APPENDIX A

SOIL AND GEOPROBE SAMPLING LOGS

APPENDIX A
SOIL SAMPLE LOG LOCATOR SHEET

Sample Station Number | **Page Number**

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SOIL AND GEOPROBE SAMPLING LOGS

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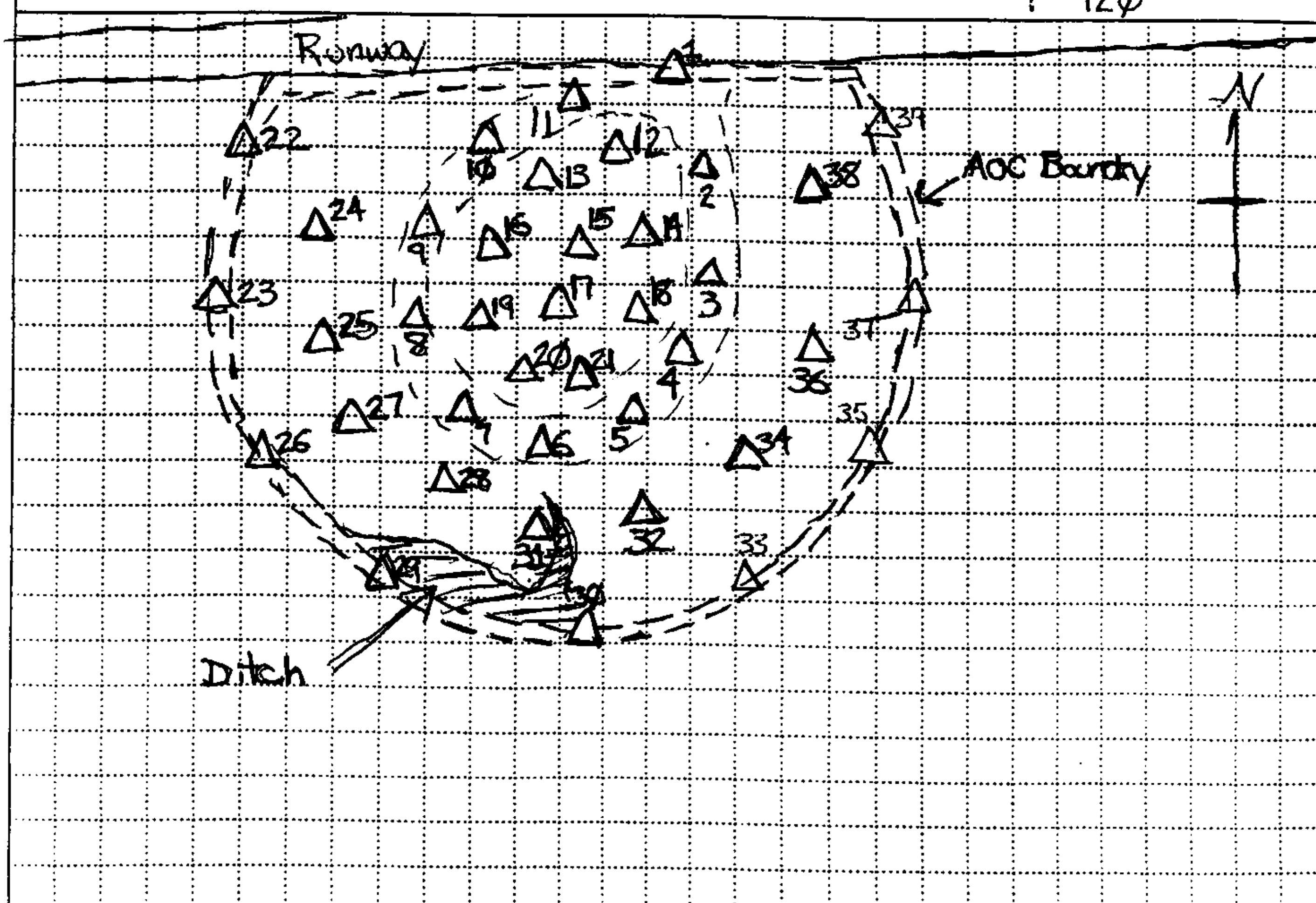
HTRW DRILLING LOG

DISTRICT	Louisville
HOLE NUMBER	DA1-001
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
SHEET / SHEETS	1 of 12
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURERS DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia. stainless steel bucket auger
8. HOLE LOCATION	~~NA~~ (NORTHING: 551576.0000 EASTING: 2346299.0000)
9. SURFACE ELEVATION	~~NA~~ 1082.40
10. DATE STARTED	10/19/99
11. DATE COMPLETED	10/19/99
12. OVERBURDEN THICKNESS	NA
13. DEPTH DRILLED INTO ROCK	NA
14. TOTAL DEPTH OF HOLE	3@ 1.0'
15. DEPTH GROUNDWATER ENCOUNTERED	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA
18. GEOTECHNICAL SAMPLES	NA; DISTURBED: NA; UNDISTURBED: NA
19. TOTAL NUMBER OF CORE BOXES	NA
20. SAMPLES FOR CHEMICAL ANALYSIS	DA10001; VOC: —; METALS: ✓; OTHER (SPECIFY): Propellants; OTHER (SPECIFY): Explosives; OTHER (SPECIFY): Cyanide
21. TOTAL CORE RECOVERY %	100
22. DISPOSITION OF HOLE	Bentonite; BACKFILLED: —; MONITORING WELL: —; OTHER (SPECIFY): —
23. SIGNATURE OF INSPECTOR	Paul J. [signature]

vjb 11-9-99

LOCATION SKETCH/COMMENTS

SCALE: 1" = 120'



PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-001

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucot | HOLE NUMBER: DA1-001 | SHEET: ~~1 of 1~~ 2 of 2

vjb 11-9-99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	1.0'	CLAY with 15% very fine (CL) sand, yellowish brown, variegated (10YR5/8). light gray, subrounded poorly sorted, moderate plasticity, moist, soft.	NA	NA	DA1001 1035	4, 1' deep borings, (3 composited) 1 grabbed

PJL 10/19/99

PROJECT: Demolition Area 1 Phase I RI | HOLE NO: DA1-001

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-ØØ1
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 of ~~4~~ 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11-9-99
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Little Beaver	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Little Beaver power auger w/6" dia. augers. Stainless steel bowls and spoons	8. HOLE LOCATION: NA	
	9. SURFACE ELEVATION: NA	
	10. DATE STARTED: 1Ø/19/99	11. DATE COMPLETED: 1Ø/19/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
NA	NA	NA	NA			
20. SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21. TOTAL CORE RECOVERY %**
DA1ØØØ2	—	✓	Explosives	Propellants	Cyanide	1ØØ
22. DISPOSITION OF HOLE	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23. SIGNATURE OF INSPECTOR**		
Bentonite	—	—	—	Paul J. [signature]		

LOCATION SKETCH/COMMENTS See sketch on page #2 SCALE:

Same location as DA1-001 on pages 2 & 3. This is just the description of the next sampling intravel.

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-ØØ1

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucost	DA1-001	~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1.0' 2.0' 3.0'	CLAY with 15% very fine sand (CL), yellowish brown (10YR5/8) vacrigated ~~clay~~ light gray, subrounded, poorly sorted, moderate plasticity, moist, soft.	NA	NA	DA10002 1115	vjb 11/9/99
		Bottom of Boring = 3.0'				

PSL 10/19/99

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HTRW DRILLING LOG	DISTRICT Louisville		HOLE NUMBER DA1-~~001~~002
1. COMPANY NAME SAIC	2. DRILL SUBCONTRACTOR NA		SHEET 1 of ~~1~~ 2
3. PROJECT Demolition Area 1 Phase I RI	4. LOCATION Ravenna Army Ammunition Plant		vjb 11/9/99
5. NAME OF DRILLER -	6. MANUFACTURERS DESIGNATION OF DRILL Bucket Auger		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 3" stainless steel bucket auger, Stainless steel bowls and spoons	8. HOLE LOCATION On Berm		
	9. SURFACE ELEVATION ~~NA~~ 1083.700		
	10. DATE STARTED 10/19/99	11. DATE COMPLETED 10/19/99	
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA		
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA		
14. TOTAL DEPTH OF HOLE 3.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA		

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA10003/DA10004	—	✓/✓	Propellants/—	CN⁻/CN⁻	Explosives/Explosives	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See sketch on page #2 SCALE

Survey data for sample ID # DA1-002
northing: 551497.0000
easting: 2346319.0000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-002

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA1-ØØ2	~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	1.Ø'	SAND with 2Ø % silt, and 2Ø % gravel. Sand is subrounded. 1.5'	NA	NA	DA1ØØØ3 1145	vjb 11-9-99
	2.Ø'	Same as above; but gray 5YR 6/1			DA1ØØØ4 12ØØ	
	3.Ø'	Bottom of Boring = 3.Ø'				

PSL 1Ø/9/99

PROJECT Demolition Area 1 Phase I R.. HOLE NO DA1-ØØ2

HTRW DRILLING LOG

DISTRICT	Louisville
HOLE NUMBER	DA1-ØØ3
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
SHEET	1 of 2
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURERS DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia. stainless steel bucket augers. Stainless steel bowls and spoons.
8. HOLE LOCATION	Berm
9. SURFACE ELEVATION	1083.910
10. DATE STARTED	1Ø/19/99
11. DATE COMPLETED	1Ø/19/99
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	NA
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	3@1Ø' 1@3.Ø'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØØ5/DA1ØØØ6	—	✓/✓	Propellants/—	CN-/CN-	explosives/explosives	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See sketch on page #2

SCALE: NONE

Sample ID # DA1-003, Survey data
northing: 551428.00000
easting: 2346319.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-ØØ3

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

vjb 11-9-99

DRILLING LOG

PROJECT Demolition Area 1 Phase I RI | INSPECTOR P. Lucot | HOLE NUMBER DA1-003 | SHEET 1 of 1 — 2 of 2 | 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	1.0' 2.0'	Gravelly SAND (SW) w/some silt, 30% gravel, sand is fine to medium; well graded, subrounded, soft.	NA	NA	DA100005 1420	Composite sample from 3 borings. Metals & CN⁻ from 1 grab
					DA100006 1440	
		2.6'-2.8': Sand is wet 2.8'				
	3.0'	CLAY with 15% very fine sand (CL). Yellowish brown (10YR 5/8)	3.0'			
		Bottom of Boring = 3.0'				

PJL 10/19/99

HTRW DRILLING LOG

DISTRICT: Louisville	HOLE NUMBER: DA1-004	SHEET 1 of 2
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia bucket augers. Stainless steel bowls and spoons	8. HOLE LOCATION: On Berm	
	9. SURFACE ELEVATION: ~~NA~~ 1083.530	
	10. DATE STARTED: 10/19/99	11. DATE COMPLETED: 10/19/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
NA	NA	NA	NA			
20. SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21. TOTAL CORE RECOVERY**
DA1000??	—	✓	Propellants	Explosives	CN	100
22. DISPOSITION OF HOLE	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23. SIGNATURE OF INSPECTOR**		
Bentonite	—	—	—	Paul J. Lucas		

LOCATION SKETCH/COMMENTS See sketch on page #2 SCALE:

Survey Data from Sample Data from DA1-004
northing: 551376.00000
easting: 2346303.00000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-004

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT Demolition Area 1 Phase I RI | INSPECTOR P. Lucas | HOLE NUMBER DA1-004 | SHEET ~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Gravelly SAND (SW), with some silt 30% gravel, 20% silt. Sand is well graded, soft	NA	NA	DA100002 1520	Sample is composite of 3 grabs
	1.0'	1.0				Refusal @ 1.0'
		Bottom of Boring = 1.0'				

PJL 10/19/99

vjh 11-9-99

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HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER: DA1-005
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 2 SHEETS

3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant vjb 11-9-99
5. NAME OF DRILLER: NA	6. MANUFACTURER'S DESIGNATION OF DRILL: Bucket Auger/Little Beaver power Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers. Stainless steel bowls and spoons.	8. HOLE LOCATION: Berm
	9. SURFACE ELEVATION: ~~NA~~ NGS 1083.080
	10. DATE STARTED: 10/19/99 — 11. DATE COMPLETED: 10/19/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA
14. TOTAL DEPTH OF HOLE: 1.3'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1009/DA10127/DA10139	——→	✓✓✓	Explosives	Propellants	CN-	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS SCALE:

See page #2

Survey Data for Sample Location #DA1-005
northing: 551339.00000
easting: 2346269.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-005

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA1-005	~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Gravelly SAND with some silt (SW), moist, soft, well graded	NA	NA	DA100049 DA100127 DA100139 1625	vjb 11-9-99
	1.0'	Bottom of Boring = 1.0'				

PJL 10/9/99

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-005

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER: DA1-ØØ6
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF ~~1~~ 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99
5. NAME OF DRILLER: –	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, stainless steel bowls and spoons.	8. HOLE LOCATION: On Berm (NORTHING: 551328.00000; EASTING: 2346211.00000)	
	9. SURFACE ELEVATION: ~~NA~~ HCS 3-21-00 1082.890	
	10. DATE STARTED: 10/20/99	11. DATE COMPLETED: 10/20/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 1.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

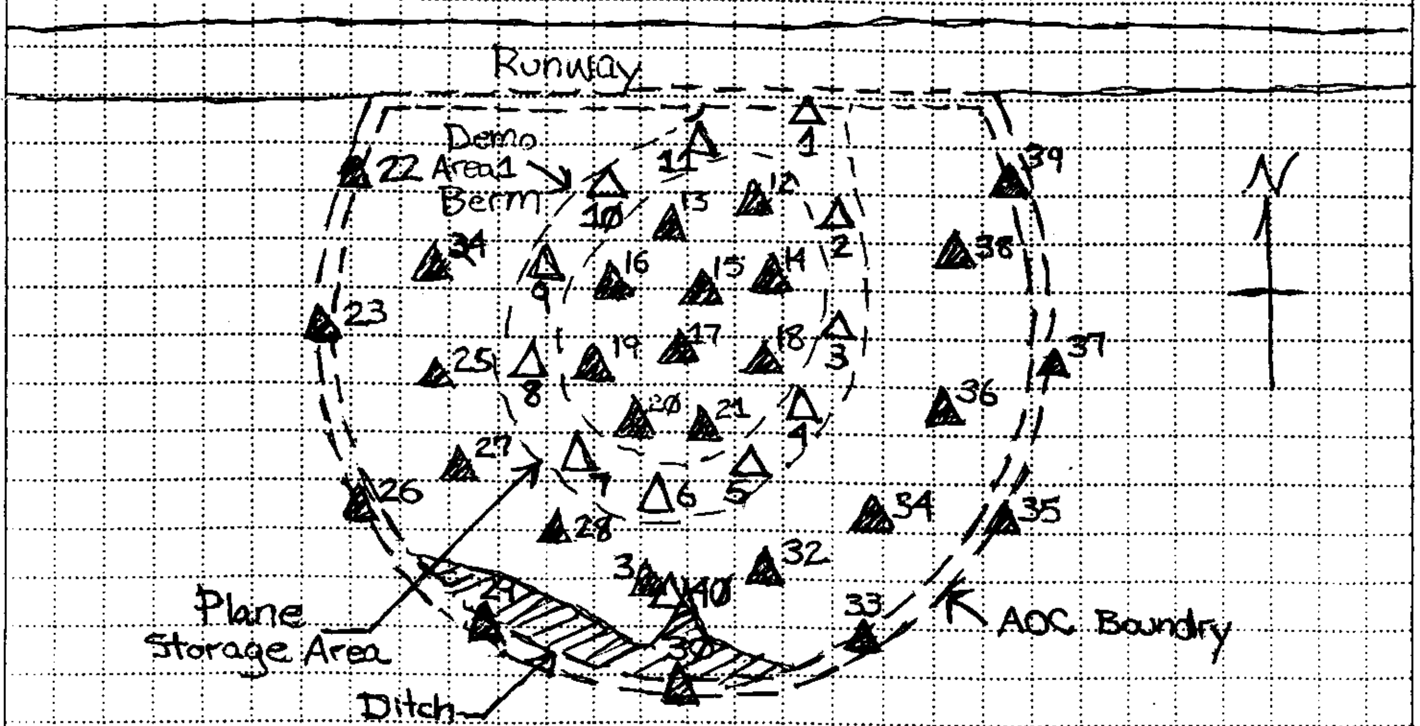
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
~~(DA10011)~~ PJ DA1ØØ11	—	✓	Propellants	Explosives	Cyanide	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS

SCALE: 1" = 12Ø'



PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-ØØ6

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA1-006	2 of ~~1~~ 2

vjb

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Gravelly SAND with some silt (SW), moist, loose, sand is fine to medium and subrounded, dark yellowish brown (10YR 4/6).	NA	NA	DA100011 0920	11/9/99
	1.0'	Bottom of Boring=1.0'				Refusal @ 1.0' on cobbles
	2.0'					
	3.0'					

PJL
10/20/99

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-006

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-ØØ7
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF ~~1~~ 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. bucket augers. Stainless steel bowls and spoons	8. HOLE LOCATION: On Berm	
	9. SURFACE ELEVATION: ~~NA~~ HLS 3-21-00 1083.220	
	10. DATE STARTED: 1Ø/2Ø/99	11. DATE COMPLETED: 1Ø/2Ø/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
—	—	—	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ13/DA1ØØ14/DA1Ø147/DA1Ø135		✓	SVOCs, PCBs	Explosives	Propellants	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. Lucas

LOCATION SKETCH/COMMENTS See page # 2 SCALE:

Survey Data for location # DA1-007
northing: 551350.00000
easting: 2346154.00000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-ØØ7

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucot | HOLE NUMBER: DA1-007 | SHEET: 1 of 1 vjb 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Gravelly SAND with some silt (SW), moist, loose, sand is fine to medium and subrounded, dark yellowish brown (10YR 4/6)	NA	NA	DA10013 1050	Explosives and propellants samples were composited from 3 boreholes
	1.0'				DA10014 DA10147 DA10135 1120	
	2.0'	2.7'				
		silty CLAY (CL), moist, mottled, medium stiff, yellowish brown (10YR 5/6).				
	3.0'	Bottom of Boring = 3.0'				

PJL 10/20/99

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HTRW DRILLING LOG

DISTRICT	Louisville
HOLE NUMBER	DA1-008
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
SHEET 1 OF 2 SHEETS	
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURERS DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia. stainless steel bucket augers, stainless steel bowls and spoons
8. HOLE LOCATION	On Berm
9. SURFACE ELEVATION	~~NA~~ 1083.950
10. DATE STARTED	10/20/99
11. DATE COMPLETED	10/20/99
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	NA
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	1.3'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

vjb 11/9/99

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	—	—	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA10015	—	✓	Explosives	Propellants	CN-	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. Lucas

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location # DA1-008
northing: 551408.00000
easting: 2346120.00000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-008

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

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DRILLING LOG

PROJECT Demolition Area 1 Phase I RI	INSPECTOR P. Lucat	HOLE NUMBER DA1-008
		SHEET ~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Gravelly SAND with some silt (SW), moist, loose, sand is fine to medium and subrounded, dark yellowish brown (10YR 4/6). 1.0'	NA	NA	DA100015 1350	vjb 11/9/99
	1.0'	Sandy COBBLES				
		Bottom of Boring = 3.0'				Refusal @ 1.3'

PJL 10/20/99

HTRW DRILLING LOG

DISTRICT	Louisville
HOLE NUMBER	DA1-ØØ9
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
SHEET 1 OF SHEETS	1 of ~~1~~ 2 vjb 11/9/99
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURERS DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia. bucket augers, stainless steel bowls and spoons
8. HOLE LOCATION	On Berm
9. SURFACE ELEVATION	~~NA~~ ALS 3-21-03 1084.030
10. DATE STARTED	10/20/99
11. DATE COMPLETED	10/20/99
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	NA
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	1.3'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	—	—	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA10017	—	✓	Explosives	Propellants	CN-	100 %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. Tucci

LOCATION SKETCH/COMMENTS See sketch on page #2 SCALE:

Survey Data for location # DA1-009
northing: 551471.0000
easting: 2346132.0000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-ØØ9

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA1-ØØ9	~~1 of 1~~

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G) 2 of 2
		Gravelly SAND with ~~silt~~ PJL some silt (SW), moist, loose, sand is fine to medium and subrounded, dark yellowish brown (10YR 4/6)	NA	NA	DA100017 1435	vjb 11/9/99
	1.Ø'	Sandy COBBLES and coarse GRAVEL				
		Bottom of Boring = 1.3'				Refusal @ 1.3'
	2.Ø'					
	3.Ø'					

PJL 10/20/99

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER: DA1-010
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99
5. NAME OF DRILLER: NA	6. MANUFACTURER'S DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, stainless steel bowls and spoons.	8. HOLE LOCATION: On Berm	
	9. SURFACE ELEVATION: ~~NA~~ 1083.510	
	10. DATE STARTED: 10/20/99	11. DATE COMPLETED: 10/22/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.0' 1@3.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1009/DA1010		✓/✓	CN-/CN-	Explosives/Exp	Propellants	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for DA1-010
northing: 551516.00000
easting: 2346179.00000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-010

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA1-Ø1Ø	~~1 of 1~~ 2 of 2 vjb 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	1.Ø'	Gravelly SAND with some silt (SW), moist, loose, sand is fine to medium and subrounded, dark yellowish brown (10 YR 4/6). 1.1'	NA	NA	DA1ØØ19 154Ø	Propellants and explosives samples were composited from 3 boreholes. Cyanide and metals were grabbed from a 4th hole
		Poorly graded GRAVEL with sand (GP), moist, very coarse GRAVEL 1.5'			DA1ØØ2Ø 15ØØ	
	2.Ø'	Silty CLAY (CL), moist, yellowish brown (10YR 5/6), variegated gray (10YR 7/), stiff, moderate plasticity.				
	3.Ø'	Bottom of Boring = 3.Ø'				

PJL 10/20/99

HTRW DRILLING LOG

DISTRICT	Louisville
HOLE NUMBER	DA1-Ø11
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
SHEET	1 of 2 SHEETS
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURER'S DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia. Stainless steel bucket auger, Stainless steel bowls and spoons.
8. HOLE LOCATION	NA
9. SURFACE ELEVATION	~~NA~~ 1084.040
10. DATE STARTED	1Ø/2Ø/99
11. DATE COMPLETED	1Ø/2Ø/99
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	NA
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	4@1.Ø
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
✓ DA1ØØ21	DA1ØØ21 ✓ —	—	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
DA1ØØ21	—	✓	Explosives	Propellants	CN⁻	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. Lucas

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for DA1-011
Northing : 551551.00000
Easting : 2346237.00000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-Ø11

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA-Ø11	~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	1.Ø'	Gravelly SAND with some silt (SW), moist, loose, sand is well graded from fine to medium and subrounded, yellowish brown (1ØYR 5/6). 1.Ø'	NA	DA1ØØ21 162Ø	DA1ØØ21 162Ø	vjb 11/9/99 USCS classification = SC
		Bottom of Boring = 1.Ø'				Refusal @ 1.Ø' on cobbles

DSL 10/20/99

HTRW DRILLING LOG

DISTRICT: Louisville	HOLE NUMBER: DA1-012	SHEET 1 OF 2
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	
5. NAME OF DRILLER: NA	6. MANUFACTURER'S DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" stainless steel bucket augers, stainless steel bowls and spoons	8. HOLE LOCATION: Inside Berm	
	9. SURFACE ELEVATION: ~~NA~~ HCS 3-24-00 1083.790	
	10. DATE STARTED: 10/21/99	11. DATE COMPLETED: 10/21/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1' / 1@5'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1-[illegible] / DA1-[illegible] / DA1-[illegible]	—	✓✓✓	Propellants (3)	Explosives (3)	Cyanide (?)	NA

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS

See page #2

SCALE:

SURVEY DATA FOR DA1-012
northing : 551512.00000
easting : 2346275.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-012

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

vjb 11/9/99

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI
INSPECTOR: P. Lucot
HOLE NUMBER: DA1-012
SHEET: ~~1 of 1~~ 2 of 2 VJP 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		PSL ~~Silty~~ Sandy SILT with traces of gravel (ML), moist, medium dense, sand is fine to medium grained and subrounded, olive brown (2.5Y4/4), sand and gravel are well graded.	NA	NA	DA10023 1535	Explosives and propellant samples were composited from 3 borings. Metals and cyanide were grabbed from a 4th boring.
	1.Ø'				DA10024 1545	Sample was homogenized through out the interval 1.6'-1.7': Wet
		1.6' Silty CLAY (CL), moist, stiff, moderate plasticity, yellowish brown (10YR 5/6), varigated gray (10YR7/1).				
	2.Ø'					
	3.Ø'	3.1'-5.0': Very moist			DA10025 1555	Sample was homogenized throughout the interval.
	4.Ø'					
	5.Ø'					4.9'-5.Ø': Wet
		Bottom of Boring=5.Ø'				

1.Ø' 2.Ø' 3.Ø' 4.Ø' 5.Ø'

PSL 10/21/99

PROJECT: Demolition Area 1 Phase I R

HOLE NO. DA1-Ø12

HTRW DRILLING LOG	DISTRICT Louisville	HOLE NUMBER DA1-Ø13
1. COMPANY NAME SAIC	2. DRILL SUBCONTRACTOR NA	SHEET 1 OF 2

3. PROJECT Demolition Area 1 Phase I RI	4. LOCATION Ravenna Army Ammunition Plant
5. NAME OF DRILLER NA	6. MANUFACTURERS DESIGNATION OF DRILL Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 3" dia. stainless steel bucket augers, stainless steel bowls and spoons	8. HOLE LOCATION Inside Berm
	9. SURFACE ELEVATION 1084.230
	10. DATE STARTED 10/21/99 — 11. DATE COMPLETED 10/21/99
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 3@1.Ø' / 1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
—	—	—	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA10026/DA10027/DA10028	—	✓	Propellants	Explosives	CN	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS — See page #2 — SCALE:

SURVEY DATA for DA1-013
northing: 551505.00000
easting: 2346229.00000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-Ø13

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

vjb 11/9/99

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucst	DA1-Ø13	1 of 1

2 of 2 VJB 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Gravelly SAND with some silt (SW), moist, loose, sand is fine to medium, and subrounded, dark yellowish brown (1ØYR 4/6).	NA	NA	DA1ØØ26 Ø95Ø	Propellants and explosives sample composited from 3 boreholes. Metals and cyanide samples grabbed from a 4th hole in the center.
	1.Ø				DA1ØØ27 1Ø15	Sample was homoginized
		1.6'				
	2.Ø'	Silty CLAY (CL), moist, mottled, medium stiff, primarily yellowish brown (1ØYR 5/6).				
	3.Ø'				DA1ØØ28 1Ø2Ø	Sample was homoginized
	4.Ø'					
	5.Ø'	5.Ø'				
		Bottom of Boring: 5.Ø'				

PJL 1Ø/21/99

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-Ø13

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HTRW DRILLING LOG

DISTRICT	Louisville
HOLE NUMBER	DA1-Ø14
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
SHEET 1 OF	~~1~~ 2
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURERS DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia. stainless steel bucket augers, stainless steel bowls and spoons
8. HOLE LOCATION	Inside Berm
9. SURFACE ELEVATION	~~NA~~ 1083.070
10. DATE STARTED	1Ø/21/99
11. DATE COMPLETED	1Ø/21/99
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	NA
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	3@1.Ø' / 1@ 5.Ø'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

vjb 11/9/99

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ29/DA1ØØ30/DA1ØØ31	None	✓	Explosives	Propellants	Cl-	100%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for Location NTA-014
northing : 551476.00000
easting : 2346287.00000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-Ø14

ENG FORM 5056-R, AUG 94 (Proponent CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA1-Ø14	~~1 of 1~~ 2 of 2

34

vjb 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Silty SAND (SW-SM), moist, medium dense, sand is fine to medium and subrounded, olive brown (2.5Y 4/4). Ø.8'	NA	NA	DA10Ø29 1Ø45	Explosives and propellants samples were composited from 3 boreholes. Metals and cyanide were grabbed from 4th hole
	1.Ø'	Silty CLAY (CL) moist, stiff, ~~(variegated)~~ moderate plasticity, yellowish brown (1ØYR 5/6) varigated gray (1ØYR 7/1).			DA10Ø3Ø 11ØØ	Sample homoginized
	2.Ø'					
	3.Ø'	3.1'-5.Ø': Same as above; but very stiff.			DA10Ø31 1115	Sample homoginized
	4.Ø'					
	5.Ø'	Bottom of Boring=5.Ø'				

DSL 1Ø/21/99

x2

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-Ø15	
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 2	
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99	
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia stainless steel bucket auger, stainless steel bowls and spoons	8. HOLE LOCATION: Inside Berm		
	9. SURFACE ELEVATION: ~~NS NA~~ 1083.560		
	10. DATE STARTED: 10/21/99	11. DATE COMPLETED: 10/21/99	
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA		
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA		
14. TOTAL DEPTH OF HOLE: 3@1.Ø' / 1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA		

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
DA1ØØ35 ~~(NA)~~ 10/19/99 1540	NA	10/19/99 DA1ØØ35 1540	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ32/DA1ØØ33/DA1ØØ34	—	✓✓✓	Propellants	Explosives	CN⁻	100%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS

See sketch on page #2

SCALE:

Survey Data for location # DA1-015
Northing: 551475.00000
Easting: 2346241.00000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-Ø15

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucas	DA1-Ø15	~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Sandy SILT (ML), moist, medium dense, sand is fine to medium and subrounded, olive brown (2.5Y 4/4). Ø.9'	NA	NA 1Ø'	DA1ØØ32 1145	Explosives and propellant samples composited from 3 borings. Metals and cyanide grabbed from a 4th boring
	1.Ø'	Silty CLAY (CL), moist, stiff, moderate plasticity, yellowish brown (1ØYR 5/6) varigated gray (1ØYR 7/1).		DA1ØØ35 1Ø/19/99 154Ø Shelby Tube	~~DA1ØØ3~~ DA1ØØ33 1155	PSL Interval homoginized for sampling. USCS classification (1-3 ft) = ML
	2.Ø'					
		2.5'-3.5': Same as above; but very fissle.		3.Ø		
	3.Ø'			NA	DA1ØØ34 12Ø5	Interval homoginized for sampling
	4.Ø'					
	5.Ø'	Bottom of Boring=5.Ø'				

PSL 1Ø/21/99

11/9/99

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-Ø16
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99
5. NAME OF DRILLER: NA	6. MANUFACTURER'S DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia bucket auger, Stainless steel bowls and spoons.	8. HOLE LOCATION: Inside Berm	
	9. SURFACE ELEVATION: ~~NA~~ HCS 3-23-00 1083.420	
	10. DATE STARTED: 1Ø/21/99	11. DATE COMPLETED: 1Ø/21/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 1@5'/3@1'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1????36/DA1????8/DA1????/DA10137/DA10132/DA1014?/DA10138				Propellant Explosives/CN		[illegible]

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE: /

Survey Data
Northing - 551477.00000
easting - 2346188.00000

PROJECT: Demolition Area 1 Phase I RI

HOLE NO: DA1-Ø16

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA1-Ø16	~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Sandy SILT with some gravel (ML), moist, medium dense, sand is fine to medium and subrounded, olive brown (2.5Y 4/4), sand and gravel are well graded.	NA	NA	DA1ØØ36 DA1Ø128 DA1Ø14Ø 144Ø	vjb 11/9/99
	1.Ø'				DA1ØØ37 DA1Ø132 DA1Ø144 15ØØ	1.Ø'
	2.Ø'	2.5'				2.Ø'
		Silty CLAY (CL), moist, stiff, moderate plasticity, yellowish brown (1ØYR 5/6), varigrated gray (1ØYR 7/1).				
	3.Ø'	3.1'-5.Ø': Very moist			DA1Ø138 1515	3.Ø'
	4.Ø'					4.Ø'
	5.Ø'	Bottom of Boring=5.Ø'				5.Ø'

DJL 11/12/99

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER: DA1-Ø17
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, Stainless steel bowls and spoons.	8. HOLE LOCATION: (OB) Inside Berm	
	9. SURFACE ELEVATION: NA 1083.060	
	10. DATE STARTED: 10/21/99	11. DATE COMPLETED: 10/21/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø'/1@3.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
DA1ØØØ39/DA1ØØØ40/DA1ØØØ41	3	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
DA1ØØØ39/DA1ØØØ40/DA1ØØØ41	—	3	Propellants (1)	Explosives (3)	Cyanide (3)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul Lucas

LOCATION SKETCH/COMMENTS See Page 2 SCALE:

SURVEY DATA FOR DA1-017
northing: 551415.0000
easting: 2346236.0000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-Ø17

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucot | HOLE NUMBER: DA1-Ø17 | SHEET: ~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Sandy SILT (ML), moist, loose, sand is Fine to medium and subrounded, olive brown (2.5Y 5/4), Ø.8'	NA	DA4ØØ39 163Ø	DA1ØØ39	vjb 11/9/99 USCS classification (0-1 ft) = CL
	1.Ø'	Silty CLAY (CL), moist, stiff, moderate plasticity, yellowish brown (1ØYR 5/6) varigated gray (1ØYR 7/1).		DA1ØØ4Ø 165Ø	DA1ØØ4Ø	USCS classification (1-3 ft) = CL
	2.Ø'					
	3.Ø'			DA1ØØ41 17ØØ	DA1ØØ41 17ØØ	USCS classification (3-5 ft) = CL
	4.Ø'	4.5-5.Ø': Wet				4.5'-5.Ø': Wet
	5.Ø'	Bottom of Boring = 5.Ø'				

PSL 1Ø/21/99

HTRW DRILLING LOG

DISTRICT	Louisville
HOLE NUMBER	DA1-Ø18
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
SHEET 1 OF SHEETS	1 of 2
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURERS DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia. stainless steel bucket augers. Stainless steel bowls and spoons.
8. HOLE LOCATION	Inside Berm
9. SURFACE ELEVATION	~~NA~~ 1082.060
10. DATE STARTED	10/22/99
11. DATE COMPLETED	10/22/99
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	Approx. 4.7'
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	3@1.Ø' 1@8.Ø'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA
18. GEOTECHNICAL SAMPLES	NA
DISTURBED	NA
UNDISTURBED	NA
19. TOTAL NUMBER OF CORE BOXES	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	~~VOC~~ PX	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ42/DA1ØØ43/DA1Ø131/DA1Ø143/DA1Ø144/DA1Ø160			Propellant	Explosives	CN-	100%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

vjb 11/9/99

Survey Data for #DA1-Ø18
northing : 551408.00000
easting : 2346283.00000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-Ø18

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucot | HOLE NUMBER: DA1-Ø18 | SHEET: ~~1 of 1~~

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G) 2 of 2
		Silty CLAY (CL), moist, stiff, moderate plasticity brownish yellow (1ØYR6/8) varigated light gray (1ØYR 7/2).	NA	NA	DA1ØØ42 Ø93Ø	vjb 11/9/99
	1.Ø'				DA1ØØ43 DA1Ø131 DA1Ø143 Ø955	1.Ø'
	2.Ø'	PJL 1Ø/22/99 ~~2.5' Silty~~				2.Ø'
	3.Ø'				DA1ØØ44 1Ø15	3.Ø'
	4.Ø'	4.7'				4.Ø'
	5.Ø'	Clayey SILT (ML), wet, loose, slightly plastic, light olive brown (2.5Y5/4)				4.7'-8.Ø': Wet 5.Ø'
	6.Ø'				DA1Ø16Ø 1Ø4Ø	6.Ø'
	7.Ø'	7.7'				7.Ø'
	8.Ø'	Silty CLAY (CL), moist, stiff, moderate plasticity, brownish yellow (1ØYR 6/8) varigated light gray (1ØYR 7/2).				8.Ø'
		Bottom of Boring-8.Ø'				9.Ø'

6>1

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-Ø19	
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF ~~1~~ 2	
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99	
5. NAME OF DRILLER: NA	6. MANUFACTURER'S DESIGNATION OF DRILL: Bucket Auger		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. bucket auger, Stainless steel Bowls and spoons	8. HOLE LOCATION: Inside Berm		
	9. SURFACE ELEVATION: ~~NA~~ NCS 1Ø83.11Ø		
	10. DATE STARTED: 1Ø/22/99	11. DATE COMPLETED: 1Ø/22/99	
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: 4.2'		
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA		
14. TOTAL DEPTH OF HOLE: 3@1.Ø' 1@8.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA		

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
DA1Ø161	~~(N)~~ Yes	No	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ45/DA1ØØ46/DA1ØØ47/DA1Ø161		3	Explosives	Propellants	CN⁻ (3)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. Lucot

LOCATION SKETCH/COMMENTS See sketch on page# 2 SCALE:

SURVEY DATA for location #DA1-019
northing: 551408.00000
easting: 2346181.00000

PROJECT	HOLE NO
Demolition Area 1 Phase I RI	DA1-Ø19

ENG FORM 5056-R, AUG 94 (Proponent CECW-EG)

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lusot | HOLE NUMBER: DA1-Ø19 | SHEET: ~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		Silty CLAY (CL), moist, stiff, moderate plasticity, brownish yellow (1ØYR 6/8), variegated light gray (1ØYR 7/2).	NA		DA1ØØ45 1120	vjb 11/9/99
	1.Ø'				DA1ØØ46 114Ø	USCS classification (1-3 ft) = CL
	2.Ø'					
	3.Ø'				DA1Ø147 12ØØ	
	4.Ø'	4.2' Clayey SILT (ML), wet, loose, slightly plastic, light olive brown (2.5Y 5/4)				
	5.Ø'	5.4' CLAY with traces of silt (CL), moist, stiff, moderately plastic, olive brown (2.5Y 4/4).				
	6.Ø'			DA1Ø161 1215	DA1Ø161 1215	
	7.Ø'					
	8.Ø'	Bottom of Boring = 8.Ø'				
	9.Ø'					

PJL 10/22/99

PROJECT: Demolition Area 1 Phase I RI | HOLE NO.: DA1-Ø19

HTRW DRILLING LOG

DISTRICT	Louisville
HOLE NUMBER	DA1-Ø2Ø
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
SHEET 1 of 2	vjb 11/9/99
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURER'S DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia. stainless steel bucket augers, stainless steel bowls and spoons
8. HOLE LOCATION	Inside Berm
9. SURFACE ELEVATION	~~NA~~ 1Ø8Ø.ØØØ
10. DATE STARTED	1Ø/22/99
11. DATE COMPLETED	1Ø/22/99
12. OVERBURDEN THICKNESS	NA
13. DEPTH GROUNDWATER ENCOUNTERED	NA
14. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	3@1.Ø' 1@8.Ø'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA
18. GEOTECHNICAL SAMPLES	NA
DISTURBED	NA
UNDISTURBED	NA
19. TOTAL NUMBER OF CORE BOXES	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1Ø Ø43/DA1Ø Ø49/DA1Ø Ø5Ø/DA1Ø162	2	4	SVOCs Propellants (1)	Explosives (4)	Cyanide (4)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
				Paul G. Lucas

LOCATION SKETCH/COMMENTS See page #2

SCALE

SURVEY DATA FOR LOCATION DA1-Ø2Ø
northing : 551353.00000
easting : 2346238.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø2Ø

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

13 1

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucot | HOLE NUMBER: DA1-020 | SHEET: ~~1 of 1~~ 2 of 2 vjb 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	0.0'–1.3'	Silty CLAY (CL), ~~moist~~ PJL wet, stiff, brownish yellow (10 YR 6/8), variegated light gray (10 YR 7/2). 1.3'	NA	NA	DA10048 1455	0.0'-0.7': Wet
	1.0'					
	1.3'–3.0'	Clayey SILT (ML), moist, loose, slightly plastic, light olive brown (2.5 Y 5/4). 3.0'			DA10049 1510	2.7'-3.0': Wet
	2.0'					
	3.0'–5.6'	Silty CLAY (CL), moist, stiff, moderately plastic, brownish yellow (10 YR 6/8), and Fissle 5.6'			DA10050 1530	5.3'-5.6': Wet
	4.0'					
	5.0'					
	5.6'–8.0'	CLAY with traces of silt (CL), moist, moderately plastic, olive brown (2.5 Y 4/4), very stiff.			DA10162 1600	
	6.0'					
	7.0'					
	8.0'	Bottom of Boring = 8.0'				
	9.0'					

PJL 10/22/99

PROJECT: Demolition Area 1 Phase I RI | HOLE NO: DA1-020

HTRW DRILLING LOG

DISTRICT: Louisville	HOLE NUMBER: DA1-Ø21	SHEET 1 OF ~~1~~ 2
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3' dia. stainless steel bucket augers, stainless steel bowls and spoons.	8. HOLE LOCATION: Inside Berm	
	9. SURFACE ELEVATION: ~~NA~~ 03-24-00 ALS 1082.020	
	10. DATE STARTED: 10/24/99	11. DATE COMPLETED: 10/24/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø' / 1@8.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1005/DA1ØØ52/DA1ØØ53/DA1ØØ13	→	4	Explosives (4)	Propellants (4)	Cyanide (4)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. Lucas

LOCATION SKETCH/COMMENTS See page # 2 SCALE:

Survey Data for DA1-021
northing : 551378.0000
easting : 2346238.0000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø21

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI
INSPECTOR: P. Lucot
HOLE NUMBER: DA1-Ø21
SHEET: ~~1 of 1~~ 2 of 2 vjb 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Sandy CLAY (CL), moist, soft, brownish yellow (1ØYR 6/8)	NA	NA	DA1ØØ51 162Ø	Ø.Ø - Ø.2' : Organic silt
	1.Ø'				DA1ØØ52 163Ø	
	2.Ø'	2.5'-2.7' : Fissle and dry 2.7'				
	3.Ø'	Silty CLAY (CL), moist, stiff, moderately plastic, brownish yellow (1ØYR 6/8) and Fissle, 3.6'			DA1ØØ53 1645	
	4.Ø'	CLAY with traces of silt (CL) moist, moderately plastic, very stiff, olive brown (2.5Y 4/4),				
	5.Ø'					
	6.Ø'				DA1Ø163 17ØØ	
	7.Ø'					
	8.Ø'	Bottom of Boring = 8.Ø'				
	9.Ø'					
	1Ø.Ø'					

PJL 10/24/99

PROJECT: Demolition Area 1 Phase I R
HOLE NO: DA1-Ø21

vjb 11/9/99

HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER: DA1-Ø22
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	
5. NAME OF DRILLER: NA	6. MANUFACTURER'S DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, stainless steel bowls and spoons	8. HOLE LOCATION: Outside Berm	
	9. SURFACE ELEVATION: ~~NA~~ 1080.410	
	10. DATE STARTED: 1Ø/25/99	11. DATE COMPLETED: 1Ø/25/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø'/1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
DA1Ø054/DA1Ø055/DA1Ø056	—	3	Propellants (3)	Explosive (3)	Cyanide (3)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul G. Lucot

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey DATA for DA1-Ø20
northing: 551533.0000
easting: 2346003.0000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø22

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

HOLE NUMBER: DA1-Ø22

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucot | SHEET: ~~1 of 1~~ 2 of 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		Sandy ORGANIC SILT (OL/OH), moist, dark grayish brown (2.5Y 4/2), loose. 0.7'	NA	NA	DA1ØØ54 0955	vjb 11/9/99
	1.Ø'	Silty CLAY (CL), moist, stiff, brownish yellow (1ØYR 6/8) variegated light gray (1Ø YR 7/2).			DA1ØØ55 1ØØØ	
	2.Ø'					
		2.5'-5.Ø': Stiff and slightly fissle				2.5'-5.Ø': Stiff and slightly fissle
	3.Ø'				DA1ØØ56 1Ø15	
		3.5'-5.Ø': Same as above; but not variegated.				
	4.Ø'					
	5.Ø'	Bottom of Boring=5.Ø'				
	6.Ø'					
	7.Ø'	PJL 1Ø/25/99				
	8.Ø'					
	9.Ø'					

PROJECT: Demolition Area 1 Phase I RI | HOLE NO.: DA1-Ø22

HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER: DA1-Ø23
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 of 2

vjb 11/9/99

3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: ~~Ø3~~ Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, stainless steel bowls and spoons	8. HOLE LOCATION: Outside Berm
	9. SURFACE ELEVATION: ~~NA~~ 1081.410
	10. DATE STARTED: 1Ø/25/99 / 11. DATE COMPLETED: 1Ø/25/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA
14. TOTAL DEPTH OF HOLE: 3@1.Ø' 1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC (3)	METALS (5)	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
DA1ss057/DA1ss130/DA1ss142/DA1ss158/DA1ss059			Propellants	Explosives, Cyanide, PCBs		1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Bill Tucott

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for DA1-023
northing: 551429.00000
easting: 2345998.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø23

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA1-Ø23	~~1 of 1~~ 2of2

vjb 11/8/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	1.Ø	Silty SAND (SM), moist, light olive brown (2.5Y 5/3), loose, 10% gravel, sand is medium to coarse sand is 6Ø%. Well graded subrounded. Non plastic. 1.2'	NA	NA	DA1ØØ57 DA1Ø13Ø DA1Ø142 11ØØ	Ø.Ø'-2.Ø': Nails, ash, and spent primer caps within the soil.
	2.Ø / 3.Ø	Clayey SILT (ML), moist, loose, slightly plastic, light olive brown (2.5Y5/4). 3.4'			DA1ØØ58 1135	
	4.Ø	Silty CLAY (CL), moist, stiff, brownish yellow (1ØYR 5/8) varigated light gray (1ØYR 7/2). 5.Ø			DA1ØØ59 1145	
	5.Ø'	Bottom of Boring = 5.Ø'				

PSL 10/25/99

HTRW DRILLING LOG	DISTRICT Louisville	HOLE NUMBER DA1-Ø24
1. COMPANY NAME SAIC	2. DRILL SUBCONTRACTOR NA	SHEET 1 OF ~~1~~ 2

vjb 11/9/99

3. PROJECT Demolition Area 1 Phase I RI	4. LOCATION Ravenna Army Ammunition Plant
5. NAME OF DRILLER Scott Stroud	6. MANUFACTURER'S DESIGNATION OF DRILL Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 3" dia. stainless steel bucket augers, Stainless steel bowls and spoons.	8. HOLE LOCATION Outside Berm
	9. SURFACE ELEVATION ~~NA~~ 1082.100
	10. DATE STARTED 10/25/99 / 11. DATE COMPLETED 10/25/99
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 3@1.Ø' / 1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ5Ø/DA1ØØ51/DA1ØØ52	—	3	Explosives (3)	Propellants (1)	Cyanide (3)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE: /

Survey Data for location DA1-024
Northing : 551458.00000
easting : 2346066.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø24

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

13

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucast	DA1-Ø24	~~1 of 1~~

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		ETC ~~(Silty SAND)~~ Sandy ORGANIC SILT (OL/OH), moist, dark graytsh brown (2.5Y 4/2), loose. Ø.4'	NA	NA	DA1ØØ6Ø 1415	2of2 vjb 11/9/99
	1.Ø'	Silty CLAY (CL), moist, stiff, brownish yellow (1Ø YR 6/8) variagated light gray (1ØYR 7/2),			DA1ØØ61 1425	1.Ø'
	2.Ø'					2.Ø'
	3.Ø'				DA1ØØ62 1435	3.Ø'
	4.Ø'					4.Ø'
		4.7'-5.Ø': Wet				
	5.Ø'	Bottom of Boring = 5.Ø'				5.Ø'

PSL

HTRW DRILLING LOG

DISTRICT: Louisville	HOLE NUMBER: DA1-Ø25	
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99
5. NAME OF DRILLER: NA	6. MANUFACTURER'S DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, stainless steel bowls and spoons.	8. HOLE LOCATION: Outside Berm	
	9. SURFACE ELEVATION: ~~NA~~ 1082.490	
	10. DATE STARTED: 10/25/99	11. DATE COMPLETED: 10/25/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø' / 1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ63/DA1ØØ64/DA1ØØ65	—	3	Propellants(1)	Explosives(3)	Cyanide(3)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. Lucas

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location DA1-025
northing: 551399.00000
easting: 2346058.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø25

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

HOLE NUMBER: DA1-Ø25

PROJECT: Demolition Area 1 Phase I RI

INSPECTOR: P. Lucot

SHEET: ~~1 of 1~~ 2 of 2

vjb 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		ORGANIC SILT (OL/OH), moist, dark grayish brown (2.5Y 4/2), loose. Ø.3'	NA	NA	DA1ØØ63 15ØØ	
	1.Ø'	Silty CLAY (CL), moist, stiff, brownish yellow (1ØYR 6/8) variegated light gray (1ØYR 7/2).			DA1ØØ64 152Ø	
	2.Ø'					
	3.Ø'	3.6'-5.Ø': Dry and Fissle			DA1ØØ65 154Ø	
	4.Ø'					
	5.Ø'	Bottom of Boring=5.Ø'				

PSL 1Ø/25/99

PROJECT: Demolition Area 1 Phase I RI

HOLE NO: DA1-Ø25

1 of 2

HTRW DRILLING LOG

DISTRICT: Louisville	HOLE NUMBER: DA1-Ø26	
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 of 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99
5. NAME OF DRILLER: Scott Stroud	6. MANUFACTURER'S DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, Stainless steel bowls and spoons	8. HOLE LOCATION: Outside Berm	
	9. SURFACE ELEVATION: ~~NA~~ 1077.990	
	10. DATE STARTED: 1Ø/25/99	11. DATE COMPLETED: 1Ø/25/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø' / 1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1Ø265/DA1Ø057/DA1Ø068	—	3	Propellants (1)	Explosives (3)	Cyanide (3)	1ØØ%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul Lucas

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location DA1-026
northing: 551326.00000
easting: 2345996.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø26

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucot | HOLE NUMBER: DA1-Ø26 | SHEET: ~~1 of 4~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Clayey ORGANIC SILT (OL/OH) moist, loose, very soft, dark grayish brown (2.5Y4/2). Ø.5'	NA	NA	DA10Ø066 162Ø	Ø.3': Blasting cap in the soil. Ø.4': Charred metal Fragment
	1.Ø'	Silty CLAY (CL), moist, stiff, brownish yellow (10YR6/8), Variegated light gray (1ØYR 7/2).			DA10Ø067 163Ø	
	2.Ø'					
	3.Ø'				DA10Ø068 1645	
	4.Ø'	4.3'-5.Ø': Same as above, but not variegated				
	5.Ø'	Bottom of Boring=5.Ø'				

PSL 10/25/99

Ø3 | rjb 11/9/99

HTRW DRILLING LOG

DISTRICT: Louisville	HOLE NUMBER: DA1-027	SHEET 1 OF 3 SHEETS
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: —	
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	
5. NAME OF DRILLER: ANDY STEFFE	6. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" macrocore sleeves MJR 10/20/99	8. HOLE LOCATION: DA1-027	
	9. SURFACE ELEVATION: 1081.590	
	10. DATE STARTED: 10/20/99	11. DATE COMPLETED: 10/20/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: 17.5' BGS	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 15.85 ~4 hrs	
14. TOTAL DEPTH OF HOLE: 32'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA — MJR	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
surface, F3', 3-5'		DA1 0072	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
WATER	X	X	X	X		~70%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	Bentonite			MATT ROOT (A-459) (HS)

LOCATION SKETCH/COMMENTS SCALE: NONE

Survey Data for Sample Location #DA1-027
northing: 551333.00000
easting: 2346101.00000

SEE PAGE #2

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-027

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

HOLE NUMBER: DA1-Ø27

PROJECT: Demolition Area 1 Phase I RI

INSPECTOR: MATT ROOT

SHEET: ~~1 of 2~~ 2 of 3

vjb 11-9-98

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		organic matter/gravel lean clay, dry, 10YR 5/6 (CL)	PID (ppm) / LEL %		DA1-ØØ69 12ØØ	0930 - 100% recovery
	1.Ø'		0.0 / ~~20.0~~ %	DA1ØØ72 1Ø/19/98 16ØØ Shelby Tube		USCS classification (1-3 ft) = CL
			0.0 / ~~20.0~~ %		~~DA1-067~~	
	2.Ø'					
		grades to moist, 10YR 4/3	0.3 / ~~20.9~~ %		DA1-0070 1125	
	3.Ø'					
			0.1 / ~~20.8~~ %			
	4.0	~~same as above~~ gravel lense, dry, 2.5Y 3.5/2			DA1-0071 1135	
	5.0	rapid dilatency	0.0 / ~~20.9~~ %			
		fat clay, 10YR 5/4, some mottling (CH)	0.0 / ~~20.9~~ %			
	6.0					
			0.0 / ~~20.9~~ %			
	7.0					
			0.0 / ~~20.9~~ %			
	8.0	same as above, more mottling	0.0 / 0% N/A			1020 - 100% recovery
	9.0	gravel lense, subangular, 10YR 5/6	0.0 / 0%			
	10.0					
			0.0 / 0%			
	11.0					
	12.0	subrounded gravelly sand, (GW) - well graded, moist, 10YR 3/6	0.0 / 0%			1009 - 75 % recovery
			0.0 / 0%			
	13.0					
			0.0 / 0%			
	14.0					
			0.0 / 0%			
	15.0					
	16.0	same as above	0.0 / 0%			1029 - 50% recovery
			0.0 / 0%			
	17.0					- WL @ 17.5
	18.0					
	19.0					

PROJECT: Demolition Area 1 Phase I

HOLE NO: DA1-Ø27.

Project: Demolition Area 1 Phase I RI | Inspector: MATT ROOT | DA1-Ø27 | Sheet 2 of 2 (3 of 3) | 34b

Elev (A)	Depth (B)	Description of Materials (C)	Field Screening Results (D)	Geotech Sample or Core Box No. (E)	Analytical Sample No. (F)	Remarks (G)
		subround gravelly sand (SW-SM) saturated 10YR 5/4	PID (ppm) / LEL %			100% recovery ujb 11/9/99
	21.0		0.0 / 0%			
	22.0	silt (ML), 10YR 5/6, saturated	0.0 / 0%			
		clayey silt (ML), 10YR 4/1, saturated, reduced				
	23.0		0.0 / 0%			
	24.0	fine sand (SM), 7.5YR 6/6, sat.	0.0 / 0%			1615 - 25% recovery
		subrounded gravelly sand (SW-SM), 10YR 4/4, saturated				
	25.0		0.0 / 0%			
	26.0		0.0 / 0%			
	27.0		0.0 / 0%			
	28.0	silty coarse sand saturated (SP-SM) 10YR 4/4	0.0 / 0%			
	29.0		0.0 / 0%			
	30.0	END BORING @ 30'	0.0 / 0%			1635 - 100% recovery

MJR 10/20/99

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HTRW DRILLING LOG

DISTRICT	Louisville
HOLE NUMBER	DA1-Ø28
SHEET	1 of 2
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURERS DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia. stainless steel bucket augers. Stainless steel bowls and spoons.
8. HOLE LOCATION	Outside Berm
9. SURFACE ELEVATION	~~NA~~ 1080.480
10. DATE STARTED	10/26/99
11. DATE COMPLETED	10/26/99
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	NA
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	3@1.Ø' / 1@5.Ø'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA
18. GEOTECHNICAL SAMPLES	NA
DISTURBED	NA
UNDISTURBED	NA
19. TOTAL NUMBER OF CORE BOXES	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA10073/DA10074/DA10075	→	(3)	Explosives (3)	Propellants (1)	Cyanide (3)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. [signature]

vjb 11-9-99

LOCATION SKETCH/COMMENTS See page #2

SCALE:

Survey Data for location #DA1-Ø28
northing: 551292.00000
easting: 2346158.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø28

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA1-Ø28	1 of 1

2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Clayey ORGANIC SILT (OL/OH), moist, soft, dark grayish brown (2.5Y 4/2). Ø.3'	NA	NA	DA1ØØ73 1ØØØ	vjb 11/9/99
	1.Ø'	Silty CLAY (CL), moist, stiff, brownish yellow (1ØYR 6/8) variegated light gray (1ØYR 7/2).			DA1ØØ74 1Ø15	
	2.Ø'					
	3.Ø'				DA1ØØ75 1Ø25	
	4.Ø'	4.3'				
		Clayey SILT (ML), moist, loose, slightly plastic, olive (5Y 4/3).				
	5.Ø'	Bottom of Boring=5.Ø'				

PJL
1Ø/26/99

HTRW DRILLING LOG	DISTRICT Louisville	HOLE NUMBER DA1-Ø29
1. COMPANY NAME SAIC	2. DRILL SUBCONTRACTOR NA	SHEET 1 of 12

3. PROJECT Demolition Area 1 Phase I RI	4. LOCATION Ravenna Army Ammunition Plant
5. NAME OF DRILLER NA	6. MANUFACTURERS DESIGNATION OF DRILL Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 3" dia. Stainless steel bucket augers. Stainless steel bowls and spoons	8. HOLE LOCATION Outside Berm
	9. SURFACE ELEVATION ~~NA~~ 1076.710
	10. DATE STARTED 10/26/99 — 11. DATE COMPLETED 10/26/99
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 3@1.Ø' / 1@3.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
DA100076/DA100077	2	2	SVOCs (2)	PCBs (2) Explosives (2)	Propellants (1)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location #DA1-Ø29
northing: 551238.00000
easting: 2346093.00000

PROJECT Demolition Area 1 Phase I RI

HOLE NO. DA1-Ø29

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

vjb 11/9/99

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucot | HOLE NUMBER: DA1-Ø29 | SHEET: 1 of 1 2 of 2

vjb 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		Sandy SILT (ML), moist, soft, olive brown (2.5Y4/4). 5Ø% of the material is rusted metal scraps.	NA	NA	DA1ØØ76 1115	Ø.Ø'-1.5': 5Ø% of the material being pulled out of the boreholes is metal scraps.
	1.Ø'	1.Ø'-3.Ø': Wet (Free water) 1.5'			DA1ØØ77 1145	1.Ø'-3.Ø': Wet
	2.Ø'	Silty CLAY (CL), wet, stiff, light yellowish brown (2.5Y6/3).				The Field team quit sampling @ 3.Ø' because of visible contamination and free water to prevent contamination of deeper media.
	3.Ø'	Bottom of Boring = 3.Ø'				
	4.Ø'					
	5.Ø'					

PJL 10/26/99

PROJECT: Demolition Area 1 Phase I RI | HOLE NO. DA1-Ø29

03

HTRW DRILLING LOG	DISTRICT Louisville	HOLE NUMBER DA1-Ø3Ø
1. COMPANY NAME SAIC	2. DRILL SUBCONTRACTOR NA	SHEET 1 OF ~~1~~ 2

3. PROJECT Demolition Area 1 Phase I RI	4. LOCATION Ravenna Army Ammunition Plant vjb 11/9/99
5. NAME OF DRILLER NA	6. MANUFACTURERS DESIGNATION OF DRILL Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 3" dia stainless steel bucket augers, Stainless steel bowls and spoons.	8. HOLE LOCATION Outside Berm
	9. SURFACE ELEVATION ~~NA~~ 1077.230
	10. DATE STARTED 10/26/99 — 11. DATE COMPLETED 10/25/99
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 3@1.Ø' / 1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ79/DA1ØØ8Ø/DA1ØØ81	—	3	Propellants(1)	Explosives(3)	Cyanide(3)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. [signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location #DA1-030
northing: 551209.00000
easting: 2346217.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø3Ø

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

HOLE NUMBER: DA1-030

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucot | SHEET: ~~1 of 1~~ 2 of 2

vjb 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Silty CLAY (CL), moist, stiff, moderately plastic, light olive brown (2.5Y 4/3).	NA	NA	DA10079 1430	Grass lined drainage ditch on surface.
	1.0'				DA10080 1445	
	2.0'	2.5'-5.0': Fissle and slightly drier.				
	3.0'				DA10081 1510	
	4.0'					
	5.0'	Bottom of Boring=5.0'				

PSL 10/26/99

58 1

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-Ø31
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 of 42 SHEETS
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11-4-99
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, stainless steel bowls and spoons	8. HOLE LOCATION: Outside Berm	
	9. SURFACE ELEVATION: ~~NA~~ 1080.380 3-23	
	10. DATE STARTED: 10/26/99	11. DATE COMPLETED: 10/26/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: 4.8'	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø' / 1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA10082/DA10083/DA10084	—	3	Propellants (1)	Explosives (3)	Cyanide (3)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. [signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location DA1-031
northing: 551277.00000
easting: 2346206.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø31

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

HOLE NUMBER: DA1-Ø31

PROJECT: Demolition Area 1 Phase I RI

INSPECTOR: P. Lucot

SHEET: 1 of 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G) 2 of 2
		ORGANIC SILT with traces of sand (OL/OH), moist, very soft, black (2.5Y 2.5/1). Ø.1'	NA	NA	DA10Ø082 1545	11/9/99
	1.Ø'	Silty CLAY (CL), moist, stiff, moderately plastic, light olive brown (2.5Y4/3) variegated light gray (2.5Y 7/1).			DA10Ø083 1555	
	2.Ø'					
	3.Ø'				DA10Ø084 1605	
	4.Ø'					
		Clayey SILT (ML), moist, loose, slightly plastic, olive (5Y4/3). 4.8'				4.8'-5.Ø': Wet
	5.Ø'	Bottom of Boring=5.Ø'				

PJL 10/26/99

p3

HTRW DRILLING LOG

DISTRICT: Louisville	HOLE NUMBER: DA1-Ø32	SHEET 1 OF SHEETS 2
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	VJB 11/9/99
5. NAME OF DRILLER: –	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. Stainless Steel bucket augers, Stainless steel bowls and spoons	8. HOLE LOCATION: NA	
	9. SURFACE ELEVATION: ~~NA~~ 1Ø81.42Ø	
	10. DATE STARTED: 1Ø/27/99	11. DATE COMPLETED: 1Ø/27/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø'/1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ85/DA1ØØ86/DA1ØØ87	—	(3)	Propellants (1)	Explosives (3)	Cyanide (3)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—		Paul J. Lucas

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location DA1-032
northing: 551280.00000
easting: 2346282.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø32

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT: Demolition Area 1 Phase I RI

INSPECTOR: P Lucot

HOLE NUMBER: DA1-Ø32

SHEET: ~~1 of 1~~ 2 of 2 vjb 11/9/99

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Sandy SILT (mL), moist, very loose, very soft, olive brown (2.5Y4/3).	NA	NA	DA1ØØ85 Ø94Ø	
	1Ø'	1.2'				
		Silty SAND (SP-SM), moist, loose, sand is medium to coarse grained and subrounded, light olive brown (2.5Y 5/6).			DA1ØØ86 Ø955	
	2.Ø'	2.2'				
		Silty CLAY with traces of sand (CL), moist, stiff, light olive brown (2.5Y4/3) variagated light gray (2.5Y 7/1).				
	3.Ø'				DA1ØØ87 1Ø1Ø	
	4.Ø'	3.8'-5.Ø': ~~(Wet)~~ PSL Fissle				
	5.Ø'	Bottom of Boring=5.Ø'				

PSL 10/27/99

PROJECT: Demolition Area 1 Phase I RI

HOLE NO: DA1-Ø32

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-Ø33
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, Stainless steel bowls and spoons	8. HOLE LOCATION: Outside Berm	
	9. SURFACE ELEVATION: ~~NA~~ 1079.640	
	10. DATE STARTED: 10/27/99	11. DATE COMPLETED: 10/27/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø' / 1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA10088/DA10089/DA10090	—	3	Propellants (1)	Explosives (3)	Cyanide (3)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location #DA1-033
northing : 551238.00000
easting : 2346331.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø33

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

HOLE NUMBER: DA1-Ø33

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucot | SHEET: 1 of 1 / 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Sandy SILT (ML), moist, very loose, very soft, olive brown (2.5Y4/3). Ø.8'	NA	NA	DA1ØØ88 1Ø3Ø	v,b 11-9-99
	1.Ø'	Silty CLAY (CL), moist, very stiff, light olive brown (2.5Y4/3) variegated light gray (2.5Y7/1).			DA1ØØ89 1Ø45	1.Ø'
	2.Ø'	2.5'				2.Ø'
	3.Ø'	Silty SAND (SP-SM), wet, loose, sand is fine to medium grained, yellowish brown 1ØYR 5/6). 3.6'			DA1ØØ9Ø 111Ø	3.Ø'
		Silty CLAY (CL), wet, stiff, light olive brown (2.5Y4/3). 3.8'				
	4.Ø'	SILT with traces of fine sand (ML), wet, soft, light olive brown (2.5Y 5/4). 4.8'				4.Ø'
		Silty CLAY (CL), wet, stiff, light olive brown.				
	5.Ø'	Bottom of Boring=5.Ø'				5.Ø'

PJL 1Ø/27/99

13

vjb 11/9/99

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-Ø34
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF ~~1~~ 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers. Stainless steel bowls and spoons.	8. HOLE LOCATION: Outside Berm	
	9. SURFACE ELEVATION: ~~NA~~ 1075.000	
	10. DATE STARTED: 10/27/99	11. DATE COMPLETED: 10/27/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø'/1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ91/DA1ØØ92/DA1ØØ93	—	3	Explosives(3)	Cyanide(3)	Propellant(1)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
				[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

(Survey Data for location #DA1-034
northing: 551509.00000
easting: 2347211.00000)

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø34

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

HOLE NUMBER DA1-Ø34

PROJECT Demolition Area 1 Phase I RI

INSPECTOR P. Lucast

SHEET ~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		ORGANIC SILT (OL/OH), moist, very soft, black (2.5Y 2.5/1). Ø.1'	NA	NA	DA1ØØ91 1135	v, b 11-9-99
	1.Ø'	Silty CLAY (CL), moist, very stiff, light olive brown (2.5Y 4/3) variegated light gray (2.5Y 7/1).			DA1ØØ92 12ØØ	
	2.Ø'	2.3'				
		SILT with traces of very Fine sand (ML), moist, soft, loose, light olive brown (2.5Y 5/3). 2.8'				
	3.Ø'	Silty CLAY (CL), moist, very stiff, light olive brown (2.5Y 4/3) variegated light gray (2.5Y 7/1).			DA1ØØ93 121Ø	
	4.Ø'	4.3'				
		SILT with traces of very Fine sand (ML), moist, soft, light olive brown (2.5Y 5/3). 4.9'				
		Silty CLAY (CL), moist, very stiff, light olive brown (2.5Y 5/3).				
	5.Ø'	Bottom of Boring=5.Ø'				

PL 10/27/99

HTRW DRILLING LOG	DISTRICT Louisville	HOLE NUMBER DA1-Ø35
1. COMPANY NAME SAIC	2. DRILL SUBCONTRACTOR NA	SHEET 1 OF 2 SHEETS

3. PROJECT	4. LOCATION
Demolition Area 1 Phase I RI	Ravenna Army Ammunition Plant
5. NAME OF DRILLER NA	6. MANUFACTURER'S DESIGNATION OF DRILL Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 3" dia. stainless steel bucket augers; Stainless steel bowls and spoons	8. HOLE LOCATION Outside Berm
	9. SURFACE ELEVATION ~~NA~~ 1079.200
	10. DATE STARTED 11/1/99 — 11. DATE COMPLETED 11/1/99
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 3@1.Ø' / 1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1ØØ34/DA1ØØ35/DA1ØØ36	—	3	Explosives (3)	Cyanide (3)	Propellants (1)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul [signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location DA1-035
northing : 557317.00000
easting : 2346413.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø35

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

VJB 11/9/99

DRILLING LOG

HOLE NUMBER: DA1-Ø35 | SHEET: ~~1 of 1~~ 2 of 2

PROJECT: Demolition Area 1 Phase I RI | INSPECTOR: P. Lucost

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Silty SAND (SP-SM), moist, very loose, sand is fine to medium grained and subrounded, yellowish brown (10YR 5/6),	NA	NA	DA10094 1500	vjb 11/9/99
	1.Ø'				DA10095 1515	
		1.7'				
	2.Ø'	Silty CLAY (CL), moist, very stiff, light olive brown (2.5Y4/3) variegated light gray (2.5Y 7/1).				
	3.Ø'				DA10096 1525	
		3.6'				
		SILT with traces of very fine sand (ML), moist, soft, light olive brown (2.5Y 5/3) 3.8'				
	4.Ø'	Silty CLAY (CL), moist, very stiff, light olive brown (2.5Y 5/3).				
	5.Ø'	Bottom of Boring=5.Ø'				

