for peer review and QC?	フィ	$\prod$		T
The QC Inspector shall sign this checklist upon completion of all items on the checklist.  QC Inspector Signature:				

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214		^	_	-							

Site: 5-5	
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No	is
checked, provide an explanation on the Noncompliance and Corrective Actions form.	

Field Documentation	
1. Was all original field data, except boring logs, recorded in black indelible ink?	
Were logbooks filled out properly; accurately recounting the day's events?	
3. Were all field forms completed and information accurately recorded:	
* DQCR's?	
* Borehole Logs?	
* Well Construction Diagrams?	
* Well Development Forms?	
* Sampling Forms?	
* Water Level Forms?	
* Chain of Custody Forms?	
* Field Log Books?	
* Project Photograph Log (in Log Book)?	
* Daily Air Monitoring Record?	
List additional field forms completed:	
4. Was field documentation forwarded to office for peer review and QC?	

Yes No N/O N/A

QC Inspector Signature:

4-4-16

Date:

Project Name/Location:	Former Forbes At	las Missile Site S-5
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Site: 5 - 5

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Field Documentation	<del></del>	ŕ		
Was all original field data, except boring logs, recorded in black indelible ink?		L	L	L
	<del></del>	_	_	_
2. Were logbooks filled out properly; accurately recounting the day's events?		L		L
3. Were all field forms completed and information accurately recorded:	77	$\overline{}$	ı –	
* DQCR's?		<u> </u>	L—	Щ-
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* Borehole Logs?				
	<del></del>	r		
* Well Construction Diagrams?		<u> </u>		ـــــــــــــــــــــــــــــــــــــــ
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* Well Development Forms?		L	l	<u> </u>
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* Sampling Forms?	—			
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* Water Level Forms?		<u> </u>	<u> </u>	<u></u>
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* Chain of Custody Forms?	Ш		L	
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* Field Log Books?		L		<u> </u>
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* Project Photograph Log (in Log Book)?			L	Ь
	<del></del>	ł		
* Daily Air Monitoring Record?			L	Щ.
List additional field forms completed:		$\overline{}$		Т
4. Was field documentation forwarded to office for peer review and QC?		<u> </u>	L	<u>.                                    </u>
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
Mand 25				
Date: 4-5-14				

#### **INSTRUMENT CALIBRATION CHECKLIST**

5-24-15

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5 Date: 5-24-16 Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A **Instrument Calibration** 1. Were all field instruments calibrated properly? 2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP? 3. Did the Field Calibration Forms list all calibration events? List instruments used at the Site: PID & LEL The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signaturez/

### INSTRUMENT CALIBRATION CHECKLIST

Project Name/Location: Former Forces Atlas Wilssite Site 5-5				
Site: 5-5				
Date: 5-25-/L				
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Instrument Calibration				
1. Were all field instruments calibrated properly?				
		_		
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	7 7			
3. Did the Field Calibration Forms list all calibration events?				
List instruments used at the Site: PTO & LEC				
1.00				
The QC Inspector shall sign this specklist upon completion of all items on the checklist.				
QC Inspector Signature:				
5-25-14				

INSTRUMENT	<b>CALIBRATION</b>	CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site:				
Date: 5-26-16				
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is				
checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Instrument Calibration				
Were all field instruments calibrated properly?		<u>t</u>		
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	7-	7		
3. Did the Field Calibration Forms list all calibration events?	7-			
List instruments used at the Site: PID & LEL				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:///////				
Date:				
5-11,-11.				
J ~ (V				

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Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: S-5				
Date: 6-1-14				
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is				
checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Instrument Calibration				
Were all field instruments calibrated properly?	<u> </u>			
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?				
3. Did the Field Calibration Forms list all calibration events?				
List instruments used at the Site: PEO, LLL, pH, Cand, Turb				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
Date:				

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ロンコスクロミアロ	CALIBRATION	CHECKFIOL

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: S-5				
Date: 4-2-14				
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.  Instrument Calibration	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Were all field instruments calibrated properly?				
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?		1		
3. Did the Field Calibration Forms list all calibration events?	<u> </u>	Z	<u> </u>	
List instruments used at the Site: VID UL, pH, land, Turb				
The QC Inspector shall sign this theoklist upon completion of all items on the checklist.  QC Inspector Signature:  Date:				

### **INSTRUMENT CALIBRATION CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5  Date: 4-3-16			
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	No N/O	<u>N/A</u>
Instrument Calibration  1. Were all field instruments calibrated properly?		<del>- T - </del>	T
1. Were all field institutions calibrated property:			Ц
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?	1 4	7	
3. Did the Field Calibration Forms list all calibration events?	13		
List instruments used at the Site: PED, LEL, pH, Cond, Tu-b			
The QC Inspector shall side this checklist upon completion of all items on the checklist.  QC Inspector Signature:  Date:  (-3-/4)			

### **INSTRUMENT CALIBRATION CHECKLIST**

1. Were all field instruments calibrated properly?  2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?  3. Did the Field Calibration Forms list all calibration events?
Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.  Yes No N/O N/A Instrument Calibration  1. Were all field instruments calibrated properly?  2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?
checked, provide an explanation on the Noncompliance and Corrective Actions form.  Instrument Calibration  1. Were all field instruments calibrated properly?  2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?  3. Did the Field Calibration Forms list all calibration events?
1. Were all field instruments calibrated properly?  2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?  3. Did the Field Calibration Forms list all calibration events?
2. Were all field instruments calibrated properly?  2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?  3. Did the Field Calibration Forms list all calibration events?
2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?  3. Did the Field Calibration Forms list all calibration events?
3. Did the Field Calibration Forms list all calibration events?
3. Did the Field Calibration Forms list all calibration events?
List instruments used at the City.
List instruments used at the Site:
The QC Inspector shall sign this/checklist upon completion of all items on the checklist.
QC Inspector Signature:
Date:
4-4-14

#### **INSTRUMENT CALIBRATION CHECKLIST**

Date:

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: \$-5"
Date: \$\( \lambda - 5 - \) / C

Complete daily. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Instrument Calibration

1. Were all field instruments calibrated properly?

2. Were all field instruments calibrated on the schedule in the Work Plan/SSHP?

3. Did the Field Calibration Forms list all calibration events?

List instruments used at the Site:

The QC Inspector shall sign this sheeklist open-completion of all items on the checklist.

QC Inspector Signature:

# **DRILLING METHODS CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

5-5 

Sampling Date: 5-24-16

Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,

no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A 1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner, submersible pumps, Pad water tanks)? 2. Are there any fluid leaks on drilling rig and associated equipment? 3. If so, have oil absorbent pads been used to contain leaks? 4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas? 5. Was clean equipment wrapped in visqueen? 6. Were clean and dirty equipment stored or transported separately? 7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with <u>Drilling Rig</u> 8. Was the type and model of the drilling rig recorded? 9. Was the type of lubricating oil recorded? 10. Were names and titles of crew recorded? 11. Were drill stem augers and bit diameters recorded? 12. Were volumes of drilling fluids lost to fromation accounted for and recorded? 13. Were rig start, stop, down times, and penetration rates recorded? 14. Was split spoon sampler used on deep MW and test holes? 15. Were all drilling tools and cables inspected daily prior to their use?

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Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5 Boring/Monitoring Well Number(s): www-10 S Sampling Date: 5-24-16 Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A Rotary Wash 16. Was a sample of the proposed drilling water analyzed? 17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site? 18. Was the water circulated in portable tanks? 19. Was bentonite used? 20. Were any additives used besides bentonite? 21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log? 22. Was the bentonite supplier, brand and type recorded? **Depth Measurements Precision and Accuracy** 23. Was the well installed to the depth defined in the Work Plan? 24. Was the depth of each boring verified by measuring with a fiberglass or steel tape? 25. Was depth to ground water measurements collected with an electronic tape? 26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements? 27. Was the Kelly Bar marked to verify depth during drilling? 28. Was the boring open to the bottom? The QC Inspector shall san the checklist upon completion of all items on the checklist. QC Inspector Signature

Date:

10 of 21

	DRILLING METHODS CHECKLIST				
	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: 5-5				
	Boring/Monitoring Well Number(s): ルルーパ S				
	Sampling Date: 5-75-1C				
	Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
	no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and	Voc	810	N/O	NI/A
	Corrective Actions form.	<u>165</u>	140	N/O	WA
	General  1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner,	Т		1	Γ
	submersible pumps, Pad water tanks)?	-	1		
i					
	2. Are there any fluid leaks on drilling rig and associated equipment?	T	<u> </u>	P	
	,				
	3. If so, have oil absorbent pads been used to contain leaks?	T			٦
	4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas?	T			
	5. Was clean equipment wrapped in visqueen?	<u> </u>	1_		
	6. Were clean and dirty equipment stored or transported separately?	1			
	7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with		1-	1	
	lubricants?		<u> </u>		
			_		
	<u>Drilling Rig</u>		<del>7</del>	_	r
1	8. Was the type and model of the drilling rig recorded?		<del></del>		
		T.	$\overline{}$	Т	
	9. Was the type of lubricating oil recorded?				
	1000	T /	Т	T	Γ
	10. Were names and titles of crew recorded?		Щ.	نــــــــــــــــــــــــــــــــــــــ	
1	44 101 1 111 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7	Ĺ	T	
1	11. Were drill stem augers and bit diameters recorded?	ــــــــــــــــــــــــــــــــــــــ	<u> —</u>	<u></u>	<u> </u>
	42 Minus In the State of the Second S	T/	Í	Т	Γ—
1	12. Were volumes of drilling fluids lost to fromation accounted for and recorded?	ــــــــــــــــــــــــــــــــــــــ		<u> </u>	L
	do III	T –	1	T	Γ
	13. Were rig start, stop, down times, and penetration rates recorded?		Ь		
	14. Was split speep sampler used on deep MW and test holes?	T	Т	T	

15. Were all drilling tools and cables inspected daily prior to their use?

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: $S-5$				
National Section (Specifical Number Specifical Number				
Sampling Date: 5-25-16				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.				
	<u>Yes</u>	No	<u>N/O</u>	N/A
Rotary Wash  16. Was a sample of the proposed drilling water analyzed?	<del></del>	_	T	T
10. Was a sample of the proposed draining water analyzed?		<u> </u>	<u> </u>	10
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?	7	Т		
18. Was the water circulated in portable tanks?	~			
19. Was bentonite used?				<u> </u>
		<u>.</u>		
20. Were any additives used besides bentonite?		_		L,
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the				
boring log?		ţ		
jesting logi	L	<u> </u>		l
22. Was the bentonite supplier, brand and type recorded?		Í		
- The state of the		_		
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?				
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?				
25. Was depth to ground water measurements collected with an electronic tape?				
	<u></u>			
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?				
		,		
27. Was the Kelly Bar marked to verify depth during drilling?	一个			
28. Was the boring open to the bottom?				