PJL 11/2/99

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HTRW DRILLING LOG

DISTRICT	Louisville
HOLE NUMBER	DA1-036
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
SHEET 1 OF 2	
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURERS DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia. stainless steel bucket augers, Stainless steel bowls and spoons
8. HOLE LOCATION	Outside Berm
9. SURFACE ELEVATION	~~NA~~ 1080.500 (RLS 1-00)
10. DATE STARTED	11/2/99
11. DATE COMPLETED	11/2/99
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	NA
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	3@1.0' / 1@5.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

vjb 11-9-99

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA10097/DA10098/DA10099	—	3	Propellants (1)	Explosives (3)	Cyanide (3)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	Paul J. Lucas

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for DA1-036
northing: 551375.00000
easting: 2346391.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-036

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucost	DA1-Ø36	~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Silty CLAY with some sand (CL), moist, soft, nonplastic, olive brown (2.5Y 4/3). 1.1'	NA	NA	DA10097 Ø835	vjb 11/9/99
	1.Ø'	Silty CLAY (CL), moist, very stiff, slightly plastic, light olive brown (2.5Y 5/3).			DA10098 Ø855	
	2.Ø'					
	3.Ø'	3.2'-3.5': Seam of very fine sand			DA10099 Ø915	
	4.Ø'	4.Ø'-5.Ø': Same as above, but variegated light gray (2.5Y 7/1).				
	5.Ø'	Bottom of Boring = 5.Ø'				

PJL 11/2/99

18

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-Ø37
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 of +2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11/9/99
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, stainless steel bowls and spoons	8. HOLE LOCATION: NA	
	9. SURFACE ELEVATION: ~~NA~~ 3-24-00 1079.700	
	10. DATE STARTED: 11/2/99	11. DATE COMPLETED: 11/2/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: ~~NA~~ 3@1.Ø'/1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1Ø1ØØ/DA1Ø1Ø1/DA1Ø1Ø2	—	3	Propellants (1)	Explosives (3)	Cyanide (3)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for # DA1-037
northing: 551410.00000
easting: 2346466.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø37

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

HOLE NUMBER: DA1-Ø37

PROJECT: Demolition Area 1 Phase I RI

INSPECTOR: P. Locat

SHEET: 1 of 1

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Silty CLAY with some sand (CL), moist, soft, nonplastic, olive brown (2.5Y 4/3).	NA	NA	DA1Ø1ØØ 1545	2 of 2 v, b 11/9/99
	1.Ø'	1.6'			DA1Ø1Ø1 16ØØ	
	2.Ø'	Sandy SILT (ML), slightly moist, very loose, sand is very fine grained, light yellowish brown (2.5Y 6/4).				
	3.Ø'				DA1Ø1Ø2 161Ø	
	4.Ø'					
		Silty CLAY (CL), moist, stiff, moderately plastic, olive brown (2.5Y4/3)				
	5.Ø'	Bottom of Boring = 5.Ø'				

PJL 11/2/99

PROJECT: Demolition Area 1 Phase I RI

HOLE NO: DA1-Ø37

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HTRW DRILLING LOG

DISTRICT: Louisville

HOLE NUMBER: DA1-Ø38

1. COMPANY NAME: SAIC

2. DRILL SUBCONTRACTOR: NA

SHEET 1 OF ~~1~~ 2

3. PROJECT: Demolition Area 1 Phase I RI

4. LOCATION: Ravenna Army Ammunition Plant

vjb 11/9/99

5. NAME OF DRILLER: NA

6. MANUFACTURER'S DESIGNATION OF DRILL: Bucket Auger

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket auger, stainless steel bowls and spoons

8. HOLE LOCATION: Outside Berm

9. SURFACE ELEVATION: ~~NA~~ 1079.890

10. DATE STARTED: 11/2/99

11. DATE COMPLETED: 11/2/99

12. OVERBURDEN THICKNESS: NA

15. DEPTH GROUNDWATER ENCOUNTERED: NA

13. DEPTH DRILLED INTO ROCK: NA

16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA

14. TOTAL DEPTH OF HOLE: 3@1.Ø'/1@5.Ø'

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	~~VOC~~	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1[illegible]/DA10129/DA10141/DA10124/DA10135/DA10145/DA10105/DA10134/DA10146		9		Cyanide	Explosives (?)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
				[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location # DA1-038
northing: 551485.00000
easting: 2346400.00000

PROJECT: Demolition Area 1 Phase I RI

HOLE NO. DA1-Ø38

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Lucot	DA1-Ø38	~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		Sandy SILT (ML), moist, soft, nonplastic, olive brown (2.5Y 4/3).	NA	NA	DA1Ø1Ø3 DA1Ø129 DA1Ø141 1Ø15	vjb 11/9/99
	1.Ø'	1.1'				
		Silty CLAY (CL), moist, very stiff, slightly plastic, light olive brown (2.5Y 5/3).			DA1Ø1Ø4 DA1Ø133 DA1Ø145 1Ø35	
	2.Ø'					
	3.Ø'				DA1Ø1Ø5 DA1Ø134 DA1Ø146 1Ø55	
	4.Ø'	4.Ø'				
		Silt (ML), moist, soft, loose, nonplastic, light olive brown (2.5Y 5/6).				
	5.Ø'	Bottom of Boring = 5.Ø'				

PJL
11/2/99

13

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-Ø39
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	v, b 11-9-99
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers. Stainless steel bowls and spoons.	8. HOLE LOCATION: Outside Berm	
	9. SURFACE ELEVATION: ~~NA~~ HLS 3-21-00 1079.160	
	10. DATE STARTED: 11/2/99	11. DATE COMPLETED: 11/2/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø'/1@5.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
DAØ106/DA1Ø107/DA1Ø108	—	3	Propellants (1)	Explosives (3)	Cyanide (3)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location DA1-Ø39
northing: 551535.00000
easting: 2346433.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø39

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
Demolition Area 1 Phase I RI	P. Locat	DA1-039	~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Sandy SILT (ML), moist, soft, olive brown (2.5Y4/4). Ø.8'	NA	NA	DA101Ø6 1415	vjb 11/9/99
	1.Ø'	Sandy CLAY (CL), moist, moderately stiff, moderate plasticity, olive brown (2.5Y 4/3),			DA101Ø7 144Ø	
	2.Ø'	2.3'				
	3.Ø'	Silty CLAY (CL), moist, very stiff, slightly plastic, light olive brown (2.5Y5/3) varigated light gray (2.5Y7/1).			DA101Ø8 1455	
	4.Ø'					
		SILT (ML), moist, soft, loose, nonplastic, light olive brown (2.5Y5/4) 4.8'				
	5.Ø'	Bottom of Boring = 5.Ø'				

PJL (?) 11/2/99

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HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER: DA1-Ø4Ø
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF ~~1~~ 2

3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. stainless steel bucket augers, Stainless steel bowls and spoons	8. HOLE LOCATION: Outside Berm
	9. SURFACE ELEVATION: ~~NA~~ 1078.780
	10. DATE STARTED: 11/3/99 — 11. DATE COMPLETED: 11/3/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA
14. TOTAL DEPTH OF HOLE: 3@1.Ø'/1@3.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1Ø1Ø9/DA1Ø126/DA1Ø138/DA1Ø11Ø	(3)	4	Propellants (4)	Explosives (4)	Cyanide & SVOC (4)	1ØØ

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
				Paul J. [illegible]

vjb 11/9/99

LOCATION SKETCH/COMMENTS See page #2 SCALE:

Survey Data for location #DA1-Ø4Ø
northing: 551283.00000
easting: 2346220.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø4Ø

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG

HOLE NUMBER: DA1-Ø4Ø

PROJECT: Demolition Area 1 Phase I RI

INSPECTOR: P. Lucot

SHEET: ~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Silty CLAY (CL), wet, stiff, moderately plastic light olive brown (2.5Y4/3).	NA	NA	DA10109 DA10126 DA10138 1030	V, b 11/9/99
	1.Ø'	1.Ø'-3.Ø': Same as above, but moist, Fissle, and variagated light gray (2.5Y 7/1). PJL 11/3/99			DA1Ø11Ø 11ØØ	
	2.Ø'					
	3.Ø'	Bottom of Boring=3.Ø'				

PJL 11/3/99

PROJECT: Demolition Area 1 Phase I RI

HOLE NO: DA1-Ø4Ø

HTRW DRILLING LOG

DISTRICT	Louisville
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	NA
HOLE NUMBER	DA1-0441
SHEET	1 OF 2
3. PROJECT	Demolition Area 1 Phase I RI
4. LOCATION	Ravenna Army Ammunition Plant
5. NAME OF DRILLER	NA
6. MANUFACTURERS DESIGNATION OF DRILL	Bucket Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3" dia stainless steel bucket auger, Stainless steel bowls and spoons
8. HOLE LOCATION	NA
9. SURFACE ELEVATION	NA
10. DATE STARTED	11/3/99
11. DATE COMPLETED	11/3/99
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	NA
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	3@1.0'/1@8.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA10111/DA10112/DA10113/DA10164	NA	4	Propellant (3)	Explosive (4)	Cyanide (1)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	✓	—	—	Paul J. Jucorb

LOCATION SKETCH/COMMENTS

See page #2

SCALE:

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-0481 vjb

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

vjb 11/9

vjb 2/22/00

DRILLING LOG

Hole No. DA1-Ø41

Project: Demolition Area 1 Phase I RI | Inspector: P. Luost | Sheet 1 of 1 / 2 of 2

Elev. (a)	Depth (b)	Description of Materials (c)	Field Screening Results (d)	Geotech Sample or Core Box No. (e)	Analytical Sample No. (f)	Remarks (g)
		Silty CLAY (CL), moist, stiff, moderately plastic, light olive brown (2.5Y4/3). 1.Ø'	NA	NA	DA1Ø111 1355	vjb 11/9/99
	1.Ø'	Sandy SILT (ML), moist, very loose, sand is fine grained, light yellowish brown (2.5Y6/4).			DA1Ø112 1405	
	2.Ø'					
	3.Ø'				DA1Ø113 1415	
	4.Ø'					
	5.Ø'					
	6.Ø'				DA1Ø164 1925	
	7.Ø'	7.5'				
		Silty CLAY (CL), moist, stiff, moderately plastic, light olive brown (2.5Y4/3).				
	8.Ø'	Bottom of Boring = 8.Ø'				

1.Ø
2.Ø
3.Ø
4
5.
6.
7.
8

PJL 11/3/99

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: DA1-Ø42
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 of ~~1~~ 2
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	vjb 11-9-99
5. NAME OF DRILLER: NA	6. MANUFACTURER'S DESIGNATION OF DRILL: Bucket Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3" dia. Stainless steel bucket augers, Stainless steel bowls and spoons	8. HOLE LOCATION: Outside Berm	
	9. SURFACE ELEVATION: ~~[illegible]~~ 1082.860	
	10. DATE STARTED: 11/3/99	11. DATE COMPLETED: 11/3/99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 3@1.Ø' / 1@8.Ø'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA	NA	~~[illegible]~~ NA	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA1Ø114/DA1Ø115/DA1Ø116/DA1Ø165	(1)	4	Propellants (3)	Explosives (4)	Cyanide (9)	100

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Bentonite	—	—	—	[signature]

LOCATION SKETCH/COMMENTS

SCALE: NONE

SEE PG 2

Survey Data for location #DA1-042
easting: 2346059.00000
northing: 551429.00000

PROJECT	HOLE NO.
Demolition Area 1 Phase I RI	DA1-Ø42

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

DRILLING LOG		HOLE NUMBER DA1-Ø42
PROJECT Demolition Area 1 Phase I RI	INSPECTOR P. Lucof	SHEET ~~1 of 1~~ 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	~~1.Ø'~~	Sandy SILT (ML), moist, loose, nonplastic, olive brown (2.5Y4/4).	NA	NA PJL 11/3/99	DA10115 153Ø	Because UXO clearance was not granted to core a 4th borehole all sample jars were filled with the composite
	~~2.Ø'~~ 1.Ø' ~~3.Ø'~~	Ø.Ø'-1.Ø': Several nails, amunition Fuses, and bluish gray (5B4/1) metal oxides	1.Ø'	~~DA10Ø35 154Ø 10/19/99 Shelby Tube~~	DA1Ø116 154Ø	Boring location from 1.Ø'-8.Ø' offset due to amount of debris down hole. Location DA1-Ø42A was located 15.5' due east of the original location were the Ø'-1' sample was collected.
	~~4.Ø'~~ 2.Ø' ~~5.Ø'~~	Sandy SILT (ML), moist, loose, non plastic, olive brown (2.5Y4/4). 3.Ø'				
	3.Ø'	Silty CLAY (CL), moist, very stiff, light olive brown (2.5Y4/3) varigated light gray (2.5Y7/1).			DA1Ø117 155Ø	
	4.Ø'					
	5.Ø'					
	6.Ø'				DA1Ø165 16ØØ	
	7.Ø'					
	8.Ø'	Bottom of Boring=8.Ø'				

PJL 11/3/99

vjb 11/9/99

APPENDIX B

SEDIMENT AND SURFACE WATER SAMPLING LOGS

APPENDIX B
SEDIMENT AND SURFACE WATER SAMPLE LOG LOCATOR SHEET

Sample Station Number — **Page Number**

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SEDIMENT AND SURFACE WATER SAMPLING LOGS

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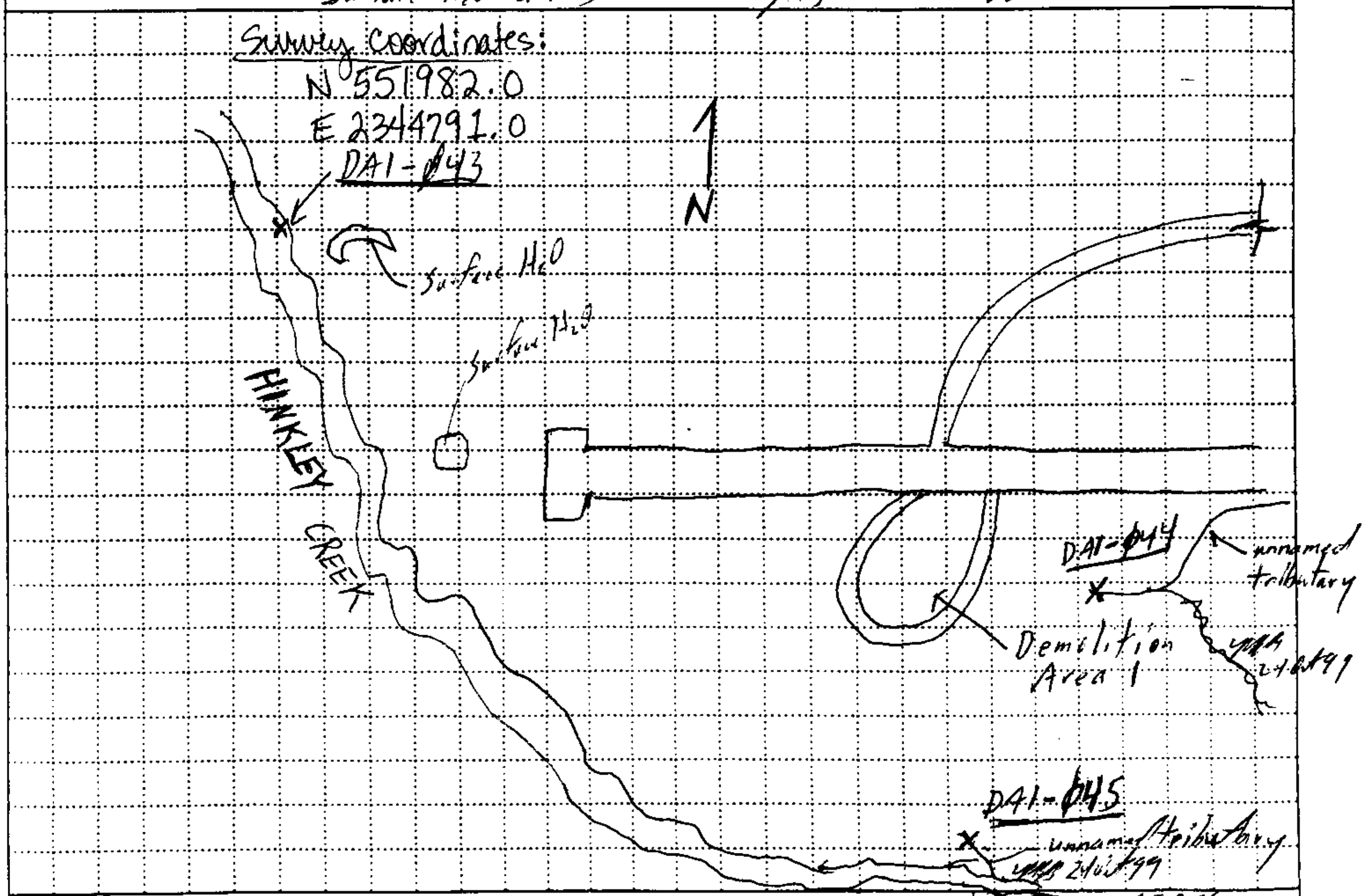
HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER / STATION: DA1-Ø43
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 of 1
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	
5. NAME OF DRILLER: NA	6. MANUFACTURER'S DESIGNATION OF DRILL: NA	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Decon'd Stainless Steel bowl and spoon	8. HOLE LOCATION: DA 1	
	9. SURFACE ELEVATION: 1071.789 SRA 5/18/01	
	10. DATE STARTED: 24 Oct 99	11. DATE COMPLETED: 24 Oct 99
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: NA	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
	✓		NA			
20. SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21. TOTAL CORE RECOVERY**
	✓	✓	TOC, SVOCs	Cyanide, Pesticides	PCBs, Explosives	
22. DISPOSITION OF HOLE NA	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23. SIGNATURE OF INSPECTOR**		

LOCATION SKETCH/COMMENTS: Surface H2O and Sediment Samples SCALE: NA



PROJECT: Demolition Area 1 Phase I RI

HOLE NO. STATION: DA1-Ø43

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

5

HTRW DRILLING LOG

DISTRICT: Louisville

~~HOLE NUMBER~~ STATION: DAI-Ø44

1. COMPANY NAME: SAIC

2. DRILL SUBCONTRACTOR: N/A

SHEET 1 OF 1 SHEETS

3. PROJECT: Demolition Area 1 Phase I RI

4. LOCATION: Ravenna Army Ammunition Plant

5. NAME OF DRILLER: N/A

6. MANUFACTURER'S DESIGNATION OF DRILL: N/A

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Decon'd Stainless steel bowl and spoon

8. ~~HOLE~~ LOCATION: See Map Page 2

9. SURFACE ELEVATION: 1065.650

10. DATE STARTED: 24 Oct 99

11. DATE COMPLETED: 24 Oct 99

12. OVERBURDEN THICKNESS: N/A

15. DEPTH GROUNDWATER ENCOUNTERED: N/A

13. DEPTH DRILLED INTO ROCK: N/A

16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: N/A

14. TOTAL DEPTH OF HOLE: N/A

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	/		N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
Sediment ONLY	# DA10118					

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
N/A	X			[signature]

LOCATION SKETCH/COMMENTS: See map for DAI-Ø43 (pg 2)

SCALE:

(SURVEY DATA for DAI-Ø44
northing: 550872.00000
easting: 2346326.00000)

PROJECT: Demolition Area 1 Phase I RI

~~HOLE NO.~~ STATION: DAI-Ø44

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: Louisville		LOCATION DA1-Ø45
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 1 SHEETS
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	
5. NAME OF DRILLER: NA	6. MANUFACTURER'S DESIGNATION OF DRILL: NA	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Decond Stainless Steel Bowl and Spoon	8. HOLE LOCATION: See Map on Pg 2	
	9. SURFACE ELEVATION	
	10. DATE STARTED: 24 Oct 99	11. DATE COMPLETED: 24 Oct 99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: NA	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
	✓		NA			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
DA10123 & DA10119	✓	✓	TOC, SVOCs	Cyanide, Propellants	PCBs, Explosives	
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
NA				[signature]		

LOCATION SKETCH/COMMENTS See Map for DA1-Ø43 (Pg 2) SCALE: NA

Surface H2O and Sediment Samples

DA1-Ø45 Survey coordinates:

N 550872.0
E 2346326.0

24 Oct 99

PROJECT: Demolition Area 1 Phase I RI	STATION: DA1-Ø45

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER: ~~HOLE NUMBER~~ LOCATION DA1-046
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: NA	SHEET 1 OF 1 SHEETS
3. PROJECT: Demolition Area 1 Phase I RI	4. LOCATION: Ravenna Army Ammunition Plant	
5. NAME OF DRILLER: NA	6. MANUFACTURERS DESIGNATION OF DRILL: NA	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Stainless steel decond bowl and spoon	8. HOLE LOCATION: See Map Below	
	9. SURFACE ELEVATION: 1062.616	
	10. DATE STARTED: 24 Oct 99	11. DATE COMPLETED: 24 Oct 99
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: NA	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: NA	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
	✓		NA			
20. SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21. TOTAL CORE RECOVERY**
	✓	✓	TOC, SVOCs	Cyanide, Propellants, PCBs, Explosives		
22. DISPOSITION OF HOLE	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23. SIGNATURE OF INSPECTOR**		
NA				[signature]		

LOCATION SKETCH/COMMENTS

SCALE:

Surface H2O and Sediment Samples

SURVEY Data for ~~☒~~ HCS DA1-046
northing: 548603.00000
easting: 2346897.00000

PROJECT	~~HOLE NO~~ LOCATION
Demolition Area 1 Phase I RI	DA1-046

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

APPENDIX C

PROJECT QUALITY ASSURANCE SUMMARY

C.0 PROJECT QUALITY ASSURANCE SUMMARY

This appendix presents the actions and methodologies undertaken to meet the quality assurance/quality control (QA/QC) goals for the project. These goals were established in the Facility-wide Sampling and Analysis Plan (SAP) for the Ravenna Army Ammunition Plant (RVAAP) (USACE 1996b) and the Phase I Remedial Investigation (RI) SAP Addendum No.1 for Demolition Area 1 (USACE 1999a). These were implemented through project-specific procedures and requirements, the Science Applications International Corporation (SAIC) QA Program, and the U.S. Army Corps of Engineers (USACE) – Louisville District QA requirements. A large proportion of project QA was focused on field and analytical laboratory activities and project administration.

C. 1 FIELD QUALITY ASSURANCE

C.1.1 Readiness Review

Field QA was initiated for the Demolition Area 1 (DA1) Phase I RI in the readiness review held at the SAIC Oak Ridge offices on October 11, 1999. The purpose of the readiness review was to ensure that (1) all project documents and procedures were approved, controlled, and properly distributed; (2) all assigned personnel were trained or a schedule was established to conduct training; (3) the mobilization and site logistics were established; (4) the laboratories were ready to accept samples; (5) all other subcontractors were ready to begin work; and (6) the QA system was implemented. All elements of the readiness review were completed prior to initiating field activities and were approved by the SAIC QA/QC Officer. Readiness review and project kickoff checklists provide documentation of this QA element and are maintained in the project file.

C.1.2 Procedures

Standard operating methods for field activities performed during the Phase I RI at DA1 are incorporated into the governing documents for the project. The Facility-wide SAP (USACE 1996b) describes the overall approach and methodologies to be used for projects at RVAAP, and the Phase I RI SAP Addendum for DA1 (USACE 1999a) details project-specific requirements for field implementation. These documents were reviewed and approved by the USACE – Louisville District and by the Ohio Environmental Protection Agency (Ohio EPA) prior to implementation. Clarifications and/or planned deviations from these methods were documented as field change orders (FCOs), and variances were documented as nonconformance reports (NCRs). Copies of the FCOs are attached to this appendix.

C.1.3 Training

Field team personnel were trained in all procedures applicable to their assigned tasks. Training was accomplished by combinations of classroom lectures, reading assignments, and on-the-job training. Surveillance performed by the project SAIC contractor quality control (CQC) representative provided assessments of worker proficiency and training effectiveness.

Training was documented by the completion of training records. Performance documentation was completed in the field by the CQC representative after observing successful implementation of a procedure by a field team member. Copies of training records and surveillance reports were maintained in the project file. Copies of training records required for Occupational Safety and Health Administration and Department of Transportation compliance also were maintained in the field.

C.1.4 Equipment Calibration

Various types of Measuring and Testing Equipment (M&TE) were used during the field investigation. All M&TE was categorized, assigned unique identifiers, and listed in an inventory in the M&TE logbook. Last and next calibration recall dates were also recorded. As appropriate, instruments were calibrated daily according to the manufacturer's instructions. Only equipment and standards having verifiable traceability to nationally recognized standards were used for calibration. Daily calibration activities and results were recorded in the M&TE logbook, as well as source information for all calibration standards and reagents.

C.1.5 Quality Control Samples

Field QC samples collected included trip blanks, equipment rinsate blanks, source water, and field duplicates. Field QA splits were collected as specified in the Phase I RI SAP Addendum for DA1 (USACE 1999a) pertaining to contractor chemical quality control. Implementation of the Contractor Chemical Quality Control program in the field was done by the SAIC CQC representative. Field QC data and analyses of QC samples are presented in Appendix E.

C.1.6 Field Records

Field data, observations, activities, and information were recorded in preformatted, bound field logbooks. The use of structured logbooks ensured that all necessary data were entered consistently. Logbook entries were checked for accuracy and completeness by independent reviewers. Critical and/or contract-required original records (e.g., sampling forms) were recorded in duplicate using carbonless paper. Other field records, which were collected and likewise maintained, included equipment/material certifications, boring logs, and air bill forms.

C.1.7 Surveillance and Audits

Surveillance of operations at RVAAP during the Phase I RI at DA1 was conducted by SAIC. This surveillance assessed technical and quality-related activities including surface and subsurface soil sampling, sediment and surface water sampling, equipment decontamination, training and health and safety practices, and field record review.

C.2 ANALYTICAL LABORATORY QUALITY ASSURANCE

SAIC subcontracted Quanterra, Inc. (now Severn-Trent Laboratories) to perform chemical analysis for the DA1 Phase I RI. The selected laboratory is certified by the USACE Missouri River Division Mandatory Center of Expertise (MCX) in Omaha, Nebraska. In addition, this laboratory was technically audited by SAIC prior to contract award.

C.2.1 Readiness Review

Laboratory QA activities were initiated during the readiness review. The readiness review ensured that (1) governing documents and approved analytical methods were controlled and properly distributed; (2) the laboratory was scheduled and ready to conduct the analysis; (3) logistical coordination was established between the laboratory and the field team; and (4) laboratory QA programs were consistent and compatible with the project requirements.

C.2.2 Procedures

Prior to initiation of analytical support for the DA1 Phase I RI, Quanterra and SAIC reviewed and negotiated a contract based on a comprehensive Statement of Work (laboratory SOW). The laboratory SOW represented and referenced project-specific requirements, including the parameters to be measured, the analytical methods to implement, adherence to Environmental Protection Agency (EPA) SW-846 protocol, project quantitation goals (sensitivity), and data deliverables required. All laboratory comments and questions were resolved before analytical work proceeded.

C.2.3 Laboratory Quality Control

To document laboratory data quality and to measure the quality of the analytical process, laboratory quality control samples and data verification/validation were employed. The results of laboratory QC are discussed in the project data quality assessment (Appendix D). Analytical results of laboratory QC samples are included in the project file and form the basis of the data validation and verification process.

C.2.4 Laboratory Documentation

The laboratory maintains comprehensive information regarding the entire analytical process. The laboratory delivered summary data packages and electronic deliverables consistent with those identified in the EPA SW-846 protocol to SAIC for validation and verification. Laboratory QC sample analyses were cross-referenced to the appropriate environmental field sample analyses in the laboratory deliverables.

C.2.5 Data Verification/Validation

Analytical data generated during this project were subjected to a rigorous process of data validation and verification. Criteria were established against which the analytical results were compared and from which a judgment was rendered regarding the acceptability and qualification of the data (Appendix D). Upon receipt of data packages from each laboratory, the information was subjected to a systematic examination following standardized checklists and procedures to ensure content, presentation, administrative validity, and technical validity. Routine data changes were documented through data change forms. Data deficiencies or formal laboratory-related nonconformances were documented through an NCR process, as required.

C.3 QUALITY ASSURANCE DOCUMENTATION

Primary methods for documenting QA during the DA1 Phase I RI include the completion of FCOs and NCRs. Copies of FCOs completed during the investigation are included in this appendix. Copies of NCRs are on record in the SAIC RVAAP project file.

C.3.1 Field Change Control

FCOs were completed during the RI to document the rationale and to gain approval for any departures from protocols specified in the approved Facility-wide SAP and Phase I RI Addendum for DA1. FCOs provide clarification to scope or refinement in the procedural approach to a specific field activity. All FCOs were reviewed and approved by designated technical representatives of the USACE – Louisville District prior to implementation. None of the FCOs resulted in an adverse impact to project quality, schedule, or scope. Copies of the three approved FCOs are included in this appendix.

The purpose of most of the FCOs was to request and document changes to the approved SAPs or Quality Assurance Project Plans. Two FCOs pertained to changes in planned sampling methodologies or sampling locations. For example, FCO-001 addressed a change in soil sampling method at one station. FCO-002 addressed an error in the SAP Addendum, and FCO-003 addressed the reassignment of samples that could not be collected due to auger refusal.

C.3.2 Nonconformance Reports

To identify and correct conditions adverse to quality, as described in the field and laboratory QA plans, NCRs and corrective action reports were completed, as necessary. Between project initiation and January 2000, one NCR was completed. This NCR was generated as a result of the data verification process. This NCR, which was initiated during the project, has been corrected and closed.

A summary of the actions or items that warranted the initiation of the NCR included:

- Comparison of laboratory data received with the Sample Manager's field records showed a discrepancy in the identification of a trip blank. Further review indicated that the wrong label was applied to a trip blank and that the trip blank identification was not documented on the laboratory chain-of-custody form. Actions taken to prevent recurrence include assignment of labels to trip blank vials prior to assigning the blank vials to the sampling teams. The incorrect identification number was corrected on the Form I received from the laboratory.

FIELD CHANGE ORDERS

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Field Change Order (FCO)

FCO NO 91

MODIFICATION NO. ______ DATE 10.22.99 WORK AUTHORIZATION ______

TYPE OF CHANGE ______ PRIORITY O EMERGENCY O URGENT ✓ ROUTINE

ADS NO. ______ CYWP NO. ______ CWBS NO. ______ O MINOR O MAJOR O OTHER

REQUESTER IDENTIFICATION

NAME K Dominic ORGANIZATION SAIC PHONE 918·625·7614

TITLE FOM SIGNATURE KLDominic

BASELINE IDENTIFICATION

BASELINE(S) AFFECTED O COST O SCOPE O MILESTONES ✓ METHOD OF ACCOMPLISHMENT

PROGRAM SERVICE ORDER NO. ______ REVISION NO. ______ CAM SIGNATURE ______ PHONE ______

DESCRIPTION OF CHANGE Sec. 4.1.1.1 of SAP Addendum: At DAI-027, samples from 1-3' and 3-5' intervals were collected using the Geoprobe macro-core device instead of with hand augers, during lithologic sampling.

JUSTIFICATION Difficulty in hand auguring at nearby locations made this a savings in time and effort.

IMPACT OF NOT IMPLEMENTING REQUEST Potential for not being able to push augers and collect subsurface soils at this location.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST Field team.

COST ESTIMATE $ NA ESTIMATOR SIGNATURE ______

PHONE ______ DATE ______

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE [signature] DATE 11·4·99

QAS REVIEW ______ DATE ______

TIME FROM INITIATION TO ACTION ______

Field Change Order (FCO)

FCO NO 02

MODIFICATION NO. ______ DATE 10.22.99 WORK AUTHORIZATION ______

TYPE OF CHANGE ______ PRIORITY O EMERGENCY O URGENT O ROUTINE

ADS NO. ______ CYWP NO. ______ CWBS NO. ______ O MINOR O MAJOR O OTHER

REQUESTER IDENTIFICATION

NAME K Dominic ORGANIZATION SAIC PHONE 913.625.

TITLE FCM SIGNATURE K L Dominic

BASELINE IDENTIFICATION

BASELINE(S) AFFECTED O COST O SCOPE O MILESTONES O METHOD OF ACCOMPLISHMENT

PROGRAM SERVICE ORDER NO. ______ REVISION NO. ______ CAM SIGNATURE ______

DESCRIPTION OF CHANGE Figure 4-2 and Table 4-3 incorrectly identify surface water + sediment locations. Bottle labels + Table 5-1 are correct, accounting for addition of Geoprobe groundwater sample. PHONE ______

JUSTIFICATION Corrects error in SAP Addendum.

IMPACT OF NOT IMPLEMENTING REQUEST Incorrect labeling/logging of samples.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST Field teams. Change has been pointed out to them + stations were re-labeled in field.

COST ESTIMATE $ N/A ESTIMATOR SIGNATURE ______

PHONE ______ DATE ______

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE [signature] DATE 11.4.99

QAS REVIEW ______ DATE ______

TIME FROM INITIATION TO ACTION ______

Field Change Order (FCO)

FCO NO 03

MODIFICATION NO. ________ DATE 10.22.99 WORK AUTHORIZATION ________

TYPE OF CHANGE ________ PRIORITY O EMERGENCY O URGENT O ROUTINE

ADS NO. ________ CYWP NO. ________ CWBS NO. ________ O MINOR O MAJOR O OTHER

REQUESTER IDENTIFICATION

NAME K Dominic ORGANIZATION SAIC PHONE 918.625.7644

TITLE FOM SIGNATURE K L Dominic

BASELINE IDENTIFICATION

BASELINE(S) AFFECTED O COST O SCOPE O MILESTONES O METHOD OF ACCOMPLISHMENT

PROGRAM SERVICE ORDER NO. ________ REVISION NO. ________ CAM SIGNATURE ________

DESCRIPTION OF CHANGE Sec. 4.1.1.1 of SAP Addendum PHONE ________ Subsurface (1-3' interval) samples could not be collected because of refusal on compacted rubble. Instead, samples will be added in 6-8' interval as shown below.
SAMPLES WHERE 1-3' INTERVAL NOT COLLECTED:

JUSTIFICATION DA1-4, DA1-5, DA1-6, DA1-8, DA1-9, DA1-11: LOCATIONS WHERE 6-8' SAMPLES WILL BE COLLECTED: DA1-18, DA1-19, DA1-20 DA1-20, DA1-21, DA1-41, DA1-42.
JUSTIFICATION: Provides additional depth characterization in areas where subsurface is penetrable.

IMPACT OF NOT IMPLEMENTING REQUEST Unexpended analyses + lost subsurface data.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST Field team
Sample mgr.

COST ESTIMATE $ NA ESTIMATOR SIGNATURE ________

PHONE ________ DATE ________

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE ________ DATE ________

QAS REVIEW ________ DATE ________

TIME FROM INITIATION TO ACTION ________

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APPENDIX D

QUALITY CONTROL SUMMARY REPORT

D.0 DATA QUALITY CONTROL SUMMARY REPORT

Environmental data must always be interpreted relative to their known limitations and intended use. As can be expected in environmental media of this type, there are areas and data points where the user needs to be cautioned relative to the quality of the project information presented. The data validation process and this data quality assessment are intended to provide current and future data users with assistance throughout the interpretation of this data.

D.1 PURPOSE

The purpose of this Data Quality Control Summary Report (QCSR) is (1) to describe the quality control (QC) procedures followed to ensure data generated by Science Applications International Corporation (SAIC) during CERCLA investigations at the Ravenna Army Ammunition Plant (RVAAP) would meet project requirements; (2) to describe the quality of the data collected; and (3) to describe problems encountered during the course of the study and their solutions. A separate Chemical Quality Assessment Report will be completed by the US Army Corps of Engineers (USACE) Quality Assurance (QA) representative to address data generated from QA split samples remanded to its custody.

This report provides an assessment of the analytical information gathered during the course of the RVAAP Demolition Area 1 (DA1) Phase I Remedial Investigation (RI) performed during 1999. This report documents that the quality of the data employed for the RI report met project objectives. Evaluation of field and laboratory QC measures constitutes the majority of this assessment; however, references are also directed toward those QA procedures that establish data credibility. The primary intent of this assessment is to illustrate that data generated for the RI can withstand scientific scrutiny; are appropriate for their intended purpose; are technically defensible; and are of known and acceptable sensitivity, precision, and accuracy.

Multiple activities must be performed to achieve the desired data quality. As discussed in the RI report, decisions were made during the initial scoping of the RI to define the quality and quantity of data required. Data quality objectives (DQOs) were established to guide the implementation of the field sampling and laboratory analysis (refer to the DA1 Phase I RI SAP Addendum, October 1999). A QA program was established to standardize procedures and to document activities (refer to the RVAAP Facility-wide Quality Assurance Project Plan (QAPP) April 1996 and the DA1 Phase I RI QAPP Addendum October 1999). This program provided a means to detect and correct any deficiencies in the process. Upon receipt by the project team, data was subjected to verification and validation review that identified and qualified problems related to the analysis. These review steps contribute to this final Data Quality Assessment, which defines that data used in the investigation met the criteria and are employed appropriately.

D.2 QUALITY ASSURANCE PROGRAM

A Facility-wide QAPP and a Phase I RI QAPP Addendum for DA1 studies were developed to guide the investigation. These plans are found in Part II of the Facility-wide Sampling and Analysis Plan (SAP) (USACE 1996) and the DA1 Phase I RI SAP Addendum No. 1 (USACE 1999). The purposes of these documents were to enumerate the quantity and type of samples to be taken to inspect the area of concern and to define the quantity and type of QA/QC samples to be used to evaluate the quality of the data obtained.

The QAPP established requirements for both field and laboratory QC procedures. In general, field QC duplicates and QA split samples were required for each environmental sample matrix collected in the area being investigated. Volatile organic compounds (VOCs) trip blanks were to accompany each cooler containing water samples for VOC determinations. Analytical laboratory QC duplicates, matrix spikes, laboratory control samples, and method blanks were required for every 20 samples or less of each matrix and analyte.

A primary goal of the RVAAP QA program is to ensure that the quality of results for all environmental measurements are appropriate for their intended use. To this end, the QAPP and standardized field procedures were compiled to guide the investigation. Through the process of readiness review, training, equipment calibration, QC implementation, and detailed documentation, the project has successfully accomplished the goals set for the QA program. Surveillances were conducted to determine the adequacy of field performance as evaluated against the QA plan and procedures.

D.2.1 Monthly Progress Reports

Monthly Progress Reports (MPRs) were completed by the SAIC Project Manager for each month of the project's duration. The MPRs contained the following information: work completed, problems encountered, corrective actions/solutions, summary of findings, and upcoming work. These reports were issued to the USACE – Louisville District Project Manager with copies forwarded to the Ohio EPA. Access to these reports can be obtained through the USACE Project Manager.

D.2.2 Daily Quality Control Reports

The Field Team Leader produced all Daily Quality Control Reports (DQCRs). These include information such as sub-tier contractors on-site, equipment on-site, work performed summaries, QC activities, health and safety activities, problems encountered, and corrective actions. Other QA-related information is included where appropriate. The DQCRs were submitted to the USACE – Louisville District Project Manager and may be obtained through his office.

D.2.3 Laboratory "Definitive" Level Data Reporting

The QAPP for this project identified requirements for laboratory data reporting and identified Quanterra Laboratories (now Severn-Trent Laboratories) of North Canton, Ohio, as the lab for the project. During the execution of the project, the North Canton, Ohio, facility took the lead and performed the majority of the analyses, while its Knoxville, Tennessee, facility performed explosives by High Pressure Liquid Chromatography (HPLC) and its Sacramento, California, facility performed nitroguanidine and nitrocellulose determinations. EPA "definitive" data have been reported including the following basic information:

a. laboratory case narratives;
b. sample results (soil/sediment reported per dry weight);
c. laboratory method blank results;
d. laboratory control standard results;
e. laboratory sample matrix spike recoveries;
f. laboratory duplicate results;
g. surrogate recoveries (VOCs, Semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and explosives);

h. sample extraction dates; and
i. sample analysis dates.

This information from the laboratory, along with field information, provides the basis for subsequent data evaluation relative to sensitivity, precision, accuracy, representativeness, and completeness. These have been presented in Section D.4.

D.3 DATA VALIDATION

The objective when evaluating the project data quality is to determine its usability. The evaluation is based on the interpretation of laboratory QC measures, field QC measures, and the project DQOs. This project implemented data validation checklists to facilitate laboratory data validation. These checklists were completed by the project designated validation staff and were reviewed by the project laboratory coordinator. Data validation checklists for each laboratory sample delivery group have been retained with laboratory data deliverables in the project files.

D.3.1 Field Data Validation

DQCRs were completed by the Field Team Leader. The DQCRs and other field-generated documents, such as sampling logs, boring logs, daily health and safety summaries, daily safety inspections, equipment calibration and maintenance logs, and sample management logs, were peer reviewed on-site. These logs and all associated field information have been delivered to the USACE – Louisville District Project Manager and can be obtained through that office.

D.3.2 Laboratory Data Validation

Analytical data generated for this project have been subjected to a process of data verification, validation, and review. The following describes this systematic process and the evaluation activities performed. Several criteria have been established against which the data were compared and from which a judgment was rendered regarding the acceptance and qualification of the data. Because it is beyond the scope of this report to cite those criteria, the reader is directed to the following documents for specific detail:

- SAIC Technical Support Contractor QA Technical Procedure (TP-DM-300-7) Data Verification and Validation;

- EPA – *National Functional Guidelines for Inorganic Data Review*, EPA 540/R-94/013, February 1994;

- EPA – *National Functional Guidelines for Organic Data Review*, EPA-540/R-94/012, February 1994; and

- *Phase 1 Remedial Investigation of Demolition Area #1 at the RVAAP, Ravenna, Ohio, Sampling and Analysis Plan Addendum No. 1*, SAIC, October 1999.

Upon receipt of field and analytical data, verification staff performed a systematic examination of the reports, following standardized data package checklists to ensure the content, presentation, and administrative validity of the data. Discrepancies identified during this process were recorded and documented utilizing the checklists. As part of data verification, standardized laboratory electronic data deliverables were subjected to review. This technical evaluation ensured that all contract-specified requirements had been met and that electronic information conformed to reported hardcopy data. QA program nonconformance report (NCR) and corrective action systems were implemented as required.

During the validation phase of the review and evaluation process, data were subjected to a systematic technical review by examining all field and analytical QC results and laboratory documentation, following appropriate functional guidelines for laboratory data validation. These data validation guidelines define the technical review criteria, methods for evaluation of the criteria, and actions to be taken resulting from the review of these criteria. The primary objective of this phase was to assess and summarize the quality and reliability of the data for the intended use and to document factors that may affect the usability of the data. Data verification/validation included but was not necessarily limited to the following parameters:

- Data completeness;
- Analytical holding times and sample preservation;
- Calibration (initial and continuing);
- Method blanks;
- Sample results verification;
- Surrogate recovery;
- Laboratory control standard analysis;
- Internal standard performance;
- Matrix spike (MS) recovery;
- Duplicate analysis comparison;
- Reported detection limits;
- Compound, element, isotope quantification;
- Reported detection levels; and
- Secondary dilutions.

As an end result of this phase of the review, the data were qualified based on the technical assessment of the validation criteria. Qualifiers were applied to each field and analytical result to indicate the usability of the data for their intended purpose.

D.3.3 Definition of Data Qualifiers (FLAGS)

During the data validation process, all laboratory data were assigned appropriate data validation flags and reason codes. Validation flags are defined as follows:

"U" Indicates the analyte was analyzed for, but not detected, above the level of the associated value.

"J" Indicates the analyte was positively identified; however, the associated numerical value is an approximate concentration of the analyte in the sample.

"UJ" Indicates the analyte was analyzed for, but not detected, above the associated value; however, the reported value is an estimate and demonstrates a decreased knowledge of its accuracy or precision.

"R" Indicates the analyte value reported is unusable. The integrity of the analyte's identification, accuracy, precision, or sensitivity has raised significant questions as to the reliability of the information presented.

"=" Indicates the analyte has been validated and positively identified, and the associated concentration value is accurate.

SAIC validation reason codes have been provided as Attachment 1, while copies of validation checklists and qualified data forms are maintained with the analytical laboratory deliverable**.**

D.3.4 Data Acceptability

More than 130 environmental soil, sediment, surface water, groundwater, and field QC samples were collected with approximately 7,300 discrete analyses (i.e., analytes) being obtained, reviewed, and integrated into the assessment (these totals do not include field measurements and field descriptions). The project produced acceptable results for more than 99 percent of the sample analyses performed. Data that were rejected are relegated primarily to results for the metal antimony and the SVOC hexachlorocyclopentadiene.

Table D-1 presents a summary of the collected investigation samples. It tallies the successful collection of all targeted field QC and QA split samples, while Table D-2 identifies a cross-reference for duplicate and QA split sample pair numbers. Table D-3 provides a summary of rejected analyses grouped by media and analyte category.

For the DA1 Phase I RI, a total of 12 field duplicates were analyzed for soil, sediment, and surface water media. Equipment rinsate and site source water blanks were those reported with the concurrent NACA Test Area (NTA) Phase I RI results (USACE 2000). Trip blanks for VOC determinations were analyzed relative to each shipment of water samples, totaling one analysis for the Phase I RI, with one other accompanying the surface water QA split sample.

Undetected results for antimony were rejected in several soil samples due to poor matrix spike recoveries. The SVOCs 3,3'-dichlorobenzidine and 4-chlorobenzenamide required rejection in a few isolated sediment and soil sample analyses due to sample matrix interferences as demonstrated by very poor matrix spike recoveries. Hexachlorocyclopentadiene non-detected results for all surface water samples were also rejected due to extremely poor matrix spike recoveries.

The majority of estimated values were based on values observed between the laboratory method detection levels and the project reporting levels. Values determined in this region have an inherently higher variability and need to be considered estimated, at best.

D.4 DATA EVALUATION

D.4.1 Accuracy

Accuracy provides a gauge or measure of the agreement between an observed result and the true value for an analysis. Analytical accuracy is evaluated by measuring the agreement between an analytical result and its known or true value. This is generally determined through use of laboratory control samples (LCSs), MS analysis, and performance evaluation samples. Accuracy, as measured through the use of LCSs, determines the method implementation accuracy independent of sample matrix. They document the laboratory analytical process control. Accuracy determined by the MS is a function of both matrix and the analytical process. Table D-4 lists the average, maximum, and minimum analytical LCS recovery values for VOC, SVOC, explosive, PCB, metal, and miscellaneous analyses. Average, minimum, and maximum method blank surrogate compound recoveries for organic parameters are compiled in Table D-5. Table D-6 consolidates the sample MS recovery values for metal, VOC, SVOC, explosive, PCB, and miscellaneous parameters.

D.4.1.1 Metals

Average LCS percent recovery values for metals analyses of soil and sediment ranged from 89 percent for selenium to 114 percent for iron. All LCS recoveries were within the reference materials assigned variation and within project accuracy goals of 75-125 percent. None of the soil and sediment data required qualification based on the LCS. LCS percent recovery values for metal analysis in water were all within 92-116 percent, and average recovery values ranged from 97 percent for mercury to 114 percent for zinc.

Sample MS information for metals produced some estimated values (in particular, antimony and magnesium values); however, the overall accuracy for these measurements is considered acceptable. Average soil and sediment percent recoveries ranged from 49 percent for antimony to 112 percent for mercury. Results for water MS data were satisfactory and provide confidence in the accuracy of the measurements. Average water sample MS recoveries were comparable to LCS recoveries, with averages ranging from 82 percent for thallium to 113 percent for iron.

In summary, LCS information demonstrates that the analytical laboratory process was in control and that accurate. MS, post-digestion spike analyses, and serial dilutions also provide confidence in the accuracy of elemental metal results.

D.4.1.2 VOCs

The VOC LCS recovery, method blank surrogate recovery, and MS recovery information provide measures of accuracy. Recoveries determined for the laboratory volatile organic method blank spike analyses (LCS) indicate the analytical process was in control. Summaries in Table D-4 show average soil and sediment LCS values range from 71 percent for chloromethane to 124 percent for acetone, while water LCS values range from 67 percent for chloromethane to 120 percent for both chloroethane and 2-butanone. Method blank surrogate recoveries (Table D-5) were all within 85-110 percent for volatile compounds. These values establish that the analytical process was in control.

The VOC MS recoveries (Table D-6) indicate that analytical accuracy for these compounds was in control and that the data are usable with few exceptions. Average soil and sediment MS recoveries ranged from 71 percent for chloromethane to 120 percent for 1,1,2,2-tetrachloroethane, while average water MS recoveries ranged from 51.5 percent for acetone to 109.5 percent for chloroethane and 1,1,1-trichloroethane.

D.4.1.3 Explosive Compounds

Nitroaromatic compound measures of accuracy are also derived from LCS, surrogate, and MS recovery information. Overall, the laboratory explosives analytical process was demonstrated to be in control by maintaining a general 75-125 LCS percent recovery for both water and soil matrices. HPLC results (compounds other than nitrocellulose) exhibited excellent control with all LCS values being between 73 percent and 116 percent and average results ranging between 87.5 percent and 106.5 percent. Colorimetric processes for nitrocellulose showed less control. Average LCS recoveries were 111 percent for water and 68 percent for soil and sediment analyses.

MS information also demonstrates acceptable accuracy control for both soil/sediment and water for the majority of the analyses. Average soil and sediment MS recoveries ranged from 40 percent for nitrocellulose to 102.5 percent for 2,6-dinitrotoluene. Water MS information was not performed on the few samples collected for HPLC explosives; however, the data collected on nitroquanidine and nitrocellulose are fully acceptable. Project data were qualified as estimated where appropriate relative to these QC results.

D.4.1.4 SVOCs

The LCS percent recovery values for semivolatile analyses of soil and sediment are generally in the 40-100 percent range, with average recoveries ranging from 42 percent for 3,3'-dichlorobenzidine to 87 percent for 2,2'-oxybis(1-chloropropane). Certain compounds exhibit wide variations, such as 2,4-dinitrophenol (44-104 percent) and pentachlorophenol (33-77 percent). Water average LCS values range from 16 percent for hexachlorocyclopentadiene to 83 percent for bis(2-ethylhexyl)phthalate, with all values between 39 percent and 104 percent with the exception of 2,4-dimethylphenol, 4-chloroaniline, hexachlorocyclopentadiene, 3-nitroaniline, and 3,3'-dichlorobenzidine. Most values are within the normally accepted advisory limits tabulated in Table D-7. They are also within project accuracy goals of 30-140 percent for semivolatile compounds. Data that required qualification based on LCS recoveries have been appropriately flagged in the data set.

Method blank surrogate recoveries (Table D-5) were within acceptable ranges for semivolatile compounds, reinforcing that the analytical process was in control.

Sample MS information for SVOCs (Table D-6) paralleled LCS data, with the overall accuracy for these measurements being considered acceptable. Average soil and sediment percent recoveries ranged from 26 percent for hexachlorocyclopentadiene to 90 percent for 2,2'-oxybis(1-chloropropane), with the exception of 3,3'-dichlorobenzidine at 20 percent. Results for the water MS data were also satisfactory, with average values ranging between 25 percent for 4-chloroaniline and 93 percent for 4-nitrophenol, with the exception of hexachlorocyclopentadiene at 19 percent. The MS results are believed to provide confidence in the accuracy of the measurements. Individual data points have been qualified where appropriate in the data set.

D.4.1.5 PCB Compounds

PCB LCS, blank surrogate recoveries, and MS results were within acceptable limits. Only a few values were qualified based on these QC parameters.

D.4.1.6 Miscellaneous Analytes

These analyses included cyanide. LCS data ranged from 71 percent to 99 percent recovery, while MS data ranged from 68 percent to 108 percent recovery. The majority of the data required no qualification.

D.4.2 Precision

D.4.2.1 Laboratory Precision

As a measure of analytical precision, Table D-8 contains the average relative percent difference (RPD) for laboratory duplicate pairs for metal, VOC, SVOC, explosive, PCB, and miscellaneous parameters where both values meet or exceed five times the reported quantitation level for that analyte. As the RPD approaches zero, complete agreement is achieved between the duplicate sample pairs. Sample homogeneity, analytical method performance, and the quantity of analyte being measured all contribute to this measure of sample analytical precision.

The goal for laboratory soil, sediment, and water precision is set as acceptable when the RPD does not exceed 35. This goal was exceeded for analyte average RPDs in only 5 out of 262 cases (approximately 98 percent within acceptable range). The exceptions included soil SVOC 4-chloroaniline at 47 RPD; soil SVOC 3,3'-dichlorobenzidine at 52 RPD; water VOC 2-butanone at 36 RPD; water VOC 4-methyl-2-pentanone at 36 RPD; and water VOC 2-hexanone at 39 RPD. Maximum RPDs fell within the 35 RPD level for most parameters with the exception of individual RPDs for several SVOC compounds. Analyses were qualified as estimated “J” through the validation process to indicate data impact, when necessary. In general, the RPD values are considered good for these media and reflect great effort on the part of the laboratory team to homogenize and analyze the samples consistently.

Individual data points affected by poor precision measures appear in the data set qualified as estimated, when necessary. The precision for those data is considered acceptable and is usable for project objectives.

D.4.2.2 Field Precision

Field duplicate samples were collected to ascertain the contribution to variability (i.e., precision) due to the combination of environmental media, sampling consistency, and analytical precision. Field duplicate samples were collected from the same spatial and temporal conditions as the primary environmental sample. Soil samples for all analytes except VOCs were collected from the same sampling device after homogenization.

Field duplicate comparison information in Table D-9 presents the absolute difference or RPD for field duplicate measurements by analyte. RPD was calculated only when both samples were >5 times the reporting level. When one or both sample values were between the quantitation level and 5 times the reporting level the absolute difference was evaluated. If both samples were not detected for a given analyte, precision was considered acceptable. In order to review information, this data quality assessment has implemented general criteria for comparison of absolute difference measurements and RPDs. RPD criteria were set at 50, and absolute difference criteria were set at 3 times the reporting level. This slightly broader acceptance criterion was applied to field duplicate samples because they are co-located spacially at the site and do not represent analysis from the same homogenized sample container, as is presented by laboratory duplicate comparisons.

Field duplicate metal and organic RPD comparisons are considered good, with 100 of 107 (93 percent) of the observations being <50 RPD. Absolute differences were all within three times the reporting level criteria, with the exception of one calcium comparison in 541 observations. Field duplicate comparisons are therefore considered acceptable for 99 percent of the observations made (640 out of 648).

D.4.3 Sensitivity

Determination of minimum detectable values allows the investigation to assess the relative confidence that can be placed in a value relative to the magnitude or level of analyte concentration observed. The closer a measured value comes to the minimum detectable concentration, the less confidence and more variation the measurement will have. Project sensitivity goals were expressed as quantitation level goals in the QAPP. When laboratory reporting limits were compared to the project quantitation goals to assure that analyses could be detected at concentrations low enough to meet project objectives, reporting limits were below the project quantitation goals for all analytes but a few. The exceptions included some semivolatile compounds that were reported at approximately 2 times the project goals (i.e., 25 µg/L versus the goal of 10 µg/L) and some propellant analyses in water. Nitroguanidine had a reporting limit of 20 µg/L compared with a goal of 10 µg/L, while nitrocellulose as N had a reporting limit of 500 µg/L compared to a goal of 10 µg/L. After further discussions with the laboratory, it was determined that 25 µg/L, 20 µg/L, and 500 µg/L represented the limitations of the methodology and that project expectations were overambitious in regard to these parameters. Reporting levels were more variable for soil and sediment because of variability in sample size and moisture content. The lowest reporting levels were generally close to the quantitation limit goals. The best reporting levels for antimony, however, were more than 10 times the goal of 0.5 mg/kg. Reporting levels for explosives and propellants were generally lower than the goals except for nitrocellulose and nitroglycerin. Reporting limits for nitrocellulose and nitroglycerin were 2.5 times the goal of 1 mg/kg. In each of the cases, it has been determined that initial project expectations exceed the capability of the analytical methodology. However, contaminants with reporting levels that exceeded quantitation limits were moved forward into risk characterization. Actual laboratory method detection levels achieved during this investigation are presented in Table D-10 with original practical quantitation level goals.

Method blank determinations were performed with each analytical sample batch for each analyte under investigation. These blanks were evaluated during data validation to determine their potential impact on individual data points, if any. Validation action levels are set at 5 times the reporting level for all analytes, except those designated as common laboratory contaminants (methylene chloride, acetone, 2-butanone, and phthalate compounds), which have action levels set at 10 times reporting levels. During data validation, reported sample concentrations are assessed against method blank action levels, and the following qualifications are made when reportable quantities of an analyte were observed in the associated method blank.

- When the analyte sample concentration is above the 5 times or 10 times action level, the data are not qualified and are considered a positive value. This result will receive a validation reason code of "F01, F08."

- When the analyte sample concentration is determined to be below the 5 times or 10 times action level but above the reporting level, the result is considered to be impacted by the method blank, and the value reported is qualified as a non-detect at the analyte value reported. This result is then qualified as "U" with a reason code of "F01, F07."

- When the analyte sample concentration is determined to be below the 5 times or 10 times action level and below the reporting level, the result is considered to be impacted by the method blank, and the value reported is qualified as a non-detect at the reporting level. This result is then qualified as "U" with a reason code of "F01, F06."

No data were rejected as a result of method blank contamination; however, various analytes are qualified as non-detect "U" according to the above validation reason codes.

Evaluation of overall project sensitivity can be gained through review of field blank information. These actual sample analyses may provide a comprehensive look at the combined sampling and analysis sensitivity attained by the project. Field QC blanks obtained during sampling activities at RVAAP included samples of VOC trip blank waters, an ASTM deionized water source, and a site potable water source. Deionized water and potable water were obtained and reported with data gathered concurrently as part of the NTA investigations.

VOCs were not detected in trip blanks associated with the DA1 projects. In the concurrent NTA investigation, trace levels of methylene chloride (4.8 µg/L) and styrene (1 µg/L) (estimated concentrations less than reporting limits) were observed in two trip blanks. A source cannot be pinpointed for these compounds, and the results are likely anomalies. It therefore is determined that VOC analyses have not been affected through the transportation and storage process and that the procedures and precautions employed were effective in preserving the integrity of the sample analysis.

Field source water blank NTA0165 (11/2/1999) and equipment rinsate NTA0166 (11/2/1999) exhibited few analyte levels above project reporting levels. Those detected included minor levels of methylene chloride, 1,3-dintrobenzene, 2,6-dinitrotoluene, 2,4,6-trinitrotoluene, octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), and 3-nitrotoluene in the equipment rinsate, along with a 220 µg/L quantity of di-n-butyl phthalate. The site source water blank exhibited normal levels of calcium, magnesium, potassium, and sodium, with minor concentrations of barium, copper, manganese, and zinc. Acetone was also observed as an estimated value below the reporting limit. There is no indication that the source water or the equipment rinsate impacted associated sample levels.

D.4.4 Representativeness and Comparability

Representativeness expresses the degree to which data accurately reflect the analyte or parameter of interest for the environmental site and is the qualitative term most concerned with the proper design of the sampling program. Factors that affect the representativeness of analytical data include proper preservation, holding times, use of standard sampling and analytical methods, and determination of matrix or analyte interferences. A few organic analyses were conducted outside the holding time because samples were re-extracted and reanalyzed due to low surrogate recoveries. These data were qualified accordingly as outside of the holding time per EPA validation protocols. These instances occurred when initial extraction results required the laboratory to repeat semivolatile extractions for a sample beyond the standard holding time but within the direction and guidance of the analytical methodology. Sample preservation, analytical methodologies, and soil sampling methodologies were documented to be adequate and consistently applied. Estimated values qualified as being outside of the holding time were utilized with the requisite precautions in some of the report data interpretations. Use of these data might result in some additional uncertainty in specific interpretations where the values were incorporated but are not believed to have detracted from achieving the overall project data quality objectives.

Comparability, like representativeness, is a qualitative term relative to an individual project data set. This Phase I RI employed appropriate sampling methodologies, site surveillance, use of standard sampling devices, uniform training, documentation of sampling, standard analytical protocols/procedures, QC checks with standard control limits, and universally accepted data reporting units to ensure comparability to other data sets. Through the proper implementation and documentation of these standard practices, the project has established the confidence that the data will be comparable to other project and programmatic information.

D.4.5 Completeness

Usable data are defined as those data that pass individual scrutiny during the verification and validation process and are accepted for unrestricted application to the human health risk assessment evaluation or equivalent type applications. It has been determined that estimated data are acceptable for RVAAP project objectives.

Analytical DQOs for the DA1 Phase I RI have been achieved. The project produced valid results for 99 percent of the sample analyses performed.

D.5 DATA QUALITY ASSESSMENT SUMMARY

The overall quality of the DA1 Phase I RI data meets or exceeds the established project objectives. Through proper implementation of the project data verification, validation, and assessment process, project data have been determined to be acceptable for use.

Data have been qualified as estimated, but usable, when necessary. Data that have been estimated provide indications that either accuracy, precision, or sensitivity is less than desired but adequate for interpretation. Data that are not acceptable for use have been rejected, and qualifiers have been applied.

Data produced for this project demonstrate that they can withstand scientific scrutiny; are appropriate for their intended purpose; are technically defensible; and are of known and acceptable sensitivity, precision, and accuracy. Data integrity has been documented through proper implementation of QA and QC measures. The environmental information presented has an established confidence that allows utilization for the project objectives and provides data for future needs.

Table D-1. Demolition Area I Phase I RI Sampling Summary

Area	Media	Environmental Samples	Field Duplicates	Trip Blanks	Equipment Rinsate Blanks	Site Source Water Blanks	USACE Split Samples
Demo Area 1							
	Soil	112	10	-	-	-	10
	Sediment	4	1	-	-	-	1
	Surface water	3	1	1	-	-	1
	Groundwater	1	-	-	-	-	-
Totals		120	12	1	-	-	12

USACE = U.S. Army Corps of Engineers.

Table D-2. Demolition Area 1 Phase I RI Sample/Field Duplicate/QA Split Sample Number Reference

Media	Primary Sample Number	Field Duplicate Sample Number	USACE Split Sample Number	Sampling Date
Surface soil	DA10109	DA10126	DA10138	11/3/1999
	DA10009	DA10127	DA10139	10/19/1999
	DA10036	DA10128	DA10140	10/21/1999
	DA10103	DA10129	DA10141	11/2/1999
	DA10057	DA10130	DA10142	10/25/1999
Subsurface soil	DA10043	DA10131	DA10143	10/22/1999
	DA10037	DA10132	DA10144	10/21/1999
	DA10104	DA10133	DA10145	11/2/1999
	DA10105	DA10134	DA10146	11/2/1999
	DA10014	DA10135	DA10147	10/20/1999
Sediment	DA10120	DA10136	DA10148	10/24/1999
Surface water	DA10124	DA10137	DA10149	10/24/1999

USACE = U.S. Army Corps of Engineers.

Table D-3. Demolition Area 1 Phase I RI Summary of Rejected Analytes (Grouped by Medium and Analysis Group)

Media	Analysis Group	Rejected/	Total	Percent Rejected
Soil	Metals	19/	2,806	0.7
	Volatile organics	0/	396	0.0
	Semivolatile organics	1/	768	0.1
	PCBs	0/	77	0.0
	Explosives	0/	1,830	0.0
	Cyanide	0/	122	0.0
	Subtotal	20/	5,999	0.3
Sediment	Metals	0/	115	0.0
	Volatile organics	0/	132	0.0
	Semivolatile organics	2/	320	0.6
	PCBs	0/	28	0.0
	Explosives	0/	75	0.0
	Cyanide	0/	5	0.0
	Total organic carbon	0/	4	0.0
	Subtotal	2/	679	0.3
Surface water and groundwater	Metals	0/	115	0.0
	Volatile organics	0/	165	0.0
	Semivolatile organics	4/	256	1.6
	PCBs	0/	28	0.0
	Explosives	0/	75	0.0
	Cyanide	0/	5	0.0
	Subtotal	5/	644	0.6
Project Total		**26/**	**7,322**	**0.4**

PCBs = Polychlorinated biphenyls.

Table D-4. Demolition Area I Phase I RI Laboratory Control Sample Evaluation – Percent Recovery

Analysis	Soil Average % Rec	Soil Min. % Rec.	Soil Max. % Rec.	N[a]	Water Average % Rec.	Water Min. % Rec.	Water Max. % Rec.	N[a]
Volatile Organic Compounds								
Chloromethane	71	59	92	8	67	na	na	1
Bromomethane	76	63	93	8	98	na	na	1
Vinyl chloride	79	64	97	8	86	na	na	1
Chloroethane	107	94	123	8	120	na	na	1
Methylene chloride	91	85	104	8	91	na	na	1
Acetone	124	78	148	8	95	na	na	1
Carbon disulfide	90	78	103	8	105	na	na	1
1,1-Dichloroethene	99	89	110	8	100	na	na	1
1,1-Dichloroethane	100	93	106	8	97	na	na	1
1,2-Dichloroethene (total)	103	96	110	8	91	na	na	1
Chloroform	100	94	106	8	99	na	na	1
1,2-Dichloroethane	110	103	118	8	100	na	na	1
2-Butanone	98	80	120	8	77	na	na	1
1,1,1-Trichloroethane	100	92	108	8	117	na	na	1
Carbon tetrachloride	99	92	105	8	120	na	na	1
Bromodichloromethane	97	93	104	8	104	na	na	1
1,2-Cichloropropane	99	92	105	8	96	na	na	1
Cis-1,3-dichloropropene	94	90	100	8	94	na	na	1
Trichloroethene	98	89	104	8	98	na	na	1
Dibromochloromethane	97	91	103	8	94	na	na	1
1,1,2-Trichloroethane	102	94	110	8	86	na	na	1
Benzene	101	93	108	8	98	na	na	1
Trans-1,3-dichloropropene	95	90	102	8	92	na	na	1
Bromoform	97	92	103	8	92	na	na	1
4-Methyl-2-pentanone	107	94	122	8	71	na	na	1
2-Hexanone	107	91	128	8	104	na	na	1
Tetrachloroethene	102	95	108	8	107	na	na	1
1,1,2,2-Tetrachloroethane	104	98	111	8	90	na	na	1
Toluene	100	92	107	8	105	na	na	1
Chlorobenzene	100	93	107	8	104	na	na	1
Ethylbenzene	101	95	107	8	102	na	na	1
Styrene	92	81	102	8	97	na	na	1
Xylenes (total)	99	87	109	8	104	na	na	1
Semivolatile Organic Compounds								
Phenol	84	72	90	6	52	47	59	3
Bis(2-chloroethyl)ether	78	71	91	6	71	58	87	3
2-Chlorophenol	78	66	88	6	69	58	82	3
1,3-Dichlorobenzene	75	66	85	6	63	48	72	3
1,4-Dichlorobenzene	74	66	84	6	63	48	73	3
1,2-Dichlorobenzene	76	66	86	6	64	49	71	3
2-Methylphenol	76	71	81	6	61	55	66	3
2,2'-Oxybis(1-chloropropane)	87	72	107	6	72	56	84	3
4-Methylphenol	79	64	87	6	64	58	68	3
N-nitrosodi-n-propylamine	80	67	86	6	69	59	80	3
Hexachloroethane	77	66	86	6	65	49	74	3
Nitrobenzene	76	72	86	6	78	60	104	3

Table D-4. Demolition Area I Phase I RI Laboratory Control Sample Evaluation – Percent Recovery (continued)

Analysis	Soil Average % Rec	Soil Min. % Rec.	Soil Max. % Rec.	N[a]	Water Average % Rec.	Water Min. % Rec.	Water Max. % Rec.	N[a]
Isophorone	74	69	84	6	71	56	91	3
2-Nitrophenol	75	69	83	6	64	50	76	3
2,4-Dimethylphenol	61	56	66	6	46	29	77	3
Bis(2-chloroethoxy)methane	75	71	86	6	71	54	84	3
2,4-Dichlorophenol	76	71	81	6	68	53	80	3
1,2,4-Trichlorobenzene	77	70	84	6	69	52	80	3
Naphthalene	75	67	85	6	68	53	81	3
4-Chloroaniline	50	40	62	6	23	0	38	3
Hexachlorobutadiene	73	69	86	6	67	47	84	3
4-Chloro-3-methylphenol	80	69	86	6	68	49	88	3
2-Methylnaphthalene	76	71	83	6	65	46	77	3
Hexachlorocyclopentadiene	48	73	90	6	16	0	48	3
2,4,6-Trichlorophenol	79	71	86	6	75	62	90	3
2,4,5-Trichlorophenol	80	73	88	6	74	59	88	3
2-Chloronaphthalene	76	70	80	6	71	56	84	3
2-Nitroaniline	82	76	86	6	80	66	108	3
Dimethyl phthalate	81	72	91	6	77	65	89	3
Acenaphthylene	73	65	77	6	68	54	80	3
2,6-Dinitrotoluene	84	76	94	6	72	60	82	3
3-Nitroaniline	70	59	77	6	44	19	60	3
Acenaphthene	75	67	79	6	69	56	80	3
2,4-Dinitrophenol	75	44	104	6	60	43	72	3
4-Nitrophenol	78	73	81	6	70	66	78	3
Dibenzofuran	78	72	82	6	72	57	84	3
2,4-Dinitrotoluene	81	74	89	6	73	62	81	3
Diethyl phthalate	80	70	88	6	77	64	94	3
4-Chlorophenyl phenyl ether	79	72	84	6	72	60	83	3
Fluorene	78	70	83	6	71	58	81	3
4-Nitroaniline	76	72	83	6	61	51	68	3
4,6-Dinitro-2-methylphenol	82	59	96	6	69	50	79	3
N-nitrosodiphenylamine	80	70	94	6	64	56	70	3
4-Bromophenyl phenyl ether	82	74	93	6	71	56	81	3
Hexachlorobenzene	82	72	102	6	70	56	78	3
Pentachlorophenol	57	33	77	6	60	39	74	3
Phenanthrene	79	71	90	6	71	55	81	3
Anthracene	78	68	88	6	67	52	78	3
Carbazole	81	77	88	6	63	51	77	3
Di-n-butyl phthalate	80	71	86	6	72	54	92	3
Fluoranthene	79	68	89	6	69	51	80	3
Pyrene	82	64	94	6	72	66	79	3
Butyl benzyl phthalate	81	73	87	6	71	59	81	3
3,3'-Dichlorobenzidine	42	31	49	6	29	20	39	3
Benzo(a)anthracene	76	66	89	6	71	63	75	3
Chrysene	83	75	95	6	76	66	82	3
Bis(2-ethylhexyl)phthalate	86	70	103	6	83	72	92	3
Di-n-octyl phthalate	82	74	96	6	82	69	101	3

Table D-4. Demolition Area I Phase I RI Laboratory Control Sample Evaluation – Percent Recovery (continued)

Analysis	Soil Average % Rec	Soil Min. % Rec.	Soil Max. % Rec.	N[a]	Water Average % Rec.	Water Min. % Rec.	Water Max. % Rec.	N[a]
Benzo(b)fluoranthene	80	71	88	6	72	57	83	3
Benzo(k)fluoranthene	81	72	89	6	71	61	85	3
Benzo(a)pyrene	81	71	90	6	69	56	78	3
Indeno(1,2,3-cd)pyrene	83	69	95	6	69	58	75	3
Dibenzo(a,h)anthracene	85	73	96	6	72	61	79	3
Benzo(ghi)perylene	83	73	95	6	70	57	76	3
Explosive Compounds								
1,3-Dinitrobenzene	100	93	103	8	109	106	112	2
2,4-Dinitrotoluene	100	95	104	8	105.5	102	109	2
2,6-Dinitrotoluene	105	98	109	8	113	110	116	2
Nitrobenzene	101	97	104	8	97	95	99	2
1,3,5-Trinitrobenzene	100	92	103	8	106	103	109	2
2,4,6-Trinitrotoluene	100	91	104	8	105	102	108	2
HMX	99	89	102	8	104.5	102	107	2
RDX	102	97	104	8	107.5	105	110	2
Tetryl	95	75	101	8	106.5	104	109	2
2-Nitotoluene	101	97	104	8	92	90	94	2
3-Nitrotoluene	101	99	104	8	94.5	92	98	2
4-Nitrotoluene	101	97	106	8	95	92	98	2
4-Amino-2,6-dintrotoluene	93	90	100	8	87.5	84	97	2
2-Amino-4,6-dinitrotoluene	100	95	104	8	101	97	105	2
Nitroguanidine	95	90	99	6	97	na	na	1
Nitrocellulose	68	66	73	6	111	na	na	1
PCB Compounds								
Aroclor-1016	78	72	87	5	80	78	82	2
Aroclor-1260	80	75	87	5	77	75	79	2
Metals								
Antimony	93	90	96	9	103	96	110	2
Aluminum	98	93	110	9	103	98	108	2
Arsenic	92	90	94	9	101.5	96	107	2
Barium	94	91	97	9	102	98	106	2
Beryllium	95	92	101	9	105	103	107	2
Cadmium	94	93	95	9	101.5	96	107	2
Calcium	95	91	101	9	104.5	102	107	2
Chromium	98	96	101	9	105	101	105	2
Cobalt	92	90	94	9	99.5	94	105	2
Copper	95	92	98	9	101.5	95	108	2
Cyanide	86	71	99	25	86	76	90	6
Iron	114	105	120	9	112	106	118	2
Lead	94	92	97	9	103	100	106	2
Magnesium	92	87	99	9	102.5	102	103	2
Manganese	98	95	103	9	105.5	100	111	2
Mercury	110	101	130	9	97	95	99	2
Nickel	96	94	100	9	103.5	102	105	2
Potassium	96	85	101	9	101	100	102	2
Selenium	89	85	92	9	99	92	106	2

Table D-4. Demolition Area I Phase I RI Laboratory Control Sample Evaluation – Percent Recovery (continued)

Analysis	Soil Average % Rec	Soil Min. % Rec.	Soil Max. % Rec.	Soil N[a]	Water Average % Rec.	Water Min. % Rec.	Water Max. % Rec.	Water N[a]
Silver	104	101	107	9	112	109	115	2
Sodium	94	89	99	9	102.5	101	104	2
Thallium	96	86	102	9	107	101	113	2
Vanadium	94	93	96	9	101.5	96	107	2
Zinc	101	96	111	9	114	112	116	2

[a]N = Number of samples.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
na = Not analyzed.
PCB = Polychlorinated biphenyl.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

Table D-5. Demolition Area 1 Phase I RI Laboratory Control Sample Evaluation – Method Blank Surrogate Recovery

	Soil				Water			
Analysis	Average % Rec	Min. % Rec.	Max. % Rec.	N[a]	Average % Rec.	Min. % Rec.	Max. % Rec.	N[a]
Volatile Organic Compounds								
1,2-Dichloroethane-d4	102	96	109	8	99	na	na	1
Toluene-d8	96	95	97	8	102	na	na	1
4-Tromofluorobenzene	91	87	94	8	96	na	na	1
Dibromofluoromethane	99	97	100	8	97	na	na	1
Semivolatile Organic Compounds								
Nitrobenzene-d5	75	63	85	6	62	54	73	3
Terphenyl-d14	90	85	102	6	102	92	114	3
2-Fluorobiphenyl	74	65	89	6	63	56	73	3
2-Fluorophenol	80	65	85	6	60	56	63	3
Phenol-d5	80	62	92	6	50	50	51	3
2,4,6-Tribromophenol	67	61	75	6	62	51	82	3
Pesticides/PCB Compounds								
Tetrachloro-m-xylene	67	41	87	5	90	na	na	1
Decachlorobiphenyl	81	49	102	5	92	na	na	1
Explosive Compounds								
1-Chloro-3-nitrobenzene	95	91	98	5	91	na	na	1

[a]N = Number of samples.
na = Not analyzed.
PCB = Polychlorinated biphenyl.

Table D-6. Demolition Area 1 Phase I RI Laboratory Matrix Spike Evaluation – Percent Recovery

	Soil				Water			
Analysis	Average % Rec	Min. % Rec.	Max. % Rec.	N[a]	Average % Rec.	Min. % Rec.	Max. % Rec.	N[a]
Volatile Organic Compounds								
Chloromethane	71	58	92	16	61.5	59	64	2
Bromomethane	78	59	94	16	82.5	76	89	2
Vinyl chloride	82	66	100	16	76.5	76	77	2
Chloroethane	108	93	123	16	109.5	109	110	2
Methylene chloride	87	80	100	16	91	88	94	2
Acetone	84	39	142	16	51.5	43	60	2
Carbon disulfide	83	75	93	16	93.5	93	94	2
1,1-Dichloroethene	98	89	107	16	90.5	90	91	2
1,1-Dichloroethane	99	89	107	16	95	91	99	2
1,2-Dichloroethene(total)	102	95	110	16	91	89	93	2
Chloroform	99	92	106	16	101.5	97	106	2
1,2-Dichloroethane	110	98	119	16	105	96	114	2
2-Butanone	93	54	111	16	58.5	48	69	2
1,1,1-Trichloroethane	98	91	107	16	109.5	108	111	2
Carbon tetrachloride	96	90	102	16	103.5	111	116	2
Bromodichloromethane	95	89	103	16	104	97	111	2
1,2-Cichloropropane	98	91	105	16	96.5	91	102	2
Cis-1,3-dichloropropene	87	74	96	16	95	89	101	2
Trichloroethene	97	90	103	16	93.5	93	94	2
Dibromochloromethane	99	90	106	16	96	91	101	2
1,1,2-Trichloroethane	107	96	122	16	90	83	97	2
Benzene	100	93	107	16	95	93	97	2
Trans-1,3-dichloropropene	91	80	101	16	92.5	86	99	2
Bromoform	101	87	112	16	96.5	87	106	2
4-Methyl-2-pentanone	117	72	143	16	67	55	79	2
2-Hexanone	106	61	125	16	63	51	75	2
Tetrachloroethene	103	93	110	16	94	94	100	2
1,1,2,2-Tetrachloroethane	120	93	135	16	103.5	89	118	2
Toluene	103	95	114	16	96.5	96	97	2
Chlorobenzene	100	93	107	16	97	96	98	2
Ethylbenzene	100	86	113	16	92	92	92	2
Styrene	90	83	99	16	83.5	80	87	2
Xylenes (total)	98	91	106	16	92.5	92	93	2
Semivolatile Organic Compounds								
Phenol	77	62	86	14	57	35	73	6
Bis(2-chloroethyl)ether	76	64	85	14	70	40	105	6
2-Chlorophenol	79	66	87	14	70	40	100	6
1,3-Dichlorobenzene	75	62	88	14	64	33	88	6
1,4-Dichlorobenzene	74	62	86	14	64	34	88	6
1,2-Dichlorobenzene	76	62	90	14	67	33	96	6
2-Methylphenol	75	63	86	14	68	41	92	6
2,2'-Oxybis(1-chloropropane)	90	61	124	14	70	52	80	6
4-Methylphenol	74	61	87	14	69	41	96	6
N-nitrosodi-n-propylamine	75	58	86	14	79	45	103	6

Table D-6. Demolition Area 1 Phase I RI Laboratory Matrix Spike Evaluation – Percent Recovery (continued)

Analysis	Soil Average % Rec	Soil Min. % Rec.	Soil Max. % Rec.	Soil N[a]	Water Average % Rec.	Water Min. % Rec.	Water Max. % Rec.	Water N[a]
Hexachloroethane	69	47	82	14	65	35	88	6
Nitrobenzene	73	57	84	14	89	54	123	6
Isophorone	71	59	83	14	83	48	114	6
2-Nitrophenol	78	61	88	14	73	42	96	6
2,4-Dimethylphenol	72	60	99	14	60	29	99	6
Bis(2-chloroethoxy)methane	76	66	92	14	76	46	104	6
2,4-Dichlorophenol	76	63	85	14	75	45	101	6
1,2,4-Trichlorobenzene	79	65	96	14	74	41	98	6
Naphthalene	76	64	87	14	71	38	99	6
4-Chloroaniline	33	0	66	14	25	0	50	6
Hexachlorobutadiene	76	62	95	14	76	37	100	6
4-Chloro-3-methylphenol	78	64	88	14	83	38	115	6
2-Methylnaphthalene	77	62	91	14	71	35	99	6
Hexachlorocyclopentadiene	26	0	55	14	19	0	61	6
2,4,6-Trichlorophenol	75	57	91	14	82	44	109	6
2,4,5-Trichlorophenol	77	62	90	14	82	42	109	6
2-Chloronaphthalene	78	66	86	14	76	42	105	6
2-Nitroaniline	72	49	90	14	92	51	130	6
Dimethyl phthalate	82	67	90	14	85	48	111	6
Acenaphthylene	74	61	82	14	73	40	99	6
2,6-Dinitrotoluene	84	69	92	14	78	45	101	6
3-Nitroaniline	55	32	80	14	51	26	77	6
Acenaphthene	76	63	85	14	75	42	100	6
2,4-Dinitrophenol	73	51	123	14	66	35	92	6
4-Nitrophenol	71	39	101	14	93	56	117	6
Dibenzofuran	79	66	87	14	78	44	102	6
2,4-Dinitrotoluene	80	65	89	14	78	47	97	6
Diethyl phthalate	78	63	88	14	85	50	111	6
4-Chlorophenyl phenyl ether	80	68	93	14	79	45	100	6
Fluorene	77	65	89	14	77	43	99	6
4-Nitroaniline	61	42	79	14	63	39	87	6
4,6-Dinitro-2-methylphenol	77	59	109	14	75	41	103	6
N-nitrosodiphenylamine	80	67	90	14	79	41	104	6
4-Bromophenyl phenyl ether	84	69	102	14	80	42	104	6
Hexachlorobenzene	85	71	104	14	79	40	103	6
Pentachlorophenol	41	6	112	14	73	33	99	6
Phenanthrene	81	73	88	14	78	41	105	6
Anthracene	78	65	87	14	76	38	104	6
Carbazole	83	73	100	14	76	38	100	6
Di-n-butyl phthalate	79	65	92	14	84	40	120	6
Fluoranthene	84	73	103	14	80	40	105	6
Pyrene	82	71	94	14	72	50	82	6
Butyl benzyl phthalate	81	67	90	14	83	53	96	6

Table D-6. Demolition Area 1 Phase I RI Laboratory Matrix Spike Evaluation – Percent Recovery (continued)

	Soil				Water			
Analysis	Average % Rec	Min. % Rec.	Max. % Rec.	N[a]	Average % Rec.	Min. % Rec.	Max. % Rec.	N[a]
3,3'-Dichlorobenzidine	20	0	47	14	42	20	59	6
Benzo(a)anthracene	77	66	95	14	77	49	90	6
Chrysene	85	74	103	14	81	50	96	6
Bis(2-ethylhexyl)phthalate	81	69	90	14	82	48	106	6
Di-n-octyl phthalate	85	66	103	14	84	46	122	6
Benzo(b)fluoranthene	81	62	104	14	77	43	100	6
Benzo(k)fluoranthene	82	71	93	14	78	43	106	6
Benzo(a)pyrene	82	68	98	14	76	43	100	6
Indeno(1,2,3-cd)pyrene	80	58	106	14	76	50	99	6
Dibenzo(a,h)anthracene	79	58	93	14	81	53	104	6
Benzo(ghi)perylene	74	54	83	14	78	51	102	6
Explosive Compounds								
1,3-Dinitrobenzene	98	97	99	2	na	na	na	na
2,4-Dinitrotoluene	99.5	98	101	2	na	na	na	na
2,6-Dinitrotoluene	102.5	101	104	2	na	na	na	na
Nitrobenzene	99.5	98	101	2	na	na	na	na
1,3,5-Trinitrobenzene	97.5	96	99	2	na	na	na	na
2,4,6-Trinitrotoluene	98.5	97	100	2	na	na	na	na
HMX	97.5	96	99	2	na	na	na	na
RDX	98.5	97	100	2	na	na	na	na
Tetryl	95.5	94	97	2	na	na	na	na
2-Nitotoluene	100.5	99	102	2	na	na	na	na
3-Nitrotoluene	100.5	99	102	2	na	na	na	na
4-Nitrotoluene	100.5	99	102	2	na	na	na	na
4-Amino-2,6-dintrotoluene	95.5	94	97	2	na	na	na	na
2-Amino-4,6-dinitrotoluene	99.5	98	101	2	na	na	na	na
Nitroguanidine	95	85	103	12	99.5	98	101	2
Nitrocellulose	40	27	59	14	112	111	113	2
PCB Compounds								
Aroclor-1016	75	24	98	10	na	na	na	na
Aroclor-1260	72	23	91	10	na	na	na	na
Metals								
Antimony	49	36	67	20	102	93	116	6
Aluminum	na	na	na	na	105	103	107	4
Arsenic	89	80	99	20	101	94	113	6
Barium	93	73	102	20	101	92	110	6
Beryllium	92	85	101	20	104	98	109	6
Cadmium	82	68	96	16	99	91	110	6
Calcium	102	89	163	12	106	91	125	6
Chromium	104	75	142	16	103	95	111	6
Cobalt	91	76	102	20	97	89	107	6
Copper	95	73	130	14	101	91	111	6
Cyanide	83	68	108	34	90	87	94	4

Table D-6. Demolition Area 1 Phase I RI Laboratory Matrix Spike Evaluation – Percent Recovery (continued)

	Soil				Water			
Analysis	Average % Rec	Min. % Rec.	Max. % Rec.	N[a]	Average % Rec.	Min. % Rec.	Max. % Rec.	N[a]
Iron	na	na	na	na	113	106	116	4
Lead	105	77	323	16	102	95	110	6
Magnesium	92	51	123	18	103	96	112	6
Manganese	na	na	na	na	104	94	115	6
Mercury	112	84	133	20	101	99	105	6
Nickel	95	80	117	18	103	96	109	6
Potassium	98	82	119	20	107	103	111	6
Selenium	87	78	96	20	98	89	112	6
Silver	98	89	107	20	112	103	123	6
Sodium	92	85	98	20	103	96	111	6
Thallium	82	69	100	20	82	74	94	6
Vanadium	99	76	116	20	99	90	111	6
Zinc	111	94	139	4	108	102	112	6

[a]N = Number of samples.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
na = Not analyzed.
PCB = Polychlorinated biphenyl.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

Table D-7. Demolition Area 1 Phase I RI EPA Organic Surrogate and LCS Recovery Criteria – Percent Recovery (%Rec) and Relative Percent Difference (RPD)

Analysis	Min. %Rec	Soil Max. %Rec	RPD	Min. %Rec	Water Max. %Rec	RPD
Volatile Organic Compounds						
1,2-Dichloroethane-d4	70	121		76	114	
Bromofluorobenzene	59	113		86	115	
Toluene-d8	84	138		88	110	
1,1-Dichloroethane	59	172	22	61	145	14
Trichloroethene	62	173	24	71	120	14
Benzene	66	142	21	76	127	11
Toluene	59	139	21	76	125	13
Chlorobenzene	60	133	21	75	130	13
Semivolatile Organic Compounds						
1,2-Dichlorobenzene-d4	20	130		16	110	
2,4,6-Tribromophenol	19	122		10	123	
2-Chlorophenol-d4	20	130		33	110	
2-Fluorobiphenyl	30	115		43	116	
2-Fluorophenol	25	121		21	110	
Nitrobenzene-d5	23	120		35	114	
Phenol-d5	24	113		10	110	
Terphenyl-d14	18	137		33	141	
Phenol	26	90	35	12	110	42
2-Chlorophenol	25	102	50	27	123	40
1,4-Dichlorobenzene	28	104	27	36	97	28
N-nitroso-di-n-propylamine	41	126	38	41	116	38
1,2,4-Trichlorobenzene	38	107	23	39	98	28
4-Chloro-3-methylphenol	26	103	33	23	97	42
Acenaphthene	31	137	19	46	118	31
4-Nitrophenol	11	114	50	10	80	50
2,4-Dinitrotoluene	28	89	47	24	96	38
Pentachlorophenol	17	109	47	9	103	50
Pyrene	35	142	36	26	127	31
Pesticides/PCBs						
Decachlorobiphenyl(1)	60	150		60	150	
Decachlorobiphenyl(2)	60	150		60	150	
Tetrachloro-m-xylene(1)	60	150		60	150	
Tetrachloro-m-xylene(2)	60	150		60	150	
Gamma-bhc (lindane)	46	127	15	56	123	50
Heptachlor	35	130	20	40	131	31
Aldrin	34	132	22	40	120	43
Dieldrin	31	134	18	52	126	38
Endrin	42	139	21	56	121	45
4,4´-DDT	23	134	27	38	127	50

DDT = Dichlorodiphenyl trichloroethane.
EPA = Environmental Protection Agency.
LCS = Laboratory control sample.
PCBs = Polychlorinated biphenyls.

Table D-8. Demolition Area 1 Phase I RI Laboratory MS Duplicate and Duplicate Evaluation – Relative Percent Difference (RPD)

Analysis	Soil Average RPD	Soil Min. RPD	Soil Max. RPD	Soil N[a] RPD	Water Average RPD	Water Min. RPD	Water Max. RPD	Water N[a]
Volatile Organic Compounds								
Chloromethane	6	2	8	8	8	na	na	1
Bromomethane	14	1	20	8	16	na	na	1
Vinyl chloride	5	2	8	8	1	na	na	1
Chloroethane	5	0	8	8	1	na	na	1
Methylene chloride	4	2	7	8	7	na	na	1
Acetone	14	0	38	8	33	na	na	1
Carbon disulfide	5	0	9	8	0	na	na	1
1,1-Dichloroethene	4	0	9	8	1	na	na	1
1,1-Dichloroethane	5	2	8	8	9	na	na	1
1,2-Dichloroethene (total)	4	1	7	8	5	na	na	1
Chloroform	4	1	7	8	9	na	na	1
1,2-Dichloroethane	5	1	8	8	17	na	na	1
2-Butanone	16	4	44	8	36	na	na	1
1,1,1-Trichloroethane	4	0	7	8	3	na	na	1
Carbon tetrachloride	4	0	8	8	4	na	na	1
Bromodichloromethane	4	0	8	8	14	na	na	1
1,2-Cichloropropane	4	0	8	8	11	na	na	1
Cis-1,3-dichloropropene	4	1	11	8	13	na	na	1
Trichloroethene	4	1	6	8	1	na	na	1
Dibromochloromethane	5	1	11	8	10	na	na	1
1,1,2-Trichloroethane	5	0	9	8	15	na	na	1
Benzene	4	1	6	8	5	na	na	1
Trans-1,3-dichloropropene	6	1	13	8	14	na	na	1
Bromoform	6	1	13	8	19	na	na	1
4-Methyl-2-pentanone	15	2	41	8	36	na	na	1
2-Hexanone	16	2	48	8	39	na	na	1
Tetrachloroethene	4	0	8	8	6	na	na	1
1,1,2,2-Tetrachloroethane	10	1	22	8	27	na	na	1
Toluene	4	1	7	8	1	na	na	1
Chlorobenzene	4	0	6	8	3	na	na	1
Ethylbenzene	5	0	8	8	0	na	na	1
Styrene	4	0	8	8	9	na	na	1
Xylenes (total)	4	0	7	8	1	na	na	1
Semivolatile Organic Compounds								
Phenol	6	1	19	7	25	7	41	3
Bis(2-chloroethyl)ether	5	1	14	7	19	9	33	3
2-Chlorophenol	6	0	19	7	21	8	37	3
1,3-Dichlorobenzene	6	0	10	7	22	10	42	3
1,4-Dichlorobenzene	6	1	10	7	21	8	40	3
1,2-Dichlorobenzene	6	0	11	7	23	9	43	3
2-Methylphenol	6	0	19	7	21	10	37	3
2,2'-Oxybis(1-chloropropane)	6	1	15	7	19	8	34	3
4-Methylphenol	6	0	20	7	21	8	38	3

Table D-8. Demolition Area 1 Phase I RI Laboratory MS Duplicate and Duplicate Evaluation – Relative Percent Difference (RPD) (continued)

Analysis	Soil Average RPD	Soil Min. RPD	Soil Max. RPD	Soil N[a] RPD	Water Average RPD	Water Min. RPD	Water Max. RPD	Water N[a]
N-nitrosodi-n-propylamine	5	0	20	7	16	5	34	3
Hexachloroethane	7	0	12	7	19	9	39	3
Nitrobenzene	6	1	12	7	16	5	34	3
Isophorone	5	0	15	7	16	3	40	3
2-Nitrophenol	6	1	16	7	14	2	34	3
2,4-Dimethylphenol	7	1	16	7	15	1	34	3
Bis(2-chloroethoxy)methane	5	0	17	7	15	4	35	3
2,4-Dichlorophenol	4	0	11	7	16	6	28	3
1,2,4-Trichlorobenzene	6	0	12	7	20	7	39	3
Naphthalene	5	0	13	7	20	7	39	3
4-Chloroaniline	47	4	200	7	12	0	33	3
Hexachlorobutadiene	6	0	14	7	20	8	39	3
4-Chloro-3-methylphenol	3	0	9	7	21	3	48	3
2-Methylnaphthalene	5	0	16	7	20	5	42	3
Hexachlorocyclopentadiene	24	0	42	7	75	0	200	3
2,4,6-Trichlorophenol	5	1	16	7	18	1	43	3
2,4,5-Trichlorophenol	5	1	12	7	20	1	46	3
2-Chloronaphthalene	5	1	15	11	17	2	38	3
2-Nitroaniline	5	0	18	11	17	2	40	3
Dimethyl phthalate	4	0	12	11	18	0	42	3
Acenaphthylene	5	0	14	11	18	2	40	3
2,6-Dinitrotoluene	5	1	12	11	17	0	42	3
3-Nitroaniline	13	1	39	11	17	1	36	3
Acenaphthene	5	0	13	11	18	2	41	3
2,4-Dinitrophenol	17	13	30	11	25	5	46	3
4-Nitrophenol	9	3	17	11	26	8	40	3
Dibenzofuran	4	1	13	11	18	1	41	3
2,4-Dinitrotoluene	4	1	12	11	19	3	43	3
Diethyl phthalate	4	0	10	11	18	1	41	3
4-Chlorophenyl phenyl ether	5	0	13	11	18	1	43	3
Fluorene	5	2	12	11	19	1	45	3
4-Nitroaniline	13	0	33	11	19	1	38	3
4,6-Dinitro-2-methylphenol	12	0	24	11	21	2	46	3
N-nitrosodiphenylamine	5	0	14	11	19	3	45	3
4-Bromophenyl phenyl ether	4	0	14	11	19	1	44	3
Hexachlorobenzene	4	0	14	11	19	1	45	3
Pentachlorophenol	30	2	105	11	23	8	47	3
Phenanthrene	4	1	13	11	20	1	46	3
Anthracene	4	0	12	11	20	1	47	3
Carbazole	6	2	14	11	21	2	47	3
Di-n-butyl phthalate	5	0	16	11	19	0	45	3
Fluoranthene	7	1	17	11	20	1	45	3
Pyrene	6	1	12	11	18	3	44	3

Table D-8. Demolition Area 1 Phase I RI Laboratory MS Duplicate and Duplicate Evaluation – Relative Percent Difference (RPD) (continued)

	Soil				Water			
Analysis	Average RPD	Min. RPD	Max. RPD	N[a] RPD	Average RPD	Min. RPD	Max. RPD	N[a]
Butyl benzyl phthalate	8	1	22	11	18	3	45	3
3,3'-Dichlorobenzidine	52	0	200	11	13	3	30	3
Benzo(a)anthracene	6	1	16	11	17	0	43	3
Chrysene	6	0	16	11	21	2	49	3
Bis(2-ethylhexyl)phthalate	5	0	14	11	18	2	45	3
Di-n-octyl phthalate	4	0	8	11	19	4	46	3
Benzo(b)fluoranthene	9	2	21	11	18	1	43	3
Benzo(k)fluoranthene	7	0	17	11	19	0	44	3
Benzo(a)pyrene	6	0	19	11	17	0	41	3
Indeno(1,2,3-cd)pyrene	18	4	59	11	16	3	32	3
Dibenzo(a,h)anthracene	6	1	17	11	17	3	43	3
Benzo(ghi)perylene	8	2	20	11	15	3	32	3
Explosive Compounds								
1,3-Dinitrobenzene	3	na	na	1	na	na	na	na
2,4-Dinitrotoluene	3	na	na	1	na	na	na	na
2,6-Dinitrotoluene	3	na	na	1	na	na	na	na
Nitrobenzene	3	na	na	1	na	na	na	na
1,3,5-Trinitrobenzene	3	na	na	1	na	na	na	na
2,4,6-Trinitrotoluene	2	na	na	1	na	na	na	na
HMX	3	na	na	1	na	na	na	na
RDX	3	na	na	1	na	na	na	na
Tetryl	4	na	na	1	na	na	na	na
2-Nitotoluene	4	na	na	1	na	na	na	na
3-Nitrotoluene	3	na	na	1	na	na	na	na
4-Nitrotoluene	3	na	na	1	na	na	na	na
4-Amino-2,6-dinitrotoluene	3	na	na	1	na	na	na	na
2-Amino-4,6-dinitrotoluene	3	na	na	1	na	na	na	na
Nitroguanidine	1	0	3	6	2	na	na	1
Nitrocellulose	12	2	20	7	2	na	na	1
PCB Compounds								
Aroclor-1016	20	1	79	5	na	na	na	na
Aroclor-1260	22	0	91	5	na	na	na	na
Metals								
Antimony	9	1	30	10	5	4	8	3
Aluminum	na	na	na	na	3.5	3	4	2
Arsenic	3	0	8	10	5	3	7	3
Barium	4	0	14	10	5	3	8	3
Beryllium	3	1	6	10	5	2	8	3
Cadmium	2	0	6	8	5	3	7	3
Calcium	6	1	29	7	4	3	4	3
Chromium	6	1	16	8	6	2	9	3
Cobalt	5	1	16	10	6	3	9	3
Copper	6	1	13	7	4	0	8	3

Table D-8. Demolition Area 1 Phase I RI Laboratory MS Duplicate and Duplicate Evaluation – Relative Percent Difference (RPD) (continued)

	Soil				Water			
Analysis	Average RPD	Min. RPD	Max. RPD	N[a] RPD	Average RPD	Min. RPD	Max. RPD	N[a]
Cyanide	11	1	25	17	4.5	3	6	2
Iron	na	na	na	na	5.5	3	8	2
Lead	18	2	101	8	5	3	8	3
Magnesium	5	0	21	9	5	5	5	3
Manganese	na	na	na	na	5	2	8	3
Mercury	4	0	16	10	3	1	6	3
Nickel	4	0	11	10	6	3	9	3
Potassium	9	1	18	10	5	4	7	3
Selenium	3	1	7	10	6	4	7	3
Silver	3	0	13	10	5	4	7	3
Sodium	3	0	7	10	4	1	6	2
Thallium	4	0	15	10	3	1	6	3
Vanadium	6	1	17	10	6	3	8	3
Zinc	14	9	19	2	4	0	7	3

[a]N = Number of samples.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
MS = Matrix spike.
na = Not analyzed.
PCB = Polychlorinated biphenyl.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

Table D-9. Demolition Area 1 Phase I RI Field Duplicate Evaluation – Relative Percent Difference (RPD)

Analysis	DA10009/DA10127 Surface Soil RPD	DA10036/DA10128 Surface Soil RPD	DA10057/DA10130 Surface Soil RPD	DA10103/DA10129 Surface Soil RPD
Metals				
Aluminum	44	3	20	11
Antimony	*	*	*	*
Arsenic	3	2	20	3
Barium	*	*	56	*
Beryllium	*	*	*	*
Cadmium	*	*	61	*
Calcium	41	*	*	*
Chromium	*	5	18	10
Cobalt	*	*	*	*
Copper	*	34	41	*
Cyanide	*	*	*	*
Iron	4	7	24	7
Lead	3	16	27	11
Magnesium	*	*	*	*
Manganese	36	36	24	31
Mercury	*	*	*	*
Nickel	*	*	25	*
Potassium	*	*	*	*
Selenium	*	*	*	*
Silver	*	*	*	*
Sodium	*	*	*	*
Thallium	*	*	*	*
Vanadium	*	*	*	*
Zinc	15	14	9	12
Volatile Organic Compounds				
All compounds	na	na	na	na
Semivolatile Organic Compounds				
All compounds	na	na	na	na
Explosive Compounds				
All compounds	*	*	*	*
PCB Compounds				
All compounds	na	na	na	na

*At least one value is <5 times the reporting level and duplicate comparison is within 3 times the reporting level
na = Not analyzed.
PCB = Polychlorinated biphenyl.

Table D-10. Project Quantitation Limit Goals and Achieved Method Detection Levels for the Demolition Area 1 Phase I RI

Parameters/Methods	Water		Sediment	
	Project Quantitation Goal	**Achieved Method Detection Level**	**Project Quantitation Goal**	**Achieved Method Detection Level**
Volatile Organic Compounds SW 846-8260B	(µg/L)	(µg/L)	(µg/kg)	(µg/kg)
Chloromethane	10	1.1	10	0.56
Bromomethane	10	0.92	10	0.9
Vinyl chloride	10	0.58	10	0.15
Chloroethane	10	0.67	10	0.45
Methylene chloride	5	0.4	5	0.28
Acetone	10	5.9	10	2.3
Carbon disulfide	5	0.4	5	0.35
1,1-Dichloroethene	5	0.53	5	0.2
1,1-Dichloroethane	5	0.62	5	0.2
1,2-Dichloroethene (total)	5	0.87	5	1.1
Chloroform	5	0.51	5	0.25
1,2-Dichloroethane	5	0.43	5	0.24
2-Butanone	10	9.7	10	1
1,1,1-Trichloroethane	5	0.63	5	0.12
Carbon tetrachloride	5	0.41	5	0.11
Bromodichloromethane	5	0.39	5	0.21
1,2-Dichloropropane	5	0.32	5	0.29
Cis-1,3-dichloropropene	5	0.35	5	0.25
Trichloroethene	5	0.54	5	0.23
Dibromochloromethane	5	0.36	5	0.21
1,1,2-Trichloroethane	5	0.41	5	0.2
Benzene	5	0.45	5	0.25
Trans-1,3-dichloropropene	5	0.64	5	0.11
Tribromomethane	5	0.35	5	0.27
4-Methyl-2-pentanone	10	5.5	10	0.46

Table D-10. Project Quantitation Limit Goals and Achieved Method Detection Levels for the Demolition Area 1 Phase I RI (continued)

Parameters/Methods	Water		Soil/Sediment	
	Project Quantitation Goal	Achieved Method Detection Level	Project Quantitation Goal	Achieved Method Detection Level
2-Hexanone	10	8.6	10	0.7
Tetrachloroethene	5	1.3	5	0.2
Toluene	5	0.45	5	0.25
1,1,2,2-Tetrachloroethane	5	0.57	5	0.35
Chlorobenzene	5	0.43	5	0.22
Ethylbenzene	5	0.41	5	0.27
Styrene	5	0.43	5	0.24
Xylenes (total)	5	1.4	5	0.72
Semivolatile Organic Compounds SW 846-8270C	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Phenol	10	2.7	330	25
Bis(2-chloroethyl) ether	10	2.8	330	33
2-Chlorophenol	10	3.0	330	29
1,3-Dichlorobenzene	10	2.6	330	28
1,4-Dichlorobenzene	10	2.6	330	18
1,2-Dichlorobenzene	10	2.5	330	24
2-Methylphenol	10	2.9	330	31
2,2'-Oxybis(1-chloropropane)	10	3.2	330	18
4-Methylphenol	10	3.1	330	31
N-nitroso-di-n-dipropylamine	10	2.7	330	29
Hexachloroethane	10	2.4	330	22
Nitrobenzene	10	2.9	330	40
Isophorone	10	2.8	330	14
2-Nitrophenol	10	2.9	330	26
2,4-Dimethylphenol	10	2.8	330	73
Bis(2-chloroethoxy) methane	10	2.6	330	21
2,4-Dichlorophenol	10	2.9	330	26

Table D-10. Project Quantitation Limit Goals and Achieved Method Detection Levels for the Demolition Area 1 Phase I RI (continued)

Parameters/Methods	Water		Soil/Sediment	
	Project Quantitation Goal	Achieved Method Detection Level	Project Quantitation Goal	Achieved Method Detection Level
1,2,4-Trichlorobenzene	10	2.5	330	17
Naphthalene	10	2.7	330	14
4-Chloroaniline	10	3.8	330	39
Hexachlorobutadiene	10	2.6	330	40
4-Chloro-3-methylphenol	10	2.9	330	26
2-Methylnaphthalene	10	3	330	16
Hexachlorocyclopentadiene	10	1	330	26
2,4,6-Trichlorophenol	10	2.9	330	18
2,4,5-Trichlorophenol	25	3.1	800	25
2-Chloronaphthalene	10	2.5	330	13
2-Nitroaniline	25	3.3	800	26
Dimethylphthalate	10	2.6	330	16
Acenaphthylene	10	2.8	330	22
2,6-Dinitrotoluene	10	2.7	330	32
3-Nitroaniline	25	3	800	31
Acenaphthene	10	2.7	330	18
2,4-Dinitrophenol	25	3.3	800	71
4-Nitrophenol	25	3.4	800	120
Dibenzofuran	10	2.9	330	25
2,4-Dinitrotoluene	10	3.1	330	31
Diethylphthalate	10	2.4	330	20
4-Chlorophenyl-phenyl ether	10	2.8	330	17
Fluorene	10	2.7	330	20
4-Nitroaniline	25	2.8	800	53
4,6-Dinitro-2-methylphenol	25	3.4	800	26
N-nitrosodiphenylamine	10	2.9	330	28
4-Bromophenyl-phenylether	10	2.7	300	23
Hexachlorobenzene	10	2.9	330	34

Table D-10. Project Quantitation Limit Goals and Achieved Method Detection Levels for the Demolition Area 1 Phase I RI (continued)

Parameters/Methods	Water		Soil/Sediment	
	Project Quantitation Goal	**Achieved Method Detection Level**	**Project Quantitation Goal**	**Achieved Method Detection Level**
Pentachlorophenol	25	3.3	800	27
Phenanthrene	10	2.9	330	19
Anthracene	10	2.7	330	22
Carbazole	10	2.8	330	24
Di-n-butylphthalate	10	2.8	330	19
Fluoranthene	10	3.2	330	26
Pyrene	10	2.8	330	30
Butylbenzylphthalate	10	2.3	330	34
3,3'-Dichlorobenzidine	10	2.7	330	29
Benzo(a)anthracene	10	2.7	330	34
Chrysene	10	3.0	330	29
Bis(2-ethylhexyl)phthalate	10	3.0	330	37
Di-n-octylphthalate	10	3.1	330	47
Benzo(b)fluoranthene	10	2.7	330	36
Benzo(k)fluoranthene	10	3.0	330	40
Benzo(a)pyrene	10	2.7	330	41
Indeno(1,2,3-cd)pyrene	10	2.9	330	41
Dibenzo(a,h)anthracene	10	3.2	330	52
Benzo(g,h,i)perylene	10	3.2	330	48
PCBs SW 846-8082	(µg/L)	(µg/L)	(µg/kg)	(µg/kg)
Aroclor-1016	1.0	0.41	33	12
Aroclor-1221	2.0	0.47	67	29
Aroclor-1232	1.0	0.12	33	8
Aroclor-1242	1.0	0.47	33	18
Aroclor-1248	1.0	0.37	33	3.9
Aroclor-1254	1.0	0.21	33	8.1
Aroclor-1260	1.0	0.36	33	7.3

Table D-10. Project Quantitation Limit Goals and Achieved Method Detection Levels for the Demolition Area 1 Phase I RI (continued)

Parameters/Methods	Water		Soil/Sediment	
	Project Quantitation Goal	Achieved Method Detection Level	Project Quantitation Goal	Achieved Method Detection Level
Explosive Compounds SW 846-8330	(µg/L)	(µg/L)	(mg/kg)	(mg/kg)
HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine)	20	0.06	2	0.05
RDX (cyclonite) hexahydro-1,3,5-trinitro-1,3,5-triazine	20	0.04	2	0.02
1,3,5-Trinitrobenzene	2	0.03	1	0.02
1,3-Dinitrobenzene	3	0.03	1	0.02
Tetryl	50	0.03	5	0.03
Nitrobenzene	10	0.04	1	0.10
2,4,6-Trinitrotoluene	3	0.06	1	0.02
2,4-Dinitrotoluene	0.1	0.03	1	0.03
2,6-Dinitrotoluene	0.1	0.03	1	0.06
O-nitrotoluene	10	0.05	1	0.02
M-nitrotoluene	10	0.05	1	0.03
P-nitrotoluene	10	0.07	1	0.02
Additional Explosive Compounds:				
Nitroglycerin	2.5	1	2.5	0.2
Nitroquanidine	20	0.96	1	0.23
Nitrocellulose	500	370	2.0	0.28
Metals (Target Analyte List) SW 846-6010B/6020 or 7000	(µg/L)	(µg/L)	(mg/Kg)	(mg/Kg)
Aluminum	200	54	20	4.4
Antimony	5	3	0.5	2.1
Arsenic	5	3	0.5	0.24
Barium	200	3	20	0.22
Beryllium	4	1	0.5	0.067
Cadmium	5	1	0.5	0.49
Calcium	5,000	150	500	14
Chromium	10	3	1	0.54

Table D-10. Project Quantitation Limit Goals and Achieved Method Detection Levels for the Demolition Area 1 Phase I RI (continued)

Parameters/Methods	Water		Soil/Sediment	
	Project Quantitation Goal	Achieved Method Detection Level	Project Quantitation Goal	Achieved Method Detection Level
Cobalt	50	2	15	0.59
Copper	25	3	2.5	0.31
Iron	100	50	10	6.1
Lead	3	2	0.3	0.19
Magnesium	5,000	52	500	11
Manganese	15	3	1.5	0.082
Mercury (CVAA) SW 846-7470A/7471A	0.2	0.1	0.1	0.019
Nickel	40	15	4	1.1
Potassium	5,000	120	500	8
Selenium	5	5	0.5	0.49
Silver	10	1	1	0.42
Sodium	5,000	340	500	14
Thallium	2	1.0	0.5	0.65
Vanadium	50	1	5	0.57
Zinc	20	11	2	1.2

PCBs = Polychlorinated biphenyls.

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ATTACHMENT 1

SAIC DATA VALIDATION FLAGGING CODES

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DATA VALIDATION REASON CODES

Organic, Inorganic, and Radiological Analytical Data

Holding Times

A01 Extraction holding times were exceeded.
A02 Extraction holding times were grossly exceeded.
A03 Analysis holding times were exceeded.
A04 Analysis holding times were grossly exceeded.
A05 Samples were not preserved properly.
A06 Professional judgment was used to qualify the data.

GC/MS Tuning

B01 Mass calibration was in error, even after applying expanded criteria.
B02 Mass calibration was not performed every 12 hours.
B03 Mass calibration did not meet ion abundance criteria.
B04 Professional judgment was used to qualify the data.

Initial/Continuing Calibration – Organics

C01 Initial calibration RRF was < 0.05.
C02 Initial calibration RDS was > 30 percent.
C03 Initial calibration sequence was not followed as required.
C04 Continuing calibration RRF was < 0.05.
C05 Continuing calibration %D was > 25 percent.
C06 Continuing calibration was not performed at the required frequency.
C07 Resolution criteria were not met.
C08 RPD criteria were not met.
C09 RDS criteria were not met.
C10 Retention time of compounds was outside windows.
C11 Compounds were not adequately resolved.
C12 Breakdown of endrin or DDT was > 30 percent.
C13 Combined breakdown of endrin/DDT was > 30 percent .
C14 Professional judgment was used to qualify the data.

Initial/Continuing Calibration – Inorganics

D01 ICV or CCV were not performed for every analyte.
D02 ICV recovery was above the upper control limit.
D03 ICV recovery was below the lower control limit.
D04 CCV recovery was above the upper control limit.
D05 CCV recovery was below the lower control limit.
D06 Standard curve was not established with the minimum number of standards.
D07 Instrument was not calibrated daily or each time the instrument was set up.
D08 Correlation coefficient was <0.995.
D09 Mid-range cyanide standard was not distilled.
D10 Professional judgment was used to qualify the data.

ICP and Furnace Requirements

E01 Interference check sample recovery was outside the control limit.
E02 Duplicate injections were outside the control limit.
E03 Post-digestion spike recovery was outside the control limit.
E04 MSA was required but not performed.
E05 MSA correlation coefficient was <0.995.
E06 MSA spikes were not at the correct concentration.
E07 Serial dilution criteria were not met.
E08 Professional judgment was used to qualify the data.

Blanks

F01 Sample data were qualified as a result of the method blank.
F02 Sample data were qualified as a result of the field blank.
F03 Sample data were qualified as a result of the equipment rinsate.
F04 Sample data were qualified as a result of the trip blank.
F05 Gross contamination exists.
F06 Concentration of the contaminant was detected at a level below the CRQL.
F07 Concentration of the contaminant was detected at a level less than the action limit but greater than the CRQL.
F08 Concentration of the contaminant was detected at a level that exceeds the action level.
F09 No laboratory blanks were analyzed.
F10 Blank had a negative value >2 times the IDL.
F11 Blanks were not analyzed at required frequency.
F12 Professional judgment was used to qualify the data.

Surrogate/Radiological Chemical Recovery

G01 Surrogate/radiological chemical recovery was above the upper control limit.
G02 Surrogate/radiological chemical recovery was below the lower control limit.
G03 Surrogate recovery was <10 percent.
G04 Surrogate recovery was zero.
G05 Surrogate/radiological chemical recovery data were not present.
G06 Professional judgment was used to qualify the data.
G07 Radiological chemical recovery was <20 percent.
G08 Radiological chemical recovery was >150 percent.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

H01 MS/MSD recovery was above the upper control limit.
H02 MS/MSD recovery was below the lower control limit.
H03 MD/MSD recovery was <10 percent.
H04 MS/MSD pairs exceed the RPD limit.
H05 No action was taken on MS/MSD limit.
H06 Professional judgment was used to qualify the data.
H07 Radiological MS/MSD recovery was <20 percent.
H08 Radiological MS/MSD recovery was >160 percent.
H09 Radiological MS/MSD samples were not analyzed at the required frequency.

Matrix Spike

I01 MS recovery was above the upper control limit.
I02 MS recovery was below the lower control limit.
I03 MS recovery was <30 percent.
I04 No action was taken on MS data.
I05 Professional judgment was used to qualify the data.

Laboratory Duplicate

J01 Duplicate RPD/radiological duplicate error ratio (DER) was outside the control limit.
J02 Duplicate sample results were >5 times the CRDL.
J03 Duplicate sample results were <5 times the CRDL.
J04 Professional judgment was used to qualify the data.
J05 Duplicate was not analyzed at the required frequency.

Internal Area Summary

K01 Area counts were outside the control limits.
K02 Extremely low area counts or performance was exhibited by a major drop off.
K03 IS retention time varied by more than 30 seconds.
K04 Professional judgment was used to qualify the data.

Pesticide Cleanup Checks

L01 Ten percent recovery was obtained during either check.
L02 Recoveries during either check were >120 percent.
L03 GPC cleanup recoveries were outside the control limits.
L04 Florisil cartridge cleanup recoveries were outside the control limits.
L05 Professional judgment was used to qualify the data.

Target Compound Identification

M01 Incorrect identifications were made.
M02 Qualitative criteria were not met.
M03 Cross contamination occurred.
M04 Confirmatory analysis was not performed
M05 No results were provided.
M06 Analysis occurred outside the 12-hour GC/MS window.
M07 Professional judgment was used to qualify the data.
M08 The %D between the two pesticide/PCB column checks was >25 percent.

Compound Quantitation and Reported CRQLs

N01 Quantitation limits were affected by large off-scale peaks.
N02 MDLs reported by the laboratory exceeded corresponding CRQLs.
N03 Professional judgment used to qualify the data.

Tentatively Identified Compounds (TICs)

O01 Compound was suspected laboratory contaminant and was not detected in the blank.
O02 TIC result was not above 10 times the level found in the blank.
O03 Professional judgment was used to qualify analytical data.

Laboratory Control Samples (LCSs)

P01 LCS recovery was above upper control limit.
P02 LCS recovery was below lower control limit.
P03 LCS recovery was <50 percent.
P04 No action was taken on the LCS data.
P05 LCS was not analyzed at required frequency.
P06 Radiological LCS recovery was <50 percent for aqueous samples and <40 percent for solid samples.
P07 Radiological LCS recovery was >150 percent for aqueous samples and >160 percent for solid samples.
P08 Professional judgment was used to qualify the data.

Field Duplicate

Q01 Field duplicate RPDs were >30 percent for waters and/or >50 percent for soil.
Q02 Radiological field duplicate error ratio (DER) was outside the control limit.
Q03 Duplicate sample results were >5 times the CRDL.
Q04 Duplicate sample results were <5 times the CRDL.

Radiological Calibration

R01 Efficiency calibration criteria were not met.
R02 Energy calibration criteria were not met.
R03 Resolution calibration criteria were not met.
R04 Background determination criteria were not met.
R05 Quench curve criteria were not met.
R06 Absorption curve criteria were not met.
R07 Plateau curve criteria were not met.
R08 Professional judgment was used to qualify the data.

Radiological Calibration Verification

S01 Efficiency verification criteria were not met.
S02 Energy verification criteria were not met.
S03 Resolution verification criteria were not met.
S04 Background verification criteria were not met.
S05 Cross-talk verification criteria were not met.
S06 Professional judgment was used to qualify the data.

ATTACHMENT 2

CHAIN-OF-CUSTODY RECORDS

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COC NO.: DA1QES - 1
page 1 of 1

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumback (Printed Name) Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS: 4101 Shuffel Drive NW, North Canton, Ohio 44720, Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SVOCs b1, Metals c1, CN d1	PCBs e1	Explosives f1	Propellants f1	Metals c1, CN d1	TOC g1				WATER: VOCs n1,2	SVOCs j1	PCBs k1	Metals - filtered i1,3	Metals - total i1,3	CN h1,4	Explosives m1	Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1ØØØ1	10-19-99	1Ø35	Soil				1	1	1													3	
DA1ØØØ9		1625					1	1	1													3	
DA1ØØØ6		144Ø					1		1													2	
DA1Ø127		1625					1	1	1													3	
DA1ØØØ7		152Ø					1	1	1													3	
DA1ØØØ4		12ØØ					1		1													2	
D-47 DA1ØØØ5		142Ø					1	1	1													3	
DA1ØØØ2		1115					1	1	1													3	
DA1ØØØ3		1145					1	1	1													3	
ignore line		VB	10-20-99																				
carbon was not centered																							
properly																							

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumback	10/20/99 11:20		
COMPANY NAME: SAIC		COMPANY NAME:	

RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
[illegible]	10-20-99 11:20		
COMPANY NAME:		COMPANY NAME:	

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 25

Cooler Temperature: 4°C

Cooler ID: QES Lab Cooler B#120

FEDEX NUMBER: NA Courier pickup

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES - 2
page 1 of 3

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumback (Printed Name) Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS:
4101 Shuffel Drive NW
North Canton, Ohio 44720
Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs b1, ~~Metals c1, CN d1~~	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1	SOIL:	SOIL:	SOIL:	WATER:	WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1Ø125	1Ø-2Ø-99	14ØØ	Water												3	2		1	1	1	2	2	12	* VOC vials are in with NACA Test Area samples in order to
DA1Ø135		112Ø	Soil				1		1														2	minimize trip blanks.
DA1ØØ17		1435	Soil				1	1	1														3	
DA1ØØ19		154Ø	Soil				1	1	1														3	
DA1ØØ69		12ØØ	Soil				1	1	1														3	
DA1ØØ2Ø		16ØØ	Soil				1		1														2	
DA1ØØ15		135Ø	Soil				1	1	1														3	
DA1ØØ21		162Ø	Soil				1	1	1														3	
DA1ØØ11		Ø945	Soil				1	1	1														3	
DA1ØØ71		1135	Soil				1		1														2	
DA1ØØ7Ø		1125	Soil				1		1														2	
DA1ØØ14		112Ø	Soil	1	1	1	1		1														5	
DA1ØØ13		1Ø5Ø	Soil	1	1	1	1	1	1														6	

VB 10-21-99

D48

RELINQUISHED BY: Vicki Brumback	Date/Time 10-22-99 1155	RECEIVED BY:	Date/Time
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY: [illegible signature]	Date/Time 10-22-99 1155
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 49

Cooler Temperature: 4° C

Cooler ID: Soils in Quanterra Cooler H37, water in Quanterra Cooler G39

FEDEX NUMBER: NA Courier pickup

SOIL/SEDIMENT METHODS
a SW-846, 5035/8260B
b SW-846, 8270C
c SW-846, 6010B/7471
d SW-846, 9011/9010
e SW-846, 8082
f SW-846, 8330
g SW-846, 9060

WATER METHODS
h SW-846, 9010
i SW-846, 6010A/7470
j SW-846, 8270C
k SW-846, 8082
m SW-846, 8330
n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES - 2
page 2 of 3

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumback **(Printed Name)** Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS: 4101 Shuffel Drive NW, North Canton, Ohio 44720, Attn: Becky Strait

PHONE NO: 330-996-9792

				REQUESTED PARAMETERS: SOIL										WATER									
Sample ID	Date Collected	Time Collected	Matrix	VOCs a1	SVOCs b1, Metals c1, CN d1	PCBs e1	Explosives f1	Propellants f1	Metals c1, CN d1	TOC g1				VOCs n1,2	SVOCs j1	PCBs k1	Metals - filtered i1,3	Metals - total i1,3	CN h1,4	Explosives m1	Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA10027	10-21-99	1015	Soil				✓		✓													2	
DA10028	↓	1020	↓				✓		✓													2	
DA10032		1145					✓	✓	✓													3	
DA10031		1115					✓		✓													2	
DA10030		1100					✓		✓													2	
DA10034		1205					✓		✓													2	
DA10033		1155					✓		✓													2	
DA10026		0950					✓	✓	✓													3	
DA10029		1045					✓	✓	✓													3	
DA10036		1440					✓	✓	✓													3	
DA10128		1440					✓	✓	✓													3	
DA10037		1500					✓		✓													2	
DA10132	↓	1500	↓				✓		✓													2	

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumback	10-22-99 1155		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	**Date/Time**	**RELINQUISHED BY:**	**Date/Time**
		Al Whitfield	10-22-99 11:55
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	**Date/Time**	**RECEIVED BY:**	**Date/Time**
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 31

Cooler Temperature: 31 4°C

Cooler ID: Soil in Quanterra cooler 1137, water in Quanterra cooler 639

FEDEX NUMBER: N/A Courier pickup

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES - 2
page 3 of 3

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumback **(Printed Name)** Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS: 4101 Shuffel Drive NW
North Canton, Ohio 44720
Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

				SOIL										WATER										
Sample ID	Date Collected	Time Collected	Matrix	VOCs a1	SVOCs b1, Metals c1, CN d1	PCBs e1	Explosives f1	Propellants f1	Metals c1, CN d1	TOC g1					VOCs n1.2	SVOCs j1	PCBs k1	Metals - filtered i1.3	Metals - total i1.3	CN h1.4	Explosives m1	Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1ΦΦ38	10/22/99	1515	Soil				1		1														2	
DA1ΦΦ23	↓	1535	↓				1	1	1														3	
DA1ΦΦ24	↓	1545	↓				1	1	1														3	
DA1ΦΦ25	↓	1555	↓				1	1	1														3	
DA1ΦΦ39	↓	163Φ	↓				1	1	1														3	
DA1ΦΦ4Φ	↓	165Φ	↓				1		1														2	
DA1ΦΦ41	↓	17ΦΦ	↓				1		1														2	
D-50															+e								+	EVB 10/22/98
																								*
			VA																					
																10-22-99								

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumback	10-22-99 1155		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY: Al. Haidt	Date/Time 10-22-99 11:55
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: ~~20~~ 18 VB 10-22-99

Cooler Temperature: 4°C

Cooler ID: Soils in Quanterra cooler H37, water in Qu. cooler G39

FEDEX NUMBER: NA courier pickup

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES - 3
page 1 of 3

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumback **(Printed Name)** Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS:
4101 Shuffel Drive NW
North Canton, Ohio 44720
Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1	WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA10042	10/22/99	0930	Soil				1	1	1										3	
DA10043	10/22/99	0955	Soil				1		1										2	
DA10131	10/22/99	0955	Soil				1		1										2	
DA10044	10/22/99	1015	Soil				1		1										2	
DA10160	10/22/99	1040	Soil				1		1										2	
DA10045	10/22/99	1120	Soil				1	1	1										3	
DA10046	10/22/99	1140	Soil				1		1										2	
DA10047	10/22/99	1200	Soil				1		1										2	
DA10161	10/22/99	1215	Soil				1		1										2	
DA10048	10/22/99	1455	Soil	1	1	1	1	1	1										~~5~~ 6	6 vjb 10-25-99
DA10049	10/22/99	1510	Soil	1	1	1	1		1										~~4~~ 5	5 vjb 10-25-99
DA10050	10/22/99	1530	Soil				1		1										2	
DA10162	10/22/99	1600	Soil				1		1										2	

D-51

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumback	10-26-99 11:30		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY: [signature]	10-25-99 11:30	RELINQUISHED BY:	
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 35

Cooler Temperature: 3.9 4°C

Cooler ID: J530, J538, J567, J353

FEDEX NUMBER: NA Courier pickup

SOIL/SEDIMENT METHODS
a SW-846, 5035/8260B
b SW-846, 8270C
c SW-846, 6010B/7471
d SW-846, 9011/9010
e SW-846, 8082
f SW-846, 8330
g SW-846, 9060

WATER METHODS
h SW-846, 9010
i SW-846, 6010A/7470
j SW-846, 8270C
k SW-846, 8082
m SW-846, 8330
n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES - 3

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature): Vicki Brumback (Printed Name): Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS: 4101 Shuffel Drive NW, North Canton, Ohio 44720, Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs b1, Metals c1, CN d1	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1				WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1Ø117	1Ø-24-99	1ØØØ	Sed.	1	1	1	1	1		1												6	
DA1Ø121	↓	Ø947	Water											3	2	2	1	1	1	2	2	14	
DA1Ø119	↓	1155	Sed.	1	1	1	1	1		1												6	
DA1Ø123	↓	1145	Water											3	2	2	1	1	1	2	2	14	
DA1Ø12Ø	↓	14Ø5	Sed.	1	1	1	1	1		1												6	
DA1Ø124	↓	1355	Water											3	2	2	1	1	1	2	2	14	
DA1Ø136	↓	14Ø5	Sed.		1		1	1														3	
DA1Ø137	↓	1355	Water														1	1	1	2	2	7	← check - ok
DA1Ø118	↓	1535	Sed.	1	1	1	1	1		1												6	
DA1ØØ51	↓	162Ø	Soil				1	1	1													3	
DA1ØØ52	↓	163Ø	↓				1		1													2	
DA1ØØ53	↓	1645	↓				1		1													2	
DA1Ø163	↓	17ØØ	↓				1		1													2	

D-52

RELINQUISHED BY: Vicki Brumback	Date/Time: 1Ø-25-99 11:30	RECEIVED BY:	Date/Time
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY: Al. Weidell	Date/Time: 10-25-99 11:30	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 85

Cooler Temperature: 4°C

Cooler ID: J530, J538, J567, J359

FEDEX NUMBER: NA Courier pickup

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

3

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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CHAIN OF CUSTODY RECORD

COC NO.: DA1QES -

PROJECT NAME: Demolition Area 1 Phase I RI	LABORATORY NAME: Quanterra Environmental
DELIVERY ORDER NUMBER: 0076	LABORATORY ADDRESS: 4101 Shuffel Drive NW, North Canton, Ohio 44720, Attn: Becky Strait
PROJECT MANAGER: Steve Selecman 423-481-8761	PHONE NO: 330-996-9792
Sampler (Signature): Vicki Brumbach (Printed Name): Vicki Brumback	

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SVOCs b1, Metals c1, CN d1	PCBs e1	Explosives f1	Propellants f1	Metals c1, CN d1	TOC g1				WATER:	VOCs n1,2	SVOCs j1	PCBs k1	Metals - filtered i1,3	Metals - total i1,3	CN h1,4	Explosives m1	Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1Φ15Φ	1Φ/24/99	NA	Water												1								1	Trip Blank

[illegible] 10/25/99

RELINQUISHED BY: Vicki Brumbach	Date/Time 1Φ-25-99 11:30	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 1	Cooler Temperature: 4°C
COMPANY NAME: SAIC		COMPANY NAME:		Cooler ID: J530, J538, J567, J359	FEDEX NUMBER: NA Courier pickup
RECEIVED BY: [illegible]	Date/Time 10-25-99 11:30	RELINQUISHED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES - 4
page 1 of 3

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature): Vicki Brumback (Printed Name): Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS: 4101 Shuffel Drive NW, North Canton, Ohio 44720, Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs b1, Metals c1, CN d1	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1	SOIL:	SOIL:	SOIL:	WATER:	WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1ΦΦ54	1Φ-25-97	Φ955	Soil				1	1	1														3	
DA1ΦΦ55	↓	1ΦΦΦ	↓				1	1	1														3	
DA1ΦΦ56		1Φ15					1	1	1														3	
DA1ΦΦ57		11ΦΦ		1	1	1	1	1	1														6	
DA1Φ13Φ		11ΦΦ					1	1	1														3	
DA1ΦΦ58		1135		1	1	1	1	1	1														6	
DA1ΦΦ59		1145		1	1	1	1	1	1														6	
D-54 DA1ΦΦ6Φ		1415					1	1	1														3	
DA1ΦΦ61		1425					1		1														2	
DA1ΦΦ62		1435					1		1														2	
DA1ΦΦ63		15ΦΦ					1	1	1														3	
DA1ΦΦ64		152Φ					1		1														2	
DA1ΦΦ65	↓	154Φ	↓				1		1														2	

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumback	10-27-97 1520	[illegible]	[illegible]
COMPANY NAME: SAIC		COMPANY NAME: Quanterra	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 44

Cooler Temperature: 4°C

Cooler ID: J372

FEDEX NUMBER: NA SAIC delivery ~~Courier pickup~~

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES- 4

page 2 of 3

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumbach **(Printed Name)** Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS: 4101 Shuffel Drive NW, North Canton, Ohio 44720, Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs b1, Metals c1, CN d1	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1					WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA10066	10-25-99	1620	Soil				1	1	1														3	
DA10067		1630					1		1														2	
DA10068		1645					1		1														2	
DA10073	10-26-99	1000					1	1	1														3	
DA10074		1015					1		1														2	
DA10075		1025					1		1														2	
DA10076		1115		1	1	1	1	1	1														6	
D-55 DA10077		1145		1	1	1	1		1														5	
DA10079		1430					1	1	1														3	
DA10080		1445					1		1														2	
DA10082		1545					1	1	1														3	
DA10083		1555					1		1														2	
DA10084		1605					1		1														2	

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumbach	10.27.99 1510	[illegible signature]	10/27 [illegible]
COMPANY NAME: SAIC		COMPANY NAME: Quanterra	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 37

Cooler Temperature: 4°C

Cooler ID: J372

FEDEX NUMBER: NA SAIC delivery

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES - 4
page 3 of 3

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumbach **(Printed Name)** Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS:
4101 Shuffel Drive NW
North Canton, Ohio 44720
Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs b1, Metals c1, CN d1	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1	WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA10085	10-27-99	0940	Soil				1	1	1										3	
DA10086		0955					1		1										2	
DA10087		1010					1		1										2	
DA10088		1030					1	1	1										3	
DA10089		1045					1		1										2	
DA10090		1110					1		1										2	
DA10091		1135					1	1	1										3	
DA10092		1200					1		1										2	
D-56 DA10093	↓	1210	↓				1		1										2	

VKB 10/27/99

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumbach	10.27.99 1520	[illegible signature]	10/27/99 5:30P
COMPANY NAME: SAIC		COMPANY NAME: Quanterra	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 23

Cooler Temperature: 4°C

Cooler ID: J372

FEDEX NUMBER: NA SAIC delivery

SOIL/SEDIMENT METHODS
a SW-846, 5035/8260B
b SW-846, 8270C
c SW-846, 6010B/7471
d SW-846, 9011/9010
e SW-846, 8082
f SW-846, 8330
g SW-846, 9060

WATER METHODS
h SW-846, 9010
i SW-846, 6010A/7470
j SW-846, 8270C
k SW-846, 8082
m SW-846, 8330
n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES - 5
page 1 of 2

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumback (Printed Name) Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS: 4101 Shuffel Drive NW, North Canton, Ohio 44720, Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs b1, Metals c1, CN d1	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1				WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1ØØ94	11/1/99	15ØØ	Soil				1	1	1													3	
DA1ØØ95	↓	1515	↓				1		1													2	
DA1ØØ96	↓	1525	↓				1		1													2	
DA1ØØ97	11/2/99	Ø835	↓				1	1	1													3	
DA1ØØ98	↓	Ø855	↓				1		1													2	
DA1ØØ99	↓	Ø915	↓				1		1													2	
DA1Ø1Ø3	↓	1Ø15	↓				1	1	1													3	
DA1Ø129	↓	1Ø15	↓				1	1	1													3	
DA1Ø1Ø4	↓	1Ø35	↓				1		1													2	
DA1Ø133	↓	1Ø35	↓				1		1													2	
DA1Ø1Ø5	↓	1Ø55	↓				1		1													2	
DA1Ø134	↓	1Ø55	↓				1		1													2	
DA1Ø1Ø2	↓	161Ø	↓				2		2													4	4 2oz. jars

D-57

RELINQUISHED BY: Vicki Brumback Date/Time: 11-3-99 Ø920
COMPANY NAME: SAIC

RECEIVED BY: [illegible signature] Date/Time: 11-3-99 9:20
COMPANY NAME:

TOTAL NUMBER OF CONTAINERS: 32
Cooler Temperature: 4°C
Cooler ID: Quanterra B44
FEDEX NUMBER: NA Courier pickup

RECEIVED BY: Date/Time:
COMPANY NAME:

RELINQUISHED BY: Date/Time:
COMPANY NAME:

RELINQUISHED BY: Date/Time:
COMPANY NAME:

RECEIVED BY: Date/Time:
COMPANY NAME:

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES - 5

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumbach **(Printed Name)** Vicki Brumbach

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS: 4101 Shuffel Drive NW, North Canton, Ohio 44720, Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs b1, Metals c1, CN d1	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1	SOIL:	SOIL:	SOIL:	WATER:	WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1Ø1Ø6	11-2-99	1415	Soil				1	1	1														3	
DA1Ø1Ø7	↓	144Ø	↓				1		1														2	
DA1Ø1Ø8	↓	1455	↓				1		2														3	Metals = 2oz CN = 2oz
DA1Ø1ØØ	↓	1545	↓				2	2	2														6	6 - 2oz jars
DA1Ø1Ø1	↓	16ØØ	↓				2		2														4	4 - 2oz jars

vjb 11-3-99

D-58

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumbach	11-3-99 Ø9 vjb 1Ø2Ø	Al. Haidit	11-3-99 9:20
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 18

Cooler Temperature: 4°C

Cooler ID: Quanterra B44

FEDEX NUMBER: NA Courier pickup

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1QES - 6
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CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature): Vicki Brumback (Printed Name): Vicki Brumback

LABORATORY NAME: Quanterra Environmental

LABORATORY ADDRESS: 4101 Shuffel Drive NW North Canton, Ohio 44720 Attn: Becky Strait

PHONE NO: 330-996-9792

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs b1, Metals c1, CN d1	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1					WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1Φ1Φ7	11-3-99	1Φ3Φ	Soil	1	1	1	1	1															5	
DA1Φ126		1Φ3Φ		1	1	1	1	1															5	
DA1Φ11Φ		11ΦΦ			1		1																2	
DA1Φ111		1355					1	1	1														3	
DA1Φ112		14Φ5					1	1	1														3	
DA1Φ113		1415					1	1	1														2	3vjb 11-4-99
DA1Φ164		1425					1		1														2	
DA1Φ114		153Φ					1	1	1														3	
A1Φ115		154Φ					1	1	1														3	
DA1Φ116		155Φ		1			1	1	1														4	
DA1Φ165	↓	16ΦΦ	↓				1	1	1														3	

D-59

vjb 11-4-99

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumback	11-4-99	[illegible]	11-4-99
COMPANY NAME: SAIC	1ΦΦΦ	COMPANY NAME:	[illegible]
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 36

Cooler Temperature: 4°C

Cooler ID: Quanterra # J266

FEDEX NUMBER: NA Courier pickup

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1GPE - 1
page 1 of 1

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature): Vicki Brumbach (Printed Name): Vicki Brumback

LABORATORY NAME: G P Environmental (Core QA Split Samples)

LABORATORY ADDRESS: 202 Perry Parkway, Gaithersburg, MD 20877, Attn: Amy Friedlander

PHONE NO: 301-926-6802

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs b1, Metals c1, CN d1	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1	WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1Φ139	1Φ/19/99	1625	Soil				1	1	1										3	
DA1Φ147	1Φ/21/99	112Φ	Soil				1		1										2	
DA1Φ14Φ	1Φ/21/99	144Φ	Soil				1	1	1										3	
DA1Φ144	1Φ/21/99	15ΦΦ	Soil				1		1										2	

VB 10-22-99

D-60

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumbach	10-22-99 2:00 pm		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 1Φ

Cooler Temperature: 4°C

Cooler ID: SAIC unnumbered

FEDEX NUMBER: 81Φ25467 1199

SOIL/SEDIMENT METHODS
a SW-846, 5035/8260B
b SW-846, 8270C
c SW-846, 6010B/7471
d SW-846, 9011/9010
e SW-846, 8082
f SW-846, 8330
g SW-846, 9060

WATER METHODS
h SW-846, 9010
i SW-846, 6010A/7470
j SW-846, 8270C
k SW-846, 8082
m SW-846, 8330
n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1GPE - 6
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CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumback (Printed Name) Vicki Brumback

LABORATORY NAME: G P Environmental (Core QA Split Samples)

LABORATORY ADDRESS:
202 Perry Parkway
Gaithersburg, MD 20877
Attn: Amy Friedlander

PHONE NO: 301-926-6802

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SVOCs b1, Metals c1, CN d1	PCBs e1	Explosives f1	Propellants f1	Metals c1, CN d1	TOC g1				WATER:	VOCs n1,2	SVOCs j1	PCBs k1	Metals - filtered i1,3	Metals - total i1,3	CN h1,4	Explosives m1	Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1Ø143	1Ø-22-99	Ø955	Soil				1		1														2	
DA1Ø142	1Ø-25-99	11ØØ	Soil				1	1	1														3	
DA1Ø148	1Ø-24-99	14Ø5	Sediment		1		1	1															3	
DA1Ø149	1Ø-24-99	1355	Water															1	1	1	2	2	7	

RELINQUISHED BY: Vicki Brumback
Date/Time: 1Ø-26-99 12:3Øpm
COMPANY NAME: SAIC

RECEIVED BY:
Date/Time
COMPANY NAME:

TOTAL NUMBER OF CONTAINERS: 15
Cooler Temperature: 4°C
Cooler ID: Quanterra # H135
FEDEX NUMBER: 81Ø2 5467 1225

RECEIVED BY:
Date/Time
COMPANY NAME:

RELINQUISHED BY:
Date/Time
COMPANY NAME:

RELINQUISHED BY:
Date/Time
COMPANY NAME:

RECEIVED BY:
Date/Time
COMPANY NAME:

SOIL/SEDIMENT METHODS
a SW-846, 5035/8260B
b SW-846, 8270C
c SW-846, 6010B/7471
d SW-846, 9011/9010
e SW-846, 8082
f SW-846, 8330
g SW-846, 9060

WATER METHODS
h SW-846, 9010
i SW-846, 6010A/7470
j SW-846, 8270C
k SW-846, 8082
m SW-846, 8330
n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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CHAIN OF CUSTODY RECORD

COC NO.: DA1GPE- 3
page 1 of 1

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NUMBER: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumback **(Printed Name)** Vicki Brumback

LABORATORY NAME: G P Environmental (Core QA Split Samples)

LABORATORY ADDRESS:
202 Perry Parkway
Gaithersburg, MD 20877
Attn: Amy Friedlander

PHONE NO: 301-926-6802

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	SOIL: VOCs a1	SOIL: SVOCs b1, Metals c1, CN d1	SOIL: PCBs e1	SOIL: Explosives f1	SOIL: Propellants f1	SOIL: Metals c1, CN d1	SOIL: TOC g1	SOIL	SOIL	SOIL	WATER	WATER: VOCs n1,2	WATER: SVOCs j1	WATER: PCBs k1	WATER: Metals - filtered i1,3	WATER: Metals - total i1,3	WATER: CN h1,4	WATER: Explosives m1	WATER: Propellants m1	No. of Containers	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DA1Ø141	1Ø15	11-2-99	Soil				1	1	1														3	
DA1Ø145	11-2-99	1Ø35					1		1														2	
DA1Ø146	11-2-99	1Ø55					1		1														2	
DA1Ø138	11-3-99	1Ø3Ø		1	1	1	1	1															5	12

VB 11-4-99

D-62

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumback	11-4-99 1ØØØ		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 12
Cooler Temperature: 4°C
Cooler ID: Quanterra # D93
FEDEX NUMBER: 81Ø254671258

SOIL/SEDIMENT METHODS
- a SW-846, 5035/8260B
- b SW-846, 8270C
- c SW-846, 6010B/7471
- d SW-846, 9011/9010
- e SW-846, 8082
- f SW-846, 8330
- g SW-846, 9060

WATER METHODS
- h SW-846, 9010
- i SW-846, 6010A/7470
- j SW-846, 8270C
- k SW-846, 8082
- m SW-846, 8330
- n SW-846, 8260B

1 Cool,4C 2 HCL, pH < 2 3 HNO3, pH < 2 4 NaOH, pH > 12

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COC NO.: DA1CE- 1
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CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NO: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumback (Printed Name) Vicki Brumback

LABORATORY NAME: Catlin Engineers

LABORATORY ADDRESS: 1051 Johnnie Dodds Blvd. Suite C Mt. Pleasent, SC 29464

PHONE NO: 803-881-6000

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	Grain Size	Moisture	Atterberg Limits	USCS Classification	pH	Redox Potential	Organic Carbon	Content	Bulk Density	Specific Gravity	Soil Permeability	No. of Containers:	OBSERVATIONS, COMMENTS.
DA10161	10-22-99	1215	Soil	✓	✓	✓	✓								1	
DA10039	10-21-99	1630	↓	✓	✓	✓	✓								1	
DA10021	10-20-99	1620		✓	✓	✓	✓								1	
DA10041	10-21-99	1700		✓	✓	✓	✓								1	
DA10040	10-21-99	1650		✓	✓	✓	✓								1	
DA10119	10-24-99	1155		✓											1	
DA10118	10-24-99	1535		✓											1	
DA10120	10-24-99	1405		✓											1	
DA10117	10-24-99	1000	✓	✓											1	

VJB 11-4-99

D-63

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumback	11-4-99 1000		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 9

Cooler Temperature: NA

Cooler ID: SAIC #901

FEDEX NUMBER: 8102546712 69

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COC NO.: DA1CE- 1

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CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NO: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumback (Printed Name) Vicki Brumback

LABORATORY NAME: Catlin Engineers

LABORATORY ADDRESS: 1051 Johnnie Dodds Blvd. Suite C Mt. Pleasent, SC 29464

PHONE NO: 803-881-6000

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	Grain Size	Moisture	Atterberg Limits	USCS Classification	pH	Redox Potential	Organic Carbon	Content	Bulk Density	Specific Gravity	Soil Permeability	No. of Containers:	OBSERVATIONS, COMMENTS,
DA1ΦΦ35	1Φ-19-99	154Φ	Soil	✓	✓	✓		✓	✓	✓		✓	✓	✓	1	
DA1ΦΦ72	↓	16ΦΦ	↓	✓	✓	✓		✓	✓	✓		✓	✓	✓	1	

VB 10-20-99

D-64

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumback	10-20-99 1200		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 2

Cooler Temperature: NA

Cooler ID: NA

FEDEX NUMBER: 81Φ2546 71453 (2 tubes)

Fed Ex Shipping Tube

(grain size ASTM D422) (sp grav ASTM D854)
(bulk density - internal lab meth)
(ph ASTM D4972) (moisture ASTM D2216)
(redox pot. 9125 8Φ)
(organic carbon content 9Φ6Φ) (AL ASTM D4318)
(soil perm D5Φ84)

APPENDIX E

ANALYTICAL RESULTS

TABLE OF CONTENTS

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EXPLANATION OF DATA QUALIFIERS

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Explanation of Data Qualifiers for Appendix E

U – Result not detected at indicated laboratory reporting limit.