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-25-14

### DRILLING METHODS CHECKLIST

15. Were all drilling tools and cables inspected daily prior to their use?

Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5 Boring/Monitoring Well Number(s):  $\mu w^{-1}ZS$ Sampling Date: 5-24-14 Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A 1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner, submersible pumps, Pad water tanks)? 2. Are there any fluid leaks on drilling rig and associated equipment? 3. If so, have oil absorbent pads been used to contain leaks? 4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas? 5. Was clean equipment wrapped in visqueen? 6. Were clean and dirty equipment stored or transported separately? 7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with lubricants? **Drilling Rig** 8. Was the type and model of the drilling rig recorded? 9. Was the type of lubricating oil recorded? 10. Were names and titles of crew recorded? 11. Were drill stem augers and bit diameters recorded? 12. Were volumes of drilling fluids lost to fromation accounted for and recorded? 13. Were rig start, stop, down times, and penetration rates recorded? 14. Was split spoon sampler used on deep MW and test holes?

DRILLING METHODS CHECKLIST  Project Name/Location: Former Forbes Atlas Missile Site S-5  Site: S-5				
Boring/Monitoring Well Number(s): $\mu\omega^{-/23}$				
Sampling Date: 5-26-76 Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Yes	No	N/O	N/A
Rotary Wash	1 6465	110	14.5	1477
16. Was a sample of the proposed drilling water analyzed?	T	П		-
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?				
18. Was the water circulated in portable tanks?				
	<del></del>			
19. Was bentonite used?			ĹJ	
20. Were any additives used besides bentonite?	1		-	
20. Were any additives used besides bentonite:	Ш	لــــا		
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log?				
	<del>. /</del>	<del>,                                    </del>		
22. Was the bentonite supplier, brand and type recorded?	لئا			
Ponth Massuramenta Prosision and Assurance				
Depth Measurements Precision and Accuracy  23. Was the well installed to the depth defined in the Work Plan?				
23. Was the Well installed to the depart defined in the Work Franc	ــــــــــــــــــــــــــــــــــــــ			
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?				
	<u></u>			
25. Was depth to ground water measurements collected with an electronic tape?				
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?				
27. Was the Kelly Bar marked to verify depth during drilling?	<del>     </del>		$\overline{}$	
27. Was the Keny bar marked to verny depart during triumg:	<u> </u>			-
28. Was the boring open to the bottom?		$\overline{}$		
The state of the s		—		-

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-26-16

	DRILLING METHODS CHECKLIST				
	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: $S-S$				
•	Boring/Monitoring Well Number(s): $M\omega - 135$				
	Sampling Date: $(-/-/4)$ Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
	no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				D1 / A
	Corrective Actions form.	Yes	NO	N/O	<u>N/A</u>
	General  1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner,		T_	г	
	submersible pumps, Pad water tanks)?	-	1		i
	Submersible pumps, Fau water tanks):	ـــــــــــــــــــــــــــــــــــ	Ь.		
	Are there any fluid leaks on drilling rig and associated equipment?	Т	T=	F	Π
	21 710 did to differ the date of diffining rig difference of approximately				J.,
	3. If so, have oil absorbent pads been used to contain leaks?	$\Box$	T		
	5.1. 50, Hard Sil 45555 Ellis parts 5551 (15.5.)				
	4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas?	$\Box$	T		
	,				
	5. Was clean equipment wrapped in visqueen?	┲	7		
	6. Were clean and dirty equipment stored or transported separately?		T		
	7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with		レ	₹	
į	lubricants?	<u> </u>	丄		<u> </u>
	Drilling Rig	<del>1</del>	<del>,</del>		T
	8. Was the type and model of the drilling rig recorded?		Щ	L	
		<del></del>	<del></del>	1	
	9. Was the type of lubricating oil recorded?	1	┸		
_			<del>,                                    </del>		
1	10. Were names and titles of crew recorded?			Ь	<u> </u>
		<del></del>	<del>,                                     </del>		
	11. Were drill stem augers and bit diameters recorded?	⊥	丄	<u></u>	<u> </u>
ĺ		т	<del>,</del>		
	12. Were volumes of drilling fluids lost to fromation accounted for and recorded?		丄	<u> </u>	<u> </u>
		<del></del>	<del>/</del>		
	13. Were rig start, stop, down times, and penetration rates recorded?			<u> </u>	<u> </u>
j					7
	14. Was split spoon sampler used on deep MW and test holes?			<u> </u>	

15. Were all drilling tools and cables inspected daily prior to their use?

	DRILLING METHODS CHECKLIST				
	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: 5-5				
	Boring/Monitoring Well Number(s): // ~ -/3 S				
	Sampling Date: (-/-/) Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
	no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
	Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
	Rotary Wash				
	16. Was a sample of the proposed drilling water analyzed?				$\Box$
ĺ	17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?				
i	18. Was the water circulated in portable tanks?	-			
	40 W. J. J. H. 10				
	19. Was bentonite used?				
	20 W		<u> </u>	- 1	
ļ	20. Were any additives used besides bentonite?				
ŀ	71. If hontonito or other additives were added to the water was the cityption requires their was decired as the				
	21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log?	ᆛ	-	l	
ŀ	soring log.	!			_
ŀ	22. Was the bentonite supplier, brand and type recorded?	न	$\neg$	П	-
ŀ	tes the periodice supplier, brain and type recorded:				
L	Depth Measurements Precision and Accuracy				
-	23. Was the well installed to the depth defined in the Work Plan?	7	一		$\neg$
ŀ	251 Tras are year instance to the department of the Front Flatt				
ŀ	24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?	7	$\overline{}$		-
ŀ	2 in this are departed each pointing reinled by measuring mand inscrigates or seed aspec				
+	25. Was depth to ground water measurements collected with an electronic tape?	コ		т Т	
í	100 departer ground mater measurements conceed that an electronic aper				$\dashv$
ŀ		1	_		—
:	26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?	1		1	
Γ		·			
Ī	27. Was the Kelly Bar marked to verify depth during drilling?	ব			
Ī			<del></del>		
7	28. Was the boring open to the bottom?	7			
ľ	,				
-	The QC Inspector shall sign∕th/s checklist upon completion of all Items on the checklist.				
	QC Inspector Signature:				
	Date:				
	4-1-14				
	ų · 14				

## **DRILLING METHODS CHECKLIST** Project Name/Location: Former Forbes Atlas Missile Site S-5 Boring/Monitoring Well Number(s): MW-095 Sampling Date: 4-2-16 Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A 1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner, submersible pumps, Pad water tanks)? 2. Are there any fluid leaks on drilling rig and associated equipment? 3. If so, have oil absorbent pads been used to contain leaks? 4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas? 5. Was clean equipment wrapped in visqueen? 6. Were clean and dirty equipment stored or transported separately? 7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with lubricants? **Drilling Rig** 8. Was the type and model of the drilling rig recorded?

9. Was the type of lubricating oil recorded?

10. Were names and titles of crew recorded?

11. Were drill stem augers and bit diameters recorded?

12. Were volumes of drilling fluids lost to fromation accounted for and recorded?

13. Were rig start, stop, down times, and penetration rates recorded?

15. Were all drilling tools and cables inspected daily prior to their use?

14. Was split spoon sampler used on deep MW and test holes?

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 – 5				
Boring/Monitoring Well Number(s): ルルカタン				
Sampling Date:				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
Corrective Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
Rotary Wash				
16. Was a sample of the proposed drilling water analyzed?				-
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?	-			
18. Was the water circulated in portable tanks?	_			
19. Was bentonite used?				
20. Were any additives used besides bentonite?			1	
21 Vibratian (1977)				
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the boring log?				
Donny log:				<u> </u>
22. Was the bentonite supplier, brand and type recorded?				
22. Was the bentonite supplier, brand and type recorded?				
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?	<del></del>	<del></del>		
25. Was the well installed to the deput defined in the Work Plant	لـــــا			
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?				
27. Was the deput of each borning verified by fileasting with a fiberglass of steel tape?				
25. Was don'th to ground water massuraments collected with an electronic taxa?			Ī	
25. Was depth to ground water measurements collected with an electronic tape?		$\mathbf{I}$		
		—		
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?	اس		ļ	
The state of the s				
27. Was the Kelly Bar marked to verify depth during drilling?	コ	$\overline{}$	П	
28. Was the boring open to the bottom?		$\neg$	T	_
11	<u>1</u>			
The QC Inspector shall sign this shecklist upon completion of all items on the checklist.	-			
QC Inspector Signature:				
MINE				
Date: 4-2-14				

	DRILLING WETHOUS CHECKLIST		
	Project Name/Location: Former Forbes Atlas Missile Site S-5		
	Site: S-5		
	Boring/Monitoring Well Number(s): NW-085		
	Sampling Date: $(-3-14)$ Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,		
	по, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and		
	Corrective Actions form.	Yes No N/O N/A	7
	<u>General</u>		
	1. Are chemically inert hoses (i.e. nylon, PVC, polyethylene) used on all water equipment (i.e. steam cleaner,		
	submersible pumps, Pad water tanks)?		
i			
	2. Are there any fluid leaks on drilling rig and associated equipment?		
	3. If so, have oil absorbent pads been used to contain leaks?		=
		<del></del>	_
	4. Was sampling equipment transported or stored away from fuel sources or fuel spill areas?	TATT	_
	The state of the s	<u> </u>	-
	5. Was clean equipment wrapped in visqueen?		-
	5. Was dean equipment wrapped in visqueen:	<del></del>	-
ĺ	C. Ware along and disk, againment should be harrowarded consumtable?	<del>- /</del>	_
	6. Were clean and dirty equipment stored or transported separately?	<u> </u>	_
ı	7. Did sampling equipment such as auger flights, drill rods, and split spoon samplers come in contact with		_
	Tous, and sampling equipment such as auger nights, drill rous, and split spoot samplers come in contact with lubricants?		
	Tubi (cants):		_
ı			_
	Drilling Rig	<del>121 1 1</del>	_
	8. Was the type and model of the drilling rig recorded?		_
			_
	9. Was the type of lubricating oil recorded?		
	10. Were names and titles of crew recorded?		
	11. Were drill stem augers and bit diameters recorded?		
		<del></del>	_
	12. Were volumes of drilling fluids lost to fromation accounted for and recorded?		-
	12. Well Volumes of thining hairs lost to normation accounted for and recorded:	<del></del>	-
	42 Mina da da da da da da da da da da da da da	<del>1 4 1 1</del>	_
	13. Were rig start, stop, down times, and penetration rates recorded?		_
		1 1 1	_
	14. Was split spoon sampler used on deep MW and test holes?		_

15. Were all drilling tools and cables inspected daily prior to their use?

DRILLING METHODS CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Boring/Monitoring Well Number(s): Mw-085				
Sampling Date: 6-3-16				
Complete daily for each monitoring well. Answer each question by checking the appropriate column (yes,				
no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and				
Corrective Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
Rotary Wash				
16. Was a sample of the proposed drilling water analyzed?				┌╱
17. Was the source of drilling water approved by the USACE in writing before mobilization to the Site?				П
	L			
18. Was the water circulated in portable tanks?				Г
	<u> </u>			
19. Was bentonite used?	<del></del>	П		T
	L			
20. Were any additives used besides bentonite?			,	
				L
21. If bentonite or other additives were added to the water, was the situation requiring their use documented on the				
boring log?				1
22. Was the bentonite supplier, brand and type recorded?				
Depth Measurements Precision and Accuracy				
23. Was the well installed to the depth defined in the Work Plan?				
24. Was the depth of each boring verified by measuring with a fiberglass or steel tape?				
	لــــــــــــــــــــــــــــــــــــــ			
25. Was depth to ground water measurements collected with an electronic tape?	ーオ	$\Box$		
			J	
	7		- 1	
26. Were depth measurements verified by estimating the amount of drill rods or by taking multiple measurements?				
27. Was the Kelly Bar marked to verify depth during drilling?	了	$\neg$		
28. Was the boring open to the bottom?	$\neg$	$\neg$		
			L	
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
Date:				
6-3-14				
<b>y</b> / 17				

PACKING, STORING, AND SHIPMENT OF SAMPLES CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Boring/Monitoring Well Number(s): ピル (エカい)				
Surface Soil/Sediment/Surface Water Sample Number(s): ユロルールルーのにのろに				
Sampling Date: 6/3/16				
612114				
Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A).				
If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Packing, Storing, and Shipment of Samples		<del>,</del>		
Were the samples handled according to the project plans?	<u> </u>	<u>t_</u>		<u> </u>
2. Was the pH of samples requiring pH adjustment verified in the field?	_	<u>t_</u>	<u> </u>	
3. Did the samples remain on ice from collection until cooler was taped for shipment?		<u>Ł</u>	<u> </u>	
4. Were COC forms filled out accurately and completely including project name and number, sampling date,	ــ ا			
sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter,				
and media sampled?	Ь	<u> </u>	<b>L</b>	L
E. W. COOK		~	Γ	
5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?	ہـــا	<u> </u>	L	<u> </u>
		1		<u> </u>
6. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?	_			ŀ
O. Were signed and dated custody scals properly placed on the costs. and the costs scaled man customy states	<u>.                                    </u>	L	<u>.                                    </u>	<u> </u>
7. Was a shipping label attached to the cooler?		1		
7. Was a shipping labor attached to the cooler.		ــــــــــــــــــــــــــــــــــــــ		<u>'</u>
Was custody documentation intact until receipt by the laboratory?		1	<u> </u>	
8. Was custody documentation intact until receipt by the laboratory.		—		
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:				
Data.				
Date: 6-3-16				
(e-)-16				

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PACKING, STORING, AND SHIPMENT OF SAMPLES CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Boring/Monitoring Well Number(s): ~~つう / 5 ほーパ				
Surface Soil/Sediment/Surface Water Sample Number(s): 55-12-0-1; 53-12-3-4;	- D :	15-	- 6 -	7
Sampling Date: C/IIIC				
Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A).				
If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
Packing, Storing, and Shipment of Samples				
Were the samples handled according to the project plans?	س, ا	$\Box$		
2. Was the pH of samples requiring pH adjustment verified in the field?	$\Box$			L
		<del></del>		
3. Did the samples remain on ice from collection until cooler was taped for shipment?				
4. Were COC forms filled out accurately and completely including project name and number, sampling date,	لرا	-		
sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter, and media sampled?		1 1		
and media sampled:				
5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?				
5. Wele COC forms signed and dated by the preparer and the form tapped to the made of the cooler no.				
		П		
6. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?		1		ŀ
7. Was a shipping label attached to the cooler?		П		
8. Was custody documentation intact until receipt by the laboratory?				
The QC Inspector shall sign this cylecklist upon completion of all items on the checklist.				
QC Inspector Signature:				
We inspector signature.				

PACKING, STORING, AND SHIPMENT OF SAMPLES CHECKLIST			
Project Name/Location: Former Forbes Atlas Missile Site S-5			
Site: 5-5			
Boring/Monitoring Well Number(s): $\mu = -125 / 5B - 11$			
Surface Soil/Sediment/Surface Water Sample Number(s): SB-11-0-1, SB-11-5-4, SB-11 Sampling Date: 512-61-15		_	
Sampling Date: 5   Zuliu Fow-wu-oszulu	-14 -15	•	
Complete daily. Answer each question by checking the appropriate column (yes, no, or not applicable N/A).			
If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u> [	NO N/O	<u>N/A</u>
Packing, Storing, and Shipment of Samples			
Were the samples handled according to the project plans?			<u></u>
2. Was the pH of samples requiring pH adjustment verified in the field?	11		
3. Did the samples remain on ice from collection until cooler was taped for shipment?			
4. Were COC forms filled out accurately and completely including project name and number, sampling date,	$I \rightarrow I$		
sampling time, analytical parameters, preservatives, size and number of containers for each analytical parameter, and media sampled?			
and media sampled:			ــــــــــــــــــــــــــــــــــــــ
5. Were COC forms signed and dated by the preparer and the form tapped to the inside of the cooler lid?	$T \nearrow T$	-	T -
5. Were Coc forms signed and dated by the preparer and the form tapped to the mode of the cooler had.			•
	T		Т
6. Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape?	1 1		
		•	
7. Was a shipping label attached to the cooler?	T		
8. Was custody documentation intact until receipt by the laboratory?	TZT		

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature. 5/26/16 "

Date:

SAFETY AND HEALTH CHECKLIST				
Date: 5-24-14				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Personnel Observed and Locations: Traut, Dr. 11 5. Le				
Complete weekly for each site. Answer each question by checking the appropriate column (yes, no, or N/A).				
If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Yes	No	<u>N/O</u>	N/A
Documentation		,		
1. Is the Site Health and Safety Plan (SSHP) on the Site?	$\overline{}$	一		Γ
1. 13 the Site ficalatiana Safety Flatt (SSFF) of the Site:	Ь	Ь	Щ	
		<del></del>		
2. Has the SSHP been reviewed, dated, and signed within the last year?	<u> </u>	Щ.		
3. Are the tasks being completed reflected in the hazard task analysis?			L	
4. Is there a written acknowledgement that all employees, including subcontractors have been briefed and read the		丅		
SSHP?			L	
5. Are the following training records current and available:				
* 40-Hour HAZWOPER/8-hour refresher for ALL employees and subcontractors?	7			Γ
10 Hour Tribut Englished Fell contained Fig. 12 cmployees and seasons determine	L	L		
¥ 24 thouse Conserved Cited Conserved	<del>-/</del>	т—		1
* 24 Hours Supervised Field Experience?				
	<del></del>			r
* 8-Hour HAZWOPER Annual Refresher?	<u> </u>	<u> </u>		
* CPR/First Aid?	7			
* 8-Hour Hazardous Waste Site Supervisor, and refresher?	1	Γ		
O Hour Hazardous Waste Sile Super Host, and Fair Saire F		Ь		<u> </u>
* Taikiel Cite Health and Cofety Drieffor?		$\overline{}$		Γ
* Initial Site Health and Safety Briefing?		Ь		<u> </u>
				r
* Site Health and Safety Briefing for each location or site?	<u></u>	<u></u>		l.,
			-	
6. Are emergency maps posted at the site and maintained in vehicles?				
7. Were daily safety checklists completed and fire extinguishers checked?				
			-	·
8. Were applicable Material Safety Data Sheets at the Site?	<u> </u>	П		Γ
o. Were applicable material safety bata sheets at the site:	Ь	Щ		<u> </u>
Are documents current and available that indicate employees and subcontractors are medically fit to work and	<del>/</del>	<del>,</del>	_	
	/			
wear the required personal protective equipment?	Ь	Щ.	<u> </u>	<u> </u>
	<del>-/</del>	, T	г	
10. Were daily air monitoring equipment calibrations recorded?	ــــــــــــــــــــــــــــــــــــــ	<u> </u>		<u></u>
		<u>_</u>		
11. Are respirator fit test records available and current?		<u>L</u>		

**Observations** 

12. Are exclusion zones and contaminant reduction zone adequately marked?

13. Is required personal protective equipment available and correctly used, maintained, and stored?

SALETT AND HEALTH OHLONGIST	SAFETY	<u>AND</u>	<b>HEALTH</b>	CHECKLIST	
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Date: 5 - 24-16

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

**Personnel Observed and Locations:** 

Trant, Drillsite

Complete weekly for each site. Answer each question by checking the appropriate column (yes, no, or N/A).

If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Yes	No	N/O	N/A
14. Is the following emergency equipment located at each site:				
* Fire extinguisher?	<u> </u>			
* Eyewash (15 minutes fresh water)?	7			
* Communications (walkie-talkie or phone)?	1			
* First aid kit?				
15. Is the buddy system in use?	<b> </b>			
16. Are personnel refraining from drinking, chewing, smoking, taking medications, or other hand-to-mouth contact while working in the exclusion zone?				
17. Is air monitoring equipment being used appropriately?				
18. Is the site organized to allow the use of lifting equipment, and avoid tripping hazards and spreading contamination?				
19. Was a random employee asked if he/she know site hazard and emergency procedures?				
20. Is the drill rig kill switch clearly marked and easily accessible?				

The QC Inspector shall sign this specklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5-24-16

#### SAFETY AND HEALTH CHECKLIST

Date: G-1-14

Project Name/Location: Former Forbes Atlas Missile Site S-5

∖Site: S - 5

Personnel Observed and Locations: Drill site Trant

Complete weekly for each site. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A **Documentation** 1. Is the Site Health and Safety Plan (SSHP) on the Site? 2. Has the SSHP been reviewed, dated, and signed within the last year? 3. Are the tasks being completed reflected in the hazard task analysis? 4. Is there a written acknowledgement that all employees, including subcontractors have been briefed and read the SSHP? 5. Are the following training records current and available: \* 40-Hour HAZWOPER/8-hour refresher for ALL employees and subcontractors? \* 24 Hours Supervised Field Experience? \* 8-Hour HAZWOPER Annual Refresher? \* CPR/First Aid? \* 8-Hour Hazardous Waste Site Supervisor, and refresher? \* Initial Site Health and Safety Briefing? \* Site Health and Safety Briefing for each location or site? 6. Are emergency maps posted at the site and maintained in vehicles? 7. Were daily safety checklists completed and fire extinguishers checked? 8. Were applicable Material Safety Data Sheets at the Site? 9. Are documents current and available that indicate employees and subcontractors are medically fit to work and wear the required personal protective equipment? 10. Were daily air monitoring equipment calibrations recorded? 11. Are respirator fit test records available and current? **Observations** 12. Are exclusion zones and contaminant reduction zone adequately marked? 13. Is required personal protective equipment available and correctly used, maintained, and stored?

SAFFTY AND HEALTH CHECK	LICT

Date: 4-/-/6

Project Name/Location: Former Forbes Atlas Missile Site S-5

5-5

Personnel Observed and Locations: Trant, Orill sike

Complete weekly for each site. Answer each question by checking the appropriate column (yes, no, or N/A).

If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Yes No	N/O	<u>N/A</u>
14. Is the following emergency equipment located at each site:			
* Fire extinguisher?	T d		
* Eyewash (15 minutes fresh water)?	17		
* Communications (walkie-talkie or phone)?	14		
* First aid kit?	11	<u></u>	
15. Is the buddy system in use?	TZ		
16. Are personnel refraining from drinking, chewing, smoking, taking medications, or other hand-to-mouth contact while working in the exclusion zone?	11		
17. Is air monitoring equipment being used appropriately?			
18. Is the site organized to allow the use of lifting equipment, and avoid tripping hazards and spreading contamination?			
19. Was a random employee asked if he/she know site hazard and emergency procedures?	11		
20. Is the drill rig kill switch clearly marked and easily accessible?	TA		

The QC Inspector shall sign this opecklist upon completion of all items on the checklist.