J – Estimated result less than laboratory reporting limit.

= – Analyte present and concentration accurate.

R – Result rejected through laboratory quality control or validation process.

* – Inorganic result exceeds its applicable RVAAP facility-wide background criterion.

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SURFACE SOIL – EXPLOSIVES AND PROPELLANTS

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Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-041 DA10111 DA1ss-041-0111-SO 11/03/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-042 DA10114 DA1ss-042-0114-SO 11/03/1999 0 - 1 Composite	Inside Bermed Area DA1-012 DA10023 DA1ss-012-0023-SO 10/21/1999 0 - 1 Composite	Inside Bermed Area DA1-013 DA10026 DA1ss-013-0026-SO 10/21/1999 0 - 1 Composite
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.15 J	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2 U	2 U	2.4 U	2.3 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.083 J	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-014 DA10029 DA1ss-014-0029-SO 10/21/1999 0 - 1 Composite	Inside Bermed Area DA1-015 DA10032 DA1ss-015-0032-SO 10/21/1999 0 - 1 Composite	Inside Bermed Area DA1-016 DA10036 DA1ss-016-0036-SO 10/21/1999 0 - 1 Composite	Inside Bermed Area DA1-016 DA10128 DA1ss-016-0128-SO 10/21/1999 0 - 1 Field Duplicate
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.13 J	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.092 J
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.4 U	2.4 U	2.4 U	2.4 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

00-090P(xls)041000

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-017 DA10039 DA1ss-017-0039-SO 10/21/1999 0 - 1 Composite	Inside Bermed Area DA1-018 DA10042 DA1ss-018-0042-SO 10/22/1999 0 - 1 Composite	Inside Bermed Area DA1-019 DA10045 DA1ss-019-0045-SO 10/22/1999 0 - 1 Composite	Inside Bermed Area DA1-020 DA10048 DA1ss-020-0048-SO 10/22/1999 0 - 1 Composite
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.4 U	2.4 U	2.5 U	2.4 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-021 DA10051 DA1ss-021-0051-SO 10/24/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-022 DA10054 DA1ss-022-0054-SO 10/25/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-023 DA10057 DA1ss-023-0057-SO 10/25/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-023 DA10130 DA1ss-023-0130-SO 10/25/1999 0 - 1 Field Duplicate
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.2 J	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.095 J
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.4 U	3.8 =	2.6 U	2.6 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-024 DA10060 DA1ss-024-0060-SO 10/25/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-025 DA10063 DA1ss-025-0063-SO 10/25/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-026 DA10066 DA1ss-026-0066-SO 10/25/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-027 DA10069 DA1ss-027-0069-SO 10/20/1999 0 - 1 Composite
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.5 U	2.5 U	2.6 U	2.5 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-028 DA10073 DA1ss-028-0073-SO 10/26/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-029 DA10076 DA1ss-029-0076-SO 10/26/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-030 DA10079 DA1ss-030-0079-SO 10/26/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-031 DA10082 DA1ss-031-0082-SO 10/26/1999 0 - 1 Composite
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.46 =	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.82 =	6.6 =	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.4 U	2.7 U	2.6 =	2.5 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-032 DA10085 DA1ss-032-0085-SO 10/27/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-033 DA10088 DA1ss-033-0088-SO 10/27/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-034 DA10091 DA1ss-034-0091-SO 10/27/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-035 DA10094 DA1ss-035-0094-SO 11/01/1999 0 - 1 Compostie
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.4 U	2.5 U	2.4 U	2 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-036 DA10097 DA1ss-036-0097-SO 11/02/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-037 DA10100 DA1ss-037-0100-SO 11/02/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-038 DA10103 DA1ss-038-0103-SO 11/02/1999 0 - 1 Composite	NACA Plane Storage Area - Outside Berm DA1-038 DA10129 DA1ss-038-0129-SO 11/02/1999 0 - 1 Field Duplicate
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2 U	2 U	2 U	2 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.15 J
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-039 DA10106 DA1ss-039-0106-SO 11/02/1999 0 - 1 Composite	On Berm DA1-001 DA10001 DA1ss-001-0001-SO 10/19/1999 0 - 1 Composite	On Berm DA1-002 DA10003 DA1ss-002-0003-SO 10/19/1999 0 - 1 Composite	On Berm DA1-003 DA10005 DA1ss-003-0005-SO 10/19/1999 0 - 1 Composite
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	1.8 =	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.2 J
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2 U	2.4 U	2.2 U	2.2 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-004 DA10007 DA1ss-004-0007-SO 10/19/1999 0 - 1 Composite	On Berm DA1-005 DA10009 DA1ss-005-0009-SO 10/19/1999 0 - 1 Composite	On Berm DA1-005 DA10127 DA1ss-005-0127-SO 10/19/1999 0 - 1 Field Duplicate	On Berm DA1-006 DA10011 DA1ss-006-0011-SO 10/20/1999 0 - 1 Composite
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.2 U	2.2 U	2.2 U	2.2 =
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.12 J	0.19 J	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-007 DA10013 DA1ss-007-0013-SO 10/20/1999 0 - 1 Composite	On Berm DA1-008 DA10015 DA1ss-008-0015-SO 10/20/1999 0 - 1 Composite	On Berm DA1-009 DA10017 DA1ss-009-0017-SO 10/20/1999 0 - 1 Composite	On Berm DA1-010 DA10019 DA1ss-010-0019-SO 10/20/1999 0 - 1 Composite
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	2.9 =
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.13 J
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.2 U	2.2 U	2.2 U	2.4 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-1. Demolition Area 1
Surface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-011 DA10021 DA1ss-011-0021-SO 10/20/1999 0 - 1 Composite	South Ditch Line DA1-040 DA10109 DA1ss-040-0109-SO 11/03/1999 0 - 1 Composite	South Ditch Line DA1-040 DA10126 DA1ss-040-0126-SO 11/03/1999 0 - 1 Field Duplicate
1,3,5-Trinitrobenzene	mg/kg	0.25 U	62 U	50 U
1,3-Dinitrobenzene	mg/kg	0.25 U	62 U	50 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	2000 =	1400 =
2,4-Dinitrotoluene	mg/kg	0.25 U	62 U	50 U
2,6-Dinitrotoluene	mg/kg	0.25 U	62 U	50 U
2-Nitrotoluene	mg/kg	0.25 U	62 U	50 U
3-Nitrotoluene	mg/kg	0.25 U	62 U	50 U
4-Nitrotoluene	mg/kg	0.25 U	62 U	20 J
HMX	mg/kg	0.5 U	120 U	100 U
Nitrobenzene	mg/kg	0.25 U	62 U	50 U
Nitrocellulose	mg/kg	2.2 U	175 =	109 =
Nitroglycerin	mg/kg	2.5 U	620 U	500 U
Nitroguanidine	mg/kg	0.25 U	0.035 J	0.25 U
RDX	mg/kg	0.5 U	120 U	100 U
Tetryl	mg/kg	0.65 U	160 U	130 U

SURFACE SOIL – INORGANICS

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Table E-2. Demolition Area 1
Surface Soil
Inorganics

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-041 DA10111 DA1ss-041-0111-SO 11/03/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-042 DA10114 DA1ss-042-0114-SO 11/03/1999 0 - 1 Grab	Inside Bermed Area DA1-012 DA10023 DA1ss-012-0023-SO 10/21/1999 0 - 1 Grab	Inside Bermed Area DA1-013 DA10026 DA1ss-013-0026-SO 10/21/1999 0 - 1 Grab	Inside Bermed Area DA1-014 DA10029 DA1ss-014-0029-SO 10/21/1999 0 - 1 Grab
Cyanide	mg/kg	0.59 U	0.67 U	0.61 U	0.58 U	0.61 U
Aluminum	mg/kg	7740 =	61300 = *	12600 =	9580 =	9520 =
Antimony	mg/kg	1.2 UJ	2.6 J *	1.2 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	8 =	11.1 =	11.9 =	9.3 =	9.3 =
Barium	mg/kg	53.8 =	1840 = *	343 = *	78.2 =	58.1 =
Beryllium	mg/kg	0.59 U	0.25 U	0.56 J	0.3 J	0.24 =
Cadmium	mg/kg	0.59 U	65.5 = *	0.61 U	0.58 U	0.61 U
Calcium	mg/kg	1080 =	1950 =	1360 =	12500 J	522 J
Chromium	mg/kg	9.7 =	43.8 = *	12.6 =	12.3 =	12.4 =
Cobalt	mg/kg	6.2 =	5.9 J	26.5 = *	7.6 =	7.6 =
Copper	mg/kg	11.3 J	6500 J *	11.1 J	27.3 = *	10.8 J
Iron	mg/kg	16400 =	25800 = *	22900 =	17700 =	18300 =
Lead	mg/kg	11.5 =	149 = *	26.9 = *	15.3 =	18.3 =
Magnesium	mg/kg	1600 =	2900 =	1760 =	1840 =	1500 =
Manganese	mg/kg	345 =	466 =	14600 = *	575 =	820 =
Mercury	mg/kg	0.033 U	0.23 U	0.041 J *	0.069 J *	0.034 U
Nickel	mg/kg	10.9 =	46 = *	23.4 = *	14 =	10 =
Potassium	mg/kg	485 J	1340 = *	869 =	642 =	681 =
Selenium	mg/kg	0.74 =	0.87 =	3 J *	0.8 =	0.61 U
Silver	mg/kg	1.2 U	0.41 J *	0.31 J *	1.2 U	1.2 U
Sodium	mg/kg	79.1 U	293 J *	66.1 U	97.7 U	50.6 U
Thallium	mg/kg	0.25 J *	0.28 J *	0.31 J *	0.36 J *	0.35 J *
Vanadium	mg/kg	13.8 =	18.2 =	23.9 =	16.5 =	21.3 =
Zinc	mg/kg	93.8 J *	4680 J *	78.7 J *	119 = *	52.9 J

Table E-2. Demolition Area 1
Surface Soil
Inorganics

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-015 DA10032 DA1ss-015-0032-SO 10/21/1999 0 - 1 Grab	Inside Bermed Area DA1-016 DA10036 DA1ss-016-0036-SO 10/21/1999 0 - 1 Grab	Inside Bermed Area DA1-016 DA10128 DA1ss-016-0128-SO 10/21/1999 0 - 1 Field Duplicate	Inside Bermed Area DA1-017 DA10039 DA1ss-017-0039-SO 10/21/1999 0 - 1 Grab	Inside Bermed Area DA1-018 DA10042 DA1ss-018-0042-SO 10/22/1999 0 - 1 Grab
Cyanide	mg/kg	0.6 U	0.6 U	0.6 U	0.61 U	0.61 U
Aluminum	mg/kg	14100 =	11400 =	11800 =	11800 =	16200 J
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	10.9 =	12.4 =	12.1 =	10.6 =	15.1 =
Barium	mg/kg	66.2 =	91.2 = *	81.2 =	35.8 =	58.3 J
Beryllium	mg/kg	0.28 J	0.36 J	0.28 J	0.23 J	0.7 U
Cadmium	mg/kg	0.6 U	0.6 U	0.6 U	0.61 U	0.61 UJ
Calcium	mg/kg	1200 J	1780 =	2370 =	323 J	661 =
Chromium	mg/kg	17 =	14.6 =	15.3 =	15.3 =	22.6 = *
Cobalt	mg/kg	9.4 =	9.5 =	8.9 =	5.9 J	14 = *
Copper	mg/kg	12.1 =	40.8 J *	28.8 J *	11.9 J	23.5 J *
Iron	mg/kg	18600 =	25900 = *	24100 = *	22100 =	33400 J *
Lead	mg/kg	16.9 =	18.7 =	16 =	11.6 =	16.3 =
Magnesium	mg/kg	2230 =	2190 =	2270 =	2320 =	4070 J *
Manganese	mg/kg	543 =	608 =	421 =	176 =	242 J
Mercury	mg/kg	0.05 J *	0.0072 U	0.038 J *	0.028 U	0.03 J
Nickel	mg/kg	14.7 =	13.7 =	14 =	14.3 =	31.9 = *
Potassium	mg/kg	914 =	859 =	878 =	1010 = *	1870 = *
Selenium	mg/kg	0.88 =	0.6 U	0.6 U	0.61 U	0.61 U
Silver	mg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Sodium	mg/kg	80.3 U	55.8 U	72.7 U	58 U	80.2 U
Thallium	mg/kg	0.48 J *	0.31 J *	0.32 J *	0.33 J *	0.31 J *
Vanadium	mg/kg	25 =	22.3 =	21.8 =	20.1 =	23 =
Zinc	mg/kg	57.7 =	78.8 J *	68.5 J *	41.4 J	74.2 = *

Table E-2. Demolition Area 1
Surface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-015 DA10032 DA1ss-015-0032-SO 10/21/1999 0 - 1 Grab	Inside Bermed Area DA1-016 DA10036 DA1ss-016-0036-SO 10/21/1999 0 - 1 Grab	Inside Bermed Area DA1-016 DA10128 DA1ss-016-0128-SO 10/21/1999 0 - 1 Field Duplicate	Inside Bermed Area DA1-017 DA10039 DA1ss-017-0039-SO 10/21/1999 0 - 1 Grab	Inside Bermed Area DA1-018 DA10042 DA1ss-018-0042-SO 10/22/1999 0 - 1 Grab
Cyanide	mg/kg	0.6 U	0.6 U	0.6 U	0.61 U	0.61 U
Aluminum	mg/kg	14100 =	11400 =	11800 =	11800 =	16200 J
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	10.9 =	12.4 =	12.1 =	10.6 =	15.1 =
Barium	mg/kg	66.2 =	91.2 = *	81.2 =	35.8 =	58.3 J
Beryllium	mg/kg	0.28 J	0.36 J	0.28 J	0.23 J	0.7 U
Cadmium	mg/kg	0.6 U	0.6 U	0.6 U	0.61 U	0.61 UJ
Calcium	mg/kg	1200 J	1780 =	2370 =	323 J	661 =
Chromium	mg/kg	17 =	14.6 =	15.3 =	15.3 =	22.6 = *
Cobalt	mg/kg	9.4 =	9.5 =	8.9 =	5.9 J	14 = *
Copper	mg/kg	12.1 =	40.8 J *	28.8 J *	11.9 J	23.5 J *
Iron	mg/kg	18600 =	25900 = *	24100 = *	22100 =	33400 J *
Lead	mg/kg	16.9 =	18.7 =	16 =	11.6 =	16.3 =
Magnesium	mg/kg	2230 =	2190 =	2270 =	2320 =	4070 J *
Manganese	mg/kg	543 =	608 =	421 =	176 =	242 J
Mercury	mg/kg	0.05 J *	0.0072 U	0.038 J *	0.028 U	0.03 J
Nickel	mg/kg	14.7 =	13.7 =	14 =	14.3 =	31.9 = *
Potassium	mg/kg	914 =	859 =	878 =	1010 = *	1870 = *
Selenium	mg/kg	0.88 =	0.6 U	0.6 U	0.61 U	0.61 U
Silver	mg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Sodium	mg/kg	80.3 U	55.8 U	72.7 U	58 U	80.2 U
Thallium	mg/kg	0.48 J *	0.31 J *	0.32 J *	0.33 J *	0.31 J *
Vanadium	mg/kg	25 =	22.3 =	21.8 =	20.1 =	23 =
Zinc	mg/kg	57.7 =	78.8 J *	68.5 J *	41.4 J	74.2 = *

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Table E-2. Demolition Area 1
Surface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-019 DA10045 DA1ss-019-0045-SO 10/22/1999 0 - 1 Grab	Inside Bermed Area DA1-020 DA10048 DA1ss-020-0048-SO 10/22/1999 0 - 1 Grab	Inside Bermed Area DA1-021 DA10051 DA1ss-021-0051-SO 10/24/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-022 DA10054 DA1ss-022-0054-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10057 DA1ss-023-0057-SO 10/25/1999 0 - 1 Grab
Cyanide	mg/kg	0.61 U	0.61 U	0.59 U	0.62 U	0.66 U
Aluminum	mg/kg	15000 J	13900 J	11100 =	13400 =	85700 = *
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.3 UJ
Arsenic	mg/kg	11.3 =	13.2 =	10.3 =	14.6 =	10.4 =
Barium	mg/kg	53.8 J	100 J *	34.7 =	98.5 = *	367 = *
Beryllium	mg/kg	0.28 U	0.47 U	0.32 U	0.61 U	0.48 U
Cadmium	mg/kg	0.61 UJ	0.61 UJ	0.59 UJ	0.62 UJ	48.7 J *
Calcium	mg/kg	1130 =	1190 =	632 =	826 J	577 J
Chromium	mg/kg	18.8 = *	20.7 = *	14.6 J	16.5 =	52 = *
Cobalt	mg/kg	6.4 =	9.6 =	5.2 J	20.1 = *	6.4 J
Copper	mg/kg	20.1 J *	27.4 J *	13.2 J	11.8 J	7250 J *
Iron	mg/kg	24300 J *	29300 J *	21000 =	27300 = *	23400 = *
Lead	mg/kg	15.7 =	16.4 =	12.3 J	22.7 =	163 = *
Magnesium	mg/kg	2540 J	3430 J *	2310 J	2580 =	2410 =
Manganese	mg/kg	205 J	262 J	139 =	3920 J *	456 J
Mercury	mg/kg	0.03 J	0.045 J *	0.032 J	0.049 J *	0.12 J *
Nickel	mg/kg	15 =	27.4 = *	14.9 =	19 J	73.8 J *
Potassium	mg/kg	1370 = *	1910 = *	978 = *	1330 = *	1220 = *
Selenium	mg/kg	0.61 U	0.61 U	0.59 U	0.62 U	1.8 = *
Silver	mg/kg	1.2 U	1.2 U	1.2 U	1.2 U	0.38 J *
Sodium	mg/kg	131 U	108 U	85.9 U	31.9 U	324 U
Thallium	mg/kg	0.32 J *	0.33 J *	0.24 J *	0.53 UJ	0.56 UJ
Vanadium	mg/kg	26.6 =	22.4 =	17.6 =	24.9 =	19.1 =
Zinc	mg/kg	69.2 = *	86.2 = *	45.6 J	68.6 J *	6320 J *

Table E-2. Demolition Area 1
Surface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-023 DA10130 DA1ss-023-0130-SO 10/25/1999 0 - 1 Field Duplicate	NACA Plane Storage Area - Outside Berm DA1-024 DA10060 DA1ss-024-0060-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-025 DA10063 DA1ss-025-0063-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-026 DA10066 DA1ss-026-0066-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-027 DA10069 DA1ss-027-0069-SO 10/20/1999 0 - 1 Grab
Cyanide	mg/kg	0.66 U	0.83 = *	0.63 U	0.64 U	0.62 U
Aluminum	mg/kg	105000 = *	15700 =	8730 =	14400 J	22800 = *
Antimony	mg/kg	1.9 UJ	1.2 UJ	1.3 UJ	1.3 R	3.1 J *
Arsenic	mg/kg	8.5 =	11.7 =	8.7 =	11.4 J	15.2 =
Barium	mg/kg	654 = *	1670 = *	229 = *	74.1 =	70.6 =
Beryllium	mg/kg	0.31 U	0.43 U	0.38 U	0.34 U	0.25 J
Cadmium	mg/kg	92.2 J *	3.7 J *	0.93 UJ	0.7 J *	107 = *
Calcium	mg/kg	850 J	536 J	1010 J	816 J	1330 J
Chromium	mg/kg	62.6 = *	16.4 =	11.1 =	17.8 J *	26.2 = *
Cobalt	mg/kg	6.8 =	6.3 =	8.7 =	10 J	8.4 =
Copper	mg/kg	11100 J *	853 J *	108 J *	70.4 J *	747 = *
Iron	mg/kg	18400 =	23000 =	17500 =	23900 J *	33400 = *
Lead	mg/kg	213 = *	41.7 = *	24.9 =	19.5 =	128 = *
Magnesium	mg/kg	1900 =	2940 =	1780 =	2780 J	3100 = *
Manganese	mg/kg	580 J	301 J	793 J	483 J	349 =
Mercury	mg/kg	0.11 J *	0.082 J *	0.095 J *	0.048 J *	0.14 J *
Nickel	mg/kg	95.4 J *	18 J	11.2 J	16.7 J	26.7 = *
Potassium	mg/kg	824 =	1300 = *	630 =	1490 J *	1370 = *
Selenium	mg/kg	1.8 = *	0.62 U	0.63 U	1.3 =	1.4 =
Silver	mg/kg	0.67 J *	1.2 U	1.3 U	1.3 UJ	1.2 U
Sodium	mg/kg	343 U	62.2 U	38.8 U	639 UJ	85.1 U
Thallium	mg/kg	0.64 UJ	0.55 UJ	0.3 UJ	0.51 UJ	0.36 J *
Vanadium	mg/kg	14.5 =	20.6 =	17.2 =	24.7 J	23.1 =
Zinc	mg/kg	6890 J *	668 J *	184 J *	186 J *	1420 = *

Table E-2. Demolition Area 1
Surface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-028 DA10073 DA1ss-028-0073-SO 10/26/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10076 DA1ss-029-0076-SO 10/26/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-030 DA10079 DA1ss-030-0079-SO 10/26/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-031 DA10082 DA1ss-031-0082-SO 10/26/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-032 DA10085 DA1ss-032-0085-SO 10/27/1999 0 - 1 Grab
Cyanide	mg/kg	0.6 U	0.67 U	0.61 U	0.62 U	0.6 U
Aluminum	mg/kg	13000 J	17700 J	12400 =	12100 =	6940 =
Antimony	mg/kg	1.2 R	19.8 J *	1.2 R	0.63 J	1.2 R
Arsenic	mg/kg	12.4 J	31.4 J *	13.5 J	14.4 J	7.9 J
Barium	mg/kg	72 =	131 = *	78.4 J	55.7 J	54.9 J
Beryllium	mg/kg	0.6 U	0.67 U	0.42 U	0.2 U	0.28 U
Cadmium	mg/kg	0.6 UJ	4910 J *	0.61 UJ	0.62 UJ	0.6 UJ
Calcium	mg/kg	721 J	1300 J	1930 =	718 =	250 J
Chromium	mg/kg	16.8 J	174 J *	18.1 J *	15.8 J	7.9 J
Cobalt	mg/kg	6.1 J	16.4 J *	12.5 J *	5.4 J	6.9 J
Copper	mg/kg	37.7 J *	1860 J *	45.6 J *	69.8 J *	5.8 J
Iron	mg/kg	24600 J *	231000 J *	26900 J *	27200 J *	16400 J
Lead	mg/kg	15.6 =	772 = *	17.6 =	19 =	17 =
Magnesium	mg/kg	2360 J	1470 J	3350 J *	1920 J	1230 J
Manganese	mg/kg	138 J	834 J	471 J	230 J	667 J
Mercury	mg/kg	0.063 J *	0.077 J *	0.038 J *	0.023 J	0.052 J *
Nickel	mg/kg	13.4 J	82.7 J *	27.2 J *	13 J	7.9 J
Potassium	mg/kg	1030 J *	1760 J *	1680 = *	1440 J *	350 J
Selenium	mg/kg	1.2 =	6.1 = *	0.61 U	0.62 U	0.6 U
Silver	mg/kg	1.2 UJ	1.3 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Sodium	mg/kg	603 UJ	668 UJ	612 UJ	617 UJ	604 UJ
Thallium	mg/kg	0.43 UJ	0.4 UJ	0.4 J *	0.41 J *	0.3 J *
Vanadium	mg/kg	26.1 J	13.8 J	21.8 =	22 =	16 =
Zinc	mg/kg	89.9 J *	4970 J *	90.2 = *	317 = *	36.4 =

Table E-2. Demolition Area 1
Surface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-033 DA10088 DA1ss-033-0088-SO 10/27/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-034 DA10091 DA1ss-034-0091-SO 10/27/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-035 DA10094 DA1ss-035-0094-SO 11/01/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-036 DA10097 DA1ss-036-0097-SO 11/02/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-037 DA10100 DA1ss-037-0100-SO 11/02/1999 0 - 1 Grab
Cyanide	mg/kg	0.63 U	0.61 U	0.57 U	0.62 U	0.62 U
Aluminum	mg/kg	5550 =	16100 =	6580 =	11600 =	8980 =
Antimony	mg/kg	1.3 R	1.2 R	1.1 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	7.9 J	15.6 J *	8.8 =	9.6 =	9.9 =
Barium	mg/kg	45.7 J	114 J *	23.4 =	70.9 =	60.6 =
Beryllium	mg/kg	0.28 U	0.83 U	0.21 U	0.28 U	0.19 U
Cadmium	mg/kg	0.63 UJ	0.61 UJ	0.57 U	0.62 U	0.62 U
Calcium	mg/kg	388 J	1390 =	520 J	1400 =	2240 =
Chromium	mg/kg	7.3 J	22.7 J *	8.6 =	14.5 =	12.5 =
Cobalt	mg/kg	7.7 J	15.4 J *	6.9 =	8.3 =	9.7 =
Copper	mg/kg	10.8 J	22.6 J *	13.2 =	18.6 = *	11.5 =
Iron	mg/kg	17000 J	31500 J *	15100 =	20900 =	20500 =
Lead	mg/kg	22.2 =	15.3 =	8 J	20.2 J	16.2 J
Magnesium	mg/kg	905 J	4480 J *	1420 =	2200 =	1980 =
Manganese	mg/kg	550 J	467 J	227 =	447 =	656 =
Mercury	mg/kg	0.13 U	0.022 J	0.025 U	0.051 U	0.043 U
Nickel	mg/kg	8.6 J	35.9 J *	11.9 J	15.5 J	15.5 J
Potassium	mg/kg	302 J	2950 J *	902 =	1000 = *	609 J
Selenium	mg/kg	0.63 U	0.61 U	0.73 U	0.8 U	0.88 U
Silver	mg/kg	1.3 UJ	1.2 UJ	1.1 U	1.2 U	1.2 U
Sodium	mg/kg	625 UJ	607 UJ	63.5 U	93.7 U	53.8 U
Thallium	mg/kg	0.36 J *	0.47 J *	0.26 J *	0.41 J *	0.31 J *
Vanadium	mg/kg	14.9 =	25.8 =	12.2 =	21 =	17.1 =
Zinc	mg/kg	38 =	72.5 = *	33.8 =	86.8 = *	47.9 =

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Table E-2. Demolition Area 1
Surface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-038 DA10103 DA1ss-038-0103-SO 11/02/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-038 DA10129 DA1ss-038-0129-SO 11/02/1999 0 - 1 Field Duplicate	NACA Plane Storage Area - Outside Berm DA1-039 DA10106 DA1ss-039-0106-SO 11/02/1999 0 - 1 Grab	On Berm DA1-001 DA10001 DA1ss-001-0001-SO 10/19/1999 0 - 1 Grab	On Berm DA1-002 DA10003 DA1ss-002-0003-SO 10/19/1999 0 - 1 Grab
Cyanide	mg/kg	0.63 U	0.64 U	0.61 U	0.61 U	0.54 U
Aluminum	mg/kg	12300 =	11000 =	8850 =	15000 J	1940 J
Antimony	mg/kg	1.3 UJ	1.3 UJ	1.2 UJ	1.2 UJ	1.1 UJ
Arsenic	mg/kg	10.5 =	10.2 =	8 =	14.5 =	6.2 =
Barium	mg/kg	109 = *	91.9 = *	53.3 =	86.9 =	58.6 =
Beryllium	mg/kg	0.42 J	0.47 J	0.23 U	0.53 U	0.22 U
Cadmium	mg/kg	0.63 U	0.64 U	0.61 U	0.61 U	0.54 U
Calcium	mg/kg	2400 =	2080 =	412 J	8250 J	58400 J *
Chromium	mg/kg	15 =	13.5 =	10.8 =	19.5 = *	4.3 =
Cobalt	mg/kg	10.9 = *	10.2 =	9.4 =	10.7 = *	3.6 J
Copper	mg/kg	12.4 =	11.6 =	6.9 =	24.3 J *	7.1 J
Iron	mg/kg	21600 =	20200 =	15700 =	28400 = *	10500 =
Lead	mg/kg	20 J	18 J	16.1 J	18.4 =	10.5 =
Magnesium	mg/kg	2420 =	2230 =	1430 =	4070 = *	797 =
Manganese	mg/kg	2300 = *	1690 = *	644 =	739 J	376 J
Mercury	mg/kg	0.046 U	0.068 U	0.05 U	0.041 J *	0.0078 J
Nickel	mg/kg	19.4 J	16.4 J	10.3 J	22 J *	11.5 J
Potassium	mg/kg	1060 = *	897 =	573 J	1560 = *	540 =
Selenium	mg/kg	1.5 U	0.94 U	0.97 U	0.57 J	0.54 U
Silver	mg/kg	1.3 U	1.3 U	1.2 U	1.2 U	1.1 U
Sodium	mg/kg	67.8 U	53.1 U	82.4 U	612 UJ	540 UJ
Thallium	mg/kg	0.38 J *	0.42 J *	0.37 J *	0.42 J *	0.21 J *
Vanadium	mg/kg	22.6 =	19.8 =	17.2 =	24.3 =	4 J
Zinc	mg/kg	60.6 =	53.6 =	41.4 =	103 J *	31.9 J

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Table E-2. Demolition Area 1
Surface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-003 DA10005 DA1ss-003-0005-SO 10/19/1999 0 - 1 Grab	On Berm DA1-004 DA10007 DA1ss-004-0007-SO 10/19/1999 0 - 1 Grab	On Berm DA1-005 DA10009 DA1ss-005-0009-SO 10/19/1999 0 - 1 Grab	On Berm DA1-005 DA10127 DA1ss-005-0127-SO 10/19/1999 0 - 1 Field Duplicate	On Berm DA1-006 DA10011 DA1ss-006-0011-SO 10/20/1999 0 - 1 Grab
Cyanide	mg/kg	0.54 U	0.54 U	0.55 U	0.56 U	0.54 U
Aluminum	mg/kg	3000 J	3610 J	4300 J	2760 J	3610 =
Antimony	mg/kg	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ	0.61 J
Arsenic	mg/kg	5.3 =	11 =	7.9 =	7.7 =	8.6 =
Barium	mg/kg	177 = *	96.5 = *	93.9 = *	71.1 =	124 = *
Beryllium	mg/kg	0.35 U	0.39 U	0.49 U	0.32 U	0.34 J
Cadmium	mg/kg	0.54 U	0.27 J *	1 = *	0.81 = *	0.91 = *
Calcium	mg/kg	182000 J *	150000 J *	111000 J *	73300 J *	150000 J *
Chromium	mg/kg	4.4 =	7.2 =	4.1 =	4.3 =	6.2 =
Cobalt	mg/kg	2.7 J	3.1 J	3.2 J	2.4 J	5.3 J
Copper	mg/kg	8.9 J	13.6 J	10.9 J	10.6 J	35.4 = *
Iron	mg/kg	7900 =	9560 =	9410 =	9040 =	13000 J
Lead	mg/kg	11.2 =	13.9 =	14.6 =	15.1 =	17 =
Magnesium	mg/kg	2140 =	2130 =	3330 = *	1540 =	1880 =
Manganese	mg/kg	531 J	523 J	463 J	320 J	502 =
Mercury	mg/kg	0.02 J	0.024 J	0.013 J	0.011 J	0.013 J
Nickel	mg/kg	9.9 J	12.5 J	10.6 J	8 J	20 =
Potassium	mg/kg	547 =	688 =	521 J	461 J	426 J
Selenium	mg/kg	0.54 U	0.54 U	0.55 U	0.56 U	0.54 U
Silver	mg/kg	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Sodium	mg/kg	543 UJ	543 UJ	555 UJ	556 UJ	121 U
Thallium	mg/kg	0.15 J *	0.14 J *	0.29 J *	0.19 J *	0.23 J *
Vanadium	mg/kg	4.6 J	5.7 =	4.3 J	4.3 J	6 =
Zinc	mg/kg	31.9 J	43.4 J	45.4 J	38.9 J	107 = *

Table E-2. Demolition Area 1
Surface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-007 DA10013 DA1ss-007-0013-SO 10/20/1999 0 - 1 Grab	On Berm DA1-008 DA10015 DA1ss-008-0015-SO 10/20/1999 0 - 1 Grab	On Berm DA1-009 DA10017 DA1ss-009-0017-SO 10/20/1999 0 - 1 Grab	On Berm DA1-010 DA10019 DA1ss-010-0019-SO 10/20/1999 0 - 1 Grab	On Berm DA1-011 DA10021 DA1ss-011-0021-SO 10/20/1999 0 - 1 Grab
Cyanide	mg/kg	0.55 U	0.55 U	0.55 U	0.61 U	0.56 U
Aluminum	mg/kg	10700 =	7240 =	1730 =	5650 =	2670 =
Antimony	mg/kg	1.4 J *	0.54 J	1.1 UJ	0.93 J	1.1 UJ
Arsenic	mg/kg	6.4 =	5 =	5.1 =	11 =	9.2 =
Barium	mg/kg	310 = *	252 = *	92.1 = *	83.8 =	43.7 =
Beryllium	mg/kg	0.81 =	0.94 = *	0.15 J	0.15 J	0.16 J
Cadmium	mg/kg	14 = *	1.1 = *	0.5 J *	0.33 J *	0.56 U
Calcium	mg/kg	206000 J *	195000 J *	248000 J *	1960 J	50900 J *
Chromium	mg/kg	10.4 =	4.1 =	3.4 =	8.6 =	5.3 =
Cobalt	mg/kg	4.6 J	3.8 J	2.8 J	4.9 J	3.2 J
Copper	mg/kg	152 = *	55.2 = *	25.2 = *	70.3 = *	12.1 =
Iron	mg/kg	11800 J	7530 J	7150 =	18500 =	5820 J
Lead	mg/kg	196 = *	12.4 =	8.2 =	36.4 = *	12.4 =
Magnesium	mg/kg	5300 = *	5280 = *	1890 =	959 =	983 =
Manganese	mg/kg	1070 =	947 =	519 =	367 =	314 =
Mercury	mg/kg	0.16 J *	0.076 J *	0.023 J	0.035 J	0.012 J
Nickel	mg/kg	19.8 =	15.4 =	11.8 =	11.7 =	9.2 =
Potassium	mg/kg	1060 = *	555 =	332 J	539 J	458 J
Selenium	mg/kg	0.55 U	0.55 U	0.55 U	0.93 =	0.56 U
Silver	mg/kg	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
Sodium	mg/kg	262 U	254 U	97.1 U	51.2 U	75.5 U
Thallium	mg/kg	0.14 J *	0.22 J *	0.2 J *	0.21 J *	0.26 J *
Vanadium	mg/kg	9 =	3.8 J	4.8 J	10.2 =	5.3 J
Zinc	mg/kg	191 = *	63.9 = *	33.9 =	107 = *	36.2 =

Table E-2. Demolition Area 1
Surface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	South Ditch Line DA1-040 DA10109 DA1ss-040-0109-SO 11/03/1999 0 - 1 Grab	South Ditch Line DA1-040 DA10126 DA1ss-040-0126-SO 11/03/1999 0 - 1 Field Duplicate
Cyanide	mg/kg	0.65 U	0.66 U
Aluminum	mg/kg	14900 =	14200 =
Antimony	mg/kg	1.3 UJ	1.3 UJ
Arsenic	mg/kg	15.5 = *	17.5 = *
Barium	mg/kg	124 = *	73.6 =
Beryllium	mg/kg	0.52 J	0.36 J
Cadmium	mg/kg	0.65 U	0.66 U
Calcium	mg/kg	2410 =	1970 =
Chromium	mg/kg	21.5 = *	19.6 = *
Cobalt	mg/kg	13.1 = *	9 =
Copper	mg/kg	33.5 J *	92.1 J *
Iron	mg/kg	32900 = *	34000 = *
Lead	mg/kg	18.5 =	22.5 =
Magnesium	mg/kg	4220 = *	2600 =
Manganese	mg/kg	380 =	456 =
Mercury	mg/kg	0.041 U	0.058 U
Nickel	mg/kg	34.4 = *	17.6 =
Potassium	mg/kg	2050 = *	1220 = *
Selenium	mg/kg	1 =	1.2 =
Silver	mg/kg	1.3 U	1.3 U
Sodium	mg/kg	113 U	81.3 U
Thallium	mg/kg	0.34 J *	0.26 J *
Vanadium	mg/kg	25.3 =	29 =
Zinc	mg/kg	190 J *	99.6 J *

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SURFACE SOIL – SEMIVOLATILE ORGANIC CONSTITUENTS

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Table E-3. Demolition Area 1
Surface Soil
Semivolatile Organic Compounds

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10048 DA1ss-020-0048-SO 10/22/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10057 DA1ss-023-0057-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10076 DA1ss-029-0076-SO 10/26/1999 0 - 1 Grab	On Berm DA1-007 DA10013 DA1ss-007-0013-SO 10/20/1999 0 - 1 Grab
1,2,4-Trichlorobenzene	µg/kg	400 UJ	430 U	440 U	370 U
1,2-Dichlorobenzene	µg/kg	400 UJ	430 U	440 U	370 U
1,3-Dichlorobenzene	µg/kg	400 UJ	430 U	440 U	370 U
1,4-Dichlorobenzene	µg/kg	400 UJ	430 U	440 U	370 U
2,4,5-Trichlorophenol	µg/kg	400 UJ	430 U	440 U	370 U
2,4,6-Trichlorophenol	µg/kg	400 UJ	430 U	440 U	370 U
2,4-Dichlorophenol	µg/kg	400 UJ	430 U	440 U	370 U
2,4-Dimethylphenol	µg/kg	400 UJ	430 U	440 U	370 U
2,4-Dinitrophenol	µg/kg	980 UJ	1000 UJ	1100 UJ	890 U
2,4-Dinitrotoluene	µg/kg	400 UJ	430 U	440 U	370 U
2,6-Dinitrotoluene	µg/kg	400 UJ	430 U	440 U	370 U
2-Chloronaphthalene	µg/kg	400 UJ	430 U	440 U	370 U
2-Chlorophenol	µg/kg	400 UJ	430 U	440 U	370 U
2-Methyl-4,6-dinitrophenol	µg/kg	980 UJ	1000 U	1100 U	890 U
2-Methylnaphthalene	µg/kg	400 UJ	430 U	440 U	43 J
2-Methylphenol	µg/kg	400 UJ	430 U	440 U	370 U
2-Nitrobenzenamine	µg/kg	980 UJ	1000 U	1100 U	890 U
2-Nitrophenol	µg/kg	400 UJ	430 U	440 U	370 U
3,3'-Dichlorobenzidine	µg/kg	400 UJ	430 U	440 U	370 U
3-Nitrobenzenamine	µg/kg	980 UJ	1000 U	1100 U	890 U
4-Bromophenyl phenyl ether	µg/kg	400 UJ	430 U	440 U	370 U
4-Chloro-3-methylphenol	µg/kg	400 UJ	430 U	440 U	370 U
4-Chlorobenzenamine	µg/kg	400 UJ	430 U	440 U	370 U
4-Chlorophenyl phenyl ether	µg/kg	400 UJ	430 U	440 U	370 U

Table E-3. Demolition Area 1
Surface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10048 DA1ss-020-0048-SO 10/22/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10057 DA1ss-023-0057-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10076 DA1ss-029-0076-SO 10/26/1999 0 - 1 Grab	On Berm DA1-007 DA10013 DA1ss-007-0013-SO 10/20/1999 0 - 1 Grab
4-Methylphenol	µg/kg	400 UJ	430 U	440 U	370 U
4-Nitrobenzenamine	µg/kg	980 UJ	1000 U	1100 U	890 U
4-Nitrophenol	µg/kg	980 UJ	1000 U	1100 U	890 U
Acenaphthene	µg/kg	400 UJ	430 U	440 U	370 U
Acenaphthylene	µg/kg	400 UJ	430 U	440 U	370 U
Anthracene	µg/kg	400 UJ	430 U	440 U	370 U
Benz(*a*)anthracene	µg/kg	400 UJ	430 U	440 U	370 U
Benzo(*a*)pyrene	µg/kg	400 UJ	430 U	440 U	370 U
Benzo(*b*)fluoranthene	µg/kg	400 UJ	430 U	440 U	370 U
Benzo(*g,h,i*)perylene	µg/kg	400 UJ	430 U	440 U	370 U
Benzo(*k*)fluoranthene	µg/kg	400 UJ	430 U	440 U	370 U
bis(2-Chloroisopropyl) ether	µg/kg	400 UJ	430 U	440 U	370 U
bis(2-Ethylhexyl)phthalate	µg/kg	400 UJ	51 J	440 U	370 U
Butyl benzyl phthalate	µg/kg	400 UJ	430 U	440 U	370 U
Carbazole	µg/kg	400 UJ	430 U	440 U	370 U
Chrysene	µg/kg	400 UJ	430 U	440 U	370 U
Di-*n*-butyl phthalate	µg/kg	400 UJ	430 U	440 U	370 U
Di-*n*-octylphthalate	µg/kg	400 UJ	430 U	440 U	370 U
Dibenz(*a,h*)anthracene	µg/kg	400 UJ	430 U	440 U	370 U
Dibenzofuran	µg/kg	400 UJ	430 U	440 U	370 U
Diethyl phthalate	µg/kg	400 UJ	430 U	440 U	370 U
Dimethyl phthalate	µg/kg	400 UJ	430 U	440 U	370 U
Fluoranthene	µg/kg	400 UJ	430 U	440 U	370 U
Fluorene	µg/kg	400 UJ	430 U	440 U	370 U
Hexachlorobenzene	µg/kg	400 UJ	430 U	440 U	370 U

Table E-3. Demolition Area 1
Surface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10048 DA1ss-020-0048-SO 10/22/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10057 DA1ss-023-0057-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10076 DA1ss-029-0076-SO 10/26/1999 0 - 1 Grab	On Berm DA1-007 DA10013 DA1ss-007-0013-SO 10/20/1999 0 - 1 Grab
Hexachlorobutadiene	µg/kg	400 UJ	430 U	440 U	370 U
Hexachlorocyclopentadiene	µg/kg	400 UJ	430 U	440 U	370 U
Hexachloroethane	µg/kg	400 UJ	430 U	440 U	370 U
Indeno(1,2,3-*cd*)pyrene	µg/kg	400 UJ	430 U	440 U	370 U
Isophorone	µg/kg	400 UJ	430 U	440 U	370 U
N-Nitroso-di-*n*-propylamine	µg/kg	400 UJ	430 U	440 U	370 U
N-Nitrosodiphenylamine	µg/kg	400 UJ	430 U	440 U	370 U
Naphthalene	µg/kg	400 UJ	430 U	440 U	370 U
Nitrobenzene	µg/kg	400 UJ	430 U	440 U	370 U
Pentachlorophenol	µg/kg	980 UJ	1000 U	1100 U	890 U
Phenanthrene	µg/kg	400 UJ	430 U	440 U	370 U
Phenol	µg/kg	400 UJ	430 U	440 U	370 U
Pyrene	µg/kg	400 UJ	430 U	440 U	49 J
bis(2-Chloroethoxy)methane	µg/kg	400 UJ	430 U	440 U	370 U
bis(2-Chloroethyl) ether	µg/kg	400 UJ	430 U	440 U	370 U

Table E-3. Demolition Area 1
Surface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10048 DA1ss-020-0048-SO 10/22/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10057 DA1ss-023-0057-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10076 DA1ss-029-0076-SO 10/26/1999 0 - 1 Grab	On Berm DA1-007 DA10013 DA1ss-007-0013-SO 10/20/1999 0 - 1 Grab
1,2,4-Trichlorobenzene	µg/kg				
1,2-Dichlorobenzene	µg/kg				
1,3-Dichlorobenzene	µg/kg				
1,4-Dichlorobenzene	µg/kg				
2,4,5-Trichlorophenol	µg/kg				
2,4,6-Trichlorophenol	µg/kg				
2,4-Dichlorophenol	µg/kg				
2,4-Dimethylphenol	µg/kg				
2,4-Dinitrophenol	µg/kg				
2,4-Dinitrotoluene	µg/kg				
2,6-Dinitrotoluene	µg/kg				
2-Chloronaphthalene	µg/kg				
2-Chlorophenol	µg/kg				
2-Methyl-4,6-dinitrophenol	µg/kg				
2-Methylnaphthalene	µg/kg				
2-Methylphenol	µg/kg				
2-Nitrobenzenamine	µg/kg				
2-Nitrophenol	µg/kg				
3,3'-Dichlorobenzidine	µg/kg				
3-Nitrobenzenamine	µg/kg				
4-Bromophenyl phenyl ether	µg/kg				
4-Chloro-3-methylphenol	µg/kg				
4-Chlorobenzenamine	µg/kg				
4-Chlorophenyl phenyl ether	µg/kg				

Table E-3. Demolition Area 1
Surface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10048 DA1ss-020-0048-SO 10/22/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10057 DA1ss-023-0057-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10076 DA1ss-029-0076-SO 10/26/1999 0 - 1 Grab	On Berm DA1-007 DA10013 DA1ss-007-0013-SO 10/20/1999 0 - 1 Grab
4-Methylphenol	µg/kg	400 UJ	430 U	440 U	370 U
4-Nitrobenzenamine	µg/kg	980 UJ	1000 U	1100 U	890 U
4-Nitrophenol	µg/kg	980 UJ	1000 U	1100 U	890 U
Acenaphthene	µg/kg	400 UJ	430 U	440 U	370 U
Acenaphthylene	µg/kg	400 UJ	430 U	440 U	370 U
Anthracene	µg/kg	400 UJ	430 U	440 U	370 U
Benz(*a*)anthracene	µg/kg	400 UJ	430 U	440 U	370 U
Benzo(*a*)pyrene	µg/kg	400 UJ	430 U	440 U	370 U
Benzo(*b*)fluoranthene	µg/kg	400 UJ	430 U	440 U	370 U
Benzo(*g,h,i*)perylene	µg/kg	400 UJ	430 U	440 U	370 U
Benzo(*k*)fluoranthene	µg/kg	400 UJ	430 U	440 U	370 U
bis(2-Chloroisopropyl) ether	µg/kg	400 UJ	430 U	440 U	370 U
bis(2-Ethylhexyl)phthalate	µg/kg	400 UJ	51 J	440 U	370 U
Butyl benzyl phthalate	µg/kg	400 UJ	430 U	440 U	370 U
Carbazole	µg/kg	400 UJ	430 U	440 U	370 U
Chrysene	µg/kg	400 UJ	430 U	440 U	370 U
Di-*n*-butyl phthalate	µg/kg	400 UJ	430 U	440 U	370 U
Di-*n*-octylphthalate	µg/kg	400 UJ	430 U	440 U	370 U
Dibenz(*a,h*)anthracene	µg/kg	400 UJ	430 U	440 U	370 U
Dibenzofuran	µg/kg	400 UJ	430 U	440 U	370 U
Diethyl phthalate	µg/kg	400 UJ	430 U	440 U	370 U
Dimethyl phthalate	µg/kg	400 UJ	430 U	440 U	370 U
Fluoranthene	µg/kg	400 UJ	430 U	440 U	370 U
Fluorene	µg/kg	400 UJ	430 U	440 U	370 U
Hexachlorobenzene	µg/kg	400 UJ	430 U	440 U	370 U

Table E-3. Demolition Area 1
Surface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10048 DA1ss-020-0048-SO 10/22/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10057 DA1ss-023-0057-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10076 DA1ss-029-0076-SO 10/26/1999 0 - 1 Grab	On Berm DA1-007 DA10013 DA1ss-007-0013-SO 10/20/1999 0 - 1 Grab
Hexachlorobutadiene	µg/kg	400 UJ	430 U	440 U	370 U
Hexachlorocyclopentadiene	µg/kg	400 UJ	430 U	440 U	370 U
Hexachloroethane	µg/kg	400 UJ	430 U	440 U	370 U
Indeno(1,2,3-*cd*)pyrene	µg/kg	400 UJ	430 U	440 U	370 U
Isophorone	µg/kg	400 UJ	430 U	440 U	370 U
N-Nitroso-di-*n*-propylamine	µg/kg	400 UJ	430 U	440 U	370 U
N-Nitrosodiphenylamine	µg/kg	400 UJ	430 U	440 U	370 U
Naphthalene	µg/kg	400 UJ	430 U	440 U	370 U
Nitrobenzene	µg/kg	400 UJ	430 U	440 U	370 U
Pentachlorophenol	µg/kg	980 UJ	1000 U	1100 U	890 U
Phenanthrene	µg/kg	400 UJ	430 U	440 U	370 U
Phenol	µg/kg	400 UJ	430 U	440 U	370 U
Pyrene	µg/kg	400 UJ	430 U	440 U	49 J
bis(2-Chloroethoxy)methane	µg/kg	400 UJ	430 U	440 U	370 U
bis(2-Chloroethyl) ether	µg/kg	400 UJ	430 U	440 U	370 U

Table E-3. Demolition Area 1
Surface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	South Ditch Line DA1-040 DA10109 DA1ss-040-0109-SO 11/03/1999 0 - 1 Grab	South Ditch Line DA1-040 DA10126 DA1ss-040-0126-SO 11/03/1999 0 - 1 Field Duplicate
1,2,4-Trichlorobenzene	µg/kg	430 U	1700 U
1,2-Dichlorobenzene	µg/kg	430 U	1700 U
1,3-Dichlorobenzene	µg/kg	430 U	1700 U
1,4-Dichlorobenzene	µg/kg	430 U	1700 U
2,4,5-Trichlorophenol	µg/kg	430 U	1700 U
2,4,6-Trichlorophenol	µg/kg	430 U	1700 U
2,4-Dichlorophenol	µg/kg	430 U	1700 U
2,4-Dimethylphenol	µg/kg	430 U	1700 U
2,4-Dinitrophenol	µg/kg	1000 U	4200 U
2,4-Dinitrotoluene	µg/kg	430 U	1700 U
2,6-Dinitrotoluene	µg/kg	430 U	1700 U
2-Chloronaphthalene	µg/kg	430 U	1700 U
2-Chlorophenol	µg/kg	430 U	1700 U
2-Methyl-4,6-dinitrophenol	µg/kg	1000 U	4200 U
2-Methylnaphthalene	µg/kg	430 U	1700 U
2-Methylphenol	µg/kg	430 U	1700 U
2-Nitrobenzenamine	µg/kg	1000 U	4200 U
2-Nitrophenol	µg/kg	430 U	1700 U
3,3'-Dichlorobenzidine	µg/kg	430 U	1700 U
3-Nitrobenzenamine	µg/kg	1000 U	4200 U
4-Bromophenyl phenyl ether	µg/kg	430 U	1700 U
4-Chloro-3-methylphenol	µg/kg	430 U	1700 U
4-Chlorobenzenamine	µg/kg	430 U	1700 U
4-Chlorophenyl phenyl ether	µg/kg	430 U	1700 U

Table E-3. Demolition Area 1
Surface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	South Ditch Line DA1-040 DA10109 DA1ss-040-0109-SO 11/03/1999 0 - 1 Grab	South Ditch Line DA1-040 DA10126 DA1ss-040-0126-SO 11/03/1999 0 - 1 Field Duplicate
4-Methylphenol	µg/kg	430 U	1700 U
4-Nitrobenzenamine	µg/kg	1000 U	4200 U
4-Nitrophenol	µg/kg	1000 U	4200 U
Acenaphthene	µg/kg	430 U	1700 U
Acenaphthylene	µg/kg	430 U	1700 U
Anthracene	µg/kg	430 U	1700 U
Benz(*a*)anthracene	µg/kg	430 U	1700 U
Benzo(*a*)pyrene	µg/kg	430 U	1700 U
Benzo(*b*)fluoranthene	µg/kg	430 U	1700 U
Benzo(*g,h,i*)perylene	µg/kg	430 U	1700 U
Benzo(*k*)fluoranthene	µg/kg	430 U	1700 U
bis(2-Chloroisopropyl) ether	µg/kg	430 U	1700 U
bis(2-Ethylhexyl)phthalate	µg/kg	430 U	1700 U
Butyl benzyl phthalate	µg/kg	430 U	1700 U
Carbazole	µg/kg	430 U	1700 U
Chrysene	µg/kg	430 U	1700 U
Di-*n*-butyl phthalate	µg/kg	430 U	1700 U
Di-*n*-octylphthalate	µg/kg	430 U	1700 U
Dibenz(*a,h*)anthracene	µg/kg	430 U	1700 U
Dibenzofuran	µg/kg	430 U	1700 U
Diethyl phthalate	µg/kg	430 U	1700 U
Dimethyl phthalate	µg/kg	430 U	1700 U
Fluoranthene	µg/kg	430 U	1700 U
Fluorene	µg/kg	430 U	1700 U
Hexachlorobenzene	µg/kg	430 U	1700 U

Table E-3. Demolition Area 1
Surface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	South Ditch Line DA1-040 DA10109 DA1ss-040-0109-SO 11/03/1999 0 - 1 Grab	South Ditch Line DA1-040 DA10126 DA1ss-040-0126-SO 11/03/1999 0 - 1 Field Duplicate
Hexachlorobutadiene	µg/kg	430 U	1700 U
Hexachlorocyclopentadiene	µg/kg	430 U	1700 U
Hexachloroethane	µg/kg	430 U	1700 U
Indeno(1,2,3-*cd*)pyrene	µg/kg	430 U	1700 U
Isophorone	µg/kg	430 U	1700 U
N-Nitroso-di-*n*-propylamine	µg/kg	430 U	1700 U
N-Nitrosodiphenylamine	µg/kg	430 U	1700 U
Naphthalene	µg/kg	430 U	1700 U
Nitrobenzene	µg/kg	430 U	1700 U
Pentachlorophenol	µg/kg	1000 U	4200 U
Phenanthrene	µg/kg	430 U	1700 U
Phenol	µg/kg	430 U	1700 U
Pyrene	µg/kg	430 U	1700 U
bis(2-Chloroethoxy)methane	µg/kg	430 U	1700 U
bis(2-Chloroethyl) ether	µg/kg	430 U	1700 U

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SURFACE SOIL – VOLATILE ORGANIC CONSTITUENTS

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Table E-4. Demolition Area 1
Surface Soil
Volatile Organic Compounds

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10048 DA1ss-020-0048-SO 10/22/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10057 DA1ss-023-0057-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10076 DA1ss-029-0076-SO 10/26/1999 0 - 1 Grab
1,1,1-Trichloroethane	µg/kg	6.1 U	6.6 U	6.7 U
1,1,2,2-Tetrachloroethane	µg/kg	6.1 U	6.6 UJ	6.7 UJ
1,1,2-Trichloroethane	µg/kg	6.1 U	6.6 U	6.7 U
1,1-Dichloroethane	µg/kg	6.1 U	6.6 U	6.7 U
1,1-Dichloroethene	µg/kg	6.1 U	6.6 U	6.7 U
1,2-Dibromoethane	µg/kg	6.1 U	6.6 U	6.7 U
1,2-Dichloroethane	µg/kg	6.1 U	6.6 U	6.7 U
1,2-Dichloroethene	µg/kg	6.1 U	6.6 U	6.7 U
1,2-Dichloropropane	µg/kg	6.1 U	6.6 U	6.7 U
2-Butanone	µg/kg	12 UJ	13 UJ	13 U
2-Hexanone	µg/kg	12 U	13 UJ	13 U
4-Methyl-2-pentanone	µg/kg	12 U	13 U	13 U
Acetone	µg/kg	12 UJ	13 UJ	13 UJ
Benzene	µg/kg	6.1 U	6.6 U	6.7 U
Bromochloromethane	µg/kg	6.1 U	6.6 U	6.7 U
Bromodichloromethane	µg/kg	6.1 U	6.6 U	6.7 U
Bromoform	µg/kg	6.1 U	6.6 UJ	6.7 U
Bromomethane	µg/kg	12 U	13 U	13 U
Carbon disulfide	µg/kg	6.1 U	6.6 U	6.7 U
Carbon tetrachloride	µg/kg	6.1 U	6.6 U	6.7 U
Chlorobenzene	µg/kg	6.1 U	6.6 UJ	6.7 U
Chloroethane	µg/kg	12 UJ	13 U	13 U
Chloroform	µg/kg	6.1 U	6.6 U	6.7 U
Chloromethane	µg/kg	12 U	13 U	13 U
Dibromochloromethane	µg/kg	6.1 U	6.6 UJ	6.7 U
Dimethylbenzene	µg/kg	6.1 U	6.6 UJ	1.8 J
Ethylbenzene	µg/kg	6.1 U	6.6 UJ	6.7 U
Methylene chloride	µg/kg	6.1 U	6.6 U	6.7 U
Styrene	µg/kg	6.1 UJ	6.6 UJ	6.7 U
Tetrachloroethene	µg/kg	6.1 U	6.6 UJ	6.7 U
Toluene	µg/kg	6.1 U	2.5 J	4.6 J
Trichloroethene	µg/kg	6.1 U	6.6 U	6.7 U
Vinyl chloride	µg/kg	12 U	13 U	13 U
cis-1,3-Dichloropropene	µg/kg	6.1 U	6.6 U	6.7 U
trans-1,3-Dichloropropene	µg/kg	6.1 U	6.6 U	6.7 U

Table E-4. Demolition Area 1
Surface Soil
Volatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-007 DA10013 DA1ss-007-0013-SO 10/20/1999 0 - 1 Grab	South Ditch Line DA1-040 DA10109 DA1ss-040-0109-SO 11/03/1999 0 - 1 Grab	South Ditch Line DA1-040 DA10126 DA1ss-040-0126-SO 11/03/1999 0 - 1 Field Duplicate
1,1,1-Trichloroethane	µg/kg	5.5 U	6.5 U	6.6 U
1,1,2,2-Tetrachloroethane	µg/kg	5.5 UJ	6.5 U	6.6 U
1,1,2-Trichloroethane	µg/kg	5.5 U	6.5 U	6.6 U
1,1-Dichloroethane	µg/kg	5.5 U	6.5 U	6.6 U
1,1-Dichloroethene	µg/kg	5.5 U	6.5 U	6.6 U
1,2-Dibromoethane	µg/kg	5.5 U	6.5 U	6.6 U
1,2-Dichloroethane	µg/kg	5.5 U	6.5 U	6.6 U
1,2-Dichloroethene	µg/kg	5.5 U	6.5 U	6.6 U
1,2-Dichloropropane	µg/kg	5.5 U	6.5 U	6.6 U
2-Butanone	µg/kg	11 UJ	13 U	13 U
2-Hexanone	µg/kg	11 U	13 U	13 U
4-Methyl-2-pentanone	µg/kg	11 U	13 U	13 U
Acetone	µg/kg	11 UJ	6.8 J	13 U
Benzene	µg/kg	5.5 U	6.5 U	6.6 U
Bromochloromethane	µg/kg	5.5 U	6.5 U	6.6 U
Bromodichloromethane	µg/kg	5.5 U	6.5 U	6.6 U
Bromoform	µg/kg	5.5 U	6.5 U	6.6 U
Bromomethane	µg/kg	11 U	13 U	13 U
Carbon disulfide	µg/kg	5.5 UJ	6.5 U	6.6 U
Carbon tetrachloride	µg/kg	5.5 U	6.5 U	6.6 U
Chlorobenzene	µg/kg	5.5 U	6.5 U	6.6 U
Chloroethane	µg/kg	11 U	13 U	13 U
Chloroform	µg/kg	5.5 U	6.5 U	6.6 U
Chloromethane	µg/kg	11 U	13 U	13 U
Dibromochloromethane	µg/kg	5.5 U	6.5 U	6.6 U
Dimethylbenzene	µg/kg	5.5 U	6.5 U	6.6 U
Ethylbenzene	µg/kg	5.5 U	6.5 U	6.6 U
Methylene chloride	µg/kg	5.5 U	6.5 U	6.6 U
Styrene	µg/kg	5.5 U	6.5 U	6.6 U
Tetrachloroethene	µg/kg	5.5 U	6.5 U	6.6 U
Toluene	µg/kg	5.5 U	6.5 U	6.6 U
Trichloroethene	µg/kg	5.5 U	6.5 U	6.6 U
Vinyl chloride	µg/kg	11 U	13 U	13 U
cis -1,3-Dichloropropene	µg/kg	5.5 U	6.5 U	6.6 U
trans -1,3-Dichloropropene	µg/kg	5.5 U	6.5 U	6.6 U

SURFACE SOIL – PCBS

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Table E-5. Demolition Area 1
Surface Soil
PCBs

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10048 DA1ss-020-0048-SO 10/22/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10057 DA1ss-023-0057-SO 10/25/1999 0 - 1 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10076 DA1ss-029-0076-SO 10/26/1999 0 - 1 Grab	On Berm DA1-007 DA10013 DA1ss-007-0013-SO 10/20/1999 0 - 1 Grab
PCB-1016	µg/kg	40 U	43 U	44 U	37 U
PCB-1221	µg/kg	40 U	43 U	44 U	37 U
PCB-1232	µg/kg	40 U	43 U	44 U	37 U
PCB-1242	µg/kg	40 U	43 U	44 U	37 U
PCB-1248	µg/kg	40 U	43 U	44 U	37 U
PCB-1254	µg/kg	40 U	43 U	44 U	37 U
PCB-1260	µg/kg	40 U	43 U	44 U	37 U

Table E-5. Demolition Area 1
Surface Soil
PCBs (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	South Ditch Line DA1-040 DA10109 DA1ss-040-0109-SO 11/03/1999 0 - 1 Grab	South Ditch Line DA1-040 DA10126 DA1ss-040-0126-SO 11/03/1999 0 - 1 Field Duplicate
PCB-1016	µg/kg	43 U	44 U
PCB-1221	µg/kg	43 U	44 U
PCB-1232	µg/kg	43 U	44 U
PCB-1242	µg/kg	43 U	44 U
PCB-1248	µg/kg	43 U	44 U
PCB-1254	µg/kg	43 U	44 U
PCB-1260	µg/kg	43 U	44 U

SUBSURFACE SOIL – EXPLOSIVES AND PROPELLANTS

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Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-041 DA10112 DA1so-041-0112-SO 11/03/1999 1 - 3 Grab	Inside Bermed Area DA1-041 DA10113 DA1so-041-0113-SO 11/03/1999 3 - 5 Grab	Inside Bermed Area DA1-041 DA10164 DA1so-041-0164-SO 11/03/1999 6 - 8 Grab	NACA Plane Storage Area - Outside Berm DA1-042 DA10115 DA1so-042-0115-SO 11/03/1999 1 - 3 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2 U	2 U		2 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U		0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-042 DA10116 DA1so-042-0116-SO 11/03/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-042 DA10165 DA1so-042-0165-SO 11/03/1999 6 - 8 Grab	Inside Bermed Area DA1-012 DA10024 DA1so-012-0024-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-012 DA10025 DA1so-012-0025-SO 10/21/1999 3 - 5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2 U	2 U	2.4 U	2.4 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-013 DA10027 DA1so-013-0027-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-013 DA10028 DA1so-013-0028-SO 10/21/1999 3 - 5 Grab	Inside Bermed Area DA1-014 DA10030 DA1so-014-0030-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-014 DA10031 DA1so-014-0031-SO 10/21/1999 3 - 5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-015 DA10033 DA1so-015-0033-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-015 DA10034 DA1so-015-0034-SO 10/21/1999 3 - 5 Grab	Inside Bermed Area DA1-016 DA10037 DA1so-016-0037-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-016 DA10132 DA1ss-016-0132-SO 10/21/1999 1 - 3 Field Duplicate
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	2.5 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	2.5 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	2.5 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-016 DA10038 DA1so-016-0038-SO 10/21/1999 3 - 5 Grab	Inside Bermed Area DA1-017 DA10040 DA1so-017-0040-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-017 DA10041 DA1so-017-0041-SO 10/21/1999 3 - 5 Grab	Inside Bermed Area DA1-018 DA10043 DA1so-018-0043-SO 10/22/1999 1 - 3 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-018 DA10131 DA1ss-018-0131-SO 10/22/1999 1 - 3 Field Duplicate	Inside Bermed Area DA1-018 DA10044 DA1so-018-0044-SO 10/22/1999 3 - 5 Grab	Inside Bermed Area DA1-018 DA10160 DA1so-018-0160-SO 10/22/1999 6 - 8 Grab	Inside Bermed Area DA1-019 DA10046 DA1so-019-0046-SO 10/22/1999 1 - 3 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-019 DA10047 DA1so-019-0047-SO 10/22/1999 3 - 5 Grab	Inside Bermed Area DA1-019 DA10161 DA1so-019-0161-SO 10/22/1999 6 - 8 Grab	Inside Bermed Area DA1-020 DA10049 DA1so-020-0049-SO 10/22/1999 1 - 3 Grab	Inside Bermed Area DA1-020 DA10050 DA1so-020-0050-SO 10/22/1999 3 - 5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10162 DA1so-020-0162-SO 10/22/1999 6 - 8 Grab	Inside Bermed Area DA1-021 DA10052 DA1so-021-0052-SO 10/24/1999 1 - 3 Grab	Inside Bermed Area DA1-021 DA10053 DA1so-021-0053-SO 10/24/1999 3 - 5 Grab	Inside Bermed Area DA1-021 DA10163 DA1so-021-0163-SO 10/24/1999 6 - 8 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-022 DA10055 DA1so-022-0055-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-022 DA10056 DA1so-022-0056-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10058 DA1so-023-0058-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10059 DA1so-023-0059-SO 10/25/1999 3 - 5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.4 U	2.4 U	2.4 U	2.4 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-024 DA10061 DA1so-024-0061-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-024 DA10062 DA1so-024-0062-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-025 DA10064 DA1so-025-0064-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-025 DA10065 DA1so-025-0065-SO 10/25/1999 3 - 5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-026 DA10067 DA1so-026-0067-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-026 DA10068 DA1so-026-0068-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-027 DA10070 DA1so-027-0070-SO 10/20/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-027 DA10071 DA1so-027-0071-SO 10/20/1999 3 - 5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-028 DA10074 DA1so-028-0074-SO 10/26/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-028 DA10075 DA1so-028-0075-SO 10/26/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10077 DA1so-029-0077-SO 10/26/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-030 DA10080 DA1so-030-0080-SO 10/26/1999 1 - 3 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-031 DA10083 DA1so-031-0083-SO 10/26/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-031 DA10084 DA1so-031-0084-SO 10/26/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-032 DA10086 DA1so-032-0086-SO 10/27/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-032 DA10087 DA1so-032-0087-SO 10/27/1999 3 - 5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-033 DA10089 DA1so-033-0089-SO 10/27/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-033 DA10090 DA1so-033-0090-SO 10/27/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-034 DA10092 DA1so-034-0092-SO 10/27/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-034 DA10093 DA1so-034-0093-SO 10/27/1999 3 - 5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-035 DA10095 DA1so-035-0095-SO 11/01/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-035 DA10096 DA1so-035-0096-SO 11/01/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-036 DA10098 DA1so-036-0098-SO 11/02/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-036 DA10099 DA1so-036-0099-SO 11/02/1999 3 - 5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-037 DA10101 DA1so-037-0101-SO 11/02/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-037 DA10102 DA1so-037-0102-SO 11/02/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-038 DA10104 DA1so-038-0104-SO 11/02/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-038 DA10133 DA1ss-038-0133-SO 11/02/1999 1 - 3 Field Duplicate
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-038 DA10105 DA1so-038-0105-SO 11/02/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-038 DA10134 DA1ss-038-0134-SO 11/02/1999 3 - 5 Field Duplicate	NACA Plane Storage Area - Outside Berm DA1-039 DA10107 DA1so-039-0107-SO 11/02/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-039 DA10108 DA1so-039-0108-SO 11/02/1999 3 - 5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg				
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg				
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-001 DA10002 DA1so-001-0002-SO 10/19/1999 1 - 3 Grab	On Berm DA1-002 DA10004 DA1so-002-0004-SO 10/19/1999 1 - 3 Grab	On Berm DA1-003 DA10006 DA1so-003-0006-SO 10/19/1999 1 - 3 Grab	On Berm DA1-007 DA10014 DA1so-007-0014-SO 10/20/1999 1 - 3 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.4 U			
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U			
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U

Table E-6. Demolition Area 1
Subsurface Soil
Explosives and Propellants (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-007 DA10135 DA1ss-007-0135-SO 10/20/1999 1 - 3 Field Duplicate	On Berm DA1-010 DA10020 DA1so-010-0020-SO 10/20/1999 1 - 3 Grab	South Ditch Line DA1-040 DA10110 DA1so-040-0110-SO 11/03/1999 1 - 3 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.12 J
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg			
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg			
RDX	mg/kg	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U

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SUBSURFACE SOIL – INORGANICS

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Table E-7. Demolition Area 1
Subsurface Soil
Inorganics

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-041 DA10112 DA1so-041-0112-SO 11/03/1999 1 - 3 Grab	Inside Bermed Area DA1-041 DA10113 DA1so-041-0113-SO 11/03/1999 3 - 5 Grab	Inside Bermed Area DA1-041 DA10164 DA1so-041-0164-SO 11/03/1999 6 - 8 Grab	NACA Plane Storage Area - Outside Berm DA1-042 DA10115 DA1so-042-0115-SO 11/03/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-042 DA10116 DA1so-042-0116-SO 11/03/1999 3 - 5 Grab
Cyanide	mg/kg	0.6 U	0.61 U	0.64 U	0.6 U	0.59 U
Aluminum	mg/kg	15700 =	11600 =	10500 =	15100 =	12600 =
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.3 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	15.8 =	17.7 =	14.1 =	15 =	15.7 =
Barium	mg/kg	54.6 =	57.4 =	61.2 =	65.1 =	118 =
Beryllium	mg/kg	0.4 J	0.51 J	0.34 U	0.4 J	0.53 J
Cadmium	mg/kg	0.6 U	0.61 U	0.64 U	0.6 U	0.59 U
Calcium	mg/kg	532 U	734 U	2170 =	1220 =	2010 =
Chromium	mg/kg	20 =	17.1 =	16.6 =	19.3 =	19.6 =
Cobalt	mg/kg	9.9 =	9.8 =	9.3 =	15.4 =	15.3 =
Copper	mg/kg	19 J	23.5 J	20.6 J	19.7 J	23.1 J
Iron	mg/kg	30700 =	30000 =	26900 =	30800 =	32100 U
Lead	mg/kg	14.5 =	13.3 =	12.1 =	14.3 =	14.1 =
Magnesium	mg/kg	3280 =	3100 =	3610 =	3400 =	4440 =
Manganese	mg/kg	209 =	228 =	256 =	274 =	414 =
Mercury	mg/kg	0.042 U	0.04 U	0.037 U	0.041 U	0.03 U
Nickel	mg/kg	22.4 =	22.6 =	24.9 =	23.7 =	39.2 =
Potassium	mg/kg	1480 =	1260 =	1530 =	1430 =	1490 =
Selenium	mg/kg	0.9 =	0.51 J	0.64 U	0.75 =	0.47 J
Silver	mg/kg	1.2 U	1.2 U	1.3 U	1.2 U	1.2 U
Sodium	mg/kg	79.9 U	88.3 U	92.1 U	66.2 U	62.7 U
Thallium	mg/kg	0.31 J	0.27 J	0.24 J	0.38 J	0.33 J
Vanadium	mg/kg	26 =	19.9 =	17.5 =	25.7 =	20.9 =
Zinc	mg/kg	52.8 J	60.4 J	64.4 J	76.6 J	79.6 J

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-042 DA10165 DA1so-042-0165-SO 11/03/1999 6 - 8 Grab	Inside Bermed Area DA1-012 DA10024 DA1so-012-0024-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-012 DA10025 DA1so-012-0025-SO 10/21/1999 3 - 5 Grab	Inside Bermed Area DA1-013 DA10027 DA1so-013-0027-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-013 DA10028 DA1so-013-0028-SO 10/21/1999 3 - 5 Grab
Cyanide	mg/kg	0.62 U	0.59 U	0.61 U	0.6 U	0.59 U
Aluminum	mg/kg	14800 =	12800 =	11600 =	18700 =	19700 = *
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.2 UJ	0.77 J	0.54 J
Arsenic	mg/kg	14.5 =	17.7 =	14.1 =	15.7 =	13.4 =
Barium	mg/kg	73.7 =	64 =	80.7 =	75.3 =	179 = *
Beryllium	mg/kg	0.53 J	0.49 J	0.52 J	0.38 J	0.76 =
Cadmium	mg/kg	0.62 U	0.59 U	0.61 U	0.6 U	0.59 U
Calcium	mg/kg	15200 =	732 =	1460 =	1680 J	2000 J
Chromium	mg/kg	21.7 =	18.7 =		22 =	24.9 =
Cobalt	mg/kg	12.5 =	9.1 =	14 =	7.9 =	13.5 =
Copper	mg/kg	22.4 J	21.8 J	21.7 J	17.3 =	20.9 =
Iron	mg/kg	31500 =	34500 =	27600 =	27800 J	34300 =
Lead	mg/kg	13.5 =	15.7 =	12.4 =	15.6 =	11.9 =
Magnesium	mg/kg	5420 =	3000 =	3580 =	2860 =	4270 =
Manganese	mg/kg	329 =	509 =	380 =	295 =	283 =
Mercury	mg/kg	0.043 U	0.031 U	0.03 U	0.041 J	0.036 J
Nickel	mg/kg	30.9 =	23.3 =	31.4 =	18.4 =	33 =
Potassium	mg/kg	2980 =	1300 =	1610 =	1210 =	2210 =
Selenium	mg/kg	0.62 U	0.59 U	0.61 U	1 =	0.48 J
Silver	mg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Sodium	mg/kg	114 U	59.4 U	53.7 U	111 U	154 U
Thallium	mg/kg	0.37 J	0.38 J	0.36 J	0.35 J	0.48 J
Vanadium	mg/kg	24.5 =	22.2 =	18.6 =	32 =	26.4 =
Zinc	mg/kg	74.3 J	59.2 J	64.3 J	54.4 =	70.2 =

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-014 DA10030 DA1so-014-0030-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-014 DA10031 DA1so-014-0031-SO 10/21/1999 3 - 5 Grab	Inside Bermed Area DA1-015 DA10033 DA1so-015-0033-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-015 DA10034 DA1so-015-0034-SO 10/21/1999 3 - 5 Grab	Inside Bermed Area DA1-016 DA10037 DA1so-016-0037-SO 10/21/1999 1 - 3 Grab
Cyanide	mg/kg	0.59 U	0.6 U	0.58 U	0.59 U	0.59 U
Aluminum	mg/kg	14600 =	15300 =	14000 =	17000 =	12700 =
Antimony	mg/kg	0.78 J	0.96 J	0.79 J	1.2 UJ	1.2 UJ
Arsenic	mg/kg	15.9 =	15.3 =	17 =	18 =	17 =
Barium	mg/kg	85.8 =	90.9 =	42.3 =	78.3 =	74.4 =
Beryllium	mg/kg	0.38 J	0.5 J	0.36 J	0.62 =	0.57 J
Cadmium	mg/kg	0.59 U	0.6 U	0.58 U	0.59 U	0.59 U
Calcium	mg/kg	1350 J	2470 J	569 J	1640 J	877 =
Chromium	mg/kg	19.5 =	22 =	19.1 =	22.2 =	19.4 =
Cobalt	mg/kg	11.1 =	13.5 =	10.4 =	14.1 =	11 =
Copper	mg/kg	23.5 =	22.8 =	24 =	26.3 =	20.9 J
Iron	mg/kg	28400 =	31100 =	32400 =	28100 =	31200 =
Lead	mg/kg	15.2 =	13.9 =	14.5 =	15.1 =	13.4 =
Magnesium	mg/kg	3240 =	4360 =	3200 =	4020 =	3850 =
Manganese	mg/kg	363 =	450 =	199 =	416 =	226 =
Mercury	mg/kg	0.035 J	0.015 J	0.034 J	0.021 J	0.021 U
Nickel	mg/kg	26.4 =	34.3 =	24.1 =	30.8 =	28.3 =
Potassium	mg/kg	1540 =	2220 =	936 =	2390 =	1290 =
Selenium	mg/kg	0.71 =	0.66 =	0.86 =	0.46 =	0.59 U
Silver	mg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Sodium	mg/kg	137 U	126 U	83.3 U	134 U	70.8 U
Thallium	mg/kg	0.4 J	0.38 J	0.37 J	0.41 J	0.34 J
Vanadium	mg/kg	23.6 =	24 =	21 =	25.9 =	21.1 =
Zinc	mg/kg	58.9 =	70.5 =	59.4 =	70.4 =	65.4 J

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-016 DA10132 DA1ss-016-0132-SO 10/21/1999 1 - 3 Field Duplicate	Inside Bermed Area DA1-016 DA10038 DA1so-016-0038-SO 10/21/1999 3 - 5 Grab	Inside Bermed Area DA1-017 DA10040 DA1so-017-0040-SO 10/21/1999 1 - 3 Grab	Inside Bermed Area DA1-017 DA10041 DA1so-017-0041-SO 10/21/1999 3 - 5 Grab	Inside Bermed Area DA1-018 DA10043 DA1so-018-0043-SO 10/22/1999 1 - 3 Grab
Cyanide	mg/kg	0.25 U	0.6 U	0.6 U	0.63 U	0.61 U
Aluminum	mg/kg	12300 =	8430 =	10700 =	11300 =	12600 J
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.2 UJ	1.3 UJ	1.2 UJ
Arsenic	mg/kg	15.2 =	14.3 =	15.1 =	15.1 =	17.5 =
Barium	mg/kg	71.7 =	64.5 =	43.5 =	69.7 =	77.5 J
Beryllium	mg/kg	0.56 J	0.34 J	0.34 J	0.46 J	0.66 U
Cadmium	mg/kg	0.59 U	0.6 U	0.6 U	0.63 U	0.61 UJ
Calcium	mg/kg	619 =	1040 =	784 =	1970 =	1040 =
Chromium	mg/kg	18.1 =	13.2 =	15.7 =	17.2 =	18.8 =
Cobalt	mg/kg	14.2 =	9.4 =	12.9 =	8.8 =	11.8 =
Copper	mg/kg	21.5 J	20.1 J	20.3 J	20.6 J	22.1 J
Iron	mg/kg	29400 =	24000 =	27100 =	27300 =	32400 J
Lead	mg/kg	13.9 =	11.9 =	13.6 =	11.8 =	15.4 =
Magnesium	mg/kg	3790 =	2790 =	3070 =	3530 =	3660 J
Manganese	mg/kg	262 =	334 =	293 =	282 =	307 J
Mercury	mg/kg	0.026 U	0.0078 U	0.054 J *	0.018 U	0.014 J
Nickel	mg/kg	29.1 =	24.6 =	22.1 =	25.3 =	27.1 =
Potassium	mg/kg	1410 =	1010 =	871 =	1460 =	1270 =
Selenium	mg/kg	0.59 U	0.6 U	0.6 U	0.63 U	0.61 U
Silver	mg/kg	1.2 U	1.2 U	1.2 U	1.3 U	1.2 U
Sodium	mg/kg	54.5 U	63.1 U	57 U	55.8 U	87.2 U
Thallium	mg/kg	0.43 J	0.31 J	0.36 J	0.34 J	0.34 J
Vanadium	mg/kg	19.8 =	13.9 =	16.5 =	18.7 =	19.1 =
Zinc	mg/kg	68.2 J	56.8 J	53.8 J	60.8 J	66.2 =

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-018 DA10131 DA1ss-018-0131-SO 10/22/1999 1 - 3 Field Duplicate	Inside Bermed Area DA1-018 DA10044 DA1so-018-0044-SO 10/22/1999 3 - 5 Grab	Inside Bermed Area DA1-018 DA10160 DA1so-018-0160-SO 10/22/1999 6 - 8 Grab	Inside Bermed Area DA1-019 DA10046 DA1so-019-0046-SO 10/22/1999 1 - 3 Grab	Inside Bermed Area DA1-019 DA10047 DA1so-019-0047-SO 10/22/1999 3 - 5 Grab
Cyanide	mg/kg	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
Aluminum	mg/kg	12500 J	10700 J	7850 J	16300 J	9130 J
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	13.1 =	16.3 =	16.6 =	21.1 = *	16 =
Barium	mg/kg	79.9 J	52.9 J	55.9 J	59.7 J	52.2 J
Beryllium	mg/kg	0.6 U	0.42 U	0.35 U	0.62 U	0.39 U
Cadmium	mg/kg	0.62 UJ	0.62 UJ	0.62 UJ	0.62 UJ	0.62 UJ
Calcium	mg/kg	1000 =	1450 =	7450 =	595 J	1180 =
Chromium	mg/kg	18.3 =	17 =	13.4 =	22.4 =	14.1 =
Cobalt	mg/kg	10.4 =	10.5 =	10.9 =	10.9 =	9.6 =
Copper	mg/kg	20.4 J	21.2 J	22 J	28 J	19.6 J
Iron	mg/kg	27700 J	28900 J	26200 J	38600 J *	26000 J
Lead	mg/kg	11.5 =	13.9 =	14.1 =	17.5 =	13.4 =
Magnesium	mg/kg	3680 J	3330 J	4760 J	3890 J	2810 J
Manganese	mg/kg	226 J	390 J	463 J	265 J	396 J
Mercury	mg/kg	0.0085 J	0.0066 J	0.12 U	0.038 J	0.12 U
Nickel	mg/kg	27.1 =	26.1 =	25.6 =	27.7 =	22.7 =
Potassium	mg/kg	1400 =	1400 =	1090 =	1180 =	1120 =
Selenium	mg/kg	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
Silver	mg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Sodium	mg/kg	60.2 U	48.9 U	87.8 U	50.5 U	40.5 U
Thallium	mg/kg	0.35 J	0.3 J	0.44 J	0.36 J	0.3 J
Vanadium	mg/kg	17.9 =	17.7 =	13.6 =	23.9 =	15.3 =
Zinc	mg/kg	63.9 =	63.7 =	66.4 =	72.3 =	56.6 =

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-019 DA10161 DA1so-019-0161-SO 10/22/1999 6 - 8 Grab	Inside Bermed Area DA1-020 DA10049 DA1so-020-0049-SO 10/22/1999 1 - 3 Grab	Inside Bermed Area DA1-020 DA10050 DA1so-020-0050-SO 10/22/1999 3 - 5 Grab	Inside Bermed Area DA1-020 DA10162 DA1so-020-0162-SO 10/22/1999 6 - 8 Grab	Inside Bermed Area DA1-021 DA10052 DA1so-021-0052-SO 10/24/1999 1 - 3 Grab
Cyanide	mg/kg	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U
Aluminum	mg/kg	13800 J	18300 J	13300 J	16900 J	13800 =
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	17.8 =	20.2 = *	14.8 =	13.1 =	14.3 =
Barium	mg/kg	65.2 J	108 J	69.7 J	104 J	70.1 =
Beryllium	mg/kg	0.59 U	0.79 U	0.51 U	0.63 U	0.56 U
Cadmium	mg/kg	0.61 UJ	0.61 UJ	0.61 UJ	0.61 UJ	0.61 UJ
Calcium	mg/kg	21600 =	3570 =	22400 =	33600 =	1050 =
Chromium	mg/kg	20.7 =	27.8 = *	20.5 =	25.2 =	17.5 J
Cobalt	mg/kg	12.5 =	16.4 =	11.4 =	13.2 =	9.7 =
Copper	mg/kg	18.7 J	27.9 J	19.7 J	22.7 J	20.6 J
Iron	mg/kg	32600 J	41000 J *	29600 J	32500 J	28200 =
Lead	mg/kg	13.1 =	17.9 =	12.6 =	13.9 =	12.8 J
Magnesium	mg/kg	5920 J	6260 J	7290 J	9170 J *	3240 J
Manganese	mg/kg	370 J	517 J	307 J	431 J	239 =
Mercury	mg/kg	0.025 J	0.029 J	0.015 J	0.014 J	0.031 J
Nickel	mg/kg	31 =	43 =	29.9 =	35 =	25 =
Potassium	mg/kg	2930 =	2800 =	2780 =	3820 = *	1160 =
Selenium	mg/kg	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U
Silver	mg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Sodium	mg/kg	121 U	58.6 U	98.4 U	169 U	72.1 U
Thallium	mg/kg	0.3 J	0.34 J	0.33 J	0.34 J	0.27 J
Vanadium	mg/kg	21.7 =	27.2 =	20.7 =	25.8 =	18.7 =
Zinc	mg/kg	66.1 =	93.2 =	68.9 =	80.1 =	61 J

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-021 DA10053 DA1so-021-0053-SO 10/24/1999 3 - 5 Grab	Inside Bermed Area DA1-021 DA10163 DA1so-021-0163-SO 10/24/1999 6 - 8 Grab	NACA Plane Storage Area - Outside Berm DA1-022 DA10055 DA1so-022-0055-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-022 DA10056 DA1so-022-0056-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10058 DA1so-023-0058-SO 10/25/1999 1 - 3 Grab
Cyanide	mg/kg	0.62 U	0.63 U	0.59 U	0.59 U	0.6 U
Aluminum	mg/kg	12900 =	13500 =	14500 =	13500 =	17600 =
Antimony	mg/kg	1.2 UJ	1.3 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	15.4 =	18.8 =	13.7 =	12.8 =	14.3 =
Barium	mg/kg	68.4 =	79.7 =	86.2 =	70.5 =	77.6 =
Beryllium	mg/kg	0.55 U	0.57 U	0.59 U	0.58 U	0.73 U
Cadmium	mg/kg	0.62 UJ	0.63 UJ	0.59 UJ	0.59 UJ	0.6 UJ
Calcium	mg/kg	1950 =	19000 =	1630 J	6160 J	826 J
Chromium	mg/kg	17.1 J	18.8 J	20.6 =	19.5 =	22.7 =
Cobalt	mg/kg	11 =	17.5 =	7.8 =	10.5 =	11.9 =
Copper	mg/kg	20.8 J	20.4 J	19.6 J	18.1 J	87.3 J *
Iron	mg/kg	28400 =	30700 =	29100 =	26600 =	31500 =
Lead	mg/kg	13.7 J	14.1 J	11.3 =	11.4 =	16.6 =
Magnesium	mg/kg	3700 J	6310 J	3890 =	4470 =	4170 =
Manganese	mg/kg	424 =	532 =	199 J	340 J	251 J
Mercury	mg/kg	0.017 J	0.13 U	0.038 J	0.014 J	0.029 J
Nickel	mg/kg	28.2 =	31.2 =	28.1 J	29 J	28.3 J
Potassium	mg/kg	1680 =	2770 =	1820 =	2880 =	2620 =
Selenium	mg/kg	0.62 U	0.63 U	0.59 U	0.59 U	0.6 U
Silver	mg/kg	1.2 U	1.3 U	1.2 U	1.2 U	1.2 U
Sodium	mg/kg	100 U	114 U	36.3 U	51.5 U	47 U
Thallium	mg/kg	0.3 J	0.29 J	0.54 UJ	0.46 UJ	0.54 UJ
Vanadium	mg/kg	18.9 =	20.5 =	22.6 =	21.9 =	26.9 =
Zinc	mg/kg	65.7 J	71.1 J	61.1 J	61.2 J	167 J *

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-023 DA10059 DA1so-023-0059-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-024 DA10061 DA1so-024-0061-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-024 DA10062 DA1so-024-0062-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-025 DA10064 DA1so-025-0064-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-025 DA10065 DA1so-025-0065-SO 10/25/1999 3 - 5 Grab
Cyanide	mg/kg	0.61 U	0.64 U	0.61 U	0.58 U	0.61 U
Aluminum	mg/kg	14100 =	15500 =	9840 =	12100 =	13700 =
Antimony	mg/kg	1.2 UJ	1.3 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	15.1 =	14.7 =	13.9 =	13 =	15 =
Barium	mg/kg	89.4 =	91.7 =	59.1 =	60 =	108 =
Beryllium	mg/kg	0.64 U	0.66 U	0.45 U	0.55 U	0.76 U
Cadmium	mg/kg	0.61 UJ	0.64 UJ	0.61 UJ	0.58 UJ	0.61 UJ
Calcium	mg/kg	2340 J	569 J	1710 J	773 J	1890 J
Chromium	mg/kg	20.8 =	19.8 =	15.7 =	17.1 =	20.7 =
Cobalt	mg/kg	11.2 =	8.8 =	10.1 =	10.6 =	14.3 =
Copper	mg/kg	33.8 J *	30.2 J	20.9 J	18 J	21.2 J
Iron	mg/kg	30300 =	27300 =	26700 =	26300 =	30800 =
Lead	mg/kg	14.3 =	13.3 =	12.4 =	12.4 =	13.4 =
Magnesium	mg/kg	4470 =	3360 =	3440 =	3160 =	4420 =
Manganese	mg/kg	315 J	196 J	358 J	272 J	414 J
Mercury	mg/kg	0.018 J	0.038 J	0.019 J	0.29 = *	0.012 J
Nickel	mg/kg	31.1 J	22.5 J	27.6 J	22.8 J	36.6 J
Potassium	mg/kg	2630 =	2430 =	1380 =	1380 =	2080 =
Selenium	mg/kg	0.61 U	0.64 U	0.61 U	0.58 U	0.61 U
Silver	mg/kg	1.2 U	1.3 U	1.2 U	1.2 U	1.2 U
Sodium	mg/kg	44.8 U	642 U	62.8 U	34 U	46 U
Thallium	mg/kg	0.45 UJ	0.62 UJ	0.4 UJ	0.57 UJ	0.49 UJ
Vanadium	mg/kg	23.4 =	24.9 =	16.6 =	20.2 =	22.4 =
Zinc	mg/kg	88.2 J	66.3 J	79.6 J	55.7 J	71.3 J

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-026 DA10067 DA1so-026-0067-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-026 DA10068 DA1so-026-0068-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-027 DA10070 DA1so-027-0070-SO 10/20/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-027 DA10071 DA1so-027-0071-SO 10/20/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-028 DA10074 DA1so-028-0074-SO 10/26/1999 1 - 3 Grab
Cyanide	mg/kg	0.61 U	0.62 U	0.59 U	0.59 U	0.6 U
Aluminum	mg/kg	13900 J	15000 J	14600 =	28600 = *	14100 J
Antimony	mg/kg	1.2 R	1.2 R	0.75 J	1.3 J *	1.2 R
Arsenic	mg/kg	15.8 J	16.7 J	16.2 =	20.9 = *	16.6 J
Barium	mg/kg	67.4 =	89.4 =	75 =	107 =	99.5 =
Beryllium	mg/kg	0.43 U	0.55 U	0.49 J	0.79 =	0.65 U
Cadmium	mg/kg	0.61 UJ	0.62 UJ	0.59 U	0.59 U	0.6 UJ
Calcium	mg/kg	965 J	2660 J	1310 J	28200 J	1510 J
Chromium	mg/kg	20 J	22.6 J	19.2 =	34.7 = *	20 J
Cobalt	mg/kg	10.1 J	13.4 J	20.5 =	17.6 =	13.2 J
Copper	mg/kg	23.9 J	24.1 J	39.2 = *	35.3 = *	23 J
Iron	mg/kg	31400 J	35200 J	44300 J *	31900 J	31600 J
Lead	mg/kg	15 =	14.5 =	16.5 =	19.4 = *	12.5 =
Magnesium	mg/kg	3780 J	5460 J	3770 =	9120 = *	3840 J
Manganese	mg/kg	188 J	359 J	416 =	472 =	284 J
Mercury	mg/kg	0.0076 J	0.022 J	0.015 J	0.0096 J	0.024 J
Nickel	mg/kg	26.3 J	36.3 J	31.3 =	44.2 =	29.4 J
Potassium	mg/kg	1250 J	2230 J	1240 =	4430 = *	1740 J
Selenium	mg/kg	1 =	0.85 =	0.54 J	0.59 U	1.2 =
Silver	mg/kg	1.2 UJ	1.2 UJ	1.2 U	1.2 U	1.2 UJ
Sodium	mg/kg	608 UJ	616 UJ	93 U	182 U	602 UJ
Thallium	mg/kg	0.52 UJ	0.44 UJ	0.45 J	0.45 J	0.4 UJ
Vanadium	mg/kg	22.8 J	24.4 J	19.9 =	39.9 = *	23.5 J
Zinc	mg/kg	68.8 J	74 J	82.4 =	97 = *	67.2 J

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-028 DA10075 DA1so-028-0075-SO 10/26/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10077 DA1so-029-0077-SO 10/26/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-030 DA10080 DA1so-030-0080-SO 10/26/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-031 DA10083 DA1so-031-0083-SO 10/26/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-031 DA10084 DA1so-031-0084-SO 10/26/1999 3 - 5 Grab
Cyanide	mg/kg	0.61 U	0.67 U	0.6 U	0.59 U	0.61 U
Aluminum	mg/kg	12500 J	17900 =	14400 =	13300 =	11600 =
Antimony	mg/kg	1.2 R	1.2 J *	1.2 R	1.2 R	1.2 R
Arsenic	mg/kg	17.3 J	12.7 J	14.7 J	15.8 J	13.5 J
Barium	mg/kg	79 =	155 J *	78 J	71.8 J	90.4 J
Beryllium	mg/kg	0.39 U	0.92 U	0.55 U	0.56 U	0.43 U
Cadmium	mg/kg	0.61 UJ	110 J *	0.6 UJ	0.59 UJ	0.61 UJ
Calcium	mg/kg	11200 J	18300 =	15000 =	1000 =	17200 =
Chromium	mg/kg	19.9 J	22 J	22.2 J	18.7 J	19.5 J
Cobalt	mg/kg	12.9 J	9.3 J	12.5 J	12.4 J	12 J
Copper	mg/kg	24.2 J	597 J *	21.3 J	47.3 J *	25 J
Iron	mg/kg	32300 J	49200 J *	31300 J	29900 J	28200 J
Lead	mg/kg	13.8 =	401 = *	13.1 =	16.1 =	12.8 =
Magnesium	mg/kg	5200 J	5430 J	5740 J	3040 J	4710 J
Manganese	mg/kg	428 J	842 J	337 J	324 J	441 J
Mercury	mg/kg	0.018 J	0.052 J *	0.016 J	0.032 J	0.015 J
Nickel	mg/kg	34 J	36.1 J	31.6 J	25.7 J	34.8 J
Potassium	mg/kg	1810 J	2160 J	2860 J	1490 J	1560 J
Selenium	mg/kg	0.87 =	0.67 U	0.6 U	0.59 U	0.61 U
Silver	mg/kg	1.2 UJ	0.48 J *	1.2 UJ	1.2 UJ	1.2 UJ
Sodium	mg/kg	609 UJ	669 J *	603 UJ	593 UJ	610 UJ
Thallium	mg/kg	0.41 UJ	0.41 J	0.42 J	0.4 J	0.42 J
Vanadium	mg/kg	20.7 J	17.4 =	24.3 =	22.1 =	19.6 =
Zinc	mg/kg	74.8 J	2830 = *	67.7 =	125 = *	82.9 =

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-032 DA10086 DA1so-032-0086-SO 10/27/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-032 DA10087 DA1so-032-0087-SO 10/27/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-033 DA10089 DA1so-033-0089-SO 10/27/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-033 DA10090 DA1so-033-0090-SO 10/27/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-034 DA10092 DA1so-034-0092-SO 10/27/1999 1 - 3 Grab
Cyanide	mg/kg	0.56 U	0.59 U	0.59 U	0.64 U	0.6 U
Aluminum	mg/kg	10400 =	14200 =	10500 =	9530 =	9730 =
Antimony	mg/kg	1.1 U	1.2 R	1.2 R	1.3 R	1.2 R
Arsenic	mg/kg	11.6 J	15.2 R	12.7 J	12.2 J	17.9 J
Barium	mg/kg	35.8 J	107 J	68.9 J	56.9 J	62.1 J
Beryllium	mg/kg	0.28 U	0.72 U	0.44 U	0.41 U	0.41 U
Cadmium	mg/kg	0.56 UJ	0.59 UJ	0.59 UJ	0.64 UJ	0.6 UJ
Calcium	mg/kg	689 =	3290 =	1380 =	3780 =	1490 =
Chromium	mg/kg	13.2 J	21.6 J	15.3 J	14.9 J	15.6 J
Cobalt	mg/kg	7.6 J	14 J	10.5 J	9.6 J	8.8 J
Copper	mg/kg	17.3 J	22.5 J	18.9 J	18.7 J	22.8 J
Iron	mg/kg	21200 J	31900 J	24200 J	23400 J	27700 J
Lead	mg/kg	11.5 =	13.5 =	11.6 =	11.4 =	13.4 =
Magnesium	mg/kg	1980 J	4640 J	2860 J	3110 J	3050 J
Manganese	mg/kg	237 J	435 J	320 J	469 J	302 J
Mercury	mg/kg	0.11 U	0.12 U	0.028 J	0.014 J	0.037 J
Nickel	mg/kg	14.1 J	39.2 J	23.5 J	23.1 J	25.4 J
Potassium	mg/kg	927 J	1890 J	1440 J	1720 J	1280 J
Selenium	mg/kg	0.56 U	0.59 U	0.59 U	0.64 U	0.6 U
Silver	mg/kg	1.1 UJ	1.2 UJ	1.2 UJ	1.3 UJ	1.2 UJ
Sodium	mg/kg	559 UJ	594 UJ	591 UJ	644 UJ	596 UJ
Thallium	mg/kg	0.39 J	0.49 J	0.34 J	0.37 J	0.38 J
Vanadium	mg/kg	18.8 =	22.7 =	17.7 =	17.1 =	17.2 =
Zinc	mg/kg	48.5 =	74.6 =	58.1 =	57.7 =	59.4 =

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-034 DA10093 DA1so-034-0093-SO 10/27/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-035 DA10095 DA1so-035-0095-SO 11/01/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-035 DA10096 DA1so-035-0096-SO 11/01/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-036 DA10098 DA1so-036-0098-SO 11/02/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-036 DA10099 DA1so-036-0099-SO 11/02/1999 3 - 5 Grab
Cyanide	mg/kg	0.62 U	0.58 U	0.62 U	0.61 U	0.59 U
Aluminum	mg/kg	6370 =	7140 =	12400 =	14000 =	8720 =
Antimony	mg/kg	1.2 R	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	13.7 J	12.2 =	12.5 =	15.1 =	9.1 =
Barium	mg/kg	35.1 J	38.7 =	74.9 =	103 =	54.2 =
Beryllium	mg/kg	0.27 U	0.29 J	0.36 J	0.8 =	0.33 J
Cadmium	mg/kg	0.62 UJ	0.58 U	0.62 U	0.61 U	0.59 U
Calcium	mg/kg	1670 =	1120 =	9830 =	4120 =	2180 =
Chromium	mg/kg	10.8 J	10.2 =	19.2 =	20.8 =	14 =
Cobalt	mg/kg	7.1 J	7.5 =	11.2 =	16.5 =	8.1 =
Copper	mg/kg	18.9 J	16.7 =	19.4 =	22.5 =	14.7 =
Iron	mg/kg	21800 J	20000 =	27200 =	31700 =	19800 =
Lead	mg/kg	11.2 =	9.5 J	12.8 J	13.9 J	8.7 J
Magnesium	mg/kg	2340 J	1870 =	4530 =	4360 =	2660 =
Manganese	mg/kg	247 J	282 =	320 =	422 =	277 =
Mercury	mg/kg	0.12 U	0.024 U	0.026 U	0.033 U	0.023 U
Nickel	mg/kg	19.8 J	16 J	28.6 J	37.7 J	19.1 J
Potassium	mg/kg	871 J	1060 =	2090 =	1450 =	1230 =
Selenium	mg/kg	0.62 U	0.63 U	0.62 U	0.61 U	0.45 U
Silver	mg/kg	1.2 UJ	1.2 U	1.2 U	1.2 U	1.2 U
Sodium	mg/kg	625 UJ	70.8 U	109 U	66.1 U	67.8 U
Thallium	mg/kg	0.37 J	0.27 J	0.39 J	0.39 J	0.34 J
Vanadium	mg/kg	11.6 =	13.4 =	19.3 =	22.5 =	14.3 =
Zinc	mg/kg	51.2 =	45.8 =	69.6 =	74.9 =	47.1 =

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-037 DA10101 DA1so-037-0101-SO 11/02/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-037 DA10102 DA1so-037-0102-SO 11/02/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-038 DA10104 DA1so-038-0104-SO 11/02/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-038 DA10133 DA1ss-038-0133-SO 11/02/1999 1 - 3 Field Duplicate	NACA Plane Storage Area - Outside Berm DA1-038 DA10105 DA1so-038-0105-SO 11/02/1999 3 - 5 Grab
Cyanide	mg/kg	0.55 U	0.54 U	0.57 U	0.58 U	0.59 U
Aluminum	mg/kg	8740 =	8070 =	10400 =	8870 =	6280 =
Antimony	mg/kg	1.1 UJ	1.1 UJ	1.1 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	9.5 =	12.7 =	13.6 =	10.8 =	14.7 =
Barium	mg/kg	43.3 =	172 = *	81 =	60.9 =	42.2 =
Beryllium	mg/kg	0.3 J	0.38 J	0.36 J	0.28 J	0.2 U
Cadmium	mg/kg	0.55 U	0.27 J *	0.57 U	0.58 U	0.59 U
Calcium	mg/kg	741 =	1290 =	2130 =	1490 =	1960 =
Chromium	mg/kg	10.2 =	11 =	17.5 =	12.8 =	10.4 =
Cobalt	mg/kg	7.3 =	16 =	12.1 =	8.6 =	8.7 =
Copper	mg/kg	11 =	22 =	20.2 =	14.7 =	21.7 =
Iron	mg/kg	19900 =	23400 =	26900 =	20900 =	22000 =
Lead	mg/kg	11.6 J	14 J	13.1 J	10.2 J	12.1 J
Magnesium	mg/kg	1450 =	1910 =	3510 =	2520 =	2330 =
Manganese	mg/kg	341 =	2180 =	519 =	483 =	349 =
Mercury	mg/kg	0.028 U	0.02 U	0.03 U	0.036 U	0.01 U
Nickel	mg/kg	14.1 J	55.9 J	31.6 J	19.2 J	19.6 J
Potassium	mg/kg	506 J	958 =	1040 =	928 =	893 =
Selenium	mg/kg	0.49 U	0.46 U	0.57 U	0.63 U	0.59 U
Silver	mg/kg	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U
Sodium	mg/kg	49.7 U	63.3 U	51.6 U	49.7 U	67.2 U
Thallium	mg/kg	0.36 J	0.35 J	0.32 J	0.36 J	0.33 J
Vanadium	mg/kg	16.5 =	17.1 =	19.1 =	16.5 =	11.8 =
Zinc	mg/kg	41.9 =	56.1 =	57 =	43.3 =	56.7 =

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-038 DA10134 DA1ss-038-0134-SO 11/02/1999 3 - 5 Field Duplicate	NACA Plane Storage Area - Outside Berm DA1-039 DA10107 DA1so-039-0107-SO 11/02/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-039 DA10108 DA1so-039-0108-SO 11/02/1999 3 - 5 Grab	On Berm DA1-001 DA10002 DA1so-001-0002-SO 10/19/1999 1 - 3 Grab	On Berm DA1-002 DA10004 DA1so-002-0004-SO 10/19/1999 1 - 3 Grab
Cyanide	mg/kg	0.6 U	0.59 U	0.58 U	0.59 U	0.58 U
Aluminum	mg/kg	6370 =	12300 =	10300 =	15500 J	8520 J
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	14.2 =	11.7 =	11.3 =	17 =	8.3 =
Barium	mg/kg	38.7 =	59.3 =	65 =	91 =	43.9 =
Beryllium	mg/kg	0.2 U	0.35 J	0.42 J	0.74 U	0.58 U
Cadmium	mg/kg	0.6 U	0.59 U	0.58 U	0.59 U	0.58 U
Calcium	mg/kg	1930 =	989 =	11200 =	1230 J	1590 J
Chromium	mg/kg	10.7 =	16.8 =	15.8 =	21.9 =	11.7 =
Cobalt	mg/kg	7.6 =	7.8 =	9.4 =	12.5 =	4.5 J
Copper	mg/kg	21 =	14.4 =	18.6 =	23.2 J	9.2 J
Iron	mg/kg	21700 =	25100 =	24800 =	33100 =	18000 =
Lead	mg/kg	11.6 J	11.5 J	10.8 J	14.2 =	10.6 =
Magnesium	mg/kg	2220 =	2690 =	3700 =	4280 =	1520 =
Manganese	mg/kg	327 =	213 =	336 =	255 J	103 J
Mercury	mg/kg	0.012 U	0.02 U	0.019 U	0.023 J	0.037 J
Nickel	mg/kg	18.1 J	20.2 J	24.7 J	29.8 J	12.1 J
Potassium	mg/kg	984 =	1250 =	1620 =	2030 =	661 =
Selenium	mg/kg	0.6 U	0.59 U	0.58 U	0.59 U	0.58 U
Silver	mg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Sodium	mg/kg	73.6 U	56.9 U	80.2 U	592 UJ	582 UJ
Thallium	mg/kg	0.36 J	0.35 J	0.38 J	0.36 J	0.44 J
Vanadium	mg/kg	12.8 =	22.1 =	17.8 =	24.3 =	15.6 =
Zinc	mg/kg	57.1 =	47.1 =	57.9 =	70.7 J	36.3 J

Table E-7. Demolition Area 1
Subsurface Soil
Inorganics (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-003 DA10006 DA1so-003-0006-SO 10/19/1999 1 - 3 Grab	On Berm DA1-007 DA10014 DA1so-007-0014-SO 10/20/1999 1 - 3 Grab	On Berm DA1-007 DA10135 DA1ss-007-0135-SO 10/20/1999 1 - 3 Field Duplicate	On Berm DA1-010 DA10020 DA1so-010-0020-SO 10/20/1999 1 - 3 Grab	South Ditch Line DA1-040 DA10110 DA1so-040-0110-SO 11/03/1999 1 - 3 Grab
Cyanide	mg/kg	0.56 U	0.6 U	0.6 U	0.62 U	0.65 U
Aluminum	mg/kg	7150 J	20100 = *	17800 =	13700 =	13300 =
Antimony	mg/kg	1.1 UJ	0.95 J	0.64 J	1 J *	1.3 UJ
Arsenic	mg/kg	10.6 =	16.3 =	17.2 =	21.9 = *	15 =
Barium	mg/kg	26.1 =	67.9 =	68.1 =	66 =	85.3 =
Beryllium	mg/kg	0.18 U	0.64 =	0.55 J	0.41 J	0.53 J
Cadmium	mg/kg	0.56 U	0.6 U	0.6 U	0.62 U	0.65 U
Calcium	mg/kg	1170 J	1910 J	11300 J	738 J	35700 = *
Chromium	mg/kg	10.1 =	26 =	22.8 =	18.9 =	19.7 =
Cobalt	mg/kg	6.4 =	17.1 =	11.2 =	6.7 =	12.2 =
Copper	mg/kg	13.3 J	25.7 =	24.3 =	23.2 =	21.8 J
Iron	mg/kg	19700 =	32200 J	36400 = *	26000 =	29700 =
Lead	mg/kg	10.5 =	17.1 =	15.4 =	15.2 =	13.1 =
Magnesium	mg/kg	1590 =	4220 =	3780 =	2190 =	5540 =
Manganese	mg/kg	278 J	331 =	269 =	191 =	397 =
Mercury	mg/kg	0.024 J	0.023 J	0.04 J	0.035 J	0.031 U
Nickel	mg/kg	11.4 J	33.1 =	29.6 =	18.4 =	29.9 =
Potassium	mg/kg	629 =	1810 =	1550 =	877 =	1920 =
Selenium	mg/kg	0.56 U	0.73 =	0.8 =	1 =	0.65 U
Silver	mg/kg	1.1 U	1.2 U	1.2 U	1.2 U	1.3 U
Sodium	mg/kg	563 UJ	105 U	83.3 U	53.8 U	118 U
Thallium	mg/kg	0.27 J	0.37 J	0.4 J	0.43 J	0.36 J
Vanadium	mg/kg	13.9 =	28.9 =	26.3 =	25.1 =	21.9 =
Zinc	mg/kg	35.6 J	77.5 =	71.2 =	45.6 =	68.5 J

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SUBSURFACE SOIL – SEMIVOLATILE ORGANIC CONSTITUENTS

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Table E-8. Demolition Area 1
Subsurface Soil
Semivolatile Organic Compounds

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10049 DA1so-020-0049-SO 10/22/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10058 DA1so-023-0058-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10059 DA1so-023-0059-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10077 DA1so-029-0077-SO 10/26/1999 1 - 3 Grab
1,2,4-Trichlorobenzene	µg/kg	400 UJ	400 U	400 U	440 U
1,2-Dichlorobenzene	µg/kg	400 U	400 U	400 U	440 U
1,3-Dichlorobenzene	µg/kg	400 U	400 U	400 U	440 U
1,4-Dichlorobenzene	µg/kg	400 U	400 U	400 U	440 U
2,4,5-Trichlorophenol	µg/kg	400 UJ	400 U	400 U	440 U
2,4,6-Trichlorophenol	µg/kg	400 UJ	400 U	400 U	440 U
2,4-Dichlorophenol	µg/kg	400 UJ	400 U	400 U	440 U
2,4-Dimethylphenol	µg/kg	400 UJ	400 U	400 U	440 U
2,4-Dinitrophenol	µg/kg	970 UJ	960 UJ	970 UJ	1100 UJ
2,4-Dinitrotoluene	µg/kg	400 UJ	400 U	400 U	440 U
2,6-Dinitrotoluene	µg/kg	400 UJ	400 U	400 U	440 U
2-Chloronaphthalene	µg/kg	400 UJ	400 U	400 U	440 U
2-Chlorophenol	µg/kg	400 U	400 U	400 U	440 U
2-Methyl-4,6-dinitrophenol	µg/kg	970 UJ	960 U	970 U	1100 U
2-Methylnaphthalene	µg/kg	400 UJ	400 U	400 U	440 U
2-Methylphenol	µg/kg	400 U	400 U	400 U	440 U
2-Nitrobenzenamine	µg/kg	970 UJ	960 U	970 U	1100 U
2-Nitrophenol	µg/kg	400 UJ	400 U	400 U	440 U
3,3'-Dichlorobenzidine	µg/kg	400 UJ	400 U	400 U	440 U
3-Nitrobenzenamine	µg/kg	970 UJ	960 U	970 U	1100 U
4-Bromophenyl phenyl ether	µg/kg	400 UJ	400 U	400 U	440 U
4-Chloro-3-methylphenol	µg/kg	400 UJ	400 U	400 U	440 U
4-Chlorobenzenamine	µg/kg	400 UJ	400 U	400 U	440 U
4-Chlorophenyl phenyl ether	µg/kg	400 UJ	400 U	400 U	440 U

Table E-8. Demolition Area 1
Subsurface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10049 DA1so-020-0049-SO 10/22/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10058 DA1so-023-0058-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10059 DA1so-023-0059-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10077 DA1so-029-0077-SO 10/26/1999 1 - 3 Grab
4-Methylphenol	µg/kg	400 UJ	400 U	400 U	440 U
4-Nitrobenzenamine	µg/kg	970 UJ	960 U	970 U	1100 U
4-Nitrophenol	µg/kg	970 UJ	960 U	970 U	1100 U
Acenaphthene	µg/kg	400 UJ	400 U	400 U	440 U
Acenaphthylene	µg/kg	400 UJ	400 U	400 U	440 U
Anthracene	µg/kg	400 UJ	400 U	400 U	440 U
Benz(*a*)anthracene	µg/kg	400 UJ	400 U	400 U	440 U
Benzo(*a*)pyrene	µg/kg	400 U	400 U	400 U	440 U
Benzo(*b*)fluoranthene	µg/kg	400 U	400 U	400 U	440 U
Benzo(*g,h,i*)perylene	µg/kg	400 U	400 U	400 U	440 U
Benzo(*k*)fluoranthene	µg/kg	400 U	400 U	400 U	440 U
Bis(2-chloroisopropyl) ether	µg/kg	400 U	400 U	400 U	440 U
Bis(2-ethylhexyl)phthalate	µg/kg	44 J	400 U	400 U	440 U
Butyl benzyl phthalate	µg/kg	400 UJ	400 U	400 U	440 U
Carbazole	µg/kg	400 UJ	400 U	400 U	440 U
Chrysene	µg/kg	400 UJ	400 U	400 U	440 U
Di-*n*-butyl phthalate	µg/kg	400 UJ	400 U	400 U	440 U
Di-*n*-octylphthalate	µg/kg	400 U	400 U	400 U	440 U
Dibenz(*a,h*)anthracene	µg/kg	400 U	400 U	400 U	440 U
Dibenzofuran	µg/kg	400 UJ	400 U	400 U	440 U
Diethyl phthalate	µg/kg	400 UJ	400 U	400 U	440 U
Dimethyl phthalate	µg/kg	400 UJ	400 U	400 U	440 U
Fluoranthene	µg/kg	400 UJ	400 U	400 U	440 U
Fluorene	µg/kg	400 UJ	400 U	400 U	440 U
Hexachlorobenzene	µg/kg	400 UJ	400 U	400 U	440 U

Table E-8. Demolition Area 1
Subsurface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10049 DA1so-020-0049-SO 10/22/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10058 DA1so-023-0058-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10059 DA1so-023-0059-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10077 DA1so-029-0077-SO 10/26/1999 1 - 3 Grab
Hexachlorobutadiene	µg/kg	400 UJ	400 U	400 U	440 U
Hexachlorocyclopentadiene	µg/kg	400 UJ	400 U	400 U	440 U
Hexachloroethane	µg/kg	400 U	400 U	400 U	440 U
Indeno(1,2,3-*cd*)pyrene	µg/kg	400 U	400 U	400 U	440 U
Isophorone	µg/kg	400 UJ	400 U	400 U	440 U
N-Nitroso-di-*n*-propylamine	µg/kg	400 U	400 U	400 U	440 U
N-Nitrosodiphenylamine	µg/kg	400 UJ	400 U	400 U	440 U
Naphthalene	µg/kg	400 UJ	400 U	400 U	440 U
Nitrobenzene	µg/kg	400 UJ	400 U	400 U	440 U
Pentachlorophenol	µg/kg	970 UJ	960 U	970 U	1100 U
Phenanthrene	µg/kg	400 UJ	400 U	400 U	440 U
Phenol	µg/kg	400 U	400 U	400 U	440 U
Pyrene	µg/kg	400 UJ	400 U	400 U	440 U
bis(2-Chloroethoxy)methane	µg/kg	400 UJ	400 U	400 U	440 U
bis(2-Chloroethyl) ether	µg/kg	400 U	400 U	400 U	440 U

Table E-8. Demolition Area 1
Subsurface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-007 DA10014 DA1so-007-0014-SO 10/20/1999 1 - 3 Grab	South Ditch Line DA1-040 DA10110 DA1so-040-0110-SO 11/03/1999 1 - 3 Grab
1,2,4-Trichlorobenzene	µg/kg	400 U	430 U
1,2-Dichlorobenzene	µg/kg	400 U	430 U
1,3-Dichlorobenzene	µg/kg	400 U	430 U
1,4-Dichlorobenzene	µg/kg	400 U	430 U
2,4,5-Trichlorophenol	µg/kg	400 U	430 U
2,4,6-Trichlorophenol	µg/kg	400 U	430 U
2,4-Dichlorophenol	µg/kg	400 U	430 U
2,4-Dimethylphenol	µg/kg	400 U	430 U
2,4-Dinitrophenol	µg/kg	960 U	1000 U
2,4-Dinitrotoluene	µg/kg	400 U	430 U
2,6-Dinitrotoluene	µg/kg	400 U	430 U
2-Chloronaphthalene	µg/kg	400 U	430 U
2-Chlorophenol	µg/kg	400 U	430 U
2-Methyl-4,6-dinitrophenol	µg/kg	960 U	1000 U
2-Methylnaphthalene	µg/kg	400 U	430 U
2-Methylphenol	µg/kg	400 U	430 U
2-Nitrobenzenamine	µg/kg	960 U	1000 U
2-Nitrophenol	µg/kg	400 U	430 U
3,3'-Dichlorobenzidine	µg/kg	400 R	430 U
3-Nitrobenzenamine	µg/kg	960 U	1000 U
4-Bromophenyl phenyl ether	µg/kg	400 U	430 U
4-Chloro-3-methylphenol	µg/kg	400 U	430 U
4-Chlorobenzenamine	µg/kg	400 U	430 U
4-Chlorophenyl phenyl ether	µg/kg	400 U	430 U

Table E-8. Demolition Area 1
Subsurface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-007 DA10014 DA1so-007-0014-SO 10/20/1999 1 - 3 Grab	South Ditch Line DA1-040 DA10110 DA1so-040-0110-SO 11/03/1999 1 - 3 Grab
4-Methylphenol	µg/kg	400 U	430 U
4-Nitrobenzenamine	µg/kg	960 U	1000 U
4-Nitrophenol	µg/kg	960 U	1000 U
Acenaphthene	µg/kg	400 U	430 U
Acenaphthylene	µg/kg	400 U	430 U
Anthracene	µg/kg	400 U	430 U
Benz(*a*)anthracene	µg/kg	400 U	430 U
Benzo(*a*)pyrene	µg/kg	400 U	430 U
Benzo(*b*)fluoranthene	µg/kg	400 U	430 U
Benzo(*g,h,i*)perylene	µg/kg	400 U	430 U
Benzo(*k*)fluoranthene	µg/kg	400 U	430 U
Bis(2-chloroisopropyl) ether	µg/kg	400 U	430 U
Bis(2-ethylhexyl)phthalate	µg/kg	400 U	430 U
Butyl benzyl phthalate	µg/kg	400 U	430 U
Carbazole	µg/kg	400 U	430 U
Chrysene	µg/kg	400 U	430 U
Di-*n*-butyl phthalate	µg/kg	400 U	430 U
Di-*n*-octylphthalate	µg/kg	400 U	430 U
Dibenz(*a,h*)anthracene	µg/kg	400 U	430 U
Dibenzofuran	µg/kg	400 U	430 U
Diethyl phthalate	µg/kg	400 U	430 U
Dimethyl phthalate	µg/kg	400 U	430 U
Fluoranthene	µg/kg	400 U	430 U
Fluorene	µg/kg	400 U	430 U
Hexachlorobenzene	µg/kg	400 U	430 U

Table E-8. Demolition Area 1
Subsurface Soil
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	On Berm DA1-007 DA10014 DA1so-007-0014-SO 10/20/1999 1 - 3 Grab	South Ditch Line DA1-040 DA10110 DA1so-040-0110-SO 11/03/1999 1 - 3 Grab
Hexachlorobutadiene	µg/kg	400 U	430 U
Hexachlorocyclopentadiene	µg/kg	400 U	430 U
Hexachloroethane	µg/kg	400 U	430 U
Indeno(1,2,3-*cd*)pyrene	µg/kg	400 U	430 U
Isophorone	µg/kg	400 U	430 U
N-Nitroso-di-*n*-propylamine	µg/kg	400 U	430 U
N-Nitrosodiphenylamine	µg/kg	400 U	430 U
Naphthalene	µg/kg	400 U	430 U
Nitrobenzene	µg/kg	400 U	430 U
Pentachlorophenol	µg/kg	960 U	1000 U
Phenanthrene	µg/kg	400 U	430 U
Phenol	µg/kg	400 U	430 U
Pyrene	µg/kg	400 U	430 U
bis(2-Chloroethoxy)methane	µg/kg	400 U	430 U
bis(2-Chloroethyl) ether	µg/kg	400 U	430 U

SUBSURFACE SOIL – VOLATILE ORGANIC CONSTITUENTS

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Table E-9. Demolition Area 1
Subsurface Soil
Volatile Organic Compounds

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-042 DA10116 DA1so-042-0116-SO 11/03/1999 3 - 5 Grab	Inside Bermed Area DA1-020 DA10049 DA1so-020-0049-SO 10/22/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10058 DA1so-023-0058-SO 10/25/1999 1 - 3 Grab
1,1,1-Trichloroethane	µg/kg	5.9 U	6.1 U	6 U
1,1,2,2-Tetrachloroethane	µg/kg	5.9 U	6.1 U	6 U
1,1,2-Trichloroethane	µg/kg	5.9 U	6.1 U	6 U
1,1-Dichloroethane	µg/kg	5.9 U	6.1 U	6 U
1,1-Dichloroethene	µg/kg	5.9 U	6.1 U	6 U
1,2-Dibromoethane	µg/kg	5.9 U	6.1 U	6 U
1,2-Dichloroethane	µg/kg	5.9 U	6.1 U	6 U
1,2-Dichloroethene	µg/kg	5.9 U	6.1 U	6 U
1,2-Dichloropropane	µg/kg	5.9 U	6.1 U	6 U
2-Butanone	µg/kg	12 U	12 U	12 U
2-Hexanone	µg/kg	12 U	12 U	12 U
4-Methyl-2-pentanone	µg/kg	12 U	12 U	12 U
Acetone	µg/kg	4.2 J	15 J	12 UJ
Benzene	µg/kg	5.9 U	6.1 U	6 U
Bromochloromethane	µg/kg	5.9 U	6.1 U	6 U
Bromodichloromethane	µg/kg	5.9 U	6.1 U	6 U
Bromoform	µg/kg	5.9 U	6.1 U	6 U
Bromomethane	µg/kg	12 U	12 U	12 U
Carbon disulfide	µg/kg	5.9 U	6.1 U	6 U
Carbon tetrachloride	µg/kg	5.9 U	6.1 U	6 U
Chlorobenzene	µg/kg	5.9 U	6.1 U	6 U
Chloroethane	µg/kg	12 U	12 UJ	12 U
Chloroform	µg/kg	5.9 U	6.1 U	6 U
Chloromethane	µg/kg	12 U	12 U	12 U
Dibromochloromethane	µg/kg	5.9 U	6.1 U	6 U
Dimethylbenzene	µg/kg	5.9 U	6.1 U	6 U
Ethylbenzene	µg/kg	5.9 U	6.1 U	6 U
Methylene chloride	µg/kg	5.9 U	7.1 U	6 U
Styrene	µg/kg	0.7 J	6.1 U	6 U
Tetrachloroethene	µg/kg	5.9 U	6.1 U	6 U
Toluene	µg/kg	4.5 J	8.1 =	6 U
Trichloroethene	µg/kg	5.9 U	6.1 U	6 U
Vinyl chloride	µg/kg	12 U	12 U	12 U
cis-1,3-Dichloropropene	µg/kg	5.9 U	6.1 U	6 U
trans-1,3-Dichloropropene	µg/kg	5.9 U	6.1 U	6 U

Table E-9. Demolition Area 1
Subsurface Soil
Volatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-023 DA10059 DA1so-023-0059-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10077 DA1so-029-0077-SO 10/26/1999 1 - 3 Grab	On Berm DA1-007 DA10014 DA1so-007-0014-SO 10/20/1999 1 - 3 Grab
1,1,1-Trichloroethane	µg/kg	6.1 U	6.7 U	6 U
1,1,2,2-Tetrachloroethane	µg/kg	6.1 U	6.7 U	6 U
1,1,2-Trichloroethane	µg/kg	6.1 U	6.7 U	6 U
1,1-Dichloroethane	µg/kg	6.1 U	6.7 U	6 U
1,1-Dichloroethene	µg/kg	6.1 U	6.7 U	6 U
1,2-Dibromoethane	µg/kg	6.1 U	6.7 U	6 U
1,2-Dichloroethane	µg/kg	6.1 U	6.7 U	6 U
1,2-Dichloroethene	µg/kg	6.1 U	6.7 U	6 U
1,2-Dichloropropane	µg/kg	6.1 U	6.7 U	6 U
2-Butanone	µg/kg	12 UJ	13 U	12 UJ
2-Hexanone	µg/kg	12 U	13 U	12 U
4-Methyl-2-pentanone	µg/kg	12 U	13 U	12 U
Acetone	µg/kg	12 UJ	13 UJ	12 UJ
Benzene	µg/kg	6.1 U	6.7 U	6 U
Bromochloromethane	µg/kg	6.1 U	6.7 U	6 U
Bromodichloromethane	µg/kg	6.1 U	6.7 U	6 U
Bromoform	µg/kg	6.1 U	6.7 U	6 U
Bromomethane	µg/kg	12 U	13 U	12 U
Carbon disulfide	µg/kg	6.1 U	6.7 U	6 U
Carbon tetrachloride	µg/kg	6.1 U	6.7 U	6 U
Chlorobenzene	µg/kg	6.1 U	6.7 U	6 U
Chloroethane	µg/kg	12 U	13 U	12 U
Chloroform	µg/kg	6.1 U	6.7 U	6 U
Chloromethane	µg/kg	12 U	13 U	12 U
Dibromochloromethane	µg/kg	6.1 U	6.7 U	6 U
Dimethylbenzene	µg/kg	1.3 J	6.7 U	6 U
Ethylbenzene	µg/kg	6.1 U	6.7 U	6 U
Methylene chloride	µg/kg	6.1 U	6.7 U	1 J
Styrene	µg/kg	6.1 U	6.7 U	6 U
Tetrachloroethene	µg/kg	6.1 U	6.7 U	6 U
Toluene	µg/kg	5.3 J	6.7 U	1.6 J
Trichloroethene	µg/kg	6.1 U	6.7 U	6 U
Vinyl chloride	µg/kg	12 U	13 U	12 U
cis -1,3-Dichloropropene	µg/kg	6.1 U	6.7 U	6 U
trans -1,3-Dichloropropene	µg/kg	6.1 U	6.7 U	6 U

SUBSURFACE SOIL – PCBS

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Table E-10. Demolition Area 1
Subsurface Soil PCBs

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Inside Bermed Area DA1-020 DA10049 DA1so-020-0049-SO 10/22/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10058 DA1so-023-0058-SO 10/25/1999 1 - 3 Grab	NACA Plane Storage Area - Outside Berm DA1-023 DA10059 DA1so-023-0059-SO 10/25/1999 3 - 5 Grab	NACA Plane Storage Area - Outside Berm DA1-029 DA10077 DA1so-029-0077-SO 10/26/1999 1 - 3 Grab	On Berm DA1-007 DA10014 DA1so-007-0014-SO 10/20/1999 1 - 3 Grab
PCB-1016	µg/kg	40 U	40 U	40 U	44 U	40 U
PCB-1221	µg/kg	40 U	40 U	40 U	44 U	40 U
PCB-1232	µg/kg	40 U	40 U	40 U	44 U	40 U
PCB-1242	µg/kg	40 U	40 U	40 U	44 U	40 U
PCB-1248	µg/kg	40 U	40 U	40 U	44 U	40 U
PCB-1254	µg/kg	40 U	40 U	40 U	44 U	40 U
PCB-1260	µg/kg	40 U	40 U	40 U	44 U	40 U

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SEDIMENT – EXPLOSIVES AND PROPELLANTS

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Table E-11. Demolition Area 1
Sediment
Explosives and Propellants

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10120 DA1sd-046-0120-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. Station HC-2 DA1-046 DA10136 DA1sd-046-0136-SO 10/24/1999 0 - 0.5 Field Duplicate	Hinkley Cr. South of AOC DA1-045 DA10119 DA1sd-045-0119-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. Upstream DA1-043 DA10117 DA1sd-043-0117-SD 10/24/1999 0 - 0.5 Grab	Wet Area East of AOC DA1-044 DA10118 DA1sd-044-0118-SD 10/24/1999 0 - 0.5 Grab
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	2.6 U	2.6 U	2.4 U	2.5 U	2.8 U
Nitroglycerin	mg/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetryl	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U

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SEDIMENT – INORGANICS

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Table E-12. Demolition Area 1
Sediment
Inorganics