QC Inspector Signature:

Carrier 14

### **IDW MANAGEMENT CHECKLIST**

	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: 5-5				
,	Boring/Monitoring Well Number(s): MW-85, MW-55, mw-135				
	Date: 6-1-14 to 6-5-16				
	Complete weekly. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Yes	<u>No</u>	<u>N/O</u>	 <u>N/A</u>
	Investigation-Derived Waste Management				
	Was all IDW managed according to the project plans?	<u> </u>	1_	L	
i					
	2. Were soil cuttings, drilling fluids, decon water, development water, and PPE containerized in 55-gallon drums?	1	<u>1</u>		
	And lined coll-off				
	3. Were all containers properly labeled and placed on pallets?	<u> </u>	1_		<u></u>
					,
	4. Was the Drum Inventory Worksheet completed?		1_		
	5. Were all containers in satisfactory condition?	V			
٠	The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
	QC Inspector Signature:				
	Date:				

IDAA MAMAGEMENI CUECKIIS	/MANAGEMENT CHECKL	<b>ECKLIST</b>
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Project Name/Location. Pointer Forces Atlas Missile Site 3-5				
Site: 5-5				
Boring/Monitoring Well Number(s): www-105, ww-115, ww-125				
Date: 5-24-16 to 5-26-16				
Complete weekly. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Yes	<u>No</u>	<u>N/O</u>	 <u>N/A</u>
Investigation-Derived Waste Management				
Was all IDW managed according to the project plans?			Γ	
	_			
2. Were soil cuttings, drilling fluids, decon water, development water, and PPE containerized in 55-gallon drums?				
And lined Roll-Off				
3. Were all containers properly labeled and placed on pallets?	1 -			
4. Was the Drum Inventory Worksheet completed?				
5. Were all containers in satisfactory condition?				
. 0				
The QC Inspector shall sign this thecklist upon completion of all items on the checklist.				
QC Inspector Signature:				
Date: 5/2 / 1/6				

## MOBILIZATION/DEMOBILIZATION CHECKLIST Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5-5 pope 5/24/10, Demobe 6/5/14 Complete as indicated. Answer each question by checking the appropriate column (yes, no, or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A Site Access and Security Complete 4 weeks prior to start of field activities. 1. Has a copy of the Right of Entry Permit(s) been received? Are the time frames on the Right of Entry Permits adequate for the entire job including IDW disposal? Permits and Licenses Complete 4 weeks prior to start of fieldwork. 3. Are all subcontractors licensed to operate in the state? 4. Are license numbers of subcontractors recorded in the project files? 5. Have subcontractors provided proof of insurance? 6. Have variances been obtained from the state? If yes, provide a list of variances obtained: QUIK GAL N SKAL **Coordination with Property Owners and Tenants** Complete 4 weeks before start of field activities. 7. Has the property owner been contacted? 8. Did the property owner designate a contractor staging area? 9. Did the property owner designate an IDW staging area? 10. Did the property owner approve a source for water? **Coordination with Environmental Authorities** Complete within 4 weeks of notice to proceed. 11. Has the State approved the Work Plan? 12. Has the State been informed of the planned sampling events? 13. Has USEPA approved the Work Plan? 14. Has USEPA been informed of the planned sampling events? Safety Planning and Equipment Complete1 week before start of field activities. 15. Has the SSHP been submitted to subcontractors for review? 16. Have all personnel read and signed the SSHP?

17. Was the local hospital contacted to verify the phone number and address?

18. Can the hospital treat anticipated potential chemical exposures?

19. Have all field personnel been fit-tested for respirator use?

### MOBILIZATION/DEMOBILIZATION CHECKLIST

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5-5

Date:	Non	5/24/16	Dembe	4/5/16
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Complete as indicated. Answer each question by checking the appropriate column (yes, no, or N/A is checked, provide an explanation on the Noncompliance and Corrective Actions form.	A). If a No <u>Yes No N/O N/A</u>
20. Were all training certificates, including subcontractors, in a file to take to the field?	
21. Are all training certificates current?	
	1 /1 1
22. Are all MSDS's in a file to take to the field?	
23. Are all required instruments reserved and complete with calibration standards and manuals?	
24. Do the instruments meet manufacturer maintenance and calibration standards?	
24. DO the first different meet manufacturer maintenance and cambridgen standards.	
25. Does the PID have the correct lamp?	
26. Does the LEL meter have the correct sensors?	
27. Are the detector tubes current and stored properly?	
Logistical Planning	
Complete within 1 week of notice to proceed.	
28. Have the Work plan documents been approved by USACE?	
29. Has the SSHP been approved by Health and Safety Services?	<del></del>
23. Has the 33Hr been approved by Health and Salety Schricts:	
30. Has notice to proceed from the USACE been received?	
31. Are the project personnel available and scheduled?	
32. Are subcontractors available?	
33. Do subcontractors SOWs correspond to the approved Work Plan?	
34. Has the laboratory agreed to the planned sample volume load?	
35. Has the bottle order been placed?	V
36. Have correct sample containers been received?	
30. Have correct sample containers been received.	
37. Has USACE been notified of schedule?	
Utility Clearances	
Complete not less than 1 week before fieldwork is scheduled to begin.	
38. Has the State or Local utility clearance agency been contacted and a meeting scheduled?	
39. Has a representative from each notified utility called to confirm the utility meeting?	1./
40. Was a utility work authorization number recorded?	/
44. We able acceptable acceptable about the existence of any underground utilities or tanks?	
41. Was the property owner asked about the existence of any underground utilities or tanks?	
42. Has a UXO survey been conducted at the site?	

MOBILIZATION/DEMOBILIZATION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 9-5				
Date: , whe 5/24/14, Denote 6/5/14				
Complete as indicated. Answer each question by checking the appropriate column (yes, no, or N/A). If a No				
is checked, provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
43. If yes to the above question, is a report available?				1
Environmental Site Protection				
44. Are drilling and sampling locations accessible without property damage?	<u></u>			
45. Is work area limited to prevent property damage?	/			
		_		
46. Is IDW area greater than 100 feet away from a major stream, tributary, or drinking water well?				
		A	,	
47. If field activities damage property, will measures be taken to restore the Site (explain below)?	7			
<u>Demobilization</u>		$\overline{}$		
48. Was the site returned, as much as possible, to its original condition?	7			
				•
49. Was each work area policed for trash?	7			
50. Did the site point of contact inspect the site?	~			
				•

51. Was the integrity of each drum of IDW inspected?

QC Inspector Signature://////
Date:

The QC Inspector shall significant the checklist upon completion of all items on the checklist.

DECONTAMINATION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Boring/Monitoring Well Number(s): MW-085				
Date: $\zeta - 3 - 1 \zeta$ Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
<u>Equipment</u>				
Was all sampling equipment decontaminated properly prior to use and between sample intervals?	$\Box$			

3. Was IDW (decontamination water) handled in accordance with the approved work plan?

**Corrective Actions:** 

The QC Inspector shall sign this checklist upon completion of all items on the checklist. QC Inspector Signature:

QC Inspector Signature:

Date:

6-3-16

2. Was each decontamination event recorded in the logbook?

DECONTAMINATION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Boring/Monitoring Well Number(s): MW - 095				
Date: / _ z - / C Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.  Equipment	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Was all sampling equipment decontaminated properly prior to use and between sample intervals?	T =	7	Т	$\overline{}$
- The an earlying equipment described materials and active active and active active and active			<u> </u>	
Was each decontamination event recorded in the logbook?	T	<u></u>		
Was IDW (decontamination water) handled in accordance with the approved work plan?	T			
Corrective Actions:				

#### **DECONTAMINATION CHECKLIST**

5-24-16

Date:

### **DECONTAMINATION CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Boring/Monitoring Well Number(s): $Mw-//5$				
Date: $\int -25-/4$ Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.	<u>Yes</u>	<u>No</u> !	<u>N/O</u>	N/A
Equipment				,
Was all sampling equipment decontaminated properly prior to use and between sample intervals?	1 4	$\square$		
Was each decontamination event recorded in the logbook?	T = T			
3. Was IDW (decontamination water) handled in accordance with the approved work plan?	Tオ			
Corrective Actions:  The QC Inspector shall sign this mecklist upon completion of all items on the checklist.  QC Inspector Signature:  Date: 5-25-14				

ח	FC	·Or	JΤΔ	RAIN	ATION	N CHECK	I IQT
u	_~				$\sim$ 1101		-101

Boring/Monitoring Well Number(s): MW-/2 S				
Date: 5-24-14 Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form. Equipment	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
Was all sampling equipment decontaminated properly prior to use and between sample intervals?	T			
Was each decontamination event recorded in the logbook?	Ϊ́	1		
3. Was IDW (decontamination water) handled in accordance with the approved work plan?	<u></u>	1		
Corrective Actions:  The QC Inspector shall sign this checklist abon completion of all items on the checklist.  QC Inspector Signature:  Date:				

DECONTAININATION CHECKLIST			
Project Name/Location: Former Forbes Atlas Missile Site S-5			
Boring/Monitoring Well Number(s): MW-/3 S			
Date: 6-1-16			
Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is			
checked, provide an explanation on the form.	Yes !	No N/O	N/A
<u>Equipment</u>			
1. Was all sampling equipment decontaminated properly prior to use and between sample intervals?	T		
2. Was each decontamination event recorded in the logbook?	TH		
3. Was IDW (decontamination water) handled in accordance with the approved work plan?	T	7	T
Corrective Actions:			-
The QC Inspector shall sign this one light apon completion of all items on the checklist.  QC Inspector Signature:  La - / - / La			

8 of21

## **BOREHOLE AND CORE LOGGING CHECKLIST** Project Name/Location: Former Forbes Atlas Missile Site S-5 5-5 oring/Monitoring Well Number: MW-085 Larting Date: (4-3-16)6-3-16 Date: Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A **Borehole Logging** 1. Was boring logged by a geologist or geological engineer? 2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2? 3. Was the log scale 1 inch = 1 foot? 4. Were logs completed in the field (originals)? 5. Does log contain the following a routine entries? \* Unique well number (as per Work Plan)? \* Depositional type (alluvium, till, loess, etc.) \* Depths/Heights recorded in tenths of feet? \* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes) Soils classified as per USCS and fully described with numerical percents of constituents? \* Soil moisture content and texture or cohesiveness? \* Soil color described using the Munsell System? 6. Was general information (top of form MRK-55) completed? 7. Was the log signed by person preparing the log? 8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded? 9. Were start and completion dates and time included for boring and well installation activities? 10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed in cuttings)? 11. Were depths at which free water was encountered and stabilized water levels recorded? 12. Were soil sample depths recorded?

13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter

14. Were soil sampling methods and recovery recorded?

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
¬Boring/Monitoring Well Number: MW-085				
Starting Date: 4-3-16				
Date: 4-3-/4				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Vos	Na	NI (O	BI / A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	162	NO	N/Q	<u> N/A</u>
The state of the s		Щ		L
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?	T.,	_		
10. Was observed evidence of contamination in samples, cuttings, or arming halds recorded?				L
17. Were abbreviations used on log defined?	<del></del>			
17. Were appreviations used on log defined?	1	Ш		
19. Ware drilling fluid legges including doubt water and values in the sub-sufficient in	T			
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?				
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of				
compressed air filter)?				
completed di mary.	ــــــــــــــــــــــــــــــــــــــ	ш		
20. Were drilling pressures and driller's comments recorded?				
25 Well aliming pressures and armer's comments recorded:	لــــــا			
21. Was total depth recorded and marked with a double line?	1			
21. Was total depart ecolded and marked with a double line:				
22. Was monitoring well diagram completed and attached to log?				
22. Was monitoring well diagram completed and attached to log:			!	
Core Logging				
In addition to the items above, the following also apply to core-logging:				
23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture,		<del></del>		
Lolor, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and	レル			
filling materials?				
			L	
24. Was start and stop time of each core run recorded?	7			
	<del> </del>			
25. Were depths to top and bottom of each core run recorded?	$\Box$	$\Box$	T	
	<u></u>			
26. Was length of core recovered in each core run recorded?		$\neg$		
	—			
27. Were the size and type of coring bit and barrel recorded?	7	Т		
		-		
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?	-		- Т	-
11 (				$\neg$
The QC Inspector shall sign/this checklist upon completion of all items onthe checklist.				
QC Inspector Signature:				
1////				
Date:				
Date: 4-3-14				

Date:

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: 5 - 5

Pring/Monitoring Well Number: Mw -0 95

.arting Date: 6-2-16 Date: 6-2-16

Date:  $\zeta$  - Z -  $/\zeta$ Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Borehole Logging		
Was boring logged by a geologist or geological engineer?	_1_	<u> </u>
	<del></del>	<del></del>
2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2?		<u> </u>
	_/	1 1
3. Was the log scale 1 inch = 1 foot?		
	<del>-</del>	<del></del>
4. Were logs completed in the field (originals)?		J
The state of the s		
5. Does log contain the following a routine entries?		
* Unique well number (as per Work Plan)?	7	
* Offique weil fluitibel (as per work Flair):		<u> </u>
* Depositional type (alluvium, till, loess, etc.)	1	
Depositional type (alliaviant, all, locss, etc.)		
* Depths/Heights recorded in tenths of feet?	7	
Depuis/rieignis recorded in tentris or rect.		l
* Other descriptive features (bedding, organic material, soil structures;e.g., root-holes)		
Outer descriptive readures (bedanis) organis motorici, son establishing		<u>'                                    </u>
Soils classified as per USCS and fully described with numerical percents of constituents?		
John dissertion of the second		
* Soil moisture content and texture or cohesiveness?	1	
* Soil color described using the Munsell System?		
6. Was general information (top of form MRK-55) completed?		
		,
7. Was the log signed by person preparing the log?	1	
8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded?	1	
9. Were start and completion dates and time included for boring and well installation activities?		
and the death and death and death and if the positional or if observed		1 1
10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed		
in cuttings)?	<u></u>	<u>.                                    </u>
11. Were depths at which free water was encountered and stabilized water levels recorded?	Image: section of the content of the	
11. Hole deputs at which hee water was discounted and substitute the substitute that t		
12. Were soil sample depths recorded?		
13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter	1	
recorded?		
14. Were soil sampling methods and recovery recorded?		

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: S-5				
Boring/Monitoring Well Number: $MW-095$				
Starting Date: 4-2-14				
Date: 1 7 - 14				
Date: $(-2-1)$ Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Voc	No	N/O	NI/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	┰═	140	IV/U	13/A
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				
The state of the s				
17. Were abbreviations used on log defined?	$\overline{}$			
The state of the s				L
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?	<u> </u>			
	L			
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of			<del></del> -	
compressed air filter)?				
20. Were drilling pressures and driller's comments recorded?				
21. Was total depth recorded and marked with a double line?				
	<u> </u>			
22. Was monitoring well diagram completed and attached to log?				
Core Logging				
In addition to the items above, the following also apply to core-logging:				
23. Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture,				
color, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and	/			
filling materials?	ļ			
24. Was start and stop time of each core run recorded?				
25. Were depths to top and bottom of each core run recorded?	_/			
26. Was length of core recovered in each core run recorded?				
27. Were the size and type of coring bit and barrel recorded?				
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?				
The QC Inspector shall sign this onecklist upon completion of all items onthe checklist.				
QC Inspector Signature:				
(/WV / S)				
Date: / 7 - //				
4-2-14				

# **BOREHOLE AND CORE LOGGING CHECKLIST** Project Name/Location: Former Forbes Atlas Missile Site S-5 5-5 Pering/Monitoring Well Number: MW-105 arting Date: 5-24-16 Date: Date: $\zeta = \zeta U - IU$ Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A **Borehole Logging** 1. Was boring logged by a geologist or geological engineer? 2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2? 3. Was the log scale 1 inch = 1 foot? 4. Were logs completed in the field (originals)? 5. Does log contain the following a routine entries? \* Unique well number (as per Work Plan)? \* Depositional type (alluvium, till, loess, etc.) \* Depths/Heights recorded in tenths of feet? \* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes) Soils classified as per USCS and fully described with numerical percents of constituents? \* Soil moisture content and texture or cohesiveness? \* Soil color described using the Munsell System? 6. Was general information (top of form MRK-55) completed? 7. Was the log signed by person preparing the log? 8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded? 9. Were start and completion dates and time included for boring and well installation activities? 10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed in cuttinas)?

11. Were depths at which free water was encountered and stabilized water levels recorded?

Project Name/Location: Former Forbes Atlas Missile Site S-5  Site: 5 - 5  Pring/Monitoring Well Number: MW-105  Starting Date: 5-24-16  Date: 5-24-16  Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Yes	No	N/O	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	T	F		
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?	7			
		·		-
17. Were abbreviations used on log defined?	フ			
				-
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?	7	$\Box$		
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of compressed air filter)?				
20. Were drilling pressures and driller's comments recorded?	/			
21. Was total depth recorded and marked with a double line?				
22. Was monitoring well diagram completed and attached to log?				
Core Logging In addition to the items above, the following also apply to core-logging:				
Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture, ur, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and illing materials?				
			—т	
24. Was start and stop time of each core run recorded?				
25. Were depths to top and bottom of each core run recorded?				
	<del>,</del>			
26. Was length of core recovered in each core run recorded?				

28. Was the depth to the bottom of the hole measured after the core was removed for each core run?

The QC Inspector shall sign this greet list upon completion of all items onthe checklist.

27. Were the size and type of coring bit and barrel recorded?

QC Inspector Signature:

Date:

5-24-14

# Project Name/Location: Former Forbes Atlas Missile Site S-5 5-5 Pyring/Monitoring Well Number: $\mathcal{M}\omega$ - $\mathcal{U}$ \$ arting Date: 5-25-16 Date: Date: 5-75-12Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A **Borehole Logging** 1. Was boring logged by a geologist or geological engineer? 2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2? 3. Was the log scale 1 inch = 1 foot? 4. Were logs completed in the field (originals)? 5. Does log contain the following a routine entries? \* Unique well number (as per Work Plan)? \* Depositional type (alluvium, till, loess, etc.) \* Depths/Heights recorded in tenths of feet? \* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes) Soils classified as per USCS and fully described with numerical percents of constituents? \* Soil moisture content and texture or cohesiveness? \* Soil color described using the Munsell System? 6. Was general information (top of form MRK-55) completed? 7. Was the log signed by person preparing the log? 8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded? 9. Were start and completion dates and time included for boring and well installation activities? 10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed in cuttings)? 11. Were depths at which free water was encountered and stabilized water levels recorded? 12. Were soil sample depths recorded? 13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter 14. Were soil sampling methods and recovery recorded?

**BOREHOLE AND CORE LOGGING CHECKLIST** 

Site: 5 - 5				
Fring/Monitoring Well Number: $MW-1/S$ Starting Date: $5-25-16$				
Date: 5-25-1/ Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	1 4			<u> </u>
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				L
		<u> </u>		
17. Were abbreviations used on log defined?				
		,		·
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?				
10. Word drilling fluids described (uptor course addition based on dust name and addition based on the second of t	,			
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of compressed air filter)?	1	. !		
compressed all interj:	اـــــــــــــــــــــــــــــــــــــ	—		<u> </u>
20. Were drilling pressures and driller's comments recorded?		<del></del>		г
25. Note thanking pressures and time is comments recorded:	<b>—</b> —			
21. Was total depth recorded and marked with a double line?	<del>   </del>			
22. The count depart recorded and marked with a double line:				
22. Was monitoring well diagram completed and attached to log?	$-\sqrt{1}$	—г	<del></del>	
221 Trus monatoring from diagram completed and actualled to log:		<u> </u>		
Core Logging				
In addition to the items above, the following also apply to core-logging:				
Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture,	П	—Т	<del></del> 1	
or, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and	11			ı
filling materials?				
24. Was start and stop time of each core run recorded?				
25. Were depths to top and bottom of each core run recorded?				
26. Was length of core recovered in each core run recorded?	7	$\Box$		
27. Were the size and type of coring bit and barrel recorded?	7			
	$\overline{}$			
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?	न		$\neg$	
// ///				
The QC Inspector shall sign this the Nist-pon completion of all items on the checklist.				
QC Inspector Signature:				
11.001X				
Date: 5-25-14				
5-4-19				

Project Name/Location: Former Forbes Atlas Missile Site S-5

Project Name/Location: Former Forbes Atlas Missile Site S-5

5-5 Pring/Monitoring Well Number: Mw-/25arting Date: 5-24-16 Date: Date: 5-26-76Complete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A **Borehole Logging** 1. Was boring logged by a geologist or geological engineer? 2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2? 3. Was the log scale 1 inch = 1 foot? 4. Were logs completed in the field (originals)? 5. Does log contain the following a routine entries? \* Unique well number (as per Work Plan)? \* Depositional type (alluvium, till, loess, etc.) \* Depths/Heights recorded in tenths of feet? \* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes) Soils classified as per USCS and fully described with numerical percents of constituents? \* Soil moisture content and texture or cohesiveness? \* Soil color described using the Munsell System? 6. Was general information (top of form MRK-55) completed? 7. Was the log signed by person preparing the log? 8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded? 9. Were start and completion dates and time included for boring and well installation activities? 10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed in cuttings)? 11. Were depths at which free water was encountered and stabilized water levels recorded? 12. Were soil sample depths recorded? 13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter 14. Were soil sampling methods and recovery recorded?