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10120 DA1sd-046-0120-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. Station HC-2 DA1-046 DA10136 DA1sd-046-0136-SO 10/24/1999 0 - 0.5 Field Duplicate	Hinkley Cr. South of AOC DA1-045 DA10119 DA1sd-045-0119-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. Upstream DA1-043 DA10117 DA1sd-043-0117-SD 10/24/1999 0 - 0.5 Grab	Wet Area East of AOC DA1-044 DA10118 DA1sd-044-0118-SD 10/24/1999 0 - 0.5 Grab
Cyanide	mg/kg	0.65 U	0.65 U	0.59 U	0.63 U	0.7 U
Aluminum	mg/kg	12800 J	11600 J	2570 J	3300 J	14400 = *
Antimony	mg/kg	1.3 UJ	1.3 UJ	1.2 UJ	1.3 UJ	1.4 UJ
Arsenic	mg/kg	7.6 =	4.8 =	5.2 =	5.4 =	6.4 =
Barium	mg/kg	64 J	75.8 J	26.9 J	19.9 J	85.4 =
Beryllium	mg/kg	0.47 U	0.62 U	0.28 U	0.25 U	0.69 U
Cadmium	mg/kg	0.65 UJ	0.65 UJ	0.59 UJ	0.63 UJ	0.7 UJ
Calcium	mg/kg	1960 =	2560 =	563 J	1190 =	1460 =
Chromium	mg/kg	18.8 = *	16.9 =	4.1 =	5.5 =	14.8 J
Cobalt	mg/kg	9.4 = *	9.7 = *	3.5 J	3.5 J	4.7 J
Copper	mg/kg	15.3 J	16 J	3.4 J	4.3 J	15.9 J
Iron	mg/kg	25200 J	22600 J	9360 J	10400 J	12200 =
Lead	mg/kg	11.6 =	13.5 =	5 =	6 =	31.1 J *
Magnesium	mg/kg	3690 J *	3410 J *	852 J	1460 J	1490 J
Manganese	mg/kg	350 J	389 J	305 J	148 J	91.9 =
Mercury	mg/kg	0.056 J	0.015 J	0.043 J	0.017 J	0.013 J
Nickel	mg/kg	25.4 = *	23.2 = *	8.1 =	9.1 =	11.9 =
Potassium	mg/kg	1460 =	1270 =	292 J	319 J	1120 =
Selenium	mg/kg	0.65 U	0.65 U	0.59 U	0.63 U	0.7 U
Silver	mg/kg	1.3 U	1.3 U	1.2 U	1.3 U	1.4 U
Sodium	mg/kg	126 U	149 U	117 U	140 U	165 U
Thallium	mg/kg	0.3 J	0.39 J	0.59 UJ	0.63 UJ	0.33 J
Vanadium	mg/kg	19.7 =	18.5 =	3.7 J	5.6 J	21.6 =
Zinc	mg/kg	55.7 =	49.9 =	34 =	36.6 =	73.6 J

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SEDIMENT – SEMIVOLATILE ORGANIC CONSTITUENTS

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Table E-13. Demolition Area 1
Sediment
Semivolatile Organic Compounds

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10120 DA1sd-046-0120-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. Station HC-2 DA1-046 DA10136 DA1sd-046-0136-SO 10/24/1999 0 - 0.5 Field Duplicate	Hinkley Cr. South of DA1-045 DA10119 DA1sd-045-0119-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. Upstream DA1-043 DA10117 DA1sd-043-0117-SD 10/24/1999 0 - 0.5 Grab	Wet Area East of AOC DA1-044 DA10118 DA1sd-044-0118-SD 10/24/1999 0 - 0.5 Grab
1,2,4-Trichlorobenzene	µg/kg	430 U	430 U	390 U	420 U	460 U
1,2-Dichlorobenzene	µg/kg	430 U	430 U	390 U	420 U	460 U
1,3-Dichlorobenzene	µg/kg	430 U	430 U	390 U	420 U	460 U
1,4-Dichlorobenzene	µg/kg	430 U	430 U	390 U	420 U	460 U
2,4,5-Trichlorophenol	µg/kg	430 U	430 U	390 U	420 U	460 U
2,4,6-Trichlorophenol	µg/kg	430 U	430 U	390 U	420 U	460 U
2,4-Dichlorophenol	µg/kg	430 U	430 U	390 U	420 U	460 U
2,4-Dimethylphenol	µg/kg	430 U	430 U	390 U	420 U	460 U
2,4-Dinitrophenol	µg/kg	1000 U	1000 U	950 U	1000 U	1100 U
2,4-Dinitrotoluene	µg/kg	430 U	430 U	390 U	420 U	460 U
2,6-Dinitrotoluene	µg/kg	430 U	430 U	390 U	420 U	460 U
2-Chloronaphthalene	µg/kg	430 U	430 U	390 U	420 U	460 U
2-Chlorophenol	µg/kg	430 U	430 U	390 U	420 U	460 U
2-Methyl-4,6-dinitrophenol	µg/kg	1000 U	1000 U	950 U	1000 U	1100 U
2-Methylnaphthalene	µg/kg	430 U	430 U	390 U	420 U	460 U
2-Methylphenol	µg/kg	430 U	430 U	390 U	420 U	460 U
2-Nitrobenzenamine	µg/kg	1000 U	1000 U	950 U	1000 U	1100 U
2-Nitrophenol	µg/kg	430 U	430 U	390 U	420 U	460 U
3,3'-Dichlorobenzidine	µg/kg	430 U	430 U	390 U	420 U	460 R
3-Nitrobenzenamine	µg/kg	1000 U	1000 U	950 U	1000 U	1100 U
4-Bromophenyl phenyl ether	µg/kg	430 U	430 U	390 U	420 U	460 U
4-Chloro-3-methylphenol	µg/kg	430 U	430 U	390 U	420 U	460 U
4-Chlorobenzenamine	µg/kg	430 U	430 U	390 U	420 U	460 R
4-Chlorophenyl phenyl ether	µg/kg	430 U	430 U	390 U	420 U	460 U
4-Methylphenol	µg/kg	430 U	430 U	390 U	420 U	460 U
4-Nitrobenzenamine	µg/kg	1000 U	1000 U	950 U	1000 U	1100 U
4-Nitrophenol	µg/kg	1000 U	1000 U	950 U	1000 U	1100 U
Acenaphthene	µg/kg	430 U	430 U	390 U	420 U	460 U
Acenaphthylene	µg/kg	430 U	430 U	390 U	420 U	460 U

Table E-13. Demolition Area 1
Sediment
Semivolatile Organic Compounds (continued)

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10120 DA1sd-046-0120-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. Station HC-2 DA1-046 DA10136 DA1sd-046-0136-SO 10/24/1999 0 - 0.5 Field Duplicate	Hinkley Cr. South of DA1-045 DA10119 DA1sd-045-0119-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. Upstream DA1-043 DA10117 DA1sd-043-0117-SD 10/24/1999 0 - 0.5 Grab	Wet Area East of AOC DA1-044 DA10118 DA1sd-044-0118-SD 10/24/1999 0 - 0.5 Grab
Anthracene	µg/kg	430 U	430 U	390 U	420 U	460 U
Benz(*a*)anthracene	µg/kg	430 U	430 U	390 U	420 U	460 U
Benzo(*a*)pyrene	µg/kg	430 U	430 U	390 U	420 U	460 U
Benzo(*b*)fluoranthene	µg/kg	430 U	430 U	390 U	420 U	460 U
Benzo(*g,h,i*)perylene	µg/kg	430 U	430 U	390 U	420 U	460 U
Benzo(*k*)fluoranthene	µg/kg	430 U	430 U	390 U	420 U	460 U
bis(2-Chloroisopropyl) ether	µg/kg	430 U	430 U	390 U	420 U	460 U
bis(2-Ethylhexyl)phthalate	µg/kg	430 U	430 U	390 U	420 U	460 U
Butyl benzyl phthalate	µg/kg	430 U	430 U	390 U	420 U	460 U
Carbazole	µg/kg	430 U	430 U	390 U	420 U	460 U
Chrysene	µg/kg	430 U	430 U	390 U	420 U	460 U
Di-*n*-butyl phthalate	µg/kg	430 U	430 U	390 U	420 U	460 U
Di-*n*-octylphthalate	µg/kg	430 U	430 U	390 U	420 U	460 U
Dibenz(*a,h*)anthracene	µg/kg	430 U	430 U	390 U	420 U	460 U
Dibenzofuran	µg/kg	430 U	430 U	390 U	420 U	460 U
Diethyl phthalate	µg/kg	430 U	430 U	390 U	420 U	460 U
Dimethyl phthalate	µg/kg	430 U	430 U	390 U	420 U	460 U
Fluoranthene	µg/kg	430 U	430 U	390 U	420 U	460 U
Fluorene	µg/kg	430 U	430 U	390 U	420 U	460 U
Hexachlorobenzene	µg/kg	430 U	430 U	390 U	420 U	460 U
Hexachlorobutadiene	µg/kg	430 U	430 U	390 U	420 U	460 U
Hexachlorocyclopentadiene	µg/kg	430 U	430 U	390 U	420 U	460 U
Hexachloroethane	µg/kg	430 U	430 U	390 U	420 U	460 U
Indeno(1,2,3-*cd*)pyrene	µg/kg	430 U	430 U	390 U	420 U	460 U
Isophorone	µg/kg	430 U	430 U	390 U	420 U	460 U
N-Nitroso-di-*n*-propylamine	µg/kg	430 U	430 U	390 U	420 U	460 U
N-Nitrosodiphenylamine	µg/kg	430 U	430 U	390 U	420 U	460 U
Naphthalene	µg/kg	430 U	430 U	390 U	420 U	460 U
Nitrobenzene	µg/kg	430 U	430 U	390 U	420 U	460 U

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Table E-13. Demolition Area 1
Sediment
Semivolatile Organic Compounds (continued)

Location		Hinkley Cr. Station HC-2	Hinkley Cr. Station HC-2	Hinkley Cr. South of	Hinkley Cr. Upstream	Wet Area East of AOC
Station		DA1-046	DA1-046	DA1-045	DA1-043	DA1-044
Sample ID		DA10120	DA10136	DA10119	DA10117	DA10118
Customer ID		DA1sd-046-0120-SD	DA1sd-046-0136-SO	DA1sd-045-0119-SD	DA1sd-043-0117-SD	DA1sd-044-0118-SD
Date		10/24/1999	10/24/1999	10/24/1999	10/24/1999	10/24/1999
Depth (ft)		0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Field Type		Grab	Field Duplicate	Grab	Grab	Grab
Analyte	Units					
Pentachlorophenol	µg/kg	1000 U	1000 U	950 U	1000 U	1100 U
Phenanthrene	µg/kg	430 U	430 U	390 U	420 U	460 U
Phenol	µg/kg	430 U	430 U	390 U	420 U	460 U
Pyrene	µg/kg	430 U	430 U	390 U	420 U	460 U
bis(2-Chloroethoxy)methane	µg/kg	430 U	430 U	390 U	420 U	460 U
bis(2-Chloroethyl) ether	µg/kg	430 U	430 U	390 U	420 U	460 U

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SEDIMENT – VOLATILE ORGANIC CONSTITUENTS AND TOTAL ORGANIC CARBON

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Table E-14. Demolition Area 1
Sediment
Volatile Organic Constituents

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10120 DA1sd-046-0120-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. South of AOC DA1-045 DA10119 DA1sd-045-0119-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. Upstream DA1-043 DA10117 DA1sd-043-0117-SD 10/24/1999 0 - 0.5 Grab	Wet Area East of AOC DA1-044 DA10118 DA1sd-044-0118-SD 10/24/1999 0 - 0.5 Grab
1,1,1-Trichloroethane	µg/kg	6.5 U	5.9 U	6.3 U	7 U
1,1,2,2-Tetrachloroethane	µg/kg	6.5 U	5.9 U	6.3 U	7 UJ
1,1,2-Trichloroethane	µg/kg	6.5 U	5.9 U	6.3 U	7 U
1,1-Dichloroethane	µg/kg	6.5 U	5.9 U	6.3 U	7 U
1,1-Dichloroethene	µg/kg	6.5 U	5.9 U	6.3 U	7 U
1,2-Dibromoethane	µg/kg	6.5 U	5.9 U	6.3 U	7 U
1,2-Dichloroethane	µg/kg	6.5 U	5.9 U	6.3 U	7 U
1,2-Dichloroethene	µg/kg	6.5 U	5.9 U	6.3 U	7 U
1,2-Dichloropropane	µg/kg	6.5 U	5.9 U	6.3 U	7 U
2-Butanone	µg/kg	13 UJ	12 U	13 U	14 U
2-Hexanone	µg/kg	13 U	12 U	13 U	14 U
4-Methyl-2-pentanone	µg/kg	13 U	12 U	13 U	14 U
Acetone	µg/kg	12 J	12 UJ	13 UJ	14 UJ
Benzene	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Bromochloromethane	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Bromodichloromethane	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Bromoform	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Bromomethane	µg/kg	13 U	12 U	13 U	14 U
Carbon disulfide	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Carbon tetrachloride	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Chlorobenzene	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Chloroethane	µg/kg	13 UJ	12 UJ	13 UJ	14 U
Chloroform	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Chloromethane	µg/kg	13 U	12 U	13 U	14 U
Dibromochloromethane	µg/kg	6.5 U	5.9 U	6.3 U	7 U

Table E-14. Demolition Area 1
Sediment
Volatile Organic Constituents (continued)

Location		Hinkley Cr. Station HC-2	Hinkley Cr. South of AOC	Hinkley Cr. Upstream	Wet Area East of AOC
Station		DA1-046	DA1-045	DA1-043	DA1-044
Sample ID		DA10120	DA10119	DA10117	DA10118
Customer ID		DA1sd-046-0120-SD	DA1sd-045-0119-SD	DA1sd-043-0117-SD	DA1sd-044-0118-SD
Date		10/24/1999	10/24/1999	10/24/1999	10/24/1999
Depth (ft)		0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Field Type		Grab	Grab	Grab	Grab
Analyte	Units				
Dimethylbenzene	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Ethylbenzene	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Methylene chloride	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Styrene	µg/kg	6.5 UJ	5.9 U	6.3 U	7 U
Tetrachloroethene	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Toluene	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Trichloroethene	µg/kg	6.5 U	5.9 U	6.3 U	7 U
Vinyl chloride	µg/kg	13 U	12 U	13 U	14 U
cis-1,3-Dichloropropene	µg/kg	6.5 U	5.9 U	6.3 U	7 U
trans-1,3-Dichloropropene	µg/kg	6.5 U	5.9 U	6.3 U	7 U

Table E-15. Demolition Area 1
Sediment
Total Organic Carbon

Location		Hinkley Cr. Station HC-2	Hinkley Cr. South of AOC	Hinkley Cr. Upstream	Wet Area East of AOC
Station		DA1-046	DA1-045	DA1-043	DA1-044
Sample ID		DA10120	DA10119	DA10117	DA10118
Customer ID		DA1sd-046-0120-SD	DA1sd-045-0119-SD	DA1sd-043-0117-SD	DA1sd-044-0118-SD
Date		10/24/1999	10/24/1999	10/24/1999	10/24/1999
Depth (ft)		0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Field Type		Grab	Grab	Grab	Grab
Analyte	Units				
Total Organic Carbon	µg/kg	3300000 =	140000 =	1400000 =	34000000 =

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SEDIMENT – PCBS

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Table E-16. Demolition Area 1
Sediment
PCBs

Location Station Sample ID Customer ID Date Depth (ft) Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10120 DA1sd-046-0120-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. South of AOC DA1-045 DA10119 DA1sd-045-0119-SD 10/24/1999 0 - 0.5 Grab	Hinkley Cr. Upstream DA1-043 DA10117 DA1sd-043-0117-SD 10/24/1999 0 - 0.5 Grab	Wet Area East of AOC DA1-044 DA10118 DA1sd-044-0118-SD 10/24/1999 0 - 0.5 Grab
PCB-1016	µg/kg	43 U	39 U	42 U	46 U
PCB-1221	µg/kg	43 U	39 U	42 U	46 U
PCB-1232	µg/kg	43 U	39 U	42 U	46 U
PCB-1242	µg/kg	43 U	39 U	42 U	46 U
PCB-1248	µg/kg	43 U	39 U	42 U	46 U
PCB-1254	µg/kg	43 U	39 U	42 U	46 U
PCB-1260	µg/kg	43 U	39 U	42 U	11 J

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SURFACE WATER – EXPLOSIVES AND PROPELLANTS

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Table E-17. Demolition Area 1
Surface Water
Explosives

Location Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10124 DA1sw-046-0124-SW 10/24/1999 Total Grab	Hinkley Cr. Station HC-2 DA1-046 DA10137 DA1sw-046-0137-SW 10/24/1999 Total Field Duplicate	Hinkley Cr. South of AOC DA1-045 DA10123 DA1sw-045-0123-SW 10/24/1999 Total Grab	Hinkley Cr. Upstream DA1-043 DA10121 DA1sw-043-0121-SW 10/24/1999 Total Grab
1,3,5-Trinitrobenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dinitrobenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U
2,4,6-Trinitrotoluene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U
2,4-Dinitrotoluene	µg/L	0.13 U	0.13 U	0.13 U	0.13 U
2,6-Dinitrotoluene	µg/L	0.13 U	0.13 U	0.13 U	0.13 U
2-Nitrotoluene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U
3-Nitrotoluene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U
4-Nitrotoluene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U
HMX	µg/L	0.5 U	0.5 U	0.5 U	0.5 U
Nitrobenzene	µg/L	0.2 U	0.2 U	0.2 U	0.2 U
Nitrocellulose	µg/L	500 U	500 U	500 U	500 U
Nitroglycerin	µg/L	2.5 U	2.5 U	2.5 U	2.5 U
Nitroguanidine	µg/L	20 U	20 U	20 U	20 U
RDX	µg/L	0.24 J	0.5 U	0.5 U	0.5 U
Tetryl	µg/L	0.2 U	0.2 U	0.2 U	0.2 U

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SURFACE WATER – INORGANICS

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Table E-18. Demolition Area 1
Surface Water
Inorganics

Location Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10124 DA1sw-046-0124-SW 10/24/1999 Total Grab	Hinkley Cr. Station HC-2 DA1-046 DA10137 DA1sw-046-0137-SW 10/24/1999 Total Field Duplicate	Hinkley Cr. Station HC-2 DA1-046 DA10124 DA1sw-046-0124-SW 10/24/1999 Filtered Grab	Hinkley Cr. Station HC-2 DA1-046 DA10137 DA1sw-046-0137-SW 10/24/1999 Filtered Field Duplicate
Cyanide	µg/L	10 U	10 U		
Aluminum	µg/L	210 U	300 U	200 U	200 U
Antimony	µg/L	5 U	2 J *	5 U	5 U
Arsenic	µg/L	5 U	5 U	5 U	5 U
Barium	µg/L	38 J	37 J	38 J	40 J
Beryllium	µg/L	4 U	4 U	4 U	4 U
Cadmium	µg/L	5 U	5 U	5 U	5 U
Calcium	µg/L	50200 = *	47800 = *	51200 = *	54100 = *
Chromium	µg/L	10 U	10 U	10 U	10 U
Cobalt	µg/L	50 U	50 U	50 U	50 U
Copper	µg/L	25 UJ	25 UJ	25 UJ	25 UJ
Iron	µg/L	390 U	450 U	150 U	130 U
Lead	µg/L	3 U	3 U	3 U	3 U
Magnesium	µg/L	12600 U	13400 U	12800 U	11900 U
Manganese	µg/L	56 U	60 U	62 U	31 U
Mercury	µg/L	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	µg/L	40 U	40 U	40 U	40 U
Potassium	µg/L	4300 U	4300 U	4300 U	4200 U
Selenium	µg/L	5 U	5 U	5 U	5 U
Silver	µg/L	10 U	10 U	10 U	10 U
Sodium	µg/L	20700 U	20000 U	21300 U	18400 U
Thallium	µg/L	2 UJ	2 UJ	2 U	2 UJ
Vanadium	µg/L	50 U	50 U	50 U	50 U
Zinc	µg/L	20 U	16 J	19 J	20 U

Table E-18. Demolition Area 1
Surface Water
Inorganics (continued)

Location Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	Hinkley Cr. South of AOC DA1-045 DA10123 DA1sw-045-0123-SW 10/24/1999 Total Grab	Hinkley Cr. South of AOC DA1-045 DA10123 DA1sw-045-0123-SW 10/24/1999 Filtered Grab	Hinkley Cr. Upstream DA1-043 DA10121 DA1sw-043-0121-SW 10/24/1999 Total Grab	Hinkley Cr. Upstream DA1-043 DA10121 DA1sw-043-0121-SW 10/24/1999 Filtered Grab
Cyanide	µg/L	10 U		10 U	
Aluminum	µg/L	140 U	200 U	170 U	200 U
Antimony	µg/L	5 U	5 U	5 U	5 U
Arsenic	µg/L	5 U	5 U	5 U	5 U
Barium	µg/L	39 J	40 J	44 J	39 J
Beryllium	µg/L	4 U	4 U	4 U	4 U
Cadmium	µg/L	5 U	5 U	5 U	5 U
Calcium	µg/L	49100 = *	49400 = *	47900 = *	45500 = *
Chromium	µg/L	10 U	10 U	10 U	10 U
Cobalt	µg/L	50 U	50 U	50 U	50 U
Copper	µg/L	25 UJ	25 UJ	25 UJ	25 UJ
Iron	µg/L	510 U	230 U	530 U	180 U
Lead	µg/L	3 U	3 U	3 U	3 U
Magnesium	µg/L	11900 U	12300 U	11900 U	11200 U
Manganese	µg/L	53 U	49 U	86 U	67 U
Mercury	µg/L	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	µg/L	40 U	40 U	40 U	40 U
Potassium	µg/L	3600 U	3700 U	3800 U	3600 U
Selenium	µg/L	5 U	5 U	5 U	5 U
Silver	µg/L	10 U	10 U	10 U	10 U
Sodium	µg/L	15800 U	16200 U	15800 U	15300 U
Thallium	µg/L	2 UJ	2 U	2 UJ	2 UJ
Vanadium	µg/L	50 U	50 U	50 U	50 U
Zinc	µg/L	180 = *	20 U	20 U	20 U

SURFACE WATER – SEMIVOLATILE ORGANIC CONSTITUENTS

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Table E-19. Demolition Area 1
Surface Water
Semivolatile Organic Compounds

Location Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10124 DA1sw-046-0124-SW 10/24/1999 Total Grab	Hinkley Cr. South of AOC DA1-045 DA10123 DA1sw-045-0123-SW 10/24/1999 Total Grab	Hinkley Cr. Upstream DA1-043 DA10121 DA1sw-043-0121-SW 10/24/1999 Total Grab
1,2,4-Trichlorobenzene	µg/L	10 U	10 U	10 U
1,2-Dichlorobenzene	µg/L	10 U	10 U	10 U
1,3-Dichlorobenzene	µg/L	10 U	10 U	10 U
1,4-Dichlorobenzene	µg/L	10 U	10 U	10 U
2,4,5-Trichlorophenol	µg/L	10 U	10 U	10 U
2,4,6-Trichlorophenol	µg/L	10 U	10 U	10 U
2,4-Dichlorophenol	µg/L	10 U	10 U	10 U
2,4-Dimethylphenol	µg/L	10 U	10 U	10 U
2,4-Dinitrophenol	µg/L	25 U	25 U	25 U
2,4-Dinitrotoluene	µg/L	10 U	10 U	10 U
2,6-Dinitrotoluene	µg/L	10 UJ	10 UJ	10 UJ
2-Chloronaphthalene	µg/L	10 U	10 U	10 U
2-Chlorophenol	µg/L	10 U	10 U	10 U
2-Methyl-4,6-dinitrophenol	µg/L	25 U	25 U	25 U
2-Methylnaphthalene	µg/L	10 UJ	10 UJ	10 UJ
2-Methylphenol	µg/L	10 U	10 U	10 U
2-Nitrobenzenamine	µg/L	25 U	25 U	25 U
2-Nitrophenol	µg/L	10 U	10 U	10 U
3,3'-Dichlorobenzidine	µg/L	10 U	10 U	10 UJ
3-Nitrobenzenamine	µg/L	25 U	25 U	25 U
4-Bromophenyl phenyl ether	µg/L	10 UJ	10 UJ	10 UJ
4-Chloro-3-methylphenol	µg/L	10 U	10 U	10 U
4-Chlorobenzenamine	µg/L	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	µg/L	10 U	10 U	10 U
4-Methylphenol	µg/L	10 U	10 U	10 U
4-Nitrobenzenamine	µg/L	25 U	25 U	25 U
4-Nitrophenol	µg/L	25 U	25 U	25 U
Acenaphthene	µg/L	10 U	10 U	10 U
Acenaphthylene	µg/L	10 U	10 U	10 U
Anthracene	µg/L	10 UJ	10 UJ	10 UJ
Benz(*a*)anthracene	µg/L	10 U	10 U	10 UJ
Benzo(*a*)pyrene	µg/L	10 U	10 U	10 UJ
Benzo(*b*)fluoranthene	µg/L	10 U	10 U	10 UJ
Benzo(*g,h,i*)perylene	µg/L	10 U	10 U	10 UJ
Benzo(*k*)fluoranthene	µg/L	10 U	10 U	10 UJ
bis(2-Chloroisopropyl) ether	µg/L	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	µg/L	4.5 J	3.9 J	5.1 J
Butyl benzyl phthalate	µg/L	10 U	10 U	10 UJ
Carbazole	µg/L	10 U	10 U	10 U

Table E-19. Demolition Area 1
Surface Water
Semivolatile Organic Compounds (continued)

Location		Hinkley Cr. Station HC-2	Hinkley Cr. South of AOC	Hinkley Cr. Upstream
Station		DA1-046	DA1-045	DA1-043
Sample ID		DA10124	DA10123	DA10121
Customer ID		DA1sw-046-0124-SW	DA1sw-045-0123-SW	DA1sw-043-0121-SW
Date		10/24/1999	10/24/1999	10/24/1999
Filtered		Total	Total	Total
Field Type		Grab	Grab	Grab
Analyte	**Units**			
Chrysene	µg/L	10 U	10 U	10 UJ
Di-*n*-butyl phthalate	µg/L	10 UJ	10 UJ	10 UJ
Di-n-octylphthalate	µg/L	10 U	10 U	10 U
Dibenz(*a,h*)anthracene	µg/L	10 U	10 U	10 UJ
Dibenzofuran	µg/L	10 U	10 U	10 U
Diethyl phthalate	µg/L	10 U	10 U	10 U
Dimethyl phthalate	µg/L	10 U	10 U	10 U
Fluoranthene	µg/L	10 UJ	10 UJ	10 UJ
Fluorene	µg/L	10 U	10 U	10 U
Hexachlorobenzene	µg/L	10 UJ	10 UJ	10 UJ
Hexachlorobutadiene	µg/L	10 U	10 U	10 U
Hexachlorocyclopentadiene	µg/L	10 R	10 R	10 R
Hexachloroethane	µg/L	10 U	10 U	10 U
Indeno(1,2,3-*cd*)pyrene	µg/L	10 U	10 U	10 UJ
Isophorone	µg/L	10 U	10 U	10 U
N-Nitroso-di-*n*-propylamine	µg/L	10 U	10 U	10 U
N-Nitrosodiphenylamine	µg/L	10 U	10 U	10 U
Naphthalene	µg/L	10 U	10 U	10 U
Nitrobenzene	µg/L	10 U	10 U	10 U
Pentachlorophenol	µg/L	25 U	25 U	25 U
Phenanthrene	µg/L	10 UJ	10 UJ	10 UJ
Phenol	µg/L	10 U	10 U	10 U
Pyrene	µg/L	10 U	10 U	10 UJ
bis(2-Chloroethoxy)methane	µg/L	10 U	10 U	10 U
bis(2-Chloroethyl)ether	µg/L	10 U	10 U	10 U

SURFACE WATER – VOLATILE ORGANIC CONSTITUENTS

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Table E-20. Demolition Area 1
Surface Water
Volatile Organic Compounds

Location Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10124 DA1sw-046-0124-SW 10/24/1999 Total Grab	Hinkley Cr. South of AOC DA1-045 DA10123 DA1sw-045-0123-SW 10/24/1999 Total Grab	Hinkley Cr. Upstream DA1-043 DA10121 DA1sw-043-0121-SW 10/24/1999 Total Grab
1,1,1-Trichloroethane	µg/L	5 UJ	5 UJ	5 UJ
1,1,2,2-Tetrachloroethane	µg/L	5 U	5 U	5 U
1,1,2-Trichloroethane	µg/L	5 U	5 U	5 U
1,1-Dichloroethane	µg/L	5 U	5 U	5 U
1,1-Dichloroethene	µg/L	5 U	5 U	5 U
1,2-Dibromoethane	µg/L	5 U	5 U	5 U
1,2-Dichloroethane	µg/L	5 U	5 U	5 U
1,2-Dichloroethene	µg/L	5 U	5 U	5 U
1,2-Dichloropropane	µg/L	5 U	5 U	5 U
2-Butanone	µg/L	10 U	10 U	10 U
2-Hexanone	µg/L	10 U	10 U	10 U
4-Methyl-2-pentanone	µg/L	10 U	10 U	10 U
Acetone	µg/L	5.1 J	5 J	7.5 J
Benzene	µg/L	5 U	5 U	5 U
Bromochloromethane	µg/L	5 U	5 U	5 U
Bromodichloromethane	µg/L	5 U	5 U	5 U
Bromoform	µg/L	5 U	5 U	5 U
Bromomethane	µg/L	10 U	10 U	10 U
Carbon disulfide	µg/L	5 U	5 U	5 U
Carbon tetrachloride	µg/L	5 UJ	5 UJ	5 UJ
Chlorobenzene	µg/L	5 U	5 U	5 U
Chloroethane	µg/L	10 UJ	10 UJ	10 UJ
Chloroform	µg/L	5 U	5 U	1.2 J
Chloromethane	µg/L	10 U	10 U	10 U
Dibromochloromethane	µg/L	5 U	5 U	5 U
Dimethylbenzene	µg/L	5 U	5 U	5 U
Ethylbenzene	µg/L	5 U	5 U	5 U
Methylene chloride	µg/L	5 U	5 U	5 U
Styrene	µg/L	5 U	5 U	5 U
Tetrachloroethene	µg/L	5 U	5 U	5 U
Toluene	µg/L	5 U	0.79 J	1 J
Trichloroethene	µg/L	5 U	5 U	5 U
Vinyl chloride	µg/L	10 U	10 U	10 U
cis-1,3-Dichloropropene	µg/L	5 U	5 U	5 U
trans-1,3-Dichloropropen	µg/L	5 U	5 U	5 U

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SURFACE WATER – PCBS

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Table E-21. Demolition Area 1
Surface Water
PCBs

Location Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	Hinkley Cr. Station HC-2 DA1-046 DA10124 DA1sw-046-0124-SW 10/24/1999 Total Grab	Hinkley Cr. South of AOC DA1-045 DA10123 DA1sw-045-0123-SW 10/24/1999 Total Grab	Hinkley Cr. Upstream DA1-043 DA10121 DA1sw-043-0121-SW 10/24/1999 Total Grab
PCB-1016	µg/L	1 U	1 U	1 U
PCB-1221	µg/L	1 U	1 U	1 U
PCB-1232	µg/L	1 U	1 U	1 U
PCB-1242	µg/L	1 U	1 U	1 U
PCB-1248	µg/L	1 U	1 U	1 U
PCB-1254	µg/L	1 U	1 U	1 U
PCB-1260	µg/L	1 U	1 U	1 U

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GROUNDWATER SAMPLE RESULTS

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Table E-22. Demolition Area 1
Groundwater Results

Location Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-027 DA10125 DA1gw-027-0125-GW 10/20/1999 Total Grab	NACA Plane Storage Area - Outside Berm DA1-027 DA10125 DA1gw-027-0125-GW 10/20/1999 Filtered Grab
Explosives and Propellants			
1,3,5-Trinitrobenzene	µg/L	0.2 U	
1,3-Dinitrobenzene	µg/L	0.045 J	
2,4,6-Trinitrotoluene	µg/L	0.2 U	
2,4-Dinitrotoluene	µg/L	0.13 U	
2,6-Dinitrotoluene	µg/L	0.13 U	
2-Nitrotoluene	µg/L	0.2 U	
3-Nitrotoluene	µg/L	0.2 U	
4-Nitrotoluene	µg/L	0.2 U	
HMX	µg/L	0.5 U	
Nitrobenzene	µg/L	0.2 U	
Nitrocellulose	µg/L	500 U	
Nitroglycerin	µg/L	2.5 U	
Nitroguanidine	µg/L	20 UJ	
RDX	µg/L	0.5 U	
Tetryl	µg/L	0.2 U	
Inorganics			
Cyanide	µg/L	10 U	
Aluminum	µg/L	370 U	200 U
Antimony	µg/L	5 U	2.1 J *
Arsenic	µg/L	5 U	10 U
Barium	µg/L	32 J *	32 J
Beryllium	µg/L	4 U	5 U
Cadmium	µg/L	5 U	5 U
Calcium	µg/L	40800 J *	39000 J
Chromium	µg/L	10 U	10 U
Cobalt	µg/L	50 U	50 U
Copper	µg/L	290 J *	25 U
Iron	µg/L	550 = *	100 U
Lead	µg/L	3 U	3 U
Magnesium	µg/L	10700 = *	10100 =
Manganese	µg/L	7.7 U	7.8 U
Mercury	µg/L	0.2 U	0.2 U
Nickel	µg/L	40 U	40 U
Potassium	µg/L	940 J *	1000 J
Selenium	µg/L	5 U	5 U
Silver	µg/L	10 U	10 U
Sodium	µg/L	2800 U	449000 = *
Thallium	µg/L	2 U	2 U

Table E-22. Demolition Area 1
Groundwater Results (continued)

Location Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-027 DA10125 DA1gw-027-0125-GW 10/20/1999 Total Grab	NACA Plane Storage Area - Outside Berm DA1-027 DA10125 DA1gw-027-0125-GW 10/20/1999 Filtered Grab
Vanadium	µg/L	50 U	50 U
Zinc	µg/L	20 U	24 =
Semivolatile Organic Compounds			
1,2,4-Trichlorobenzene	µg/L	10 U	
1,2-Dichlorobenzene	µg/L	10 U	
1,3-Dichlorobenzene	µg/L	10 U	
1,4-Dichlorobenzene	µg/L	10 U	
2,4,5-Trichlorophenol	µg/L	10 U	
2,4,6-Trichlorophenol	µg/L	10 U	
2,4-Dichlorophenol	µg/L	10 U	
2,4-Dimethylphenol	µg/L	10 U	
2,4-Dinitrophenol	µg/L	25 U	
2,4-Dinitrotoluene	µg/L	10 U	
2,6-Dinitrotoluene	µg/L	10 U	
2-Chloronaphthalene	µg/L	10 U	
2-Chlorophenol	µg/L	10 U	
2-Methyl-4,6-dinitrophenol	µg/L	25 U	
2-Methylnaphthalene	µg/L	10 U	
2-Methylphenol	µg/L	10 U	
2-Nitrobenzenamine	µg/L	25 U	
2-Nitrophenol	µg/L	10 U	
3,3'-Dichlorobenzidine	µg/L	10 U	
3-Nitrobenzenamine	µg/L	25 U	
4-Bromophenyl phenyl ether	µg/L	10 U	
4-Chloro-3-methylphenol	µg/L	10 U	
4-Chlorobenzenamine	µg/L	10 U	
4-Chlorophenyl phenyl ether	µg/L	10 U	
4-Methylphenol	µg/L	10 U	
4-Nitrobenzenamine	µg/L	25 U	
4-Nitrophenol	µg/L	25 U	
Acenaphthene	µg/L	10 U	
Acenaphthylene	µg/L	10 U	
Anthracene	µg/L	10 U	
Benz(*a*)anthracene	µg/L	10 U	
Benzo(*a*)pyrene	µg/L	10 U	
Benzo(*b*)fluoranthene	µg/L	10 U	
Benzo(*g,h,i*)perylene	µg/L	10 U	
Benzo(*k*)fluoranthene	µg/L	10 U	
bis(2-Chloroisopropyl) ether	µg/L	10 U	
bis(2-Ethylhexyl)phthalate	µg/L	10 U	

Table E-22. Demolition Area 1
Groundwater Results (continued)

Location Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-027 DA10125 DA1gw-027-0125-GW 10/20/1999 Total Grab	NACA Plane Storage Area - Outside Berm DA1-027 DA10125 DA1gw-027-0125-GW 10/20/1999 Filtered Grab
Butyl benzyl phthalate	µg/L	10 U	
Carbazole	µg/L	10 U	
Chrysene	µg/L	10 U	
Di-*n* -butyl phthalate	µg/L	10 U	
Di-*n* -octylphthalate	µg/L	10 U	
Dibenz(*a,h*)anthracene	µg/L	10 U	
Dibenzofuran	µg/L	10 U	
Diethyl phthalate	µg/L	10 U	
Dimethyl phthalate	µg/L	10 U	
Fluoranthene	µg/L	10 U	
Fluorene	µg/L	10 U	
Hexachlorobenzene	µg/L	10 U	
Hexachlorobutadiene	µg/L	10 U	
Hexachlorocyclopentadiene	µg/L	10 R	
Hexachloroethane	µg/L	10 U	
Indeno(1,2,3-*cd*)pyrene	µg/L	10 U	
Isophorone	µg/L	10 U	
N-Nitroso-di-*n* -propylamine	µg/L	10 U	
N-Nitrosodiphenylamine	µg/L	10 U	
Naphthalene	µg/L	10 U	
Nitrobenzene	µg/L	10 U	
Pentachlorophenol	µg/L	25 U	
Phenanthrene	µg/L	10 U	
Phenol	µg/L	10 U	
Pyrene	µg/L	10 U	
bis(2-Chloroethoxy)methane	µg/L	10 U	
bis(2-Chloroethyl) ether	µg/L	10 U	
Volatile Organic Compounds			
1,1,1-Trichloroethane	µg/L	5 UJ	
1,1,2,2-Tetrachloroethane	µg/L	5 U	
1,1,2-Trichloroethane	µg/L	5 U	
1,1-Dichloroethane	µg/L	5 U	
1,1-Dichloroethene	µg/L	5 U	
1,2-Dibromoethane	µg/L	5 U	
1,2-Dichloroethane	µg/L	5 U	
1,2-Dichloroethene	µg/L	5 U	
1,2-Dichloropropane	µg/L	5 U	
2-Butanone	µg/L	10 U	
2-Hexanone	µg/L	10 U	
4-Methyl-2-pentanone	µg/L	10 U	

Table E-22. Demolition Area 1
Groundwater Results (continued)

Location Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	NACA Plane Storage Area - Outside Berm DA1-027 DA10125 DA1gw-027-0125-GW 10/20/1999 Total Grab	NACA Plane Storage Area - Outside Berm DA1-027 DA10125 DA1gw-027-0125-GW 10/20/1999 Filtered Grab
Acetone	µg/L	4.4 J	
Benzene	µg/L	5 U	
Bromochloromethane	µg/L	5 U	
Bromodichloromethane	µg/L	5 U	
Bromoform	µg/L	5 U	
Bromomethane	µg/L	10 U	
Carbon disulfide	µg/L	1.2 J	
Carbon tetrachloride	µg/L	5 UJ	
Chlorobenzene	µg/L	5 U	
Chloroethane	µg/L	10 UJ	
Chloroform	µg/L	5 U	
Chloromethane	µg/L	10 U	
Dibromochloromethane	µg/L	5 U	
Dimethylbenzene	µg/L	5 U	
Ethylbenzene	µg/L	5 U	
Methylene chloride	µg/L	5 U	
Styrene	µg/L	5 U	
Tetrachloroethene	µg/L	5 U	
Toluene	µg/L	5 U	
Trichloroethene	µg/L	5 U	
Vinyl chloride	µg/L	10 U	
cis-1,3-Dichloropropene	µg/L	5 U	
trans-1,3-Dichloropropene	µg/L	5 U	

QUALITY ASSURANCE SAMPLING RESULTS

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Table E-23. Demolition Area 1
Quality Control Trip Blank Results

Station Sample ID Customer ID Date Filtered Field Type Analyte	Units	DA1-TB DA10150 DA1qc-TB-0150-QC 10/24/1999 Total Trip Blank
1,1,1-Trichloroethane	μg/L	5 UJ
1,1,2,2-Tetrachloroethane	μg/L	5 U
1,1,2-Trichloroethane	μg/L	5 U
1,1-Dichloroethane	μg/L	5 U
1,1-Dichloroethene	μg/L	5 U
1,2-Dibromoethane	μg/L	5 U
1,2-Dichloroethane	μg/L	5 U
1,2-Dichloroethene	μg/L	5 U
1,2-Dichloropropane	μg/L	5 U
2-Butanone	μg/L	10 U
2-Hexanone	μg/L	10 U
4-Methyl-2-pentanone	μg/L	10 U
Acetone	μg/L	10 U
Benzene	μg/L	5 U
Bromochloromethane	μg/L	5 U
Bromodichloromethane	μg/L	5 U
Bromoform	μg/L	5 U
Bromomethane	μg/L	10 U
Carbon disulfide	μg/L	5 U
Carbon tetrachloride	μg/L	5 UJ
Chlorobenzene	μg/L	5 U
Chloroethane	μg/L	10 UJ
Chloroform	μg/L	5 U
Chloromethane	μg/L	10 U
Dibromochloromethane	μg/L	5 U
Dimethylbenzene	μg/L	5 U
Ethylbenzene	μg/L	5 U
Methylene chloride	μg/L	5 U
Styrene	μg/L	5 U
Tetrachloroethene	μg/L	5 U
Toluene	μg/L	5 U
Trichloroethene	μg/L	5 U
Vinyl chloride	μg/L	10 U
cis -1,3-Dichloropropene	μg/L	5 U
trans -1,3-Dichloropropene	μg/L	5 U

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APPENDIX F

TOPOGRAPHIC SURVEY REPORT

TOPOGRAPHIC SURVEYING SERVICES

for

A PHASE I REMEDIAL INVESTIGATION OF DEMOLITION AREA 1

at

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO

Prepared For:

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

November, 1999

Prepared By:

ADAMS CRAFT HERZ WALKER, INC.

ARCHITECTS-ENGINEERS-PLANNERS-SURVEYORS

OAK RIDGE, TENNESSEE

ACHW PROJECT NO. 99726

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NARRATIVE

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NARRATIVE

Adams Craft Herz Walker, Inc. began the survey on November 1, 1999 in support of **Science Applications International Corporation** (SAIC) in a Phase II Remedial Investigation of Load Line 1, a Phase I Remedial Investigation of Demolition Area 1, and a Phase I Remedial Investigation of NACA Test Area at Ravenna Army Ammunition Plant, Ravenna, Ohio. ACHW'S crew worked 12 hour days in order to expedite the survey's progress. Work on the project was completed November 5, 1999. Temperatures during the survey were in the low thirties with snow throughout most of the week.

During the survey, 16 surface soil samples at Load Line 1, 46 points at Demolition Area, and 106 points at NACA Test Area were located primarily with traditional survey methods. Global Positioning Systems (GPS) technology was used to establish two control monuments at Load Line 1 (ACHW 003 & 004) and two control monuments at NACA Test Area (ACHW 001 & 002). Three sediment stations (DA1-46, DA1-43 & NTA-106) were located directly with GPS.

Horizontal and vertical control for Load Line 1 is based on the existing monuments RAV 10 and RAV 13. Horizontal and vertical control for NACA Test Area is based on the existing monuments RAV 4 and RAV 5. The coordinates and elevation of RAV 4, RAV 5, RAV 10, and RAV 13 were provided by the US Army Corps of Engineers. Horizontal data is based on the North American Datum of 1983 (NAD83) State Plane Coordinate System, Ohio North Zone. Vertical datum for the survey is relative to National American Vertical Datum of 1988 (NAVD88).

The field location of data was obtained using three Trimble 4600LS GPS receivers and a Topcon 303DPG total station.

A copy of the GPS data, points list, raw data, and drawings TS-3, TS-4, and TS-5 are attached.

Sam Bruner, RLS
Ohio Reg. No. 7781

STATE OF OHIO
SAM R. BRUNER
7781
REGISTERED
PROFESSIONAL SURVEYOR

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POINTS LIST

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CHW PROJECT # 99726.0
JOB: 7260TS4.CR5 TIME: 14:30 DATE: 11-15-1999
LOAD LINE 1 at RAAP

Point	Northing	Easting	Elevation	Note
1	5000.000000	5000.000000	100.000	START
2	5798.317459	5000.000000	105.839	PK 2
3	5756.650389	4811.922543	102.856	NCH 3
4	6220.704058	4992.125343	105.738	PK 4
5	7129.784674	5031.198473	111.682	ACHW00 3
51	4988.618811	4586.076296	86.185	CB 12 4
52	4993.237527	4882.120734	88.979	CB 12 1
53	4985.395987	4959.702647	89.487	CB 12 3
54	4922.451499	4902.677772	89.774	CB 12 2
55	5810.055114	4887.826718	89.612	CB-23-3
56	5796.127604	4915.905416	88.710	CB-23-1
57	5920.316236	4946.442754	88.996	CB-23-5
58	5863.452810	4889.610060	89.362	CB 23 2
59	5925.876910	4560.810754	86.651	CB 23 4
60	6236.597938	4861.025214	88.858	CB 8 1
61	6231.737414	4918.894560	89.874	CB 8 2
62	6217.136329	4560.524127	87.520	CB 8 3
63	7129.520092	4641.383965	86.181	CB 22 4
64	7138.061470	4906.126864	89.590	CB 22 2
65	7125.248601	4899.285371	89.075	CB 22 3
66	7197.148050	4963.491306	90.034	CB 22 1

ACHW PROJECT # 99726.0
JOB: 7260ALL3.CR5 TIME: 16:11 DATE: 11-19-1999
Ravenna, Ohio

Point	Northing	Easting	Elevation	Note
1	551667.000000	2347837.000000	1090.310	START
2	551610.000000	2346207.000000	1083.830	ACHW00 2
51	551704.000000	2347898.000000	1091.110	NTA 071
52	551710.000000	2347793.000000	1088.860	NTA 024
53	551716.000000	2347694.000000	1086.760	NTA 023
54	551710.000000	2347595.000000	1086.940	NTA 022
55	551713.000000	2347498.000000	1085.050	NTA 021
56	551709.000000	2347396.000000	1079.440	NTA 020
57	551702.000000	2347297.000000	1076.390	NTA 019
58	551704.000000	2347199.000000	1074.040	NTA 018
59	551707.000000	2347104.000000	1072.550	NTA 017
60	551609.000000	2347101.000000	1074.160	NTA 025
61	551607.000000	2347201.000000	1073.870	NTA 026
62	551607.000000	2347302.000000	1075.460	NTA 027
63	551603.000000	2347404.000000	1080.510	NTA 028
64	551614.000000	2347503.000000	1084.370	NTA 029
65	551600.000000	2347607.000000	1085.920	NTA 030
66	551616.000000	2347711.000000	1086.270	NTA 031
67	551609.000000	2347805.000000	1088.030	NTA 032
68	551509.000000	2347808.000000	1085.860	NTA 040
69	551510.000000	2347731.000000	1082.670	NTA 039
70	551510.000000	2347616.000000	1083.130	NTA 038
71	551514.000000	2347508.000000	1083.240	NTA 037
72	551503.000000	2347410.000000	1080.080	NTA 036
73	551508.000000	2347306.000000	1076.870	NTA 035
74	551440.000000	2347248.000000	1072.710	NTA 102
75	551509.000000	2347211.000000	1075.000	HIA 034
76	551509.000000	2347098.000000	1072.520	NTA 033
77	551556.000000	2347100.000000	1072.010	NTA 096
78	551803.000000	2347292.000000	1076.020	NTA 011
79	551810.000000	2347390.000000	1077.300	NTA 012
80	551814.000000	2347493.000000	1085.680	NT
81	551815.000000	2347585.000000	1086.930	NTA 014
82	551815.000000	2347677.000000	1087.090	NTA 015
83	551807.000000	2347776.000000	1090.540	NTA 016
84	551514.000000	2347908.000000	1089.090	NTA 074
85	551701.000000	2348098.000000	1091.160	NTA 072
86	551576.000000	2346299.000000	1082.460	NAI 1
87	551497.000000	2346319.000000	1083.700	NAI 2
88	551428.000000	2346319.000000	1083.910	NAI 3
89	551376.000000	2346303.000000	1083.530	NAI 4
90	551339.000000	2346269.000000	1083.080	NAI 5
91	551328.000000	2346211.000000	1082.890	NAI 6
92	551350.000000	2346154.000000	1083.220	NAI 7
93	551408.000000	2346120.000000	1083.950	NAI 8
94	551471.000000	2346132.000000	1084.030	NAI 9
95	551516.000000	2346179.000000	1083.510	NAI 10
96	551551.000000	2346237.000000	1084.040	NAI 11
97	551505.000000	2346229.000000	1084.230	NAI-13

ACHW PROJECT # 99726.0
JOB: 7260ALL3.CR5 TIME: 16:11 DATE: 11-19-1999
Ravenna, Ohio

Point	Northing	Easting	Elevation	Note
98	551496.000000	2346249.000000	1083.850	NAI 14
99	551512.000000	2346275.000000	1083.790	NAI-12
100	551476.000000	2346287.000000	1083.070	NAI-14
101	551475.000000	2346241.000000	1083.560	NAI-15
102	551415.000000	2346236.000000	1083.060	DAI-17
103	551408.000000	2346283.000000	1082.060	DAI-18
104	551378.000000	2346238.000000	1082.020	DAI-16
105	551408.000000	2346181.000000	1083.110	DAI-19
106	551477.000000	2346188.000000	1083.420	DAI-16
107	551353.000000	2346217.000000	1080.000	DAI-20
108	551606.000000	2346211.000000	1083.860	NTA-90
109	551604.000000	2345912.000000	1080.010	NTA-89
110	551405.000000	2345924.000000	1076.290	NTA-94
111	551429.000000	2345998.000000	1081.410	DAI-23
112	551533.000000	2346003.000000	1080.410	DAI-22
113	551458.000000	2346066.000000	1082.100	DAI-24
114	551429.000000	2346059.000000	1082.860	DAI-42
115	551399.000000	2346058.000000	1082.490	DAI-25
116	551326.000000	2345996.000000	1077.990	DAI-26
117	551333.000000	2346101.000000	1081.590	DAI-27
118	551238.000000	2346093.000000	1076.710	DAI-29
119	551292.000000	2346158.000000	1080.480	DAI-28
120	551277.000000	2346206.000000	1080.380	DAI-31
121	551283.000000	2346220.000000	1078.780	DAI-40
122	551209.000000	2346217.000000	1077.230	DAI-30
123	551280.000000	2346282.000000	1081.420	DAI-32
124	551238.000000	2346331.000000	1079.640	DAI-33
125	551535.000000	2346433.000000	1079.160	DAI-39
126	551485.000000	2346400.000000	1079.890	DAI-38
127	551375.000000	2346391.000000	1080.500	DAI-37
128	551317.000000	2346413.000000	1079.200	DAI-35
129	551300.000000	2346340.000000	1080.390	DAI-34
130	551410.000000	2346466.000000	1079.700	DAI-37
131	551432.000000	2346498.000000	1076.480	~~DAI-43~~
132	551171.000000	2346202.000000	1077.640	IPS
133	551606.000000	2346513.000000	1078.890	NTA 091
134	551805.000000	2346500.000000	1078.250	NTA 086
135	551806.000000	2346205.000000	1085.620	NTA 085
136	551802.000000	2345896.000000	1079.700	NTA 084
137	551801.000000	2345603.000000	1080.600	NTA 083
138	551603.000000	2345609.000000	1078.610	NTA 088
139	551402.000000	2345612.000000	1076.550	NTA 093
140	551606.000000	2347068.000000	1074.430	1IN STEEL PIN
141	551607.000000	2346820.000000	1076.730	NTA 092
142	551607.000000	2346819.000000	1076.720	IP 92
143	550872.000000	2346326.000000	1065.650	DAI 44
144	551811.000000	2346805.000000	1074.100	NTA-87
145	551401.000000	2346825.000000	1077.600	NTA-95
146	551526.000000	2347003.000000	1068.350	NTA-103

?CHW PROJECT # 99726.0
JOB: 7260ALL3.CR5 TIME: 16:11 DATE: 11-19-1999
Ravenna, Ohio

Point	Northing	Easting	Elevation	Note
147	551405.000000	2347083.000000	1071.840	NTA-41
148	552211.000000	2346780.000000	1077.260	NTA-104
149	551506.000000	2347294.000000	1076.190	NTA-101
150	551407.000000	2347217.000000	1074.370	NTA-42
151	551811.000000	2347100.000000	1072.710	NTA-09
152	551905.000000	2347091.000000	1074.590	NTA-01
153	551914.000000	2347198.000000	1075.410	NTA-02
154	551814.000000	2347193.000000	1071.970	NTA-10
155	551410.000000	2347308.000000	1077.110	NTA-43
156	551402.000000	2347416.000000	1078.890	NTA-44
157	551414.000000	2347517.000000	1079.450	NTA-45
158	551412.000000	2347812.000000	1083.470	NTA-48
159	551418.000000	2347756.000000	1080.160	NTA-47
160	551408.000000	2347631.000000	1080.300	NTA-46
161	551904.000000	2347758.000000	1088.370	NTA-08
162	551886.000000	2347852.000000	1093.390	NTA-68
163	551916.000000	2347667.000000	1086.620	NTA-07
164	551914.000000	2347575.000000	1084.820	NTA-06
165	551917.000000	2347488.000000	1078.810	NTA-05
166	551924.000000	2348051.000000	1085.870	NTA 069
167	551847.000000	2348228.000000	1087.260	NTA 070
168	551684.000000	2348301.000000	1095.080	NTA 073
169	551560.000000	2348292.000000	1091.580	NTA 076
170	551519.000000	2348107.000000	1091.430	NTA 075
171	551312.000000	2347903.000000	1085.950	NTA 077
172	551322.000000	2347872.000000	1085.410	IP 172
173	551790.000000	2347303.000000	1076.000	IP 173
174	551895.000000	2347278.000000	1073.540	NTA 003
175	551907.000000	2347383.000000	1075.450	NTA 004
176	552231.000000	2347386.000000	1072.680	NTA 105 INV60IN
177	551282.000000	2347211.000000	1075.780	IP 177
178	551307.000000	2347205.000000	1075.390	NTA 050
179	551208.000000	2347192.000000	1074.790	NTA 058
180	551073.000000	2347116.000000	1067.080	NTA 098
181	551175.000000	2347066.000000	1067.600	NTA 97
182	551182.000000	2347092.000000	1072.460	NTA 057
183	551301.000000	2347085.000000	1074.050	NTA 049
184	551314.000000	2347308.000000	1076.270	NTA 051
185	551213.000000	2347308.000000	1076.520	NTA 059
186	551282.000000	2347562.000000	1077.530	IP 186
187	551301.000000	2347424.000000	1077.200	NTA 052
188	551203.000000	2347423.000000	1074.620	NTA 060
189	551309.000000	2347544.000000	1077.850	NTA 053
190	551302.000000	2347615.000000	1077.810	NTA 054
191	551306.000000	2347714.000000	1078.470	NTA 055
192	551317.000000	2347780.000000	1078.130	NTA 056
193	551223.000000	2347791.000000	1078.220	NTA 064
194	551202.000000	2347727.000000	1077.770	NTA 063
195	551203.000000	2347662.000000	1075.630	NTA 062

ACHW PROJECT # 99726.0
JOB: 7260ALL3.CR5 TIME: 16:11 DATE: 11-19-1999
Ravenna, Ohio

Point	Northing	Easting	Elevation	Note
196	551168.000000	2347551.000000	1075.630	NTA 061
199	551327.000000	2348103.000000	1087.940	NTA-78
200	551361.000000	2348296.000000	1091.710	NTA-79
201	551195.000000	2348301.000000	1086.390	NTA-82
202	551134.000000	2348097.000000	1082.290	NTA-81
203	551112.000000	2347906.000000	1080.160	NTA-80
204	551850.000000	2348226.000000	1087.180	NCH
205	551886.000000	2347849.000000	1093.170	NCH
206	552087.000000	2347824.000000	1082.030	NTA 65
207	552104.000000	2348095.000000	1080.680	NTA 66
208	551994.000000	2348342.000000	1083.610	NTA 067
209	551431.000000	2346074.000000	1082.930	NTA 42A
210	551429.000000	2346058.000000	1082.900	NTA 042 2
211	551855.000000	2348280.000000	1086.820	NTA 100
501	551667.000000	2347837.000000	1090.310	ACHW00 1
502	551610.000000	2346207.000000	1084.004	ACHW00 2
503	551982.000000	2344791.000000	1071.789	DAI 43
504	548603.000000	2346015.000000	1062.616	DAI 46
505	550616.000000	2346897.000000	1066.550	NTA 106
506	554038.000000	2348868.000000	1105.519	RAV 4
507	553955.000000	2344083.000000	1108.899	RAV 5

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CHW PROJECT # 99726.0
JOB: 7260TS4 TIME: 14:31 DATE: 11-15-1999
LOAD LINE 1 at RAAP
JOB: Name 7260TS4,Date 11-4-1999,Time 12:41:02.47
ode Setup: North Azimuth,Dist feet,Scale 1.0000,Earth crv OFF
tore: Pt 1,N 5000.0000,E 5000.0000,Elv 100.0000,START
Occupy: Occ 1,N 5000.0000,E 5000.0000,Elv 100.0000,START
Backsight: Occ 1,BS Pt 1,BS azm 0.0000,Back circle 0.0000
I / HR : Inst H 5.2900,Rod H 5.4500
Side Shot: 1-2,Ang-Rt 0.0000,Zenith 89.3410,Slp Dst 798.3400,PK 2
HI / HR : Inst H 5.2900,Rod H 15.0500
Side Shot: 1-51,Ang-Rt 268.2530,Zenith 90.3340,Slp Dst 414.1000,CB 12 4
I / HR : Inst H 5.2900,Rod H 6.5000
Side Shot: 1-52,Ang-Rt 266.4300,Zenith 94.4500,Slp Dst 118.4800,CB 12 1
Side Shot: 1-53,Ang-Rt 250.0445,Zenith 102.1445,Slp Dst 43.8600,CB 12 3
I / HR : Inst H 5.2900,Rod H 28.1500
ide Shot: 1-54,Ang-Rt 231.2705,Zenith 84.1210,Slp Dst 125.0800,CB 12 2
Occupy: Occ 2,N 5798.3175,E 5000.0000,Elv 105.8390,PK 2
Backsight: Occ 2,BS Pt 1,BS azm 180.0000,Back circle 0.0000
HI / HR : Inst H 5.4000,Rod H 5.4500
Side Shot: 2-55,Ang-Rt 95.5825,Zenith 98.0945,Slp Dst 113.9400,CB-23-3
Side Shot: 2-56,Ang-Rt 88.3030,Zenith 99.1210,Slp Dst 85.2200,CB-23-1
HI / HR : Inst H 5.4000,Rod H 8.9000
Side Shot: 2-56,Ang-Rt 88.3030,Zenith 99.1210,Slp Dst 85.2200,CB-23-1
HI / HR : Inst H 5.4000,Rod H 12.4000
Side Shot: 2-57,Ang-Rt 156.1755,Zenith 94.1330,Slp Dst 133.6000,CB-23-5
HI / HR : Inst H 5.4000,Rod H 5.4500
Side Shot: 2-3,Ang-Rt 77.3030,Zenith 90.5220,Slp Dst 192.6600,NCH 3
Traverse: 2-4,Ang-Rt 178.5555,Zenith 90.0025,Slp Dst 422.4600,PK 4
Occupy: Occ 3,N 5756.6504,E 4811.9225,Elv 102.8560,NCH 3
Backsight: Occ 3,BS Pt 2,BS azm 77.3030,Back circle 0.0000
HI / HR : Inst H 5.2900,Rod H 5.2200
Note: BS point check:3-2
HI / HR : Inst H 5.2900,Rod H 5.4500
Side Shot: 3-58,Ang-Rt 318.3125,Zenith 95.4555,Slp Dst 132.7400,CB 23 2
HI / HR : Inst H 5.2900,Rod H 15.0500
Side Shot: 3-59,Ang-Rt 226.2805,Zenith 91.1310,Slp Dst 302.8800,CB 23 4
Occupy: Occ 4,N 6220.7041,E 4992.1253,Elv 105.7380,PK 4
Backsight: Occ 4,BS Pt 2,BS azm 178.5555,Back circle 0.0000
HI / HR : Inst H 5.3500,Rod H 5.2000
Note: BS point check:4-2
HI / HR : Inst H 5.3500,Rod H 5.1500
Side Shot: 4-60,Ang-Rt 97.5850,Zenith 97.2210,Slp Dst 133.1600,CB 8 1
HI / HR : Inst H 5.3500,Rod H 12.4000
Side Shot: 4-61,Ang-Rt 99.3810,Zenith 96.4715,Slp Dst 74.5800,CB 8 2
HI / HR : Inst H 5.3500,Rod H 15.0500
Side Shot: 4-62,Ang-Rt 90.3540,Zenith 91.0750,Slp Dst 431.7000,CB 8 3
HI / HR : Inst H 5.3500,Rod H 5.4500
Side Shot: 4-5,Ang-Rt 183.3145,Zenith 89.3710,Slp Dst 909.9400,ACHW00 3
Occupy: Occ 5,N 7129.7847,E 5031.1985,Elv 111.6820,ACHW00 3
Backsight: Occ 5,BS Pt 4,BS azm 182.2740,Back circle 0.0000
HI / HR : Inst H 5.4800,Rod H 15.0500
Side Shot: 5-63,Ang-Rt 87.3000,Zenith 92.2025,Slp Dst 390.1400,CB 22 4
HI / HR : Inst H 5.4800,Rod H 12.4000
Side Shot: 5-64,Ang-Rt 91.1930,Zenith 96.5405,Slp Dst 126.2600,CB 22 2

CHW PROJECT # 99726.0
JOB: 7260TS4 TIME: 14:31 DATE: 11-15-1999
LOAD LINE 1 at RAAP
Side Shot: 5-65,Ang-Rt 85.3410,Zenith 96.4640,Slp Dst 132.9200,CB 22 3
HI / HR : Inst H 5.4800,Rod H 18.0500
Side Shot: 5-66,Ang-Rt 132.2335,Zenith 95.2545,Slp Dst 95.9400,CB 22 1

CHW PROJECT # 99726.0
JOB: 7260TS3 TIME: 14:32 DATE: 11-15-1999
NACA TEST AREA at RAAP
JOB: Name 7260TS3,Date 11-2-1999,Time 16:40:36.34
Mode Setup: North Azimuth,Dist feet,Scale 1.0000,Earth crv OFF
Store: Pt 1,N 5000.0000,E 5000.0000,Elv 100.0000,START
Occupy: Occ 1,N 5000.0000,E 5000.0000,Elv 100.0000,START
Backsight: Occ 1,BS Pt 1,BS azm 0.0000,Back circle 0.0000
HI / HR : Inst H 5.1200,Rod H 5.3500
Side Shot: 1-2,Ang-Rt 0.0000,Zenith 90.1310,Slp Dst 1631.2600,ACHW00 2
Backsight: Occ 1,BS Pt 2,BS azm 0.0000,Back circle 0.0000
HI / HR : Inst H 5.1200,Rod H 5.4500
Side Shot: 1-51,Ang-Rt 150.1515,Zenith 89.0530,Slp Dst 70.9400,NTA 071
Side Shot: 1-52,Ang-Rt 46.3645,Zenith 91.0235,Slp Dst 61.3800,NTA 024
Side Shot: 1-53,Ang-Rt 20.5225,Zenith 91.1330,Slp Dst 150.8200,NTA 023
Side Shot: 1-54,Ang-Rt 12.1950,Zenith 90.4235,Slp Dst 245.7600,NTA 022
Side Shot: 1-55,Ang-Rt 9.4120,Zenith 90.4935,Slp Dst 341.7400,NTA 021
Side Shot: 1-56,Ang-Rt 7.3130,Zenith 91.2155,Slp Dst 442.4800,NTA 020
Side Shot: 1-57,Ang-Rt 5.4120,Zenith 91.2620,Slp Dst 541.1400,NTA 019
Side Shot: 1-58,Ang-Rt 5.2340,Zenith 91.2545,Slp Dst 639.1000,NTA 018
Side Shot: 1-59,Ang-Rt 5.1055,Zenith 91.2140,Slp Dst 733.8400,NTA 017
Side Shot: 1-60,Ang-Rt 357.3125,Zenith 91.1345,Slp Dst 737.6200,NTA 025
Side Shot: 1-61,Ang-Rt 356.3815,Zenith 91.2650,Slp Dst 637.8400,NTA 026
Side Shot: 1-62,Ang-Rt 355.4020,Zenith 91.3240,Slp Dst 538.8600,NTA 027
Side Shot: 1-63,Ang-Rt 353.4315,Zenith 91.1420,Slp Dst 437.9600,NTA 028
Side Shot: 1-64,Ang-Rt 353.0550,Zenith 90.5710,Slp Dst 337.6800,NTA 029
Side Shot: 1-65,Ang-Rt 346.0135,Zenith 90.5825,Slp Dst 239.2400,NTA 030
Side Shot: 1-66,Ang-Rt 340.0730,Zenith 91.3415,Slp Dst 135.1800,NTA 031
Side Shot: 1-67,Ang-Rt 301.4510,Zenith 91.4225,Slp Dst 65.3800,NTA 032
Side Shot: 1-68,Ang-Rt 282.1155,Zenith 91.2845,Slp Dst 159.5000,NTA 040
Side Shot: 1-69,Ang-Rt 306.0105,Zenith 92.1240,Slp Dst 189.5800,NTA 039
Side Shot: 1-70,Ang-Rt 326.3450,Zenith 91.2645,Slp Dst 271.3200,NTA 038
Side Shot: 1-71,Ang-Rt 337.0450,Zenith 91.0355,Slp Dst 362.7000,NTA 037
Side Shot: 1-72,Ang-Rt 341.0130,Zenith 91.1425,Slp Dst 457.3200,NTA 036
Side Shot: 1-73,Ang-Rt 345.1840,Zenith 91.2120,Slp Dst 554.0200,NTA 035
Side Shot: 1-74,Ang-Rt 340.5735,Zenith 91.3405,Slp Dst 631.1000,NTA 102
Side Shot: 1-75,Ang-Rt 347.4845,Zenith 91.1950,Slp Dst 645.2200,HIA 034
Side Shot: 1-76,Ang-Rt 349.5605,Zenith 91.1925,Slp Dst 755.7600,NTA 033
Side Shot: 1-77,Ang-Rt 353.2825,Zenith 91.2255,Slp Dst 745.2800,NTA 096
HI / HR : Inst H 5.1200,Rod H 8.9000
Side Shot: 1-78,Ang-Rt 15.5835,Zenith 91.0420,Slp Dst 561.8000,NTA 011
Side Shot: 1-79,Ang-Rt 19.4940,Zenith 91.0740,Slp Dst 468.9200,NTA 012
HI / HR : Inst H 5.1200,Rod H 5.4500
Side Shot: 1-80,Ang-Rt 25.0655,Zenith 90.3935,Slp Dst 373.6800,NT
Note: BS point check:1-2
Side Shot: 1-81,Ang-Rt 32.2800,Zenith 90.3555,Slp Dst 291.9400,NTA 014
Side Shot: 1-82,Ang-Rt 45.0000,Zenith 90.4535,Slp Dst 218.2400,NTA 015
Side Shot: 1-83,Ang-Rt 68.3645,Zenith 89.4730,Slp Dst 152.8800,NTA 016
Side Shot: 1-84,Ang-Rt 246.5925,Zenith 90.1805,Slp Dst 168.5400,NTA 074
Side Shot: 1-85,Ang-Rt 174.3735,Zenith 89.4435,Slp Dst 262.7200,NTA 072
Store: Pt 80,N 5338.3282,E 5158.5946,Elv 95.3674,NTA 013
Occupy: Occ 2,N 6631.2480,E 5000.0000,Elv 93.5220,ACHW00 2
Backsight: Occ 2,BS Pt 1,BS azm 180.0000,Back circle 0.0000
HI / HR : Inst H 5.3700,Rod H 5.2100
Note: BS point check:2-1