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Tring/Monitoring Well Number: $Mw-/25$				
starting Date: 5-26-/6				
Date: 5-26-16				
Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Yes	Nο	N/Q	Ν/Δ
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	ختا	٣	<del>~~</del>	<u> </u>
				L
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?	一フ	1		Γ
				L
17. Were abbreviations used on log defined?				Γ
				<u> </u>
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?				
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of		_		
compressed air filter)?				
		_		
20. Were drilling pressures and driller's comments recorded?				
21. Was total depth recorded and marked with a double line?			Ī	
22. Was monitoring well diagram completed and attached to log?				
·			-	
Core Logging				
In addition to the items above, the following also apply to core-logging:				
Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture,				
Jr, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and	_ /		- 1	
filling materials?				
24. Western and the Bires of the Line of t	<del></del>			
24. Was start and stop time of each core run recorded?				
25. Were depths to top and bottom of each core run recorded?				
	·····			
26. Was length of core recovered in each core run recorded?				
27. Were the size and type of coring bit and barrel recorded?				
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?				
The QC Inspector shall sign this checklist upon completion of all items on the checklist.			-	
QC Inspector Signature:				
Date: 5-26-16				

Date:

# **BOREHOLE AND CORE LOGGING CHECKLIST** Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: 5 - 5 ring/Monitoring Well Number: Mw~/35 arting Date: 4 - 1 - 16Date: Date: (L - I) - ICComplete for each boring log. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A **Borehole Logging** 1. Was boring logged by a geologist or geological engineer? 2. Was log completed and entries printed legibly on USACE Form MRK-55 or MRK-55-2? 3. Was the log scale 1 inch = 1 foot? 4. Were logs completed in the field (originals)? 5. Does log contain the following a routine entries? \* Unique well number (as per Work Plan)? \* Depositional type (alluvium, till, loess, etc.) \* Depths/Heights recorded in tenths of feet? \* Other descriptive features (bedding, organic material, soil structures; e.g., root-holes) Soils classified as per USCS and fully described with numerical percents of constituents? \* Soil moisture content and texture or cohesiveness? \* Soil color described using the Munsell System? 6. Was general information (top of form MRK-55) completed? 7. Was the log signed by person preparing the log? 8. Were special conditions (i.e., intervals of hole instability) and their resolution recorded? 9. Were start and completion dates and time included for boring and well installation activities? 10. Were boundaries between soils noted (solid line at appropriate depth or dashed line if transitional or if observed in cuttings)? 11. Were depths at which free water was encountered and stabilized water levels recorded? 12. Were soil sample depths recorded? 13. Were changes in drilling or sampling methods or equipment and changes in sample or borehole diameter

14. Were soil sampling methods and recovery recorded?

Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
ring/Monitoring Well Number: Mw-/35				
starting Date: 6-1-16				
Date: / _ / _ / Complete for each boring log. Answer each question by checking the				
appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked,				
provide an explanation on the Noncompliance and Corrective Actions form.	Vec	Nο	N/O	N/A
15. Were instrument (e.g., LEL, OVM) and detector tube measurements recorded?	T	Ë	1170	<del>                                      </del>
	12	L	L	Ь
16. Was observed evidence of contamination in samples, cuttings, or drilling fluids recorded?				$\overline{}$
				L
17. Were abbreviations used on log defined?	<del></del>	一		Г
		<u> </u>	لـــــا	L
18. Were drilling fluid losses including depth, rate, and volume in the subsurface recorded?				
				<u> </u>
19. Were drilling fluids described (water source, additive brand, product name, and mixture, and type and brand of				
compressed air filter)?	/		1 1	l
				L
20. Were drilling pressures and driller's comments recorded?	7			
	<u></u>			
21. Was total depth recorded and marked with a double line?	M			
22. Was monitoring well diagram completed and attached to log?	7			
Core Logging				
In addition to the items above, the following also apply to core-logging:				
Was rock described using standard geologic nomenclature; e.g., rock type, relative hardness, density, texture,				
or, weathering, bedding, fossils, crystals, and open or closed fractures, joints, bedding planes, or cavities and			.	
filling materials?				L
24. Was start and stop time of each core run recorded?	$\neg$			
25. Were depths to top and bottom of each core run recorded?	ーマ			
26. Was length of core recovered in each core run recorded?	71	$\Box$		
		,		
27. Were the size and type of coring bit and barrel recorded?	Y		$\neg \tau$	
28. Was the depth to the bottom of the hole measured after the core was removed for each core run?	7	$\neg \top$	$\neg \tau$	
11/	<del>1</del>			
The QC Inspector shall sign this checklist upon completion of all items onthe checklist.				
QC Inspector Signature:				
Date:				
6-1-14				

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: $\int -\int$				
Monitoring Well Number: Mw-085				
Starting Date: 4-3-16				
Completion Date: $C = 3 - 1C$				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not				
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	No	<u>N/O</u>	N/A
General		_		
Was a geologist or geotechnical engineer present during installation of the monitoring well?	_~	П		ſ
The state of geologist of geologist and displaced present during modulation of the monitoring train	L			
2. Ways all deaths weiffed during installation by measurement with a weighted tape?	· /	$\overline{}$		г —
Were all depths verified during installation by measurement with a weighted tape?				<u> </u>
Selection and Placement of Screen				
3. Was the screen length specified in the Work Plan used in construction of the well?				<u> </u>
4. Was the approved screen slot size and filter pack used?				
5. Was the screen placed at the depth specified in the Work Plan?	/			
of the die octool placed at the dopar specific in the treatment.		<u> </u>		<b></b>
6. Did the rig geologist document the stable water level before installing the well?				
o. Did the fly geologist document the stable water level before installing the well:		L		l
	-	r. —		<del>-/</del>
7. Was the boring bailed dry during drilling to check for recharge?	2			
Construction Materials and Techniques				
8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785?	/			
9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping				
containers?				
		, . <u> </u>		
10. Was the shipping container labeled to identify the materials?				
11. Was the location of the markings, the brand and the supplier of the well materials recorded?				
11. Was the location of the mannings, the stand and the supplied of the manning feet the standard feet the supplied of the standard feet t				
12 Did the Ellewant material conform to the energifications of the Work Plan?	-			
12. Did the filter pack material conform to the specifications of the Work Plan?		لـــا		
		<b></b>		
13. Was the location of the markings, the brand and the supplier of the filter pack recorded?		Ш		
	<del></del>			
14. Was the filter pack tremied into the well?			<u></u>	
15. Was the elevation of the filter pack accurately monitored during installation?				
16. Was the filter pack installed to 2-5 feet above the screen?				
10. Was the files pack installed to 2.5 receasions also sales.				
17 We the heaterity and a minimum of 2 feet thick?	_/			
17. Was the bentonite seal a minimum of 2 feet thick?				L
	<del>- /</del> -			
18. Were the brand, supplier, size and location of markings of the bentonite recorded?		Ш		
	<del></del> -			
19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite	/			
pellets and as per manufacturers specifications when using high solids bentonite slurries?		لــــا		
	<del>/</del> -			
20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?	-	į 1	, ,	

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: ハルローの85				
Starting Date: 6-3-16				
Completion Date: 6-3-16				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	ot			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	Yes	<u>No</u>	N/O	N/A
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	1	$\perp$		
22. Was Monitoring Well Construction Diagram completed?	+	₩		Ь
22. Was Fibrilloring Weil Construction Diagram Completed?	1/			<u> </u>
23. Was Materials Summary Form completed?		1		г
25. Was Matchais Summary Form Completed:	1-		L	L
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well	$\overline{}$	<del></del>		r
installation?	1			
25. Does the construction diagram accurately depict each and every component and their respective vertical	$T \nearrow$			Γ'''
positions?				1
26. Does the construction diagram list the types and quantities of materials used?	<b>「</b> フ			
11				
The QC Inspector shall sign this ehect list upon completion of all items on the checklist.				
QC Inspector Signature://////				
Date:				
Date: $(4-3-1)$				
<b>~</b>				

## Project Name/Location: Former Forbes Atlas Missile Site S-5 5-5 Site: Monitoring Well Number: Mw-095Starting Date: Starting Date: (-2-16)Completion Date: (-2-16)Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A General 1. Was a geologist or geotechnical engineer present during installation of the monitoring well? 2. Were all depths verified during installation by measurement with a weighted tape? Selection and Placement of Screen 3. Was the screen length specified in the Work Plan used in construction of the well? 4. Was the approved screen slot size and filter pack used? 5. Was the screen placed at the depth specified in the Work Plan? 6. Did the rig geologist document the stable water level before installing the well? 7. Was the boring bailed dry during drilling to check for recharge? Construction Materials and Techniques 8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785? 9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping containers? 10. Was the shipping container labeled to identify the materials? 11. Was the location of the markings, the brand and the supplier of the well materials recorded? 12. Did the filter pack material conform to the specifications of the Work Plan? 13. Was the location of the markings, the brand and the supplier of the filter pack recorded? 14. Was the filter pack tremied into the well? 15. Was the elevation of the filter pack accurately monitored during installation? 16. Was the filter pack installed to 2-5 feet above the screen? 17. Was the bentonite seal a minimum of 2 feet thick? 18. Were the brand, supplier, size and location of markings of the bentonite recorded? 19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite pellets and as per manufacturers specifications when using high solids bentonite slurries? 20. Was the remainder of the annular space tremle grouted with a2% to 5% bentonite/cement grout?

**WELL CONSTRUCTION CHECKLIST** 

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: $\int -\int$				
Monitoring Well Number: MW-095				
Starting Date: 6-2-16				
Completion Date: 6-2-16				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	ot			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	1	1_		
22 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4	╄	ـــــ		
22. Was Monitoring Well Construction Diagram completed?				
22 14 . 4	<del></del>	<del>.                                    </del>		
23. Was Materials Summary Form completed?	<u> </u>			
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well installation?	-	1		
25. Does the construction diagram accurately depict each and every component and their respective vertical	Τフ	1		···
positions?				
26. Does the construction diagram list the types and quantities of materials used?				
The QC Inspector shall sign this crecklist upon completion of all items on the checklist.				
QC Inspector Signature//////				
Date:				
Date: 4 - 2 - 14				

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: $S-5$				
Monitoring Well Number: Ww-105				
Starting Date: 5-24-16				
Completion Date: 5-24-16				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not				
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
<u>General</u>		_		
Was a geologist or geotechnical engineer present during installation of the monitoring well?	<u></u>			
		<u>_</u>		,
2. Were all depths verified during installation by measurement with a weighted tape?				
Selection and Placement of Screen	/			
3. Was the screen length specified in the Work Plan used in construction of the well?	<u></u>	<u></u>		
	<del></del>			
4. Was the approved screen slot size and filter pack used?				
5. Was the screen placed at the depth specified in the Work Plan?	/			<u> </u>
	/	_		
6. Did the rig geologist document the stable water level before installing the well?				
				, ,
7. Was the boring bailed dry during drilling to check for recharge?			<u> </u>	
Construction Materials and Techniques				
8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785?		<u> </u>	<u> </u>	
				,
9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping		1	ŀ	
containers?	L	L		
10. Was the chinning container labeled to identify the materials?		i	·	
10. Was the shipping container labeled to identify the materials?			<u> </u>	<u> </u>
11. Was the location of the markings, the brand and the supplier of the well materials recorded?		····		
11. Was the location of the markings, the brand and the supplier of the well materials recorded:		L		
12. Did the filter pack material conform to the specifications of the Work Plan?	<del>/</del>	<u> </u>		
12. Did the filter pack filaterial conform to the specifications of the Work Flats:		_		L
13. Was the location of the markings, the brand and the supplier of the filter pack recorded?		<u></u>		1
15. Was the location of the markings, the brand and the supplier of the lines pack recorded?			L	!
14. Mae the filter pack tramped into the well?				
14. Was the filter pack tremied into the well?		<u> </u>		<u> </u>
15. Wee the elevation of the filter pack accurately monitored during installation?		_		
15. Was the elevation of the filter pack accurately monitored during installation?			L	L
16. We she filter and installed to 2.5 feet about the coreon?	<del>/</del>	$\leftarrow$		r
16. Was the filter pack installed to 2-5 feet above the screen?		L		
17. Was the bentonite seal a minimum of 2 feet thick?				Γ
17. Was the perioditie Sear a minimum of 2 feet trick!		L	L	Ь
18. Were the brand, supplier, size and location of markings of the bentonite recorded?		<del></del>		Π
10. Were the Drand, Supplier, Size and location of markings of the Dentonite recorded:				L
19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite				l ——
pellets and as per manufacturers specifications when using high solids bentonite slurries?		L		