CHW PROJECT # 99726.0
JOB: 7260TS3 TIME: 14:32 DATE: 11-15-1999
NACA TEST AREA at RAAP
Backsight: Occ 2,BS Pt 1,BS azm 180.0000,Back circle 0.0000
Note: BS point check:2-1
HI / HR : Inst H 5.3700,Rod H 5.4500
Side Shot: 2-86,Ang-Rt 22.0000,Zenith 90.4505,Slp Dst 98.3800,NAI 1
Side Shot: 2-87,Ang-Rt 46.5820,Zenith 90.0110,Slp Dst 158.4600,NAI 2
Side Shot: 2-88,Ang-Rt 60.0940,Zenith 89.5725,Slp Dst 213.3600,NAI 3
Side Shot: 2-89,Ang-Rt 69.3155,Zenith 90.0300,Slp Dst 253.3200,NAI 4
Side Shot: 2-90,Ang-Rt 79.0030,Zenith 90.0820,Slp Dst 278.5600,NAI 5
Side Shot: 2-91,Ang-Rt 91.1350,Zenith 90.1035,Slp Dst 280.7000,NAI 6
Side Shot: 2-92,Ang-Rt 103.3625,Zenith 90.0655,Slp Dst 264.2000,NAI 7
Side Shot: 2-93,Ang-Rt 115.1520,Zenith 89.5650,Slp Dst 219.4000,NAI 8
Side Shot: 2-94,Ang-Rt 120.3145,Zenith 89.5350,Slp Dst 157.8200,NAI 9
Side Shot: 2-95,Ang-Rt 108.2820,Zenith 90.0845,Slp Dst 96.8200,NAI 10
Side Shot: 2-96,Ang-Rt 64.5915,Zenith 89.4520,Slp Dst 66.5200,NAI 11
Side Shot: 2-97,Ang-Rt 79.4415,Zenith 89.4430,Slp Dst 107.1000,NAI-13
Side Shot: 2-98,Ang-Rt 71.3310,Zenith 89.5715,Slp Dst 121.0400,NAI 14
Side Shot: 2-99,Ang-Rt 57.0055,Zenith 89.5855,Slp Dst 119.5000,NAI-12
Side Shot: 2-100,Ang-Rt 60.4420,Zenith 90.1500,Slp Dst 156.2600,NAI-14
Store: Pt 98,N 6592.9472,E 4885.1796,Elv 93.5391,DAI-41
Side Shot: 2-101,Ang-Rt 77.5315,Zenith 90.0440,Slp Dst 139.3600,NAI-15
Side Shot: 2-102,Ang-Rt 83.3405,Zenith 90.1205,Slp Dst 195.7800,DAI-17
Side Shot: 2-103,Ang-Rt 71.1430,Zenith 90.2700,Slp Dst 215.4000,DAI-18
Side Shot: 2-104,Ang-Rt 84.1400,Zenith 90.2535,Slp Dst 232.9600,DAI-16
Side Shot: 2-105,Ang-Rt 99.1545,Zenith 90.1055,Slp Dst 202.3000,DAI-19
Side Shot: 2-106,Ang-Rt 99.5735,Zenith 90.0835,Slp Dst 133.9200,DAI-16
Side Shot: 2-107,Ang-Rt 89.3925,Zenith 90.5005,Slp Dst 257.5000,DAI-20
Store: Pt 104,N 6607.8414,E 4768.2254,Elv 91.7086,DAI-21
Side Shot: 2-108,Ang-Rt 41.4750,Zenith 89.0120,Slp Dst 6.1600,NTA-90
Side Shot: 2-109,Ang-Rt 180.5530,Zenith 90.4340,Slp Dst 294.8600,NTA-89
Side Shot: 2-110,Ang-Rt 146.0915,Zenith 91.1330,Slp Dst 349.0600,NTA-94
Side Shot: 2-111,Ang-Rt 141.1425,Zenith 90.2915,Slp Dst 275.6600,DAI-23
Side Shot: 2-112,Ang-Rt 161.3110,Zenith 90.5255,Slp Dst 216.9400,DAI-22
Side Shot: 2-113,Ang-Rt 134.5820,Zenith 90.2740,Slp Dst 205.8600,DAI-24
Side Shot: 2-114,Ang-Rt 131.2450,Zenith 90.1310,Slp Dst 232.7600,DAI-42
Side Shot: 2-115,Ang-Rt 127.1625,Zenith 90.1650,Slp Dst 257.2200,DAI-25
Side Shot: 2-116,Ang-Rt 128.3920,Zenith 90.5605,Slp Dst 353.2600,DAI-26
Side Shot: 2-117,Ang-Rt 112.4130,Zenith 90.2505,Slp Dst 296.2400,DAI-27
Side Shot: 2-118,Ang-Rt 109.0105,Zenith 91.0225,Slp Dst 387.7600,DAI-29
Side Shot: 2-119,Ang-Rt 100.4535,Zenith 90.3455,Slp Dst 321.7800,DAI-28
Side Shot: 2-120,Ang-Rt 92.0105,Zenith 90.3450,Slp Dst 332.6400,DAI-31
Side Shot: 2-121,Ang-Rt 89.4010,Zenith 90.5210,Slp Dst 327.4200,DAI-40
Side Shot: 2-122,Ang-Rt 90.3625,Zenith 90.5555,Slp Dst 401.1400,DAI-30
Side Shot: 2-123,Ang-Rt 79.0320,Zenith 90.2345,Slp Dst 338.3000,DAI-32
HI / HR : Inst H 5.3700,Rod H 12.0000
Side Shot: 2-124,Ang-Rt 73.2810,Zenith 89.3835,Slp Dst 391.8200,DAI-33
Side Shot: 2-125,Ang-Rt 20.0640,Zenith 89.3140,Slp Dst 237.4400,DAI-39
HI / HR : Inst H 5.3700,Rod H 5.4500
Side Shot: 2-126,Ang-Rt 34.4545,Zenith 90.5740,Slp Dst 229.9400,DAI-38
Side Shot: 2-127,Ang-Rt 53.4715,Zenith 90.3725,Slp Dst 298.8400,DAI-37
Store: Pt 127,N 6454.7093,E 4758.9008,Elv 90.1897,DAI-36
Side Shot: 2-128,Ang-Rt 56.4640,Zenith 90.4340,Slp Dst 358.5000,DAI-35
Side Shot: 2-129,Ang-Rt 68.4140,Zenith 90.3415,Slp Dst 337.3000,DAI-34

CHW PROJECT # 99726.0
JOB: 7260TS3 TIME: 14:32 DATE: 11-15-1999
NACA TEST AREA at RAAP
HI / HR : Inst H 5.3700,Rod H 6.0000
Side Shot: 2-130,Ang-Rt 39.3330,Zenith 90.3650,Slp Dst 326.5600,DAI-37
HI / HR : Inst H 5.3700,Rod H 11.5000
Side Shot: 2-131,Ang-Rt 33.2515,Zenith 90.1220,Slp Dst 341.7000,DAI-43
HI / HR : Inst H 5.3700,Rod H 5.4500
Side Shot: 2-132,Ang-Rt 92.3650,Zenith 90.4755,Slp Dst 438.1400,IPS
Side Shot: 2-133,Ang-Rt 2.3935,Zenith 90.5425,Slp Dst 306.9200,NTA 091
Side Shot: 2-134,Ang-Rt 328.2005,Zenith 90.5345,Slp Dst 352.2400,NTA 086
Side Shot: 2-135,Ang-Rt 271.3245,Zenith 89.2710,Slp Dst 195.7000,NTA 085
Side Shot: 2-136,Ang-Rt 213.4640,Zenith 90.3805,Slp Dst 365.4800,NTA 084
Side Shot: 2-137,Ang-Rt 199.3840,Zenith 90.1705,Slp Dst 633.6800,NTA 083
Side Shot: 2-138,Ang-Rt 181.1950,Zenith 90.2935,Slp Dst 597.9400,NTA 088
Side Shot: 2-139,Ang-Rt 162.4350,Zenith 90.3920,Slp Dst 629.8400,NTA 093
Side Shot: 2-140,Ang-Rt 2.1420,Zenith 90.3710,Slp Dst 862.1450,1IN STEEL PIN
Side Shot: 2-141,Ang-Rt 2.1540,Zenith 90.3920,Slp Dst 613.5500,NTA 092
Side Shot: 2-142,Ang-Rt 2.1545,Zenith 90.3925,Slp Dst 613.2350,IP 92
HI / HR : Inst H 4.8800,Rod H 5.2000
Note: BS point check:132-2
Occupy: Occ 132,N 6651.2275,E 4562.3584,Elv 87.3350,IPS
Backsight: Occ 132,BS Pt 2,BS azm 92.3650,Back circle 0.0000
HI / HR : Inst H 4.8800,Rod H 5.4500
Side Shot: 132-143,Ang-Rt 156.5330,Zenith 92.0125,Slp Dst 323.5800,DAI 44
Occupy: Occ 142,N 6018.5314,E 4975.7924,Elv 86.4110,IP 92
Backsight: Occ 142,BS Pt 2,BS azm 2.1545,Back circle 0.0000
HI / HR : Inst H 5.1900,Rod H 5.2000
Note: BS point check:142-2
HI / HR : Inst H 5.1900,Rod H 5.0000
Side Shot: 142-144,Ang-Rt 85.3350,Zenith 90.4710,Slp Dst 204.8400,NTA-87
Side Shot: 142-145,Ang-Rt 268.0230,Zenith 89.4830,Slp Dst 206.0800,NTA-95
Occupy: Occ 140,N 5769.8115,E 4966.3214,Elv 84.1210,1IN STEEL PIN
Backsight: Occ 140,BS Pt 2,BS azm 2.1420,Back circle 0.0000
HI / HR : Inst H 5.3300,Rod H 5.2000
Note: BS point check:140-2
HI / HR : Inst H 5.3300,Rod H 5.0000
Side Shot: 140-146,Ang-Rt 309.1005,Zenith 93.3345,Slp Dst 103.1800,NTA-103
HI / HR : Inst H 5.3300,Rod H 5.1000
Side Shot: 140-147,Ang-Rt 265.3905,Zenith 90.4815,Slp Dst 201.2800,NTA-41
HI / HR : Inst H 5.3300,Rod H 6.0000
Side Shot: 140-148,Ang-Rt 64.1610,Zenith 89.4205,Slp Dst 670.6000,NTA-104
HI / HR : Inst H 5.3300,Rod H 5.4500
Side Shot: 140-149,Ang-Rt 203.3505,Zenith 89.3350,Slp Dst 246.4400,NTA-101
Side Shot: 140-150,Ang-Rt 233.0620,Zenith 89.5910,Slp Dst 248.6000,NTA-42
Side Shot: 140-151,Ang-Rt 98.3010,Zenith 90.2640,Slp Dst 206.8200,NTA-09
Side Shot: 140-152,Ang-Rt 94.0030,Zenith 89.5645,Slp Dst 299.0000,NTA-01
HI / HR : Inst H 5.3300,Rod H 7.2000
Side Shot: 140-153,Ang-Rt 112.3010,Zenith 89.3045,Slp Dst 334.3200,NTA-02
HI / HR : Inst H 5.3300,Rod H 5.4500
Side Shot: 140-154,Ang-Rt 120.4315,Zenith 90.3310,Slp Dst 242.3000,NTA-10
HI / HR : Inst H 5.3300,Rod H 5.0000
Side Shot: 140-155,Ang-Rt 219.0340,Zenith 89.3355,Slp Dst 309.4800,NTA-43
Side Shot: 140-156,Ang-Rt 210.1035,Zenith 89.2445,Slp Dst 403.0200,NTA-44
Side Shot: 140-157,Ang-Rt 202.5400,Zenith 89.2700,Slp Dst 487.9400,NTA-45

CHW PROJECT # 99726.0
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NACA TEST AREA at RAAP
Occupy: Occ 1,N 5000.0000,E 5000.0000,Elv 100.0000,START
Backsight: Occ 1,BS Pt 2,BS azm 0.0000,Back circle 0.0000
HI / HR : Inst H 5.2900,Rod H 5.2000
Note: BS point check:1-2
HI / HR : Inst H 5.2900,Rod H 5.0000
Side Shot: 1-158,Ang-Rt 277.3935,Zenith 91.3530,Slp Dst 256.8200,NTA-48
Side Shot: 1-159,Ang-Rt 289.4900,Zenith 92.1700,Slp Dst 262.1200,NTA-47
HI / HR : Inst H 5.2900,Rod H 7.0000
Side Shot: 1-160,Ang-Rt 310.3620,Zenith 91.2615,Slp Dst 330.7400,NTA-46
HI / HR : Inst H 5.2900,Rod H 5.0000
Side Shot: 1-161,Ang-Rt 73.3805,Zenith 90.3035,Slp Dst 250.1200,NTA-08
Side Shot: 1-162,Ang-Rt 96.0230,Zenith 89.1625,Slp Dst 219.8000,NTA-68
Side Shot: 1-163,Ang-Rt 57.4200,Zenith 90.4520,Slp Dst 301.5200,NTA-07
Side Shot: 1-164,Ang-Rt 45.1950,Zenith 90.5515,Slp Dst 359.3800,NTA-06
HI / HR : Inst H 5.2900,Rod H 12.0000
Side Shot: 1-165,Ang-Rt 37.4330,Zenith 90.3820,Slp Dst 429.6200,NTA-05
HI / HR : Inst H 5.2900,Rod H 15.0500
Side Shot: 1-166,Ang-Rt 131.3830,Zenith 89.0525,Slp Dst 335.2200,NTA 069
HI / HR : Inst H 5.2900,Rod H 5.4500
Side Shot: 1-167,Ang-Rt 157.1030,Zenith 90.2305,Slp Dst 430.7600,NTA 070
Side Shot: 1-168,Ang-Rt 179.4905,Zenith 89.2335,Slp Dst 465.4000,NTA 073
HI / HR : Inst H 5.2900,Rod H 14.5000
Side Shot: 1-169,Ang-Rt 195.0855,Zenith 88.4255,Slp Dst 467.3800,NTA 076
HI / HR : Inst H 5.2900,Rod H 18.0500
Side Shot: 1-170,Ang-Rt 210.3645,Zenith 87.2455,Slp Dst 307.7400,NTA 075
HI / HR : Inst H 5.2900,Rod H 10.8000
Side Shot: 1-171,Ang-Rt 261.2430,Zenith 89.4905,Slp Dst 360.9400,NTA 077
HI / HR : Inst H 5.2900,Rod H 5.4500
Side Shot: 1-172,Ang-Rt 266.1430,Zenith 90.4700,Slp Dst 346.7150,IP 172
Side Shot: 1-173,Ang-Rt 14.5855,Zenith 91.2740,Slp Dst 548.3150,IP 173
HI / HR : Inst H 5.1200,Rod H 5.4500
Note: BS point check:173-1
Occupy: Occ 173,N 5529.5041,E 5141.7014,Elv 85.8590,IP 173
Backsight: Occ 173,BS Pt 1,BS azm 194.5855,Back circle 0.0000
Note: HA offset
Off Center Shot: Ang-Rt 238.4525,Zenith 89.1805,Slp Dst 109.0400
HI / HR : Inst H 5.1200,Rod H 8.9000
Side Shot: 173-174,Ang-Rt 243.4035,Zenith 89.1805,Slp Dst 108.6380,NTA 003
HI / HR : Inst H 5.1200,Rod H 5.4500
Side Shot: 173-175,Ang-Rt 291.1820,Zenith 90.0515,Slp Dst 142.2200,NTA 004
Side Shot: 173-176,Ang-Rt 267.3945,Zenith 90.2250,Slp Dst 449.3400,NTA 105 INV
HI / HR : Inst H 5.1200,Rod H 4.9500
Traverse: 173-177,Ang-Rt 87.1740,Zenith 90.0235,Slp Dst 516.3200,IP 177
Occupy: Occ 177,N 5639.2880,E 4637.1881,Elv 85.6410,IP 177
Backsight: Occ 177,BS Pt 173,BS azm 102.1635,Back circle 0.0000
Backsight: Occ 177,BS Pt 173,BS azm 102.1635,Back circle 0.0000
Note: BS point check:177-173
Note: BS point check:177-173
HI / HR : Inst H 5.1200,Rod H 5.4500
Side Shot: 177-178,Ang-Rt 338.1040,Zenith 90.0825,Slp Dst 26.4000,NTA 050
Side Shot: 177-179,Ang-Rt 183.4350,Zenith 90.3000,Slp Dst 75.5000,NTA 058
HI / HR : Inst H 5.1200,Rod H 12.4000

ACHW PROJECT # 99726.0
JOB: 7260TS3 TIME: 14:32 DATE: 11-15-1999
NACA TEST AREA at RAAP

Side Shot: 177-180,Ang-Rt 194.0655,Zenith 90.2125,Slp Dst 228.7200,NTA 098
HI / HR : Inst H 5.1200,Rod H 14.5500
Side Shot: 177-181,Ang-Rt 223.2010,Zenith 89.3600,Slp Dst 179.5800,NTA 97
HI / HR : Inst H 5.1200,Rod H 12.8000
Side Shot: 177-182,Ang-Rt 219.3050,Zenith 88.2320,Slp Dst 154.9600,NTA 057
HI / HR : Inst H 5.1200,Rod H 5.4500
Side Shot: 177-183,Ang-Rt 268.3820,Zenith 90.3755,Slp Dst 126.7000,NTA 049
HI / HR : Inst H 5.1200,Rod H 7.7000
Side Shot: 177-184,Ang-Rt 61.2935,Zenith 88.1635,Slp Dst 102.2000,NTA 051
HI / HR : Inst H 5.1200,Rod H 7.0000
Side Shot: 177-185,Ang-Rt 114.4610,Zenith 88.4420,Slp Dst 118.9800,NTA 059
HI / HR : Inst H 5.1200,Rod H 5.2400
Traverse: 177-186,Ang-Rt 79.3900,Zenith 89.4140,Slp Dst 351.3600,IP 186
HI / HR : Inst H 5.3100,Rod H 4.9500
Note: BS point check:186-177
Occupy: Occ 186,N 5288.1316,E 4625.3771,Elv 87.3950,IP 186
Backsight: Occ 186,BS Pt 177,BS azm 1.5535,Back circle 0.0000
HI / HR : Inst H 5.3100,Rod H 5.4500
Side Shot: 186-187,Ang-Rt 8.0340,Zenith 90.0440,Slp Dst 139.7500,NTA 052
Side Shot: 186-188,Ang-Rt 330.2440,Zenith 90.5930,Slp Dst 160.3600,NTA 060
Side Shot: 186-189,Ang-Rt 57.2155,Zenith 89.1140,Slp Dst 32.3400,NTA 053
Side Shot: 186-190,Ang-Rt 159.0650,Zenith 89.3505,Slp Dst 57.0200,NTA 054
Side Shot: 186-191,Ang-Rt 171.0005,Zenith 89.3600,Slp Dst 154.3600,NTA 055
Side Shot: 186-192,Ang-Rt 170.5830,Zenith 89.4835,Slp Dst 220.7800,NTA 056
Side Shot: 186-193,Ang-Rt 194.3315,Zenith 89.4755,Slp Dst 236.2400,NTA 064
Side Shot: 186-194,Ang-Rt 205.4720,Zenith 89.5300,Slp Dst 183.7400,NTA 063
Side Shot: 186-195,Ang-Rt 218.1215,Zenith 90.4735,Slp Dst 127.3200,NTA 062
Side Shot: 186-196,Ang-Rt 275.3940,Zenith 90.5300,Slp Dst 114.3200,NTA 061
Note: BS point check:186-177
HI / HR : Inst H 5.3100,Rod H 5.1300
Traverse: 186-197,Ang-Rt 172.4745,Zenith 88.3635,Slp Dst 312.2350,IP
HI / HR : Inst H 5.1700,Rod H 5.1400
Note: BS point check:197-186
Occupy: Occ 197,N 4977.3118,E 4654.0894,Elv 95.1500,IP
HI / HR : Inst H 5.1700,Rod H 5.0800
Side Shot: 197-198,Ang-Rt 157.1030,Zenith 89.1210,Slp Dst 346.6950,OLD ACHW00
Side Shot: 197-198,Ang-Rt 91.3100,Zenith 89.1215,Slp Dst 346.6950,OLD ACHW00 1
HI / HR : Inst H 5.1700,Rod H 5.4500
Side Shot: 197-199,Ang-Rt 185.5730,Zenith 89.1815,Slp Dst 231.6000,NTA-78
Note: HA offset
Off Center Shot: Ang-Rt 182.1150,Zenith 88.2525,Slp Dst 426.4700
HI / HR : Inst H 5.1700,Rod H 10.6000
Side Shot: 197-200,Ang-Rt 181.5905,Zenith 88.2525,Slp Dst 426.4670,NTA-79
Note: HA offset
Off Center Shot: Ang-Rt 203.4955,Zenith 88.2920,Slp Dst 447.6650
HI / HR : Inst H 5.1700,Rod H 16.0000
Side Shot: 197-201,Ang-Rt 203.3850,Zenith 88.2920,Slp Dst 447.6630,NTA-82
Note: HA offset
Off Center Shot: Ang-Rt 226.5130,Zenith 90.3320,Slp Dst 293.0600
HI / HR : Inst H 5.1700,Rod H 5.4500
Side Shot: 197-202,Ang-Rt 226.5745,Zenith 90.3320,Slp Dst 293.0600,NTA-81
HI / HR : Inst H 5.1700,Rod H 5.8000

ACHW PROJECT # 99726.0
JOB: 7260TS3 TIME: 14:32 DATE: 11-15-1999
NACA TEST AREA at RAAP
Side Shot: 197-203,Ang-Rt 267.5755,Zenith 91.1435,Slp Dst 212.9500,NTA-80
Occupy: Occ 1,N 5000.0000,E 5000.0000,Elv 100.0000,START
Backsight: Occ 1,BS Pt 2,BS azm 0.0000,Back circle 0.0000
HI / HR : Inst H 5.1600,Rod H 5.4500
Side Shot: 1-204,Ang-Rt 156.4645,Zenith 90.2240,Slp Dst 430.0950,NCH
Traverse: 1-205,Ang-Rt 95.0930,Zenith 89.1050,Slp Dst 220.1000,NCH
HI / HR : Inst H 5.1000,Rod H 5.0100
Note: BS point check:205-1
Occupy: Occ 205,N 4980.2132,E 5219.1862,Elv 102.8580,NCH
HI / HR : Inst H 5.1000,Rod H 5.4500
Side Shot: 205-206,Ang-Rt 169.3720,Zenith 93.0730,Slp Dst 202.5150,NTA 065
Side Shot: 205-207,Ang-Rt 225.1535,Zenith 92.1035,Slp Dst 328.9600,NTA 066
HI / HR : Inst H 5.3400,Rod H 5.0100
Note: BS point check:204-1
Occupy: Occ 204,N 4604.7547,E 5169.5725,Elv 96.8740,NCH
Backsight: Occ 204,BS Pt 1,BS azm 336.4645,Back circle 0.0000
HI / HR : Inst H 5.3400,Rod H 5.1000
Side Shot: 204-208,Ang-Rt 154.0225,Zenith 91.1055,Slp Dst 185.1200,NTA 067
Occupy: Occ 2,N 6631.2480,E 5000.0000,Elv 93.5220,ACHW00 2
Backsight: Occ 2,BS Pt 1,BS azm 180.0000,Back circle 0.0000
HI / HR : Inst H 5.3500,Rod H 5.4500
Side Shot: 2-209,Ang-Rt 128.3035,Zenith 90.1220,Slp Dst 222.9200,NTA 42A
Side Shot: 2-210,Ang-Rt 131.3055,Zenith 90.1220,Slp Dst 233.0800,NTA 042 2
HI / HR : Inst H 5.4800,Rod H 5.4500
Note: BS point check:205-1
Occupy: Occ 205,N 4980.2132,E 5219.1862,Elv 102.8580,NCH
Backsight: Occ 205,BS Pt 1,BS azm 275.0930,Back circle 0.0000
Occupy: Occ 204,N 4604.7547,E 5169.5725,Elv 96.8740,NCH
Backsight: Occ 204,BS Pt 1,BS azm 336.4645,Back circle 0.0000
HI / HR : Inst H 5.0000,Rod H 5.4500
Note: BS point check:204-1
Note: BS point check:204-1
Side Shot: 204-211,Ang-Rt 200.0530,Zenith 89.5445,Slp Dst 55.1800,NTA 100

GPS DATA

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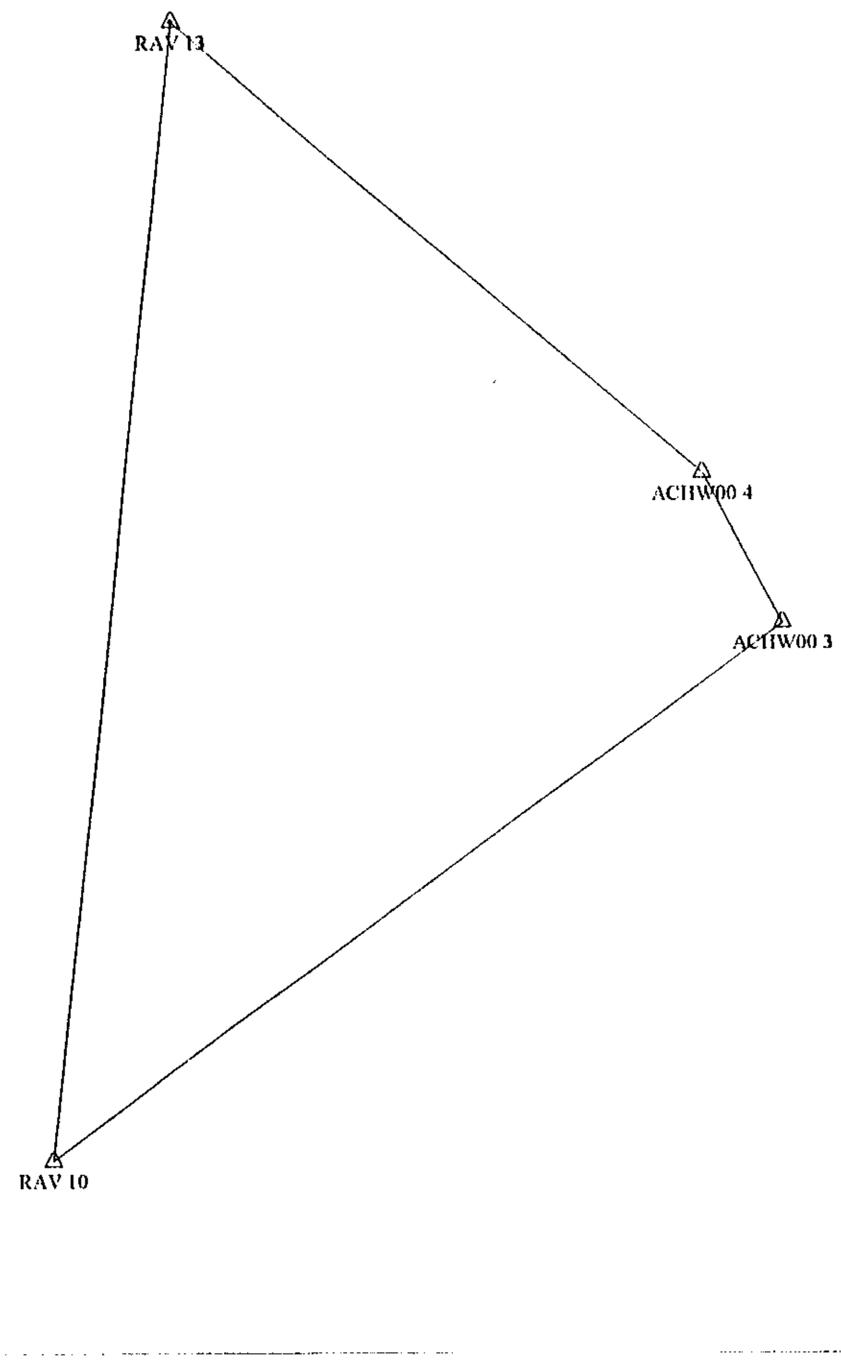
Network Map: GPS7262



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New Closure

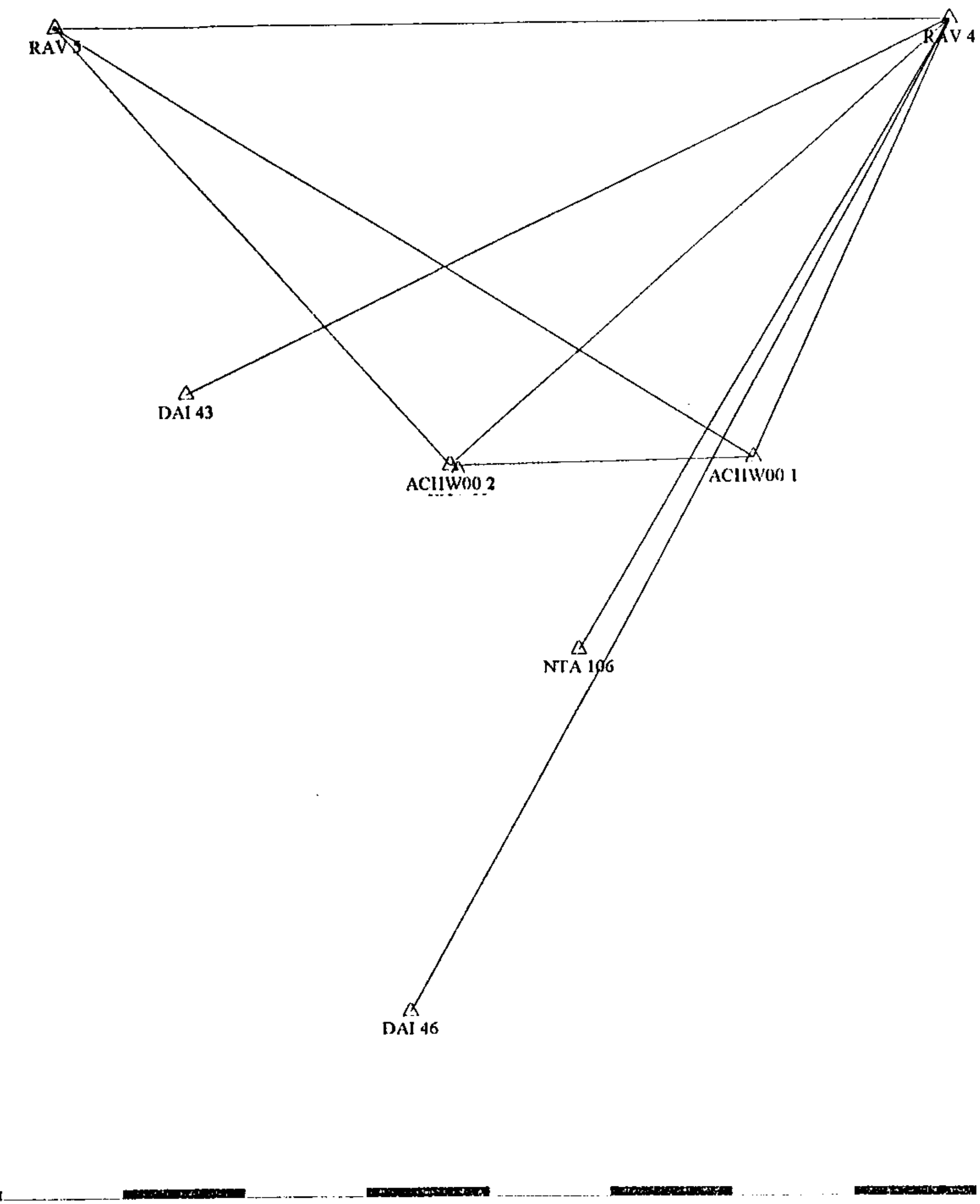
From: RAV 10

To: ACHW00 3			L1 fixed
11/4/99 17:16:30	00003496.SSF	Slope (m):	3514.265
41°11'59.93085" N	38713080.DAT	Total (m):	3514.265
081°01' 1.95376" W	38743080.DAT		
280.7209 m			
To: ACHW00 4			L1 fixed
11/4/99 17:34:30	00003492.SSF	Slope (m):	649.223
41°12'18.48488" N	38743081.DAT	Total (m):	4163.488
081°01'15.10027" W	38713080.DAT		
277.1577 m			
To: RAV 13			L1 fixed
11/4/99 18:30:45	00003488.SSF	Slope (m):	2676.689
41°13'15.30832" N	38713081.DAT	Total (m):	6840.178
081°02'41.92492" W	38743081.DAT		
264.9882 m			
To: RAV 10			L1 fixed
9/10/99 18:26:30	00003484.SSF	Slope (m):	4460.262
41°10'51.57712" N	38742530.DAT	Total (m):	11300.440
081°03' 2.58413" W	38712530.DAT		
270.5835 m			

Closed

Precision (ppm): 1.5074
Errors (m) N: 0.0093 E: 0.0098 U: -0.0103

Network Map: gps7261



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New Closure

From: RAV 5

To: ACHW00 2 L1 fixed
11/2/99 15:37:45 00003452.SSF
Slope (m): 964.601
41°10'21.56278" N 38743060.DAT
Total (m): 964.601
081°07'41.10264" W 38713062.DAT

300.6240 m

To: ACHW00 1 L1 fixed
11/2/99 14:22:30 00003448.SSF
Slope (m): 497.192
41°10'21.87247" N 38713060.DAT
Total (m): 1461.793
081°07'19.77797" W 38743060.DAT

302.5387 m

To: RAV 4 L1 fixed
11/2/99 16:50:30 00003464.SSF
Slope (m): 788.238
41°10'45.13715" N 38743061.DAT
Total (m): 2250.032
081°07' 5.80014" W 38713063.DAT

307.1665 m

To: RAV 5 L1 fixed
11/2/99 17:31:15 00003468.SSF
Slope (m): 1458.969
41°10'45.06476" N 38713063.DAT
Total (m): 3709.001
081°08' 8.39367" W 38743062.DAT

308.2182 m

Closed

Precision (ppm): 2.7792
Errors (m) N: -0.0100 E: -0.0015 U: -0.0022

Ravenna Army Ammo Plant, Ravenna Ohio

**** Reference Coordinates ****

Station Short Name	Station ID	Latitude	Longitude	Height	Station Quality
ACHW00 2	ACHW00 2	41°10'21.56308" N	081°07'41.10291" W	300.61559	Point Positioning
NTA 106	NTA 106	41°10'11.64430" N	081°07'32.27578" W	295.30363	Point Positioning
DAI 43	DAI 43	41°10'25.46190" N	081°07'59.54279" W	296.90418	Point Positioning
DAI 46	DAI 46	41°09'51.89047" N	081°07'44.22620" W	294.11070	Point Positioning
RAV 10	RAV 10	41°10'21.28234" N	081°07'40.53957" W	283.92993	Point Positioning
RAV 5	RAV 5	41°10'45.06508" N	081°08'08.39360" W	308.22036	Point Positioning
RAV 4	RAV 4	41°10'45.13747" N	081°07'05.80007" W	307.16865	Point Positioning
ACHW00 1	ACHW00 1	41°10'21.87279" N	081°07'19.77791" W	302.54089	Point Positioning

**** Adjusted Coordinates ****

Projection Group: NAD-83 SP Lambert
Zone Name: Ohio North
Linear Units: meter
Angular Units: degrees
Datum Name: NAD-83

Station Short Name	Station ID	North	East	Ortho. Height	Ellip. Height
ACHW00 1	ACHW00 1	168148.30057	715622.08406	332.32711	298.62533
ACHW00 2	ACHW00 2	168130.91260	715125.25127	330.40453	296.70723
DAI 43	DAI 43	168244.41562	714693.60503	326.68206	292.98786
DAI 46	DAI 46	167214.55429	715066.84433	323.88596	290.19438
NTA 106	NTA 106	167828.21939	715335.78653	325.08478	291.38732
RAV 4	RAV 4	168871.02322	715936.47230	336.96317	303.25308
RAV 5	RAV 5	168845.82720	714477.87250	337.99340	304.29948

Ravenna Army Ammo Plant, Ravenna Ohio

From Station Short Name	To Station Short Name	Solution Type	Slope	Ratio	Reference Variance	Entered Ant. Ht. (From)	Entered Ant. Ht. (To)
ACHW00 1	ACHW00 2	L1 fixed	497.192	54.1	0.560	1.597	1.692
ACHW00 1	RAV 4	L1 fixed	788.238	17.9	2.233	1.598	1.648
ACHW00 2	RAV 4	L1 fixed	1098.241	12.6	2.107	1.692	1.610
ACHW00 2	RAV 5	L1 fixed	964.601	6.8	6.217	1.692	1.565
RAV 4	DAI 43	L1 fixed	1392.072	1.5	40.467	1.504	0.750
RAV 4	DAI 46	L1 fixed	1871.106	4.3	7.275	1.504	0.000
RAV 4	NTA 106	L1 fixed	1203.622	5.1	2.952	1.504	0.750
RAV 4	RAV 5	L1 fixed	1458.969	3.5	8.533	1.648	1.593
RAV 5	ACHW00 1	L1 fixed	1340.218	3.0	8.250	1.565	1.598

Ravenna Army Ammo Plant, Ravenna Ohio

**** Reference Coordinates ****

Station Short Name	Station ID	Latitude	Longitude	Height	Station Quality
ACHW00 4	ACHW00 4	41°12'18.48488" N	081°01'15.10027" W	277.15768	Point Positioning
RAV 10	RAV 10	41°10'51.57682" N	081°03'02.58455" W	270.59388	Point Positioning
ACHW00 3	ACHW00 3	41°11'59.93085" N	081°01'01.95376" W	280.72089	Point Positioning
RAV 13	RAV 13	41°13'15.30832" N	081°02'41.92492" W	264.98815	Point Positioning

**** Adjusted Coordinates ****

Projection Group: NAD-83 SP Lambert
Zone Name: Ohio North
Linear Units: meter
Angular Units: degrees
Datum Name: NAD-83

Station Short Name	Station ID	North	East	Ortho. Height	Ellip. Height
ACHW00 3	ACHW00 3	171321.15833	724365.49682	310.04836	276.25446
ACHW00 4	ACHW00 4	171888.21838	724049.53684	306.48367	272.68994
RAV 10	RAV 10	169165.66820	721590.39870	299.87500	266.11849
RAV 13	RAV 13	173606.81210	721997.83910	294.31600	260.52410

Ravenna Army Ammo Plant, Ravenna Ohio

From Station Short Name	To Station Short Name	Solution Type	Slope	Ratio	Reference Variance	Entered Ant. Ht. (From)	Entered Ant. Ht. (To)
ACHW00 3	RAV 10	L1 fixed	3514.265	5.6	8.050	1.592	1.600
ACHW00 4	ACHW00 3	L1 fixed	649.223	13.6	5.151	1.639	1.592
RAV 10	RAV 13	L1 fixed	4460.262	27.5	3.279	1.625	1.543
RAV 13	ACHW00 4	L1 fixed	2676.689	8.6	8.245	1.528	1.639

GPS Fast Static Survey Field Log

Trimble

Date	Julian Day	Filename	Epoch Rate	Operator(s)	Project Name
11-2/11-3	306/307	3874	15 sec	Hershe & James	NACA Test Area Ravenna OHIO 99726.0

Receiver Type: R1

Antenna Type: 4600 LS INT

Occ.#	Mark ID	Start Time	Stop Time	Antenna Height Measurements	Point Description & Notes
1	ACHW 00-Z	9:22	11:07	(m) / (ft) 1.692 (m) / 5.55 (m) /	IRON PIN W/Alumunum Cap
2	ACHW 00-1	11:13	12:20	(m) / (ft) 1.598 (m) / 5.24 (m) /	IRON PIN W/Alumunum Cap
3	RaU 5	12:31	1301	(m) / (ft) 1.593 (m) / 5.23 (m) /	Brass Cap in Conc.
F-39				(m) / (ft) (m) / (m) /	
11-3/1	DAI 46	12:25	13:05	(m) / (ft) 0 (m) / 0 (m) /	
2	DAI 43	13:25	13:55	(m) / (ft) .25 (m) / (m) /	
3	NTA 106	14:42	15:15	(m) / (ft) .75 (m) / (m) /	
				(m) / (ft) (m) / (m) /	
				(m) / (ft) (m) / (m) /	

Receiver S/N ______ Antenna S/N ______

GPS Fast Static Survey Field Log

Trimble

Date	Julian Day	Filename	Epoch Rate	Operator(s)	Project Name
11-2 / 11-3	306 / 307	387-1	15 sec	Hershel + James	NACA Test Area Ravenna OHIO 99726.0
Receiver Type:	R2			Antenna Type:	4600 LS INT

Occ.#	Mark ID	Start Time	Stop Time	Antenna Height Measurements		Point Description & Notes
1	ACHW 00-1	9:05	9:52	(m) /	(ft)	IRON PIN W/Aluminum Cap
				1.597 (m) /	5.24	
				(m) /		PDOP 2.4 SU's 7
2	Rav 4	10:00	10:30	(m) /	(ft)	Brass Cap in Conc.
				1.610 (m) /	5.28	
				(m) /		PDOP 3.5 SU 7
3	Rav 5	10:37	11:43	(m) /	(ft)	
				1.565 (m) /	5.13	Brass Cap in Conc.
				(m) /		
4 F-40	Rav 4	11:50	13:05	(m) /	(ft)	
				1.648 (m) /	5.40	Brass Cap in Conc.
				(m) /		
				(m) /	(ft)	
				(m) /		
				(m) /		
11-3 / 1	Rav. 4	12:15	16:33	(m) /	(ft)	
				1.504 (m) /	4.94	Brass Cap in Conc.
				(m) /		
				(m) /	(ft)	
				(m) /		
				(m) /		
				(m) /	(ft)	
				(m) /		
				(m) /		
				(m) /	(ft)	
				(m) /		
				(m) /		

Receiver S/N ______ Antenna S/N ______

GPS Fast Static Survey Field Log

Trimble

Date	Julian Day	Filename	Epoch Rate	Operator(s)	Project Name
11-4	308	3874	15 sec	Hershel + James	Load line 1 Ravenna OHIO 99726.0
Receiver Type:		R1		Antenna Type:	4600 LS INT.

Occ.#	Mark ID	Start Time	Stop Time	Antenna Height Measurements	Point Description & Notes
1	RaV 10	12:15	13:20	(m) / (ft)	
				1.660 (m) / 5.25	Brass Cap in Conc.
				(m) /	
2	ACHW 00-4	13:30	15:42	(m) / (ft)	
				1.639 (m) / 5.375	IRON PIN W/Aluminum Cap
				(m) /	
				(m) / (ft)	
				(m) /	
				(m) /	
				(m) / (ft)	
				(m) /	
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				(m) / (ft)	
				(m) /	
				(m) /	

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Receiver S/N ____________ Antenna S/N ____________

GPS Fast Static Survey Field Log

Trimble

Date	Julian Day	Filename	Epoch Rate	Operator(s)	Project Name
11-4	308	3871	15 sec	Hershel & James	Load line 1 Ravenna OHIO 99726.0
Receiver Type:		RZ		Antenna Type:	4600LS INT.

Occ.#	Mark ID	Start Time	Stop Time	Antenna Height Measurements	Point Description & Notes
1	ACHW 00-3	12:35	14:25	(m) / (ft) 1.592 (m) / 5.22 (m) /	IRON PIN W/Aluminum Cap
2	Rav 13	14:47	15:52	(m) / (ft) 1.528 (m) / 5.01 (m) /	Brass Cap in Conc.
				(m) / (ft) (m) / (m) /	
				(m) / (ft) (m) / (m) /	Survey Data from Rav 13 to Rav 10 was used from previous survey.
				(m) / (ft) (m) / (m) /	
				(m) / (ft) (m) / (m) /	
				(m) / (ft) (m) / (m) /	
				(m) / (ft) (m) / (m) /	
				(m) / (ft) (m) / (m) /	

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Receiver S/N ______________ Antenna S/N ______________ Page 2 of 2

APPENDIX G

ORDNANCE AND EXPLOSIVES AVOIDANCE SURVEY REPORT

FINAL REPORT FOR UNEXPLODED ORDNANCE AVOIDANCE AT DEMOLITION AREA 1

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OH 44266

Prepared For

Science Applications International Corporation
800 Oak Ridge Turnpike,
P.O. Box 2502
Oak Ridge, TN 37831

Prepared By

MKM

MKM Engineers, Inc.
4153 Bluebonnet Drive
Stafford, TX 77477

November 1999

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UNEXPLODED ORDNANCE AVOIDANCE AT DEMOLITION AREA 1

RAVENNA ARMY AMMUNITION DEPOT
RAVENNA, OHIO 44266

Prepared for

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
800 OAK RIDGE TURNPIKE,
P.O. BOX 2502
OAK RIDGE, TN 37831

Prepared by

MKM ENGINEERS, INC
4153 BLUEBONNET DRIVE
STAFFORD, TEXAS 77477

November 1999

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FINAL REPORT

UNEXPLODED ORDNANCE AVOIDANCE

FOR

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

AT

DEMOLITION AREA 1
Ravenna Army Ammunition Plant
RAVENNA, OH 44266

SAIC CONTRACT NO. DAC 462-94-0-0029
DELIVERY ORDER NO. 0076

Prepared By

MKM Engineers, Inc.
4153 Bluebonnet Drive
Stafford, TX 77477

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TABLE OF CONTENTS

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1.0 INTRODUCTION

1.1 Project Authorization:

MKM Engineers, Inc. provided on-site UXO support during all soil sampling activities by Science Applications International Corporation (SAIC) at the Demolition Area 1. This project was executed during the period of October 18, 1999 to November 3, 1999. Ordnance Avoidance was provided in accordance with the USACE ETL 385-1-2-Ordnance Avoidance during Geo-Technical Operations.

1.2 Purpose and Scope:

The purpose of this project was to provide Unexploded Ordnance (UXO) detection services so that safe soil remediation and sampling efforts could be conducted. Specifically, the major tasks involved in completing this contract were:

1. Provide all necessary materials and labor to safely locate and identify all ordnance and explosive hazards.
2. Provide daily explosive/ordnance safety briefings to SAIC personnel prior to entering the site.
3. Provide final report describing results of all work completed.

2.0 UXO TEAM COMPOSITION AND QUALIFICATIONS

a. Senior UXO Supervisor for this project was Mr. Max Owens. Mr. Owens is qualified for this project by virtue of training and experience. He has 30 years of military and civilian UXO experience. Mr. Owens has served as Senior UXO Supervisor, UXO Supervisor, Safety Officer, and Quality Control Specialist. Duties and assignments include Range Clearances as EOD Range Supervisor of multiple team operations and civilian UXO experience including performance as a Senior UXO Supervisor for OE removal actions

b. UXO Supervisor for this project was Mr. Dewey Thedford. Mr. Thedford has 30 years military and civilian UXO experience. Mr. Thedford has served as EOD Range Officer, and as a Senior UXO Supervisor for OE removal actions.

2.1 Responsibilities and Authority:

The Senior UXO Supervisor was the technical lead for all ordnance/explosives operations and was assigned the following safety and health related responsibilities:

1. Reports to the SAIC supervisor, coordinating schedule and support requirements through that individual;
2. Overall coordination between operations and safety and health personnel;
3. Reviewing and becoming familiar with the site Work Plan and Site Safety and Health Plan;
4. Conduct UXO safety briefings for all site personnel and visitors.

2.2 Safety Briefs:

All SAIC personnel were briefed on precautions for ordnance and explosives on a daily basis.

2.3 Access Routes to Sampling Locations

a. Prior to sampling crews entering the site, the UXO team conducted a through survey of the sampling area. This included locating a clear path for the sampling crews, vehicles, and equipment to the approach site. A *Schonstedt GA-52Cx Magnetometer* and White's *Spectrum XLT* were used in locating the path. Boundaries were marked along the cleared approach path to prevent personnel from straying into areas that were not cleared.

b. Prior to sampling, an area twice the length of the vehicle used was cleared.

2.4 Soil Sampling Sites

a. For the Geo Probe Operation, Schonstedt GA-52Cx Magnetometer and GAU 30 were used to monitor down-hole in 2 feet increments. Prior to drilling equipment being used, the UXO team located anomalies near surface with the Schonstedt 52Cx, and in 2-feet increments down to depth with the GAU 30.

3.0 ORDNANCE/EXPLOSIVES

3.1 Recovered Ordnance/Explosives:

The types of ordnance/explosive related material encountered on the site were Artillery Fuzes and Primers, Flash tubes, and various parts of Fuzes. All ordnance parts encountered were burned out and rendered inert.

The Ordnance Avoidance task was completed with no delay to the SAIC Sampling Personnel.

4.0 UXO DAILY LOG:

Please see Attachment A.

5.0 DAILY REPORTS:

Please see Attachment B.

6.0 PHOTODOCUMENTATION

Please see Attachment C.

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ATTACHMENT A

UXO DAILY LOG

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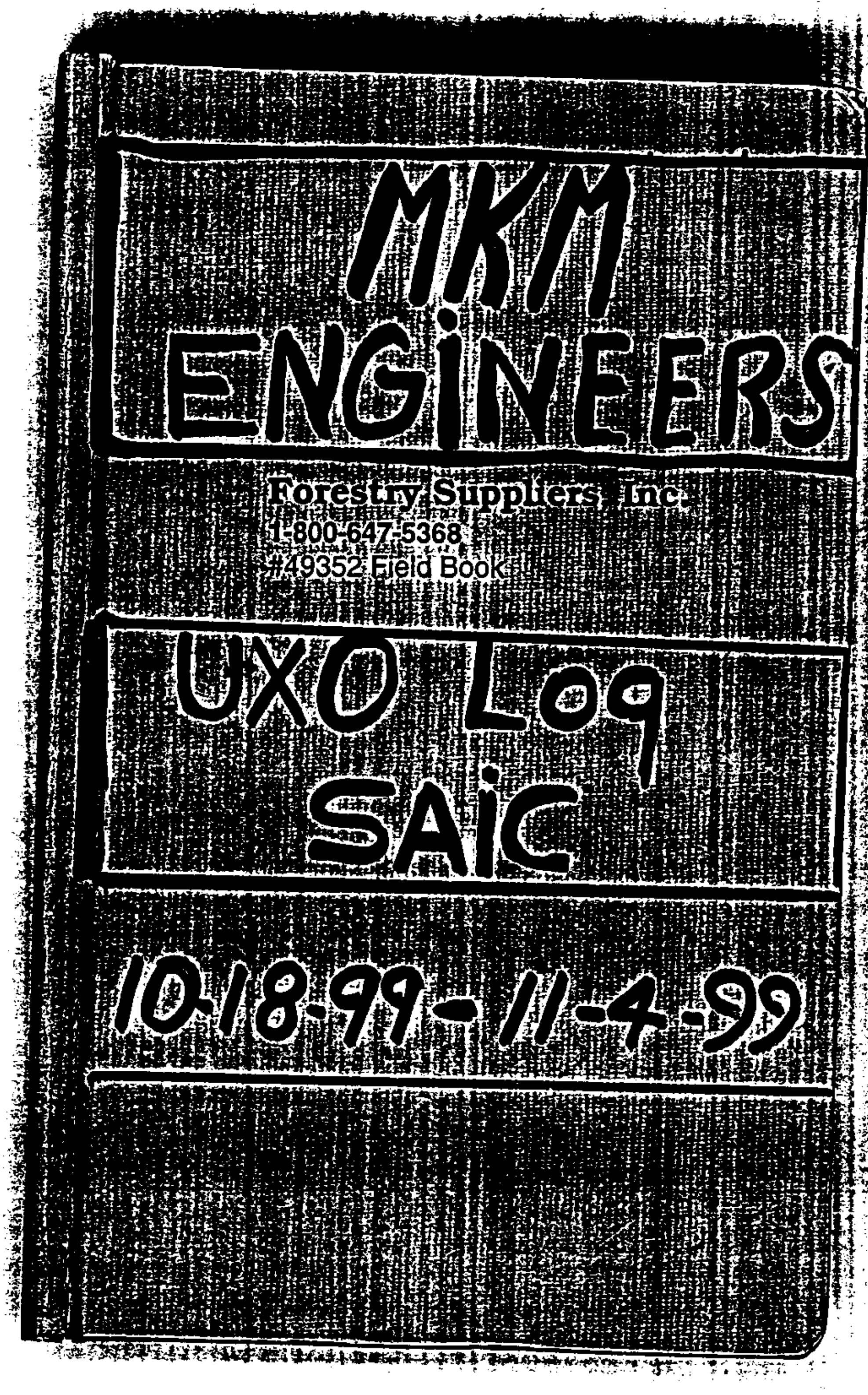
MKM ENGINEERS
Forestry Suppliers, Inc.
1-800-647-5368
#49352 Field Book
UXO Log
SAIC
10-18-99 - 11-4-99

CONTENTS

PAGE NO.	REFERENCE	DATE
	Owens & Thedford	
	Working with	
	SAIC	
	STARTed	
	10/18/99	

10/18/99

0630: ARRIVED AT WORK

0700: Safety Brief, WAITING for SAIC

1110: Meeting with SAIC INTRO, to People, Signed H&S Safety PLAN. PROVIDED Ms Heather Smith with Certificates for Owens / Thedford. Had H&S Safety Brief

1315: Secured for Lunch

1415: Returned to Bldg 1036 Helping SAIC put together Little Beaver.

1500 Departed for OBOD Area STARTed Laying out Sample Holes with SAIC

1720: DepARTed for Office.

1800: Secured for the day. M. Owen

x W. Kevin Jogo 10/18/99 SAIC

G-8

G-19

No ENTRY This PAGE
M. Owens

10/19/99 Tuesday

0630: ARRIVED AT OFFICE

0800 - Meet WITh SAIC

0810 - H & Safety Meeting

0820 - Departed 1036 / or OB OD AREA

0825: ARRIVED OBOD AreA STARTED Ordnance Avoidance FOR Sampling

1210: Departed OBOD AReA FOR LUNCh

1300: Reported BACK TO BLdg. 1036 AWAITING INSTRUCTIONS

1350: Departed 1036 for OBOD AreA for Samples.

1715: Departed OBOD AreA

1800: Secured for the Day

M. Owens

W. [illegible] 10-20-99

NO ENTRY THIS PAGE
D. Owens

10/20/99 WEDNESDAY

0630: Arrived AT Office

0800: OWENS & Thedford meet WITH SAIC

0815: SAfety Meeting

0910: DepARTed 1036 FOR OBOD AreA To Do Samples

0930: STARTed DRilling DOWN Hole SAmples Lowering Prob Down Hole Checking Every 4' NO Signs OF MAGNetic Items AT 0-4', 4-8', 8-12', 12-16' 16-20 Hit Mud & WATer

1210: BREAK For Lunch

1235: Return to Bldg. 1036

1330: DepARTed for OBOD AReA for down Hole SAmples.

1445: TOOK Ms KAThy DominiC BACK To Bldg. 1036 for Her Vehicle

1500: Returned to OBOD AReA

1600: Secured PUMPING WATer Setting Geo Probe up AGAIN

G-21

No ENTRY This PAGE
M. Owens

10/20/99 Wed. CONTINUED

1600: TOOK SAmples BACK TO 1036 FOR GeoProbe
1620: Returned TO OBOD AReA
1630: Completed Geo Probe final depth 30' NO MAGNetic SIGNATURE Picked up
1710 Departed OBOD Area
1800 Secured for the day

NFE
DWShedford

r.w. Kevin Gagos SAIC 10/21/99

G-22

NO ENTRIES This Page
W. Shedford

10/21/99

0630	Arrived at Office
0800	Thedford to Bldg 1036 to
	provide UXO support
0830	Morning safety meeting
0845	Load gear/equipment for
	sampling operations. Loaded
	Beaver in MKM vehicle and
	transported to field.
0920	Departed for DA#1.
0930	Thoroughly swept inside berm
	area w/ schonstedt to allow
	vehicular movement within area
1015	ASSISTING SAIC personnel with
	sample collection
1220	Break for lunch
1330	Return to bldg 1036.
1415	Depart for DA#1
1425	Resumed sampling operations.
1702	Departed OBOD AreA
1800	Secured for the Day

M. Owen

W. Kevin Jago 10/21/99 SAIC

No ENTRY This PAGE
M Owen

10-22-99 Friday

0630: Arrived AT Shop
0800 Owens To Bldg 1036
0815 Site H&S Brief
0845 TRANSIT TO OB/OD Area
TO START Sampleing
1045 RAIN, People in Vehicle
ALSO HAIL
1230 BROKE For LUNCH
1330 ReTURNed To 1036
1415 Returned To OB/OD Area
TO START SAmples.
1500 STARTed RAINING
1630 Secured from Sampleing
House Keeping ETC.
1800 Secured FOR The Day

M. Owen

NFE M. Owen

KLDominic 10.25.99

10-24-99 SUNDAY

0700 Arrived At Office
0800 SAIC Arrived 1036
0830 Safety Brief
0915 Departed for OB/OD AReA for Samples (WATER)
1210 Departed OB-OD AReA for Lunch
1245 Returned to 1036
1315 Departed for OBOD ArcA
1705 Departed OBOD AReA
1730 Secured for the day

M. Owen

KLDominic 10-25-99

NO ENTRY 10-25-99

M. Owen

G-24

No ENTRY This PAGE
M. Owens

10-25-99 Monday

0630 ARRIVED AT OFFICE
0800 To Bldg. 1036 WITH SAIC
0910 DEPARTED 1036 for OB/OD AREA for SAMPLES
CLEARED BURN AREAS for Auger To obTAIN Samples
1210 Departed for Lunch
1300 Returned to building 1036
1345 Departed 1036 for OB/OD AREA To START SAMPLEING
1730 Departed for Bldg. 1036
1800 Secured for the day

M. Owens

NFE
M Owens

G-33

No ENTRY This Page
M Owen

10/26/99 TUESDAY

0620 Arrived At Shop
0800 To Building 1036 SAIC
0915 Departed for OB/OD Area
for Sampleing
0920 Clearing Sample Area for
Any Contacts, All Clear
1210 Departed for Lunch
1245 Returned to Bldg 1036
1345 Departed 1036 for Demo
~~Area #1~~
1700 Departed for 1036
1800 Secured for the day

M. Owen

NFE

G-35

No Entry This Page
M Owen

10/27/99 WED

0630 Arrived AT Office
0900 Departed with SAIC to Demo Area # 1.
0920 Cleared three sampling sites for hand auger ops. All clean
1215 SAIC completed hand auger sampling at pin flags # 32, # 33 and # 34.
1230 Departed for office. SAIC securing for the day.
1240 Arrived at office.

NFE
[illegible]

No Entries This Page

11/1/99 MON

1430	To bldg 1036, checked in with SAIC
1435	Departed for Demo Area # 1
1450	SAIC commenced hand Auger sampling
1600	SAIC completed ops, loading gear into van
1615	Departed Demo Area # 1 for Office
1620	Arrived at Office

NFE

G-28

NO ENTRY
MW

11/3/99 THE

0630 Arrived at office
0715 To Bldg 1036 with SAIC. SAFETY brief and op summary
0815 On site at Demo Area 1
Rechecked sites to be sampled
0930 Survey crew (Adams, Craft, Herz and Warker) arrived at site
Setting up GPS for baseline
1000 Survey crew departed area. GPS set up and left for SAT readings.
1145 Break for lunch
1400 Return to Demo Area 1. Resume sampling operations.
1542 Surveyors back on site
1558 Surveyors departed site
1630 Secured ops
1640 Back at office

M. Owen

G-30

NO ENTRY
MD

11/3/99 WED

0630 Arrived at Office
0940 To Bldg 1036 with SAIC. SAFETY brief and op summary
0955 On site at Demo Area 1
Rechecked sites to be sampled
1000 Survey crew on site.
1140 Survey crew conducting ops outside Demo Area 1
1142 Break for lunch.
1300 Back to Demo Area 1
Surveyors working areas outside of Demo Area 1
1520 Stopped hand auger ops at DA1-42 site. Ran into ALUMINUM oxidation at 6"-8". SAIC Moved 10' to East and completed operation
1620 Completed Auger ops IN DA-1.

M Dem

ATTACHMENT B

DAILY REPORTS

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MKM Engineers, Inc. — CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	10/18/99 Monday	99-01

CONTRACTOR *(Prime or Subcontractor)*

Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477
Tel. (281) 277-5100 Fax (281) 277-5205

NAME OF SUPERINTENDENT: Robert J. Snow, Jr.

WEATHER: Partly Cloudy, Cool

TEMPERATURE: high 50s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	10,5	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	10,5	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	21
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	0
TOTAL WORK HOURS FROM START OF CONSTRUCTION	21

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?

☐ YES ■ NO

IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
GAU	30	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Conducted Health & Safety meeting.

Brief SAIC on ordnance identification, safety issues, and precautions.

Provided ordnance avoidance for SAIC during mapping and placement of sample locations.

All ordnance avoidance was performed using a Schonstedt 52 CX and a GAU 30 magnetometer.

Various projectile fuses, primers, etc. were found of the surface of the ground. These items were determined to not be a hazard.

LOCATION AND DESCRIPTION OF DEFICIENCIES

(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owens 10/18/99 | R J Snow 10/18/99

UXO SUPERVISOR DATE | SITE SUPERINTENDENT DATE

MKM Engineers, Inc.

CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	10/19/99 Tuesday	99-02

CONTRACTOR (*Prime or Subcontractor*)

Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477

Tel. (281) 277-5100 Fax (281) 277-5205

NAME OF SUPERINTENDENT: Robert J. Snow, Jr.

WEATHER: Partly Cloudy

TEMPERATURE: high 50s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	10,5	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	10,5	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	21
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	21
TOTAL WORK HOURS FROM START OF CONSTRUCTION	42

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?

☐ YES ■ NO

IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
GAU	30	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Attended SAIC Health & Safety meeting.
Brief SAIC on ordnance identification, safety issues, and precautions.
Provided ordnance avoidance for SAIC during subsurface sampling activities.
All ordnance avoidance was performed using a Schonstedt 52 CX and a GAU 30 magnetometer.
Various projectile fuses and primers were found of the surface of the ground. These items were determined not to be a hazard.

LOCATION AND DESCRIPTION OF DEFICIENCIES
(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owens 10/19/99 — UXO SUPERVISOR, DATE

RJ Snow Jr 10/19/99 — SITE SUPERINTENDENT, DATE

MK/Contractor's Daily Report, Ravenna, OH

MKM Engineers, Inc.

CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	10/20/99 Wednesday	99-03

CONTRACTOR (*Prime or Subcontractor*)	NAME OF SUPERINTENDENT
Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477 Tel. (281) 277-5100 Fax (281) 277-5205	Robert J. Snow, Jr.
WEATHER Cloudy	TEMPERATURE mid 50s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	10,5	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	10,5	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	21	WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? ☐ YES ■ NO
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	42	
TOTAL WORK HOURS FROM START OF CONSTRUCTION	63	IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
GAU	30	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Attended SAIC Health & Safety meeting.
Provided ordnance avoidance for SAIC during Geoprobe subsurface sampling activities.
All ordnance avoidance was performed using a Schonstedt 52 CX and a GAU 30 magnetometer.
GAU 30 checks every 4 feet down to a total depth of 30 feet.
Various projectile fuses and primers were found of the surface of the ground. These items were determined not to be a hazard and were moved away from the work zone.

LOCATION AND DESCRIPTION OF DEFICIENCIES
(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE REPORT NO.	REFERENCE COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owens 10/20/99 R J Smith 10/20/99

UXO SUPERVISOR DATE SITE SUPERINTENDENT DATE

MKM Engineers, Inc.

CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	10/21/99 Thursday	99-04

CONTRACTOR (*Prime or Subcontractor*)

Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477
Tel. (281) 277-5100 Fax (281) 277-5205

NAME OF SUPERINTENDENT: Robert J. Snow, Jr.

WEATHER: Cloudy

TEMPERATURE: mid 50s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	0	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	10,5	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	10,5
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	63
TOTAL WORK HOURS FROM START OF CONSTRUCTION	73,5

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?

☐ YES ■ NO

IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Attended SAIC Health & Safety meeting.
Provided ordnance avoidance for SAIC during subsurface sampling activities and to allow vehicle movement.
All ordnance avoidance was performed using a Schonstedt 52 CX magnetometer.
Various projectile fuses and primers were found of the surface of the ground. These items were determined not to be a hazard and were moved away from the work zone.

LOCATION AND DESCRIPTION OF DEFICIENCIES

(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owens 10/21/99 R J Snow Jr 10/21/99

UXO SUPERVISOR DATE SITE SUPERINTENDENT DATE

MKM Engineers, Inc.

CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	10/22/99 Friday	99-05

CONTRACTOR (*Prime or Subcontractor*)	NAME OF SUPERINTENDENT
Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477 Tel. (281) 277-5100 Fax (281) 277-5205	Robert J. Snow, Jr.

WEATHER	TEMPERATURE
Cloudy, Rain, Hail	mid 40s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	10,5	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	0	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	10,5	WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	73,5	☐ YES ■ NO
TOTAL WORK HOURS FROM START OF CONSTRUCTION	84	IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Attended SAIC Health & Safety meeting.

Provided ordnance avoidance for SAIC during subsurface sampling activities and to allow vehicle movement.

All ordnance avoidance was performed using a Schonstedt 52 CX magnetometer.

Various projectile fuses and primers were found of the surface of the ground. These items were determined not to be a hazard and were moved away from the work zone.

LOCATION AND DESCRIPTION OF DEFICIENCIES

(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owens 10/22/99 — R J Smith 10/22/99

UXO SUPERVISOR DATE SITE SUPERINTENDENT DATE

MKM Engineers, Inc.

CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	10/24/99 Sunday	99-06

CONTRACTOR *(Prime or Subcontractor)*	NAME OF SUPERINTENDENT
Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477 Tel. (281) 277-5100 Fax (281) 277-5205	Robert J. Snow, Jr.
WEATHER Cloudy, Rain, Sleet, Cold	TEMPERATURE mid 40s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	9,5	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	0	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	9,5
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	84
TOTAL WORK HOURS FROM START OF CONSTRUCTION	93,5

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?

☐ YES ■ NO

IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED
Attended SAIC Health & Safety meeting.
Provided ordnance avoidance for SAIC during subsurface sampling activities and to allow vehicle movement.
All ordnance avoidance was performed using a Schonstedt 52 CX magnetometer.
Various projectile fuses and primers were found of the surface of the ground. These items were
determined not to be a hazard and were moved away from the work zone.

LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship)* ACTION TAKEN OR TO BE TAKEN
No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owen 10/24/99 R J Snow Jr 10/24/99

UXO SUPERVISOR DATE SITE SUPERINTENDENT DATE

MKM Engineers, Inc.

CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	10/25/99 Monday	99-07

CONTRACTOR *(Prime or Subcontractor)*	NAME OF SUPERINTENDENT
Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477 Tel. (281) 277-5100 Fax (281) 277-5205	Robert J. Snow, Jr.
WEATHER Cloudy, Cool	TEMPERATURE mid 50s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	10,5	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	0	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	10,5
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	93,5
TOTAL WORK HOURS FROM START OF CONSTRUCTION	104

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?

☐ YES ■ NO

IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Attended SAIC Health & Safety meeting.
Provided ordnance avoidance for SAIC during subsurface sampling activities and to allow vehicle movement.
All ordnance avoidance was performed using a Schonstedt 52 CX magnetometer.
Various projectile fuses and primers were found of the surface of the ground. These items were determined not to be a hazard and were moved away from the work zone.

LOCATION AND DESCRIPTION OF DEFICIENCIES
(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owen 10/25/99 R J Smith Jr 10/25/99

UXO SUPERVISOR DATE SITE SUPERINTENDENT DATE

MK/Contractor's Daily Report, Ravenna, OH

MKM Engineers, Inc.

CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	10/26/99 Tuesday	99-08

CONTRACTOR *(Prime or Subcontractor)* Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477 Tel. (281) 277-5100 Fax (281) 277-5205	NAME OF SUPERINTENDENT Robert J. Snow, Jr.
WEATHER Clear, Cool	TEMPERATURE mid 50s °F
WEATHER EFFECTS	

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE

(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	10,5	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	0	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	10,5	WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	104	☐ YES ■ NO
TOTAL WORK HOURS FROM START OF CONSTRUCTION	114,5	IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY

(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Attended SAIC Health & Safety meeting.