20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Monitoring Well Number: $M\omega - 105$				
Starting Date: 5-24-16				
Completion Date: 5 - 24 - 16				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	t			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N//</u>
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?				
22. Was Monitoring Well Construction Diagram completed?	┼-			
23. Was Materials Summary Form completed?				<u> </u>
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well installation?				
25. Does the construction diagram accurately depict each and every component and their respective vertical positions?				
26. Does the construction diagram list the types and quantities of materials used?				
/	-			
The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
00 hamada 0: matum / h////				

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: $M\omega - //S$				
Starting Date: 5 - 25 - 16				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not				
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	N/A
General				
Was a geologist or geotechnical engineer present during installation of the monitoring well?		L		
2. Were all depths verified during installation by measurement with a weighted tape?				
Selection and Placement of Screen	_#	_		
3. Was the screen length specified in the Work Plan used in construction of the well?			L	<u> </u>
		<u></u>		
4. Was the approved screen slot size and filter pack used?				
		_		
5. Was the screen placed at the depth specified in the Work Plan?			ļ	L
		<u>,                                     </u>		
6. Did the rig geologist document the stable water level before installing the well?				
7. Was the boring bailed dry during drilling to check for recharge?				/
Construction Materials and Techniques				
8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785?				
9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping				
containers?		Ш		L
		<del>-</del>		
10. Was the shipping container labeled to identify the materials?				L
		_		
11. Was the location of the markings, the brand and the supplier of the well materials recorded?				
				ī
12. Did the filter pack material conform to the specifications of the Work Plan?				
13. Was the location of the markings, the brand and the supplier of the filter pack recorded?		Ш	L	<u> </u>
	<del>/</del>	<u> </u>	<del></del>	Γ
14. Was the filter pack tremied into the well?	لــــــ			
15. Was the elevation of the filter pack accurately monitored during installation?				
		_		
16. Was the filter pack installed to 2-5 feet above the screen?		Ш		
17. Was the bentonite seal a minimum of 2 feet thick?				<u> </u>
18. Were the brand, supplier, size and location of markings of the bentonite recorded?				L
40 M	<del></del>	_		
19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite pellets and as per manufacturers specifications when using high solids bentonite slurries?	/			
peners and as her mandracturers specifications when asing high solids bentonite sidmes:				
20. Was the remainder of the annular space tremie grouted with a2% to 5% hentonite/cement grout?	1		i	

WELL CONSTRUCTION CHECKLIST
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Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: $S - S^-$				
Monitoring Well Number: $MW - 1/5$ Starting Date: $5-25-16$				
Completion Date: 5 – 25 – /ζ Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no				
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	No	N/O	N/A
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?				
22. Was Monitoring Well Construction Diagram completed?	+-			
23. Was Materials Summary Form completed?	<u></u>	<u></u>		
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well installation?	[-			
25. Does the construction diagram accurately depict each and every component and their respective vertical				
positions?				
26 December conduction discuss lightly to the state of th	<del>/-</del>			
26. Does the construction diagram list the types and quantities of materials used?		Ш	ш	
The QC Inspector shall sign this phecklist apon completion of all items on the checklist.				
QC Inspector Signature://///				
Date: 5-25-14				

## Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: S - C Monitoring Well Number: Mw-125Starting Date: 5-24-16 **Completion Date:** Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form. Yes No N/O N/A <u>General</u> 1. Was a geologist or geotechnical engineer present during installation of the monitoring well? 2. Were all depths verified during installation by measurement with a weighted tape? Selection and Placement of Screen 3. Was the screen length specified in the Work Plan used in construction of the well? 4. Was the approved screen slot size and filter pack used? 5. Was the screen placed at the depth specified in the Work Plan? 6. Did the rig geologist document the stable water level before installing the well? 7. Was the boring bailed dry during drilling to check for recharge? Construction Materials and Techniques 8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785? 9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping containers? 10. Was the shipping container labeled to identify the materials? 11. Was the location of the markings, the brand and the supplier of the well materials recorded? 12. Did the filter pack material conform to the specifications of the Work Plan? 13. Was the location of the markings, the brand and the supplier of the filter pack recorded? 14. Was the filter pack tremied into the well? 15. Was the elevation of the filter pack accurately monitored during installation? 16. Was the filter pack installed to 2-5 feet above the screen? 17. Was the bentonite seal a minimum of 2 feet thick? 18. Were the brand, supplier, size and location of markings of the bentonite recorded? 19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite pellets and as per manufacturers specifications when using high solids bentonite slurries? 20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

WELL CONSTRUCTION CHECKLIST

WELL CONSTRUCTION CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: MW - /2 S				
Starting Date: 5 - 26 - 16				
Completion Date: 5-26-76 Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	t			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	~			
22 Mac Maritaria Well Conduction Discount In 12	<b>↓</b>	$ldsymbol{oxed}$		
22. Was Monitoring Well Construction Diagram completed?		L	Ĺ	<u></u>
23. Was Materials Summary Form completed?	<del></del>	<del></del>	<del></del>	
23. Was Materials Summary Form completed?		ш		L
Monitoring Well Construction Diagrams				
24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well		[ 7		
installation?	1 1			
25. Does the construction diagram accurately depict each and every component and their respective vertical				
positions?	$oldsymbol{ol}}}}}}}}}}}}}}}}}}$	لــا		
26. Does the construction diagram list the types and quantities of metaviole used?	<del>- /</del> 1	<u></u>		
26. Does the construction diagram list the types and quantities of materials used?	Ш	Ш	i	
The OC Improper shall of Asia (Asia) and the A				
The QC inspector shall sign this checklist upon completion of all items on the checklist.				
QC Inspector Signature:////				
Date:				

Project Name/Location: Former Forbes Atlas Missile Site S-5 Site: $5-5$ Monitoring Well Number: $MW-135$ Starting Date: $4-1-14$ Completion Date: $4-1-14$ Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective
Monitoring Well Number: $MW-13S$ Starting Date: $U-1-1U$ Completion Date: $U-1-1U$ Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective
Starting Date: $L - I - IL$ Completion Date: $L - I - IL$ Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective
Completion Date: $\zeta = / - / \zeta$ Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective
Actions form. Yes No N/O N/A
<u>General</u>
1. Was a geologist or geotechnical engineer present during installation of the monitoring well?
2. Were all depths verified during installation by measurement with a weighted tape?
Selection and Placement of Screen
3. Was the screen length specified in the Work Plan used in construction of the well?
4. Was the approved screen slot size and filter pack used?
5. Was the screen placed at the depth specified in the Work Plan?
6. Did the rig geologist document the stable water level before installing the well?
7. Was the boring bailed dry during drilling to check for recharge?
Construction Materials and Techniques
8. Was the well constructed using flush threaded screen and riser conforming to ASTM D1785?
9. Were the well materials transported to the Site in the manufacturers original plastic sleeves and shipping
containers?
10. Was the shipping container labeled to identify the materials?
11. Was the location of the markings, the brand and the supplier of the well materials recorded?
12. Did the filter pack material conform to the specifications of the Work Plan?
13. Was the location of the markings, the brand and the supplier of the filter pack recorded?
/
14. Was the filter pack tremied into the well?
15. Was the elevation of the filter pack accurately monitored during installation?
13. Was the devador of the files pack decardedy fromtored daring instanceon.
16. Was the filter pack installed to 2-5 feet above the screen?
10. Was the filter pack installed to 2.5 rect above the selection
17. Was the bentonite seal a minimum of 2 feet thick?
17. Was the peritorite seal a minimidition 2 feet trick:
18. Were the brand, supplier, size and location of markings of the bentonite recorded?
10. Were the brand, supplier, size and location of markings of the bencomes recorded:
19. Was the bentonite seal allowed to hydrate for a minimum of 4 hours before grouting when using bentonite
pellets and as per manufacturers specifications when using high solids bentonite slurries?
/
20. Was the remainder of the annular space tremie grouted with a2% to 5% bentonite/cement grout?

	WELL CONSTRUCTION CHECKLIST				
	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: 5 – 5				
_	Monitoring Well Number: Mw-135				
	Starting Date: 6-1-16				
	Completion Date: 6-1-16 Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not				
	Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not				
	observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective				
	Actions form.	<u>Yes</u>	<u>No</u>	<u>N/O</u>	<u>N/A</u>
	21. Was the grout allowed to set a minimum of 48 hours before any additional work was resumed on the well?	_			
	22. Was Monitoring Well Construction Diagram completed?	_			
	23. Was Materials Summary Form completed?				
	Monitoring Well Construction Diagrams				
	24. Was the construction diagram prepared by the geologist or geotechnical engineer present during the well				
- 1	installation?				
	25. Does the construction diagram accurately depict each and every component and their respective vertical positions?				
ł	posidoris:				
ł	26. Does the construction diagram list the types and quantities of materials used?	<del></del> a			
ŀ	20. Does the construction diagram list the types and quantities of materials used?				
L	The OC Increase whell also did all the state of the state				
	The QC Inspector shall sign this classification completion of all items on the checklist.				
	QC Inspector Signature:				
	Date: U-1-1C				
١	~ 7				

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5 - 5				
Monitoring Well Number: ~~~ 085				
Starting Date: 4-5-16				
Completion Date: 6-5-16				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	t			
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective			/-	
Actions form.	<u>Yes</u>	<u>No</u>	N/O	N/A
General Control of the Control of th	Т	-		
Was the grout allowed to set at least 48 hours after placement before starting development?		L		L
D. W	T		ī	_
2. Were methods of development in accordance with the Work Plan?				l
2. Was final dayslangeant water free of and and drilling flyide?	T _			r
3. Was final development water free of sand and drilling fluids?			ļ	<u> </u>
		_	I	1
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?				
			•	l
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during				
development?		<u> </u>		L
6. Was well development information accurately recorded on the well development form?				<u> </u>
·				
7. Were color photographs taken of the water after completion of development?		L		
The OO began about a long this find this time a completion of all items on the checklist				

Date:

4-5-14

	WELL DEVELOPMENT CHECKLIST				
	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: $\int -5$				
	Monitoring Well Number: MW-095				
	Starting Date: 4-4-16				
	Completion Date: (-4-16				
	Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	t			
	observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Voc	No	NI/O	NI/A
	General	163	140	<u>N/O</u>	14/A
	Nas the grout allowed to set at least 48 hours after placement before starting development?	Τ_	F		ı —
		<u> </u>		<u></u>	L
	2. Were methods of development in accordance with the Work Plan?	$\Box$	Ţ		
	3. Was final development water free of sand and drilling fluids?				
			<del></del>		
	4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?	/	1		
				د ـــــــــــا	
	5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during	$\Box$			
	development?	<u></u>		L	
	6. Was well development information accurately recorded on the well development form?	T /	1		
	6. Was well development illiornadon accurately recorded on the well development form:	ــــــــــــــــــــــــــــــــــــــ	<b></b>	l	
	7. Were color photographs taken of the water after completion of development?	$\Box$	o		
	The QC Inspector shall sign this checklist upon completion of all items on the checklist.				
	QC Inspector Signature:				
-1	Date:				
	Date: 4-4-14				

WELL DEVELOPMENT CHECKLIST				
Project Name/Location: Former Forbes Atlas Missile Site S-5				
Site: 5-5				
Monitoring Well Number: $M\omega - 105$				
Starting Date: 5-24-15				
Completion Date: 4-5-14				
Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not				
observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Voc	No	N/O	NI/A
General	162	MO	N/O	IV/A
Was the grout allowed to set at least 48 hours after placement before starting development?		←		<u> </u>
1. Was the grout allowed to set at least 46 hours after placement before starting development:		_	L	<u> </u>
Were methods of development in accordance with the Work Plan?				
3. Was final development water free of sand and drilling fluids?				
4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?		<u></u>		
5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during development?	/	1		
acrospino.				L
6. Was well development information accurately recorded on the well development form?	7			Г

The QC Inspector shall sign this/checklist upon completion of all items on the checklist.

7. Were color photographs taken of the water after completion of development?

QC Inspector Signature:

Date:

4-5-14

	WELL DEVELOPMENT CHECKLIST				
	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: $S = S$				
	Monitoring Well Number: $M\omega$ – $1/S$				
1	Starting Date: 6-146				
	Completion Date: Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no				
	Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	t			
	observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.	Voc	No	N/O	N/A
	General	1000	110	<u></u>	
ł	Was the grout allowed to set at least 48 hours after placement before starting development?	T	T		
	1. Was the grout anomed to see at least to hours area processing to the see at least 10 hours area process.				
	2. Were methods of development in accordance with the Work Plan?	フ	1		
	3. Was final development water free of sand and drilling fluids?				
	4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?		L		
	5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during development?	_			
	6. Was well development information accurately recorded on the well development form?	<u> </u>	<u> </u>	<u> </u>	
		<del></del>			
	7. Were color photographs taken of the water after completion of development?	1/	<u>L</u> _		
	The QC Inspector shall sign ting execklist upon completion of all items onthe checklist.				
	QC Inspector Signature://///				
, _	1/0000				
	Date:				
	u - 3 14 -				

	WELL DEVELOPMENT CHECKLIST				
	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: 5-5				
1	Monitoring Well Number: $MW-12-5$				
\	Starting Date: 6-1-16				
	Completion Date: 6-5-16				
	Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, not				
	observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	Voc	No	<u>N/O</u>	N/A
	Actions form.	163	110	MO	1777
	General		ГТ		
	Was the grout allowed to set at least 48 hours after placement before starting development?	Щ	<u> </u>		Щ
	and the state of t		F		-
	2. Were methods of development in accordance with the Work Plan?		ļI		
	S. M. C. L. L. L. L. L. L. L. L. L. L. L. L. L.		PT		-
	3. Was final development water free of sand and drilling fluids?	لــــــا	ш		
					-
	4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?				
	1. Was development samually complete to allow assessment 5		<u>.</u>		
	5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during				
	development?				
	6. Was well development information accurately recorded on the well development form?				
	7. Were color photographs taken of the water after completion of development?				<u> </u>
Į.	The QC Inspector shall sign/his/checklist upon completion of all items onthe checklist.				
	QC Inspector Signature/				
1	Date:				
	4-5-16				

	WELL DEVELOPMENT CHECKLIST				
	Project Name/Location: Former Forbes Atlas Missile Site S-5				
	Site: 5 – 5				
	Monitoring Well Number: アルルー/3 S				
\	Starting Date: $\zeta - 4 - 16$				
	Completion Date: 4-5-76 Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	_			
	Complete for each monitoring well. Answer each question by checking the appropriate column (yes, no, no	t			
	observed (N/O) or N/A). If a No is checked, provide an explanation on the Noncompliance and Corrective	Voc	No	N/O	N/A
	Actions form.	163	140	11/0	1477
	General  1. Was the grout allowed to set at least 48 hours after placement before starting development?		Т		
	1. Was the grout anowed to set at least 48 hours after placement before starting development.	٠	L	L	
	Were methods of development in accordance with the Work Plan?	T			
	2. Were metiods of development in accordance with the Work ham.		l		
	3. Was final development water free of sand and drilling fluids?	7			
	5. Was find development race not of bank and animag name				
		T -	F		
	4. Was development sufficiently complete to allow collection of ground water samples at 50 NTUs or less?		<u> </u>		
			_		
	5. Was a minimum of 3 times the volume of liquid lost during drilling and filter pack placement removed during	-	<b>+</b>		
	development?		ـــــــ		
	Was well development information accurately recorded on the well development form?	T_	F		
	6. Was well development information accurately recorded on the well development form:		<u> </u>		
	7. Were color photographs taken of the water after completion of development?		T		
	7. Were color photographs when or the		•		
	The QC Inspector shall sign this chaptilist upon completion of all items onthe checklist.				
	QC Inspector Signature:				
	So inspector organization of the control of the con				
1	Date:				
¥ ,	6-5-16				
	7				

15 of 21

Project Name/Location: Former Forbes Atlas Missile Site S-5 Monitoring Well Number: Mw-/25/5B-1

Sampling Date: ケ/ 2 4 // 6

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.

Yes No N/O N/A **General** 1. Were new protective gloves worn between sampling locations and/or intervals? 2. Were samples collected using methods described in the FSP? 3. Were sample containers filled in the correct order? 4. Was sampling equipment appropriate for the purpose and site conditions? 5. Was sampling equipment decontaminated or disposable/dedicated equipment used between each sample? 6. Were procedures for collecting QA/QC samples followed as per the FSP? 7. Were sampling locations properly identified by land survey? Were bottles adequately protected from contamination prior to sample collection? **Ground / Surface Water for Chemical Analysis** 9. Were ground water parameters stable before sample collection (as per FSP)? 10. Were turbidity readings below 50 NTU (or if all other field parameters are stable and turbidity can not be lowered below 50 NTU, were turbidity readings within + or - 10% over three, five-minute readings)? Note: approval must be obtained from the project geologist and project manager prior to sampling in turbid conditions. 11. Was a field sampling form completed? 12. Were the analytical parameters and QA/QC samples recorded on the field sampling form? 13. Was low-flow sampling conducted in accordance with the approved SAP? 14. Was headspace in sample containers for volatiles eliminated? Sediment for Chemical Analysis 14. Were sample collected according to the FSP? 15. Was a field sampling form completed? 16. Were the analytical parameters and QA/QC samples recorded on the field sampling form? 17. Was headspace in sample containers for volatiles eliminated? Soil for Chemical Analysis 18. Were sample collected according to the FSP? 19. Was a field sampling form completed? U 20. Were the analytical parameters and QA/QC samples recorded on the field sampling form? 21. Was headspace in sample containers for volatiles eliminated? <del>17 of 21</del>

Project Name/Location: Former Forbes Atlas Missile Site S-5

**Monitoring Well Number:** 

Sampling Date:

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.

Yes No N/O N/A

53-11 FDW-WW

Corrective Actions:

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

5/24/14

21. Was headspace in sample containers for volatiles eliminated?

Project Name/Location: Former Forbes Atlas Missile Site S-5 Monitoring Well Number: MW-135 /SB-12 Sampling Date: 4-1-16 Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form. Yes No N/O N/A **General** 1. Were new protective gloves worn between sampling locations and/or intervals? 2. Were samples collected using methods described in the FSP? 3. Were sample containers filled in the correct order? 4. Was sampling equipment appropriate for the purpose and site conditions? Was sampling equipment decontaminated or disposable/dedicated equipment used between each sample? 6. Were procedures for collecting QA/QC samples followed as per the FSP? 7. Were sampling locations properly identified by land survey? Were bottles adequately protected from contamination prior to sample collection? Ground / Surface Water for Chemical Analysis 9. Were ground water parameters stable before sample collection (as per FSP)? 10. Were turbidity readings below 50 NTU (or if all other field parameters are stable and turbidity can not be lowered below 50 NTU, were turbidity readings within + or - 10% over three, five-minute readings)? Note: approval must be obtained from the project geologist and project manager prior to sampling in turbid conditions. 11. Was a field sampling form completed? 12. Were the analytical parameters and QA/QC samples recorded on the field sampling form? 13. Was low-flow sampling conducted in accordance with the approved SAP? 14. Was headspace in sample containers for volatiles eliminated? Sediment for Chemical Analysis 14. Were sample collected according to the FSP? 15. Was a field sampling form completed? 16. Were the analytical parameters and QA/QC samples recorded on the field sampling form? 17. Was headspace in sample containers for volatiles eliminated? Soil for Chemical Analysis 18. Were sample collected according to the FSP? 19. Was a field sampling form completed? 20. Were the analytical parameters and QA/QC samples recorded on the field sampling form?

<del>17 of 21</del>

Project Name/Location: Former Forbes Atlas Missile Site S-5

**Monitoring Well Number:** 

Sampling Date:

Complete for each monitoring well sampling location inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O) or N/A). If "no" is checked, provide an explanation on the form.

Yes No N/O N/A

50-12-0-1,50-12-3-4,58-12-6-7

**Corrective Actions:** 

The QC Inspector shall sign this checklist.

QC Inspector Signature:

Date: 4-1-16

### **SURVEYING CHECKLIST**

Project Name/Location: Former Forbes Atlas Missile Site S-5

Site: Farbes 5-5 Date: 4-29-16

Complete one time for project. Answer each question by checking the appropriate column (yes, no, or N/A).

If a No is checked, provide an explanation on the Noncompliance and Corrective Actions form.

Yes No N/O N/A

Surveying	
Was the Scope of Work reviewed with the surveyor?	
Was the schedule for the work provided to the surveyor?	
Was the survey completed by a licensed land surveyor?	
Were locations surveyed for horizontal and vertical control?	一门
5. Were coordinates measured to the closest 0.1 feet and elevations measured to the closest 0.01 feet?	
Was the survey marker and TOC surveyed for each monitoring well?	
7. Were surveyor's closure calculations reviewed?	
Was surveyor interviewed by QC Inspector before leaving the Site?	

The QC Inspector shall sign this checklist upon completion of all items on the checklist.

QC Inspector Signature:

Date:

4-29-16