Provided ordnance avoidance for SAIC during subsurface sampling activities and to allow vehicle movement.

All ordnance avoidance was performed using a Schonstedt 52 CX magnetometer.

Various projectile fuses and primers were found of the surface of the ground. These items were determined not to be a hazard and were moved away from the work zone.

LOCATION AND DESCRIPTION OF DEFICIENCIES

(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owens 10/26/99 RJ Smy 10/26/99

UXO SUPERVISOR DATE SITE SUPERINTENDENT DATE

MKM Engineers, Inc.

CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	10/27/99 Wednesday	99-09

CONTRACTOR *(Prime or Subcontractor)*	NAME OF SUPERINTENDENT
Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477 Tel. (281) 277-5100 Fax (281) 277-5205	Robert J. Snow, Jr.
WEATHER Cloudy, Cool	TEMPERATURE mid 50s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	0	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	4	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	4
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	114,5
TOTAL WORK HOURS FROM START OF CONSTRUCTION	118,5

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?

☐ YES ■ NO

IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Attended SAIC Health & Safety meeting.

Provided ordnance avoidance for SAIC during subsurface sampling activities and to allow vehicle movement.

All ordnance avoidance was performed using a Schonstedt 52 CX magnetometer.

LOCATION AND DESCRIPTION OF DEFICIENCIES

(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owens 10/27/99 R J Smith 10/27/99

UXO SUPERVISOR DATE SITE SUPERINTENDENT DATE

MKM Engineers, Inc.

CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	11/01/99 Monday	99-10

CONTRACTOR (*Prime or Subcontractor*)

Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477

Tel. (281) 277-5100 Fax (281) 277-5205

NAME OF SUPERINTENDENT: Robert J. Snow, Jr.

WEATHER Sunny

TEMPERATURE mid 60s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	0	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	2	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	2
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	118.5
TOTAL WORK HOURS FROM START OF CONSTRUCTION	120.5

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?

☐ YES ■ NO

IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Attended SAIC Health & Safety meeting.
Provided ordnance avoidance for SAIC during subsurface sampling activities and to allow vehicle movement.
All ordnance avoidance was performed using a Schonstedt 52 CX magnetometer.

LOCATION AND DESCRIPTION OF DEFICIENCIES
(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owens 11/1/99

UXO SUPERVISOR DATE

R J Snow Jr 11/1/99

ITE SUPERINTENDENT DATE

MKM Engineers, Inc. — CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	11/02/99 Tuesday	99-11

CONTRACTOR *(Prime or Subcontractor)*	NAME OF SUPERINTENDENT
Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477 Tel. (281) 277-5100 Fax (281) 277-5205	Robert J. Snow, Jr.
WEATHER Cloudy, Rain	TEMPERATURE mid 50s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	0	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	9.5	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	9.5
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	120.5
TOTAL WORK HOURS FROM START OF CONSTRUCTION	130

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?

☐ YES ■ NO

IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Attended SAIC Health & Safety meeting.

Provided ordnance avoidance for SAIC during subsurface sampling activities and to allow vehicle movement.

All ordnance avoidance was performed using a Schonstedt 52 CX magnetometer.

LOCATION AND DESCRIPTION OF DEFICIENCIES

(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owens 11/2/99 RJ Sm J 11/2/99

UXO SUPERVISOR DATE G-54 SITE SUPERINTENDENT DATE

MKM Engineers, Inc.

CONTRACTOR'S DAILY REPORT

CONTRACT NO.	TITLE AND LOCATION	DATE	REPORT NO.
4400014207	UXO Avoidance in Demo Area 1	11/03/99 Wednesday	99-12

CONTRACTOR *(Prime or Subcontractor)*

Sub: MKM Engineers, Inc., 4153 Bluebonnet Dr., Stafford, TX 77477

Tel. (281) 277-5100 Fax (281) 277-5205

NAME OF SUPERINTENDENT: Robert J. Snow, Jr.

WEATHER: Overcast, snow flurries

TEMPERATURE: high 30s °F

WEATHER EFFECTS

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE

(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	SUMMARY OF WORK PERFORMED
Owens	Senior UXO Super	0	MKM	UXO Avoidance for SAIC
Thedford	UXO Supervisor	7	MKM	UXO Avoidance for SAIC

TOTAL WORK HOURS ON JOB SITE THIS DATE	7
CUMULATIVE TOTAL OF WORK HOURS FROM PREV. REPORT	130
TOTAL WORK HOURS FROM START OF CONSTRUCTION	137

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?

☐ YES ■ NO

IF "YES", ATTACH SUMMARY OF INCIDENT OR OSHA REPORT

EQUIPMENT USED ON THE JOB SITE ON THIS DATE

EQUIPMENT	MODEL NO.	DESCRIPTION OF EQUIPMENT
Schonstedt	52 CX	Magnetometer
Vehicle	Ford 250	Pickup Truck

CONSTRUCTION AND PLANT EQUIPMENT REMOVED FROM THE JOB SITE PERMANENTLY

(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transportation to & from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

LOCATION AND DESCRIPTION OF WORK/TASKS PERFORMED

Attended SAIC Health & Safety meeting.
Provided ordnance avoidance for SAIC during subsurface sampling activities and to allow vehicle movement.
All ordnance avoidance was performed using a Schonstedt 52 CX magnetometer.

LOCATION AND DESCRIPTION OF DEFICIENCIES
(Materials, Equipment, Safety, and/or Workmanship) ACTION TAKEN OR TO BE TAKEN

No Deficiencies

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY *(PID,EXPRAY)*	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING
MKM UXO personnel were present during field activities.		

REMARKS (Include directions received from client's representative, visitors, compliance notices received; pertinent information)

M. Owens 11/3/99 R J Smith 11/3/99

UXO SUPERVISOR DATE SITE SUPERINTENDENT DATE

ATTACHMENT C

PHOTODOCUMENTATION

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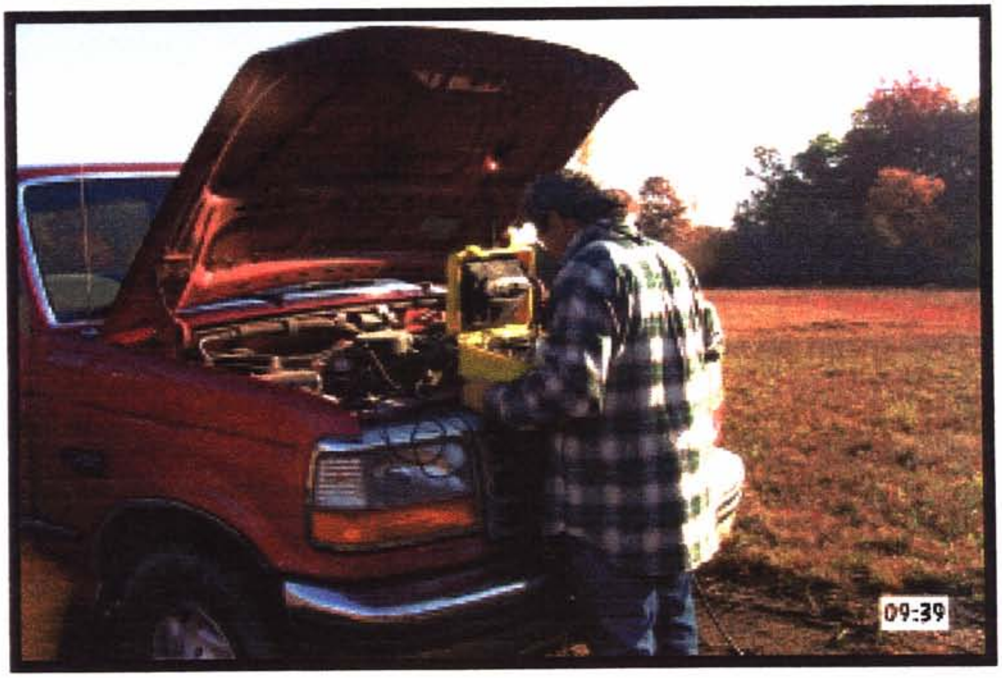
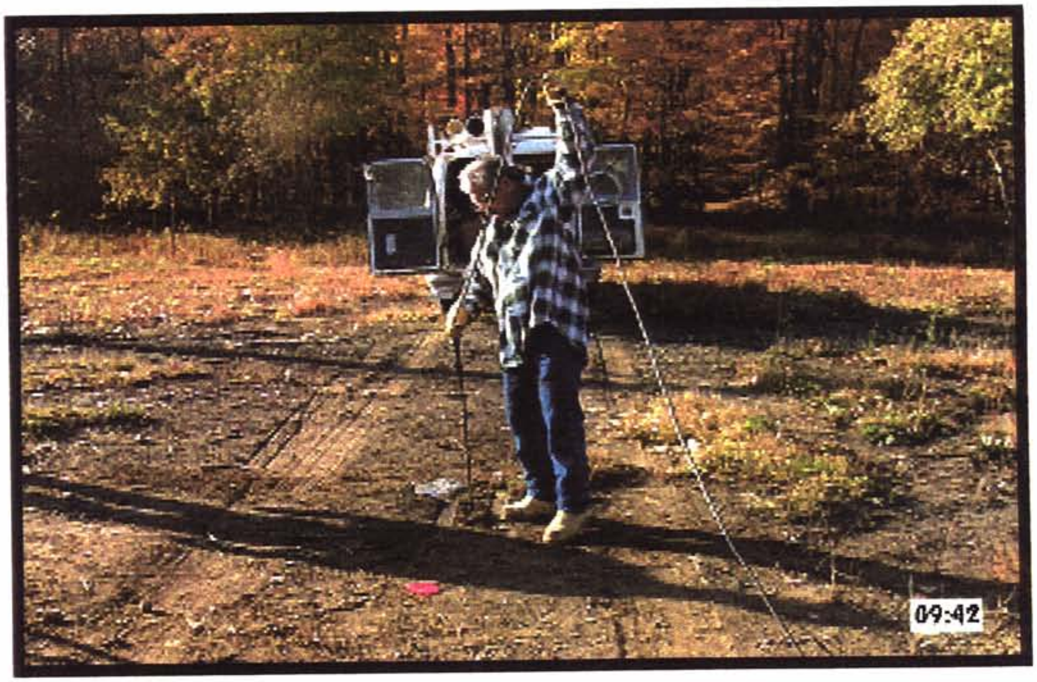
UXO Technician Clearing Area to be Sampled



UXO Technician Preparing to Use GAU 30 Probe

UXO Technician Checking Hole with GAU 30



UXO Technician Checking Hole with GAU 30

Fuzes found at Demolition Area 1

Fuze Parts Found at Demolition Area 1

SAIC Using Hand Auger After UXO Clearance

SAIC Using Geo Probe After UXO Clearance

APPENDIX H

INVESTIGATION-DERIVED WASTE MANAGEMENT REPORT

Science Applications International Corporation
An Employee-Owned Company

December 9, 1999

Mr. John Jent
U.S. Army Corps of Engineers
Louisville District
ATTN: CEORL-ED-GE
600 Martin Luther King, Jr. Place
Louisville, KY 40201-0059

SUBJECT: **Contract No. DACA62-94-D-0029, Delivery Order No. 76, Phase I Remedial Investigation at Demolition Area #1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio**

RE: **Deliverable -- Investigation-Derived Waste Characterization and Disposal Report**

Dear Mr. Jent:

Investigative activities conducted during the Phase I Remedial Investigation (RI) of Demolition Area #1 (October and November 1999) at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio, resulted in the generation of investigation-derived waste (IDW) consisting of soil and water. The IDW was generated in the course of sampling of soils and decontamination of sampling equipment. The purpose of this letter report is to characterize and classify two drums of liquid IDW for future disposal. The characterization and classification of the three soil containers will be completed in a separate letter report to be submitted at a later date because the environmental soil samples needed for characterization are still pending analysis.

This report includes a summary of all IDW generated and its origin (Table 1), comparisons of characterization sampling results to regulatory criteria (Table 2), and classification of the liquid IDW and recommendations for disposal (Table 3). This document follows guidance established by the Facility-Wide Sampling and Analysis Plan (USACE 1996), the Phase I RI Work Plan Addendum for Demolition Area #1 (USACE 1999), and the Ohio EPA (November 1997) regarding IDW disposition at RVAAP.

Table 1. Summary of Phase I RI Demolition Area #1 IDW

DRUM NUMBER	CONTAINER TYPE AND SIZE	CONTENTS AND VOLUME	GENERATION DATE(S)
NACA-001	open-top 55-gal	unsaturated soil cuttings; full	10/19 to 10/25/99
NACA-002	open-top 55-gal	unsaturated soil cuttings; full	10/25 to 11/4/99
DECON-01	closed-top 55-gal	potable wash/rinse water; full	10/21/ to 11/3/99
DECON-02	closed-top 55-gal	potable wash/rinse water; ½ full	11/4 to 11/6/99

For the characterization of liquid IDW as hazardous or non-hazardous, a composite waste characterization sample was collected from the two drums of decontamination liquids generated during the Demolition Area #1 Phase I RI. The sample was analyzed for TCLP metals, volatile organic compounds (VOCs), and ignitability. The analytical results above detection limits for the sample are compared directly to the regulatory limits to determine a waste characterization, as shown in Table 2.

Table 2. Comparison of TCLP Waste Characterization Results for Demolition Area #1 to TCLP Criteria

Drum I.D.	Chemical	TCLP Result (mg/L)	TCLP Criterion (mg/L)	TCLP Pass/Fail
DECON –1 and 2	Barium	0.39	100	P
	Cadmium	0.045	1	P
	Chromium	0.037	5	P

Based upon TCLP, VOC, and ignitability analyses of the liquid, the drums are classified as non-hazardous contaminated waste, as shown in Table 3. These results are identical to those reported for the NACA Test Area Phase 1 RI (under separate cover), because the investigations of the two sites ran concurrently, and drums were used for both projects. Both containers consist of potable wash and rinse water and suspended solids. The liquid IDW contains trace amounts of barium, cadmium, and chromium. These containers are recommended for off-site disposal at a licensed disposal facility.

Table 3. Summary of Final Waste Classification and Recommended Disposal Options

Non-Hazardous Contaminated Waste			
Container Number	**Medium**	**Waste Criterion**	**Disposal Recommendation**
DECON-01	Water	Metals	Permitted Facility
DECON-02	Water	Metals	Permitted Facility

Please provide your concurrence or direction concerning the enclosed waste characterization and disposal recommendations. Following your direction and immediate approval, we will proceed with the appropriate waste disposal before the onset of severe winter temperatures. Disposal is currently scheduled for the week of December 27, 1999.

If you have any questions or require additional information, please do not hesitate to contact me at 423-481-8761 or Kathy Dominic at 918-625-7614.

Sincerely,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Kathy L Dominic for

Stephen B. Selecman
Project Manager

CC: Eileen Mohr, Ohio EPA
Mark Patterson, RVAAP
Kevin Jago, SAIC
Kathy Dominic, SAIC

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AETS ONYX
12480B DEBARTOLO DRIVE
NORTH JACKSON, OH 44451
(330) 538-0600
FAX (330) 538-0606
ATTN: STEPHEN JAMES

18 12

17

SAMPLE CHAIN OF CUSTODY

4911-10005

CUSTOMER:
CUSTOMER #:

LAB NAME: AT LABS (330) 758-0830
FOR PICK-UP CALL KEN AT 758-5788

Explosives Deleted
PER John Sabaska 11/10/99
@ 10:00AM

H-7

SAMPLE LOCATION	DATE	SAMPLE NUMBER	PCB, SOIL/WATER - A711-25	PCB, OIL/WIPES - A711-26	FLASH POINT - A 711-64	TCLP METALS - A 711-22	REACTIVE CYANIDE - A 711-65	REACTIVE SULFIDE - A711-66	FULL TCLP - A711-15	TCLP NON-VOLATILE - A711-16	TCLP VOLATILE, ZHE - A711-17	TCLP VOLATILE, VOA - A711-18	TCLP - SEMIVOLATILES BNA - A711-19	TCLP PESTICIDES - A711-20	TCLP HERBICIDES - A711-21	TOTAL PETROLEUM HYDROCARBONS (TPH) - A711-30	TOTAL ORGANIC CARBON (TOC) - A711-62	TOTAL ORGANIC HALOGENS (TOX) - A711-63	VOC - A711-1		~~Explosives~~		
	11/4/99	EBG SO-003			✓	✓													✓		~~✓~~		
	11/4/99	EBG Decon 1-2 AQ			✓	✓													✓		~~✓~~		
	11/4/99	NACA/DA1 Decon 2 AQ			✓	✓													✓		~~✓~~		

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
[signature]	11/4/99	[signature]	11-99
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

RELINQUISHED BY:	DATE	RECEIVED BY: in LABS	DATE
		[signature]	11/10/99
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

ENVIRONMENTAL CONTROL LABORATORIES INC.

21337 Drake Road
Strongsville, Ohio 44136
(440) 238-6100
FAX: (440) 238-6294

ANALYTICAL REPORT

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10005
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Laboratory #	Client I.D.	Matrix	Sample Date
9911-10005 001	EBG-SO-003	Solid	11/04/1999
9911-10005 002	EBG Decon 1-2	Liquid	11/04/1999
9911-10005 003	NACA/DA1 Decon 1-2	Liquid	11/04/1999

****

Signed: Pat Dunn
Patrick Dunn
General Manager

NYLAP# 11222

E.C. LABORATORIES
Sample Log-in Data Sheet

Chain of Custody: Present / Absent
Sample Tags: Present / Absent
Sample Transplant: Cooler / Cardboard box Ice / Ambient

Client: Onyx
Date received: 11-9-99
Carrier: ECL
EC Lab # 9911-1005

No. of samples submitted: 3

Total No. of containers: 3

Sample Containers

	-1	-2	-3						
O&G		1	1						
Plastic Qrts									
Amber Qrts									
Squat									
VOC									
500 ml Plastic									
Plastic BAG Other	1								
Matrix	SL	LIQ	LIQ						

H-9

Temp / pH Checked by: ______

H2SO4	
HNO3	
NaOH	

Temp. ______

Sample Tags match Chain of Custody yes no

Receiving/Phone Log

Received samples LIQ in O&G Jars No VOC vials

	INITIALS/DATE
Logged-In by	
Reviewed by	
Work Order Completed	
Work Order Reported	
Work Order Mailed	

ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10005
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 003
Client I.D. NACA/DA1 Decon 1-2
Sample Date: 11/04/1999
Matrix: Liquid

TCLP Extract*: 11/17/1999

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP METALS*					11/18/99
Arsenic	6010B	0.20	BDL	mg/L	11/18/99
Barium	6010B	0.020	0.39	mg/L	11/18/99
Cadmium	6010B	0.020	0.045	mg/L	11/18/99
Chromium	6010B	0.010	0.037	mg/L	11/18/99
Lead	6010B	0.050	BDL	mg/L	11/18/99
Mercury	7470A	0.0002	BDL	mg/L	11/18/99
Selenium	6010B	0.20	BDL	mg/L	11/18/99
Silver	6010B	0.010	BDL	mg/L	11/18/99

*Extraction Method: SW 846 1311

Note:BDL(Below Detection Limit)

21337 Drake Road Strongsville, Ohio 44136
(440) 238-6100 FAX: (440) 238-6294

ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10005
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 003
Client I.D. NACA/DA1 Decon 1-2
Sample Date: 11/04/1999
Matrix: Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Flash Point	1010		> 200	DEG F	11/16/99

Note:BDL(Below Detection Limit)

21337 Drake Road Strongsville, Ohio 44136
(440) 238-6100 FAX: (440) 238-6294

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Science Applications International Corporation
An Employee-Owned Company

May 1, 2000

Mr. John Jent
U.S. Army Corps of Engineers
Louisville District
ATTN: CEORL-ED-GE
600 Martin Luther King, Jr. Place
Louisville, KY 40201-0059

SUBJECT: Contract No. DACA64-94-D-0029, Delivery Order No. 76, Phase I Remedial Investigation at Demolition Area #1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio

RE: Deliverable – Investigation-Derived Waste Characterization and Disposal Report

Dear Mr. Jent:

Investigative activities conducted in October and November 1999 during the Phase I Remedial Investigation (RI) of Demolition Area #1 at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio, resulted in the generation of investigation-derived waste (IDW) consisting of soil and water. The IDW was generated in the course of sampling of soils and decontamination of sampling equipment. The purpose of this letter report is to characterize and classify the soil IDW for future disposal. Liquid IDW characterization and disposal was the subject of a December 9,1999 letter report.

This report includes a summary of the IDW generated and its origin (Table 1), a comparison of characterization sampling results to regulatory criteria (Table 2), and classification of the IDW and recommendations for its disposal (Table 3). A summary of the analytical results used for waste characterization is provided in Attachment 1. This document follows guidance established by *the Facility-Wide Sampling and Analysis Plan for Ravenna Army Ammunition Plant* (USACE 1996) and the *Phase I RI Sampling and Analysis Plan Addendum No. 1 for Demolition Area #1* (USACE 1999), as well as Ohio EPA guidance (November 1997) regarding IDW disposition at RVAAP.

Table 1. Summary of Phase I RI Demolition Area #1 IDW

DRUM NUMBER	CONTAINER TYPE AND SIZE	CONTENTS AND VOLUME	GENERATION DATE(S)
[a]DA1-01	open-top 55-gal	unsaturated soil cuttings; full	10/19/99
[a]DA1-02	open-top 55-gal	unsaturated soil cuttings; full	10/20 to 10/21/99
[a]DA1-03	open-top 55-gal	unsaturated soil cuttings; full	10/22 to 10/25/99
DA1-04	Open-top 55-gal	unsaturated soil cuttings; full	10/25 to1/27/99
[a]DA1-05	Open-top 55-gal	unsaturated soil cuttings; 2/3 full	11/1 to 11/4/99
[b]DECON-01	closed-top 55-gal	potable wash/rinse water; full	10/21 to 11/3/99
[b]DECON-02	closed-top 55-gal	potable wash/rinse water; 1/2full	11/4 to 1/6/99

[a] Disposed March, 2000
[b] Disposed December, 1999

Per Section 7 of the Facility-Wide SAP (USACE 1996), the analytical results from environmental samples collected during the Phase I RI are used, where possible, to characterize IDW for each sampling medium. For example, analytical results from the sampling of shallow soil borings are used to characterize the drums containing correlative soil IDW for waste characterization. Only environmental samples with analytical results above method detection limits are used to characterize waste containers. These results are shown in Attachment 1.

Attachment 1 presents the frequency of detects, minimum and maximum detected concentrations, and average concentrations for each analyte. Note that the average value is calculated from all reported values, using either the detected concentration or, if the analyte was not detected, the quantitation limit for that sample. For analyses that include non-detects, the average represents an upper bound on the true average. Because quantitation limits vary between samples, the calculated average may exceed the maximum detect in cases where non-detects are included. Because surface soil drum contain IDW from several sampling locations within Demolition Area #1, minimum, maximum, and mean concentrations from all samples contained in each drum are presented for the characterization of wastes in each container.

For the characterization of solid wastes as hazardous or non-hazardous, the Resource Conservation and Recovery Act (RCRA) regulatory limits are compared to the mean and maximum concentrations of contaminants for the toxicity characteristic for hazardous wastes per 40 CFR 261.24. Analytical results for the correlative soil IDW are compared with these criteria to determine whether any wastes are potentially hazardous. In order to compare the analytical results to the TCLP criteria, a 20-fold dilution factor is applied to the analytical results for soil. If a given analyte is found to exceed 20 times the regulatory limit, it is considered to be potentially RCRA-hazardous waste. All containers of soil IDW that are determined to be RCRA-hazardous are additionally sampled for TCLP before disposal.

Five drums of soil were generated during the Phase I RI at Demolition Area #1 (Table 1). The results of correlative environmental samples indicate that four of the drums did not require further characterization. However, soil sample (DA1so-029-0076) exceeds TCLP criteria for cadmium, chromium, and lead. This sample was collected on 26 October 1999. Consequently, the drum containing soils from this sample (DA1-04) was additionally sampled for TCLP waste characterization on March 7, 2000. Comparison of the results above detection limits to TCLP criteria are shown in Table 2.

Table 2. Comparison of TCLP Characterization Results to TCLP Criteria

Drum/Sample I.D.	Chemical	TCLP Result (mg/L)	TCLP Criterion (mg/L)	TCLP Pass/Fail
DA1-04	Cadmium	BDL	100	P
	Chromium	0.018	5	P
	Lead	BDL	5	P

BDL below detection limit

Non-hazardous wastes are further characterized as contaminated or non-contaminated, based on detected contamination. Containers with detected levels of organic and/or explosive contamination or elevated concentrations of inorganic constituents are classified as non-hazardous contaminated wastes. Containers with no detected levels of organic and/or explosive contamination and no elevated levels of inorganic constituents are classified as non-hazardous, non-contaminated wastes.

None of the five soil IDW containers exceed the criteria for classification as hazardous waste. TCLP metals, VOCs, and explosives were detected, but were present at concentrations below hazardous levels. The drums are classified as non-hazardous contaminated waste, as shown in Table 3. These drums are recommended for off-site disposal at a permitted facility.

Table 3. Summary of Final Waste Classification and Recommended Disposal Options

Non-Hazardous Contaminated Waste			
Container Number	**Medium**	**Waste Criterion**	**Disposal Recommendation**
DA1-01	Surface and subsurface soils	Metals and explosives	Permitted facility
DA1-02	Surface and subsurface soils	Metals and explosives	Permitted facility

Non-Hazardous Contaminated Waste			
Container Number	**Medium**	**Waste Criterion**	**Disposal Recommendation**
DA1-03	Surface and subsurface soils	Metals and explosives	Permitted facility
DA1-04	Surface and subsurface soils	Metals and explosives	Permitted facility
DA1-05	Surface and subsurface soils	Metals and explosives	Permitted facility

Please provide your concurrence or direction concerning the enclosed waste characterization and disposal recommendations. Following your direction and immediate approval, we will proceed with the appropriate waste disposal for the remaining drum, DA1-04. Waste pickup is currently scheduled for the week of May 8, 2000.

If you have any questions or require additional information, please do not hesitate to call me at 918-625-7614.

Sincerely,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Kathryn L. Dominic

Kathryn L. Dominic
Environmental Projects Manager

Cc: Eileen Mohr, Ohio EPA
Mark Patterson, RVAAP
Kevin Jago, SAIC
Steve Selecman, SAIC

Summary of All DA#1 Soils for IDW

Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria [mg/L]	Proportion >TCLP	Mean Adj. for TCLP [mg/L]*	Max Detect Adj. for TCLP [mg/L]*
	Cyanide	Cyanide	MG/KG	1/ 122	0.602	0.83	DA1ss-024-0060-SO				
	Inorganics	Aluminum	MG/KG	122/ 122	13700	105000	DA1ss-023-0130-SO				
	Inorganics	Antimony	MG/KG	19/ 104	1.36	19.8	DA1ss-029-0076-SO				
N	Inorganics	Arsenic	MG/KG	121/ 121	13.4	31.4	DA1ss-029-0076-SO	5	0/ 121	0.671	1.57
N	Inorganics	Barium	MG/KG	122/ 122	117	1840	DA1ss-042-0114-SO	100	0/ 122	5.86	92
	Inorganics	Beryllium	MG/KG	52/ 122	0.450	0.94	DA1ss-008-0015-SO				
Y	Inorganics	Cadmium	MG/KG	17/ 122	44.4	4910	DA1ss-029-0076-SO	1	6/ 122	2.22	246
	Inorganics	Calcium	MG/KG	120/ 122	15300	240000	DA1ss-009-0017-SO				
Y	Inorganics	Chromium	MG/KG	122/ 122	18.7	174	DA1ss-029-0076-SO	5	1/ 122	0.933	8.7
	Inorganics	Cobalt	MG/KG	122/ 122	10.1	26.5	DA1ss-012-0023-SO				
	Inorganics	Copper	MG/KG	122/ 122	261	11100	DA1ss-023-0130-SO				
	Inorganics	Iron	MG/KG	121/ 122	27300	231000	DA1ss-029-0076-SO				
Y	Inorganics	Lead	MG/KG	122/ 122	30.6	772	DA1ss-029-0076-SO	5	7/ 122	1.53	38.6
	Inorganics	Magnesium	MG/KG	122/ 122	3300	9170	DA1ss-020-0162-SO				
	Inorganics	Manganese	MG/KG	122/ 122	576	14600	DA1ss-012-0023-SO				
N	Inorganics	Mercury	MG/KG	77/ 122	0.0434	0.29	DA1ss-025-0064-SO	0.2	0/ 122	0.00217	0.0145
	Inorganics	Nickel	MG/KG	122/ 122	25.1	95.4	DA1ss-023-0130-SO				
	Inorganics	Potassium	MG/KG	122/ 122	1410	4430	DA1ss-027-0071-SO				
N	Inorganics	Selenium	MG/KG	33/ 122	0.759	6.1	DA1ss-029-0076-SO	1	0/ 122	0.038	0.305
N	Inorganics	Silver	MG/KG	5/ 122	1.17	0.67	DA1ss-017-0041-SO	5	0/ 122	0.0584	0.0335
	Inorganics	Sodium	MG/KG	2/ 122	224	669	DA1ss-029-0077-SO				
	Inorganics	Thallium	MG/KG	102/ 122	0.364	0.49	DA1ss-023-0130-SO				
	Inorganics	Vanadium	MG/KG	122/ 122	19.4	39.9	DA1ss-027-0071-SO				
	Inorganics	Zinc	MG/KG	122/ 122	296	6890	DA1ss-023-0130-SO				
	Explosives	1,3,5-Trinitrobenzene	MG/KG	1/ 122	1.17	0.46	DA1ss-040-0109-SO				
	Explosives	2,4,6-Trinitrotoluene	MG/KG	8/ 122	28.2	2000	DA1ss-040-0109-SO				
N	Explosives	2,4-Dinitrotoluene	MG/KG	3/ 122	1.16	0.2	DA1ss-040-0109-SO	0.13	0/ 122	0.0581	0.01
	Explosives	4-Nitrotoluene	MG/KG	3/ 122	0.934	20	DA1ss-040-0109-SO				
	Explosives	HMX	MG/KG	1/ 122	2.29	8.2	DA1ss-040-0109-SO				
	Explosives	Nitrocellulose	MG/KG	5/ 59	7.06	175	DA1ss-040-0109-SO				
	Explosives	Nitroguanidine	MG/KG	5/ 59	0.239	0.19	DA1ss-041-0112-SO				
	Semi-Volatile Organics	2-Methylnaphthalene	MG/KG	1/ 12	0.493	0.043	DA1ss-040-0126-SO				
	Semi-Volatile Organics	Bis(2-ethylhexyl)phthalate	MG/KG	2/ 12	0.459	0.051	DA1ss-040-0126-SO				
	Semi-Volatile Organics	Pyrene	MG/KG	1/ 12	0.493	0.049	DA1ss-040-0126-SO				
	Volatile Organics	Acetone	MG/KG	3/ 12	0.0114	0.015	DA1ss-020-0049-SO				
	Volatile Organics	Dimethylbenzene	MG/KG	2/ 12	0.00543	0.0018	DA1ss-029-0077-SO				
	Volatile Organics	Methylene chloride	MG/KG	1/ 12	0.0055	0.001	DA1ss-020-0049-SO				
	Volatile Organics	Styrene	MG/KG	1/ 12	0.0058	0.0007	DA1ss-029-0076-SO				
	Volatile Organics	Toluene	MG/KG	6/ 12	0.00533	0.0081	DA1ss-020-0049-SO				

*Concentrations were adjusted for comparison to TCLP criteria. Total soil concentrations were divided by the TCLP extraction dilution factor of 20.

ENVIRONMENTAL CONTROL LABORATORIES INC.

21337 Drake Road
Strongsville, Ohio 44136
(440) 238-6100
FAX: (440) 238-6294

ANALYTICAL REPORT

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #. 0003-09002
Received Date: 3/09/00
Report Date: 3/23/00

Purchase Order #:

Subject: Ravenna

Laboratory #	Client I.D.	Matrix	Sample Date
0003-09002 001	438154-001	Solid	3/07/2000
0003-09002 002	438154-002	Solid	3/07/2000

****

Signed: Pat Dunn

Patrick Dunn
General Manager

NYLAP# 11222

ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 0003-09002
Received Date: 3/09/00
Report Date: 3/23/00

Purchase Order #:

Subject: Ravenna

Sample No: 001
Client I.D. 438154-001
Sample Date: 3/07/2000
Matrix: Solid

TCLP Extract*: 3/10/2000

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP METALS*					3/13/00
Arsenic	6010B	0.20	BDL	mg/L	3/13/00
Barium	6010B	0.020	1.8	mg/L	3/13/00
Cadmium	6010B	0.020	BDL	mg/L	3/13/00
Chromium	6010B	0.010	0.018	mg/L	3/13/00
Lead	6010B	0.050	BDL	mg/L	3/13/00
Mercury	7470A	0.0002	BDL	mg/L	3/13/00
Selenium	6010B	0.20	BDL	mg/L	3/13/00
Silver	6010B	0.010	BDL	mg/L	3/13/00

*Extraction Method: SW 846 1311

Note: BDL (Below Detection Limit)

21337 Drake Road Strongsville, Ohio 44136
(440) 238-6100 FAX: (440) 238-6294

ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 0003-09002
Received Date: 3/09/00
Report Date: 3/23/00

Purchase Order #.

Subject: Ravenna

Sample No: 001
Client I.D. 438154-001
Sample Date: 3/07/2000
Matrix: Solid

TCLP Extract*: 3/10/2000

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP VOLATILES*					3/13/00
Vinyl Chloride	8260	0.01	BDL	mg/L	3/13/00
1,1-Dichloroethene	8260	0.005	BDL	mg/L	3/13/00
2-Butanone (MEK)	8260	0.05	BDL	mg/L	3/13/00
Chloroform	8260	0.02	BDL	mg/L	3/13/00
Carbon Tetrachloride	8260	0.005	BDL	mg/L	3/13/00
Benzene	8260	0.005	BDL	mg/L	3/13/00
1,2-Dichloroethane	8260	0.005	BDL	mg/L	3/13/00
Trichloroethene	8260	0.005	BDL	mg/L	3/13/00
Tetrachloroethene	8260	0.005	BDL	mg/L	3/13/00
Chlorobenzene	8260	0.005	BDL	mg/L	3/13/00
Dibromofluoromethane	QC SURR		119	76 - 124%	3/13/00
1,2-Dichloroethane-d4	QC SURR		118	58 - 125%	3/13/00
Toluene-d8	QC SURR		86	74 - 125%	3/13/00
4-Bromofluorobenzene	QC SURR		84	73 - 127%	3/13/00

*Extraction Method: SW 846 1311

Note: BDL (Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 0003-09002
Received Date: 3/09/00
Report Date: 3/23/00

Purchase Order #:

Subject: Ravenna

Sample No: 001
Client I.D. 438154-C01
Sample Date: 3/07/2000
Matrix: Solid

TCLP Extract*: 3/10/2000
BNA Extract: 3/15/2000

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP SEMIVOLATILES*					
Cresol	8270	0.2	BDL	mg/L	3/16/00
1,4-Dichlorobenzene	8270	0.1	BDL	mg/L	3/16/00
Hexachlorobenzene	8270	0.1	BDL	mg/L	3/16/00
Hexachlorobutadiene	8270	0.1	BDL	mg/L	3/16/00
Hexachloroethane	8270	0.1	BDL	mg/L	3/16/00
2,4-Dinitrotoluene	8270	0.1	BDL	mg/L	3/16/00
Nitrobenzene	8270	0.1	BDL	mg/L	3/16/00
Pentachlorophenol	8270	0.5	BDL	mg/L	3/16/00
Pyridine	8270	0.2	BDL	mg/L	3/16/00
2,4,5-Trichlorophenol	8270	0.1	BDL	mg/L	3/16/00
2,4,6-Trichlorophenol	8270	0.1	BDL	mg/L	3/16/00
2-Fluorophenol	QC SURR		39	22 - 113%	3/16/00
Phenol-d6	QC SURR		35	9 - 104%	3/16/00
Nitrobenzene-d5	QC SURR		79	27 - 136%	3/16/00
2-Fluorobiphenyl (SURR)	QC SURR		46	11 - 117%	3/16/00
2,4,6-Tribromophenol	QC SURR		34	10 - 123%	3/16/00
p-Terphenyl-d14	QC SURR		58	18 - 134%	3/16/00

*Extraction Method: SW 846 1311

Note: BDL (Below Detection Limit)

21337 Drake Road Strongsville, Ohio 44136
(440) 238-6100 FAX: (440) 238-6294

PRELIMINARY

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 0003-09002
Received Date: 3/03/00
Report Date: 3/23/00

Purchase Order #:

Subject: Ravenna

Sample No:	001	TCLP Extract*:	3/23/2000
Client I.D.	438154-001	Pest Extract:	3/16/2000
Sample Date:	3/07/2000		
Matrix:	Solid		

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP PESTICIDES*					3/23/00
Chlordane	8081A	0.0002	BDL	mg/L	3/23/00
Endrin	8081A	0.0005	BDL	mg/L	3/23/00
Heptachlor, Total	8081A	0.0005	BDL	mg/L	3/23/00
Lindane	8081A	0.0002	BDL	mg/L	3/23/00
Methoxychlor	8081A	0.0005	BDL	mg/L	3/23/00
Toxaphene	8081A	0.002	BDL	mg/L	3/23/00
2,4,5-TP (Silvex)	8150		*	mg/L	3/21/00
2,4-D	8150		*	mg/L	3/21/00
TCMX	SURR		99	% Recovery	3/23/00

* Subcontracted results to follow

*Extraction Method: SW 846 1311

Note: BDL (Below Detection Limit)

Mar-31-00 02:30P AETS NORTH JACKSON 1 330 538 0606 P.06

Apr-07-00 02:36P AETS NORTH JACKSON 1 330 538 0606

H-23

0005 07002

SAMPLE CHAIN OF CUSTODY

ONYX ENVIRONMENTAL SVCS.
12480B DEBARTOLO DRIVE
NORTH JACKSON, OH 44451
(330) 538-0600
FAX (330) 538-0606
ATTN: STEPHEN JAMES

CUSTOMER: Ravenna
CUSTOMER #:

LAB NAME: AT LABS (330) 758-0800
FOR PICK-UP CALL KEN AT 758-5788

SAMPLE LOCATION	DATE	SAMPLE NUMBER	PCB, SOIL/WATER - A711-38	PCB, OIL/WIPES - A711-38	FLASH POINT - A711-44	TCLP METALS - A711-48	REACTIVE CYANIDE - A711-48	REACTIVE SULFIDE - A711-48	FULL TCLP - A711-18	TCLP NON-VOLATILE - A711-18	TCLP VOLATILE ZHE - A711-17	TCLP VOLATILE VOA - A711-18	TCLP - SEMIVOLATILES BNA - A711-19	TCLP PESTICIDES - A711-20	TCLP HERBICIDES - A711-21	TOTAL PETROLEUM HYDROCARBONS (TPH) - A711-30	TOTAL ORGANIC CARBON (TOC) - A711-42	TOTAL ORGANIC HALOGENS (TOX) - A711-43	VOC - A711-1				
Ravenna Army Depot	3/7/00	438154 - 001							✓														
	3/7/00	438154 - 002							✓														

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE	RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
x Bean [signature]	3/7/00	Kelly Fox [signature]	3/7/00	[signature]	3/9	[signature]	3/9/00

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE	RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
[signature]	3/8/00	[signature]	3/8 2:00				

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APPENDIX I

GEOTECHNICAL ANALYSIS REPORT

CATLIN
ENGINEERS and SCIENTISTS

1051 Johnnie Dodds Boulevard, Suite C
Mt. Pleasant, South Carolina 29464
Telephone: (803) 881-6000
Fax: (803) 881-2619

Dec 2 ,1999

Mr. Steve Selecman
Science Applications International Corporation
P.O. BOX 2502
800 Oak Ridge Turnpike
Oak Ridge, TN. 37831

Re: Geotechnical Test Results
Demolition Area 1 Phase I RI
CATLIN Project No. 99217

Dear Mr. Selecman:

Included herewith please find the completed data package for the geotechnical tests performed on soil samples submitted from the referenced site. CATLIN Engineers and Scientists appreciate the opportunity to provide geotechnical testing services to SAIC. If you should have any questions regarding these results, please contact us at (843) 881-6000 at your convenience.

Very truly yours

John Jones, P.E
Project Engineer

Fouad Bouani
Engineer 1

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Summary Table of Results for Demolition Area I Phase I RI

Sample	DA10035	DA10072
Moisture Content, %	19.87	24.53
Bulk Density, pcf	106.71	102.73
Porosity	0.36	0.38
Permeability, cm/sec	3.38E-07	3.06E-06
Specific Gravity	2.66	2.64
pH in H2 O	3.76	5.00
pH IN 0.01 Calcium Chloride	4.11	4.94
Total Organic Carbon, %	4.80	4.31
Redox Potential	494	456
Atterberg Limits		
LL	47.50	49.4
PL	31.30	24.6
PI	16.82	24.8
Classification	ML	CL

GRAIN SIZE ANALYSIS % PASSING

3" to 3/4"	100	100
3/8"	100	100
#4	99.95	94.63
#10	99.67	92.09
#20	99.20	88.46
#40	98.44	84.87
#60	97.57	81.92
#140	96.85	79.06
#200	96.04	76.21

John T. Jones

John T. Jones, P.E.

Lab Manager

PERMEABILITY TEST ANALYSIS (ASTM D5084)

Project : Demolition Area I Phase I RI

Location of Project : STA. DAI -015

Description of Soil : Brown Gray Clayey Silt

Job # : 99217
Date of Testing: 11/2/99
Tested by: JTJ
Boring # :
Sample # : DA10035
Sample Depth : 1' - 3'

Sample Type (Undisturbed or Remolded)
Standard Proctor:
Maximim Dry Density: ________ pcf
Optimum Moisture Content: ________ %

% Sample Compaction:
Sample Dry Density: 0.0
Sample Moisture Content:
Sample Wet Density: 0.0

Sample Permeation:

De-Aired Water
% Saturation: 100 %
Cell Pressure: 68 psi
Lower Pressure: 65 psi
Upper Pressure: 63 psi
Gradient: 18.26

Sample Dimensions		
	Before	After
Length (cm)	11.56	11.55
Diameter (cm)	4.82	4.86
Water Content (%)	17.38	23.74
Weight (g)	423.3	433.1

Constant Head Calculation:

$$K = [V(t_1,t_2)\ LR_T]/[P_B A t]\ \text{(cm/sec)}$$

$V(t_1,t_2)$ = Volume of flow from t_1 to t_2 (cm3)
L = Length of Sample = 11.56 cm
A = Area of Sample = 18.25 cm^2
t = $t_2 - t_1$ (sec)
P_B = Bias Pressure = 3 psi x 70.37 cm/psi $_{(cm - H2O)}$ 211.11 cm
R_T = Temperature correction = 0.953

t_2 (min)	t_1 (min)	$(t_2 - t_1)*60$ (sec)	V (cm3)	$[LR_T]/[P_B A]$ (cm^{-1})	K (cm/sec)
30	0	1800	0.05	2.86E-03	7.94E-08
60	30	1800	0.05	2.86E-03	7.94E-08
90	60	1800	0.05	2.86E-03	7.94E-08
120	90	1800	0.7	2.86E-03	1.11E-06

K_{avg} = 3.38E-07 cm/sec

CATLIN Engineers and Scientists
Geotechnical Laboratories

SPECIFIC GRAVITY (ASTM D-854)

Project: Demolition Area I Phase I RI	Job No.: 99217
Project Location: STA. DA1-015	Sample No.: DA10035
Sample Description: Brown Gray Clayey Silt	Sample Depth: 1'- 3'
	Boring No.:
Tested By: FB	Date of Testing: 11/3/99

Test No.:	4			
Wt. of Flask, Mf	158.80			
Mass Flask + H2O @ Ta = Ma @ T a	657.40			
Temperature, Ta, oC	23.0			
Method of air removal	Vacuum	Vacuum	Vacuum	Vacuum
Wt. Flask + H2O+ Soil = Mb (g)	717.20			
Temperature, Tb, oC	22.0			
Wt. Flask + H2Ob = Ma	657.40			
evap dish no.	P52			
wt of evap. dish +dry soil	347.31			
Wt. evap dish	251.50			
Wt. of dry soil = Mo (g)	95.81			
Ww = Mo + Ma - Mb	36.01			
G @ Tb = Mo/Ww	2.66			
K @ Tb	0.9993			
Gs = K * G	2.66			

CATLIN Engineers and Scientists
Geotechnical Laboratories

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area 1 Phase 1 RI	Job No.: 99217
Project Location: STA. DA1-015	Sample No.: DA10035
Sample Description: Brown Gray Clayey Silt	Sample Depth: 1'- 3'
	Boring No.:
Tested By: FB	Date of Testing: 11/11/99

Mcws	Mcds	Mc : A52	Mw	Ms	w%	Mws	Ms
19.30	19.15	15.10	0.15	4.05	3.70	200.00	192.86

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	0	0.00	0.00	100.00
4	4.76	0.10	0.05	0.05	99.95
10	2.00	0.53	0.27	0.33	99.67
20	0.841	0.91	0.47	0.80	99.20
40	0.42	1.47	0.76	1.56	98.44
60	0.25	1.67	0.87	2.43	97.57
140	0.106	1.39	0.72	3.15	96.85
200	0.074	1.56	0.81	3.96	96.04
pan	—	0.00	0.00	3.96	96.04

ATTERBERG LIMITS DETEMINATION (ASTM D4318-93)

Project: Demolition Area I Phase I RI
Location of project: STA. DAI - 015
Description Of Soil: Brown Gray Clayey Silt
Tested By: FB

Job No.: 99217
Sample No.: DA10035
Depth of Sample: 1'- 3'
Date of Testing: 11/11/99

Liquid Limit Dermination

Can No.	A47	A48	A55	A21	A35	
Wt of Soil + can, Mcws	19.87	18.63	13.78	19.53	17.51	
Wt. of dry soil + can,Mcds	18.35	17.53	12.90	18.15	15.45	
Wt. of can, Mc	15.10	15.32	10.91	15.36	11.27	
Wt. of dry soil, Ms	3.25	2.21	1.99	2.79	4.18	0.00
Wt. of moisture	1.52	1.10	0.88	1.38	2.06	0.00
Water content, w%	46.77	49.77	44.22	49.46	49.28	#DIV/0!
No. of blows, N	10	19	38	15	27	

Plastic Limit Determination

Can no.	C19	C63	C22			
Wt. of wet soil + can, Mcws	4.51	5.15	5.46			
Wt. of dry soil +can, Mcds	3.88	4.49	5.18			
Wt. of can, Mc	1.87	2.39	4.28			
Wt. of dry soil, Ms	2.01	2.10	0.90	0	0	0
Wt. of moisture, Mw	0.63	0.66	0.28	0	0	0
Water content, W% = Wp	31.34	31.43	31.11	#DIV/0!	#DIV/0!	#DIV/0!

LIQUID LIMIT =	47.5
PLASTIC LIMIT =	31.3
PLASTICITY INDEX =	16.2
CLASSIFICATION	ML

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CATLIN ENGINEERS 2404
JOHN JONES
1051 JONNIE DODDS BLVD.
MT PLEASANT, SC 29464

Lab Number: 99-A167755
Sample ID: DA10035
Sample Type: Soil
Site ID:

Project: 99217
Project Name: CATLIN
Sampler: DS

Date Collected: 11/ 2/99
Time Collected:
Date Received: 11/ 3/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS										
Fractional Organic Matter	4.80	%			1	11/ 6/99	16:15	A Hardison	ASTM 2974	2976
Redox Potential	494.	mV vs NHE		20.	1	11/ 9/99	16:00	McFarland	SM2580	6383

FOC/TOC = 2.8%

ND = Not detected at the report limit.

These results relate only to the items tested.
This report shall not be reproduced except in full and with permission of the laboratory.

Report Approved By: ______________ Report Date: 11/ 9/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director
Gail A Lage, Technical Services

PERMEABILITY TEST ANALYSIS (ASTM D5084)

Project : Demolition Area I Phase I RI

Location of Project : NACA Plane Storage Area

Description of Soil : Brown Gray Clay With Sand

Job # : 99217
Date of Testing: 11/3/99
Tested by: JTJ
Boring # :
Sample # : DA10072
Sample Depth : 1' - 3'

Sample Type (Undisturbed or Remolded)
Standard Proctor:
Maximim Dry Density: ____ pcf
Optimum Moisture Content: ____ %

% Sample Compaction:
Sample Dry Density: 0.0
Sample Moisture Content:
Sample Wet Density: 0.0

Sample Permeation:

De-Aired Water

% Saturation: 100 %
Cell Pressure: 68 psi
Lower Pressure: 63 psi
Upper Pressure: 60 psi
Gradient: 20.70

Sample Dimensions		
	Before	After
Length (cm)	10.20	10.18
Diameter (cm)	4.80	4.86
Water Content (%)	18.2	22.8
Weight (g)	359.0	369.1

Constant Head Calculation:

$$K = [V(t_1,t_2)\ LR_T]/[P_B A t]\ \text{(cm/sec)}$$

$V(t_1,t_2)$ = Volume of flow from t_1 to t_2 (cm3)
L = Length of Sample = 10.20 cm
A = Area of Sample = 18.1 cm^2
t = $t_2 - t_1$ (sec)
P_B = Bias Pressure = 3 psi x 70.37 cm/psi $_{(cm - H2O)}$ 211.11 cm
R_T = Temperature correction = 0.953

t_2 (min)	t_1 (min)	$(t_2 - t_1)$*60 (sec)	V (cm3)	$[LR_T]/[P_B A]$ (cm^{-1})	K (cm/sec)
180	175	300	0.35	2.54E-03	3.0E-06
185	180	300	0.35	2.54E-03	3.0E-06
190	185	300	0.35	2.54E-03	3.0E-06
195	190	300	0.35	2.54E-03	3.0E-06

K_{avg} = 3.0E-06 cm/sec

SPECIFIC GRAVITY (ASTM D-854)

Project: Demolition Area I Phase I RI	Job No.: 99217
Project Location: NACA Plane Storage Area	Sample No.: DA10072
Sample Description: Brown Gray Clay With Sand	Sample Depth: 1'- 3'
	Boring No.:
Tested By: FB	Date of Testing: 11/3/99

Test No.:	3			
Wt. of Flask, Mf	158.20			
Mass Flask + H2O @ Ta = Ma @ T a	653.55			
Temperature, Ta, oC	23.0			
Method of air removal	Vacuum	Vacuum	Vacuum	Vacuum
Wt. Flask + H2O+ Soil = Mb (g)	712.70			
Temperature, Tb, oC	23.0			
Wt. Flask + H2Ob = Ma	653.55			
evap dish no.	P53			
wt of evap. dish +dry soil	345.20			
Wt. evap dish	250.10			
Wt. of dry soil = Mo (g)	95.10			
Ww = Mo + Ma - Mb	35.95			
G @ Tb = Mo/Ww	2.65			
K @ Tb	0.9993			
Gs = K * G	2.64			

CATLIN Engineers and Scientists
Geotechnical Laboratories

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area 1 Phase 1 RI	Job No.: 99217
Project Location: NACA Plane Storage Area	Sample No.: DA10072
Sample Description: Brown Gray Clay With Sand	Sample Depth: 1'- 3'
	Boring No.:
Tested By: FB	Date of Testing: 10/26/99

Mcws	Mcds	Mc : A18	Mw	Ms	w%	Mws	Ms
21.40	19.43	11.40	1.97	8.03	24.53	200.00	160.60

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	0	0.00	0.00	100.00
4	4.76	8.62	5.37	5.37	94.63
10	2.00	4.08	2.54	7.91	92.09
20	0.841	5.83	3.63	11.54	88.46
40	0.42	5.77	3.59	15.13	84.87
60	0.25	4.73	2.95	18.08	81.92
140	0.106	4.60	2.86	20.94	79.06
200	0.074	4.57	2.85	23.79	76.21
pan	---	0.00	0.00	23.79	76.21

ATTERBERG LIMITS DETEMINATION (ASTM D4318-93)

Project: Demolition Area I Phase I RI
Location of project: NACA Plane Storage Area
Description Of Soil: Brown Gray Clay With Sand
Tested By: FB

Job No.: 99217
Sample No.: DA10072
Depth of Sample: 1'- 3'
Date of Testing: 11/11/99

Liquid Limit Dermination

Can No.	A43	A51	A8	A25	A40	
Wt of Soil + can, Mcws	17.18	14.34	15.10	16.13	17.15	
Wt. of dry soil + can,Mcds	16.56	13.26	13.81	14.50	16.46	
Wt. of can, Mc	15.32	11.26	11.30	11.20	15.00	
Wt. of dry soil, Ms	1.24	2.00	2.51	3.30	1.46	0.00
Wt. of moisture	0.62	1.08	1.29	1.63	0.69	0.00
Water content, w%	50.00	54.00	51.39	49.39	47.26	#DIV/0!
No. of blows, N	41	12	18	25	38	

Plastic Limit Determination

Can no.	C17	C7	C24			
Wt. of wet soil + can, Mcws	3.54	4.10	4.41			
Wt. of dry soil +can, Mcds	3.22	3.76	4.01			
Wt. of can, Mc	1.92	2.39	2.37			
Wt. of dry soil, Ms	1.30	1.37	1.64	0	0	0
Wt. of moisture, Mw	0.32	0.34	0.40	0	0	0
Water content, W% = Wp	24.62	24.82	24.39	#DIV/0!	#DIV/0!	#DIV/0!

LIQUID LIMIT = 49.4
PLASTIC LIMIT = 24.6
PLASTICITY INDEX = 24.8
CLASSIFICATION CL

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CATLIN ENGINEERS 2404
JOHN JONES
1051 JONNIE DODDS BLVD.
MT PLEASANT, SC 29464

Lab Number: 99-A167756
Sample ID: DA10072
Sample Type: Soil
Site ID:

Project: 99217
Project Name: CATLIN
Sampler: DS

Date Collected: 11/ 2/99
Time Collected:
Date Received: 11/ 3/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS										
Fractional Organic Matter	4.31	%			1	11/ 6/99	16:15	A Hardison	ASTM 2974	2976
Redox Potential	456.	mV vs NHE		20.	1	11/ 9/99	16:00	McFarland	SM2580	6383

TOC/FOC = 2.5%

ND = Not detected at the report limit.

These results relate only to the items tested.
This report shall not be reproduced except in full and with permission of the laboratory.

Report Approved By: [signature] Report Date: 11/ 9/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director
Gail A Lage, Technical Services

Chain of Custody Record

TESTAMERICA INC. #2404

Page 1 of 1

- ☐ Asheville, NC (A) (828) 254-5169
- ☐ Bartlett, IL (C) (630) 289-3100
- ☐ Cedar Falls, IA (E) (319) 277-2401
- ☐ Charlotte, NC (G) (704) 392-1164
- ☐ Dayton, OH (I) (937) 294-6856
- ☐ Lumberton, NC (K) (910) 738-6190
- ☐ Nashville, TN (M) (615) 726-0177
- ☐ Pontiac, MI (O) (248) 332-1940
- ☐ Rockford, IL (Q) (815) 874-2171
- ☐ Atlanta, GA (B) (770) 368-0636
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- ☐ Charleston, SC (F) (843) 849-6550
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- ☐ Davenport, IA (J) (319) 323-7944
- ☐ Indianapolis, IN (L) (317) 842-4261
- ☐ Macon, GA (N) (912) 757-0811
- ☐ Orlando, FL (P) (407) 851-2560
- ☐ Watertown, WI (R) (920) 261-1660

Client: CAtlin
Project No.: 99217
Report Address: 1051 Johnnie Dodds Blvd MT Pleasant SC 29464
Invoice Address: —
Attn: John
Attn:
Phone No.: 843 881 6000
Sampled By: D.S.
Fax No.: 843 881 2619
P.O. No: C-991102-1
Quote No.
State Samples Collected: 2 soil

TURNAROUND TIME
☒ Standard
☐ Rush (surcharges may apply)
Date Needed: 11.10.99

REQUESTED PARAMETERS

166941
2404

Redox Potential SM-2580
T.O.C EPA 9060

Is this work being conducted for regulatory compliance monitoring? Yes___ No___

Is this work being conducted for regulatory enforcement action? Yes___ No___

Which regulations apply:
RCRA___ NPDESWastewater___
UST___ Drinking Water___
Other___ None___

Sample ID	Date	Time	Comp (C) Grab (G)	Matrix	Lab Use	Redox Potential SM-2580	T.O.C EPA 9060								HCl	NaOH	HNO_3	H_2SO_4	Other	None	REMARKS
DA10035	11/2/99	Am	G	4 oz	167755	x	x													x	Acct #2404
DA10072	↓	↓	↓	↓	167756	x	x													x	

I-16

QC Deliverables: ☐ None ☐ Level 2 - Batch QC ☐ Level 3 ☐ Level 4 ☐ Other

FAX CHAIN TO CHARLESTON

Init Lab Temp: 4°C
Rec Lab Temp

COMMENTS: Please FAX Results. Shipped FedEx to SpecAssay #815965162784

Relinquished By: [signature]	Date 11/2/99 Time 12:15 pm	Received By: J. Braxford	Date 11/2/99 Time 12:15	LAB USE ONLY:
Relinquished By: J. Braxford	Date 11/2/99 Time 17:00	Received By:	Date Time	
Relinquished By:	Date Time	Received By: [signature]	Date Time	Custody Seal: ☐ Yes ☐ No ☐ N/A
Relinquished By	Date Time	Received By:	Date 11/3/99 Time 9:00	Bottles Supplied by TA: ☐ Yes ☐ No

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4800

P o 2
C-991102-1

COC NO.: DA1CE- 1
page 1 of 1

CHAIN OF CUSTODY RECORD

I-17

PROJECT NAME: Demolition Area 1 Phase I RI   CATLIN 99217

DELIVERY ORDER NO: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumbach   **(Printed Name)** Vicki Brumback

LABORATORY NAME: Catlin Engineers

LABORATORY ADDRESS: 1051 Johnnie Dodds Blvd. Suite C Mt. Pleasent, SC 29464

PHONE NO: 803-881-6000

OBSERVATIONS, COMMENTS,

REQUESTED PARAMETERS

	Sample ID	Date Collected	Time Collected	Matrix	Grain Size	Moisture	Atterberg Limits	USCS Classification	pH	Redox Potential	Organic Carbon	Content	Bulk Density	Specific Gravity	Soil Permeability	No. of Containers
1	DA1 ΦΦ35	1Φ-19-99	154Φ	Soil	✓	✓	✓		✓	✓	✓		✓	✓	✓	1
	DA1 ΦΦ72	↓	16ΦΦ	↓	✓	✓	✓		✓	✓	✓		✓	✓	✓	1

VB 10-20-99

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumbach	10-20-99 1200	[illegible signature]	10/21/99
COMPANY NAME: SAIC		COMPANY NAME: CATLIN	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 2

Cooler Temperature: NA

Cooler ID: NA
Fed Ex Shipping Tube

FEDEX NUMBER: 81Φ2546 71453 (2 tubes)

(grain size ASTM D422) (sp grav. ASTM D854)
(bulk density - internal lab meth)
(ph ASTM D4972) (moisture ASTM D2216)
(redox pot SM 258Φ)
(organic carbon content 9Φ6Φ) (AL ASTM D4318)
(soil perm D5Φ84)

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CATLIN
ENGINEERS and SCIENTISTS

1051 Johnnie Dodds Boulevard, Suite C
Mt. Pleasant, South Carolina 29464
Telephone: (803) 881-6000
Fax: (803) 881-2619

Dec 20 ,1999

Mr. Steve Selecman
Science Applications International Corporation
P.O. BOX 2502
800 Oak Ridge Turnpike
Oak Ridge, TN. 37831

Re: Geotechnical Test Results
Demolition Area 1 Phase I RI
CATLIN Project No. 99229y

Dear Mr. Selecman :

Included herewith please find the completed data package for the geotechnical tests performed on soil samples submitted from the referenced site. CATLIN Engineers and Scientists appreciate the opportunity to provide geotechnical testing services to SAIC. If you should have any questions regarding these results, please contact us at (843) 881-6000 at your convenience.

Very truly yours

John Jones, P.E
Project Engineer

Fouad Bouani
Engineer 1

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SUMMARY TABLE OF RESULTS FOR Demolition Area 1 Phase I RI

SAMPLE NO.	MOISTURE CONTENT (%)	USCS CLASS	ATTERBERG LIMITS FINES CLASSIFICATION				SIEVE ANALYSIS (% PASSING)											
			LL	PL	PI		3"	2"	1 1/2"	3/4"	3/8"	#4	#10	#20	#40	#60	#140	#200
DA10161	21.70	CL	49.1	25.9	23.2	CL	100	100	100	100	100	99.90	99.72	99.58	99.52	99.46	99.35	99.34
DA10039	20.40	CL	43.3	22.7	20.6	CL	100	100	100	100	100	98.21	96.71	95.59	93.93	92.48	90.93	90.76
DA10021	11.20	SC	NonPlastic				100	100	100	100	100	79.54	66.06	59.87	56.97	52.85	24.31	22.85
DA10041	22.30	CL	41.3	21	20.3	CL	100	100	100	100	100	99.67	99.49	99.16	98.92	98.73	98.04	97.82
DA10040	18.90	CL	31.7	9.6	22.1	CL	100	100	100	100	100	99.90	99.65	99.44	99.25	99.13	98.59	98.47
DA10119							100	100	100	100	100	83.73	50.83	24.85	12.42	7.86	6.55	6.51
DA10118							100	100	100	100	100	96.02	87.24	75.80	62.35	45.83	34.46	33.12
DA10120							100	100	100	100	100	95.44	89.88	86.49	83.19	77.54	68.46	66.63
DA10117							100	100	100	100	100	90.46	81.85	72.57	53.32	34.27	16.14	14.74

John Jones, P.E.
Laboratory Manager

CATLIN Engineers and Scientists
Geotechnical Laboratories

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area I Phase I RI	Job No.: 99229
Project Location: On Berm	Sample No.: DA10021
Sample Description: Brown Clayey Sand	Sample Depth: 0'- 1'
	Boring No.:
Tested By: FB	Date of Test.: 12/5/99

Mcws	Mcds	Mc : A45	Mw	Ms	w%	Mws	Ms
23.35	22.59	15.46	0.76	7.13	10.7	200.00	180.74

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	15.75	8.71	0.00	100.00
4	4.76	36.97	20.46	20.46	79.54
10	2.00	24.38	13.49	33.94	66.06
20	0.841	11.18	6.19	40.13	59.87
40	0.42	5.24	2.90	43.03	56.97
60	0.25	7.44	4.12	47.15	52.85
140	0.106	51.59	28.54	75.69	24.31
200	0.074	2.64	1.46	77.15	22.85
pan	---	0	0.00	77.15	22.85

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area I Phase I RI	Job No.: 99229
Project Location: Inside Bermed Area	Sample No.: DA10039
Sample Description: Brown Lean Clay	Sample Depth: 0'- 1'
	Boring No.:
Tested By: FB	Date of Test.: 12/5/99

Mcws	Mcds	Mc : A12	Mw	Ms	w%	Mws	Ms
24.00	22.70	14.94	1.30	7.76	16.8	200.00	171.30

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	0	0.00	0.00	100.00
4	4.76	3.06	1.79	1.79	98.21
10	2.00	2.58	1.51	3.29	96.71
20	0.841	1.92	1.12	4.41	95.59
40	0.42	2.84	1.66	6.07	93.93
60	0.25	2.49	1.45	7.52	92.48
140	0.106	2.64	1.54	9.07	90.93
200	0.074	0.30	0.18	9.24	90.76
pan	---		0.00	9.24	90.76

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area I Phase I RI	Job No.: 99229
Project Location: Inside Bermed Area	Sample No.: DA10041
Sample Description: Brown Lean Clay	Sample Depth: 3'- 5'
	Boring No.:
Tested By: FB	Date of Test.: 12/5/99

Mcws	Mcds	Mc	Mw	Ms	w%	Mws	Ms
24.28	22.85	15.26	1.43	7.59	18.8	200.0	168.29

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	0	0.00	0.00	100.00
4	4.76	0.56	0.33	0.33	99.67
10	2.00	0.30	0.18	0.51	99.49
20	0.841	0.55	0.33	0.84	99.16
40	0.42	0.40	0.24	1.08	98.92
60	0.25	0.32	0.19	1.27	98.73
140	0.106	1.17	0.70	1.96	98.04
200	0.074	0.37	0.22	2.18	97.82
pan	---	0	0.00	2.18	97.82

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area 1 Phase I RI	Job No.: 99229
Project Location: Inside Bermed Area	Sample No.: DA10161
Sample Description: Brown Lean Clay	Sample Depth: 6'- 8'
	Boring No.:
Tested By: FB	Date of Test.: 12/5/99

Mcws	Mcds	Mc:A56	Mw	Ms	w%	Mws	Ms
24.82	23.10	14.92	1.72	8.18	21.0	200.0	165.25

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	0	0.00	0.00	100.00
4	4.76	0.17	0.10	0.10	99.90
10	2.00	0.30	0.18	0.28	99.72
20	0.841	0.23	0.14	0.42	99.58
40	0.42	0.10	0.06	0.48	99.52
60	0.25	0.10	0.06	0.54	99.46
140	0.106	0.17	0.10	0.65	99.35
200	0.074	0.02	0.01	0.66	99.34
pan	---	0	0.00	0.66	99.34

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area I Phase I RI	Job No.: 99229
Project Location: Hinkle Cr. South of AOC	Sample No.: DA10119
Sample Description: Brown Sand With Hash	Sample Depth: NA
	Boring No.:
Tested By: FB	Date of Test.: 12/5/99

Mcws	Mcds	Mc:A31	Mw	Ms	w%	Mws	Ms
23.59	22.12	11.13	1.47	10.99	13.4	201.93	178.11

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	3.90	2.19	0.00	100.00
4	4.76	28.97	16.27	16.27	83.73
10	2.00	58.60	32.90	49.17	50.83
20	0.841	46.27	25.98	75.15	24.85
40	0.42	22.14	12.43	87.58	12.42
60	0.25	8.13	4.56	92.14	7.86
140	0.106	2.33	1.31	93.45	6.55
200	0.074	0.08	0.04	93.49	6.51
pan	---	0	0.00	93.49	6.51

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area I Phase I RI	Job No.: 99229
Project Location: West Area East of AOC	Sample No.: DA10118
Sample Description: Black Silty Sand	Sample Depth: NA
	Boring No.:
Tested By: FB	Date of Test.: 12/5/99

Mcws	Mcds	Mc:A11	Mw	Ms	w%	Mws	Ms
16.99	15.35	10.88	1.64	4.47	36.7	201.10	147.12

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	0	0.00	0.00	100.00
4	4.76	5.86	3.98	3.98	96.02
10	2.00	12.91	8.78	12.76	87.24
20	0.841	16.83	11.44	24.20	75.80
40	0.42	19.79	13.45	37.65	62.35
60	0.25	24.30	16.52	54.17	45.83
140	0.106	16.73	11.37	65.54	34.46
200	0.074	1.97	1.34	66.88	33.12
pan	---	0	0.00	66.88	33.12

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area I Phase I RI	Job No.: 99229
Project Location: HC- 2"	Sample No.: DA10120
Sample Description: Brown Sand With Clay	Sample Depth: NA
	Boring No.:
Tested By: FB	Date of Test.: 12/5/99

Mcws	Mcds	Mc:A2	Mw	Ms	w%	Mws	Ms
23.62	21.84	15.30	1.78	6.54	27.2	201.58	158.45

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	4.98	3.14	0.00	100.00
4	4.76	7.22	4.56	4.56	95.44
10	2.00	8.82	5.57	10.12	89.88
20	0.841	5.36	3.38	13.51	86.49
40	0.42	5.23	3.30	16.81	83.19
60	0.25	8.96	5.65	22.46	77.54
140	0.106	14.38	9.08	31.54	68.46
200	0.074	2.90	1.83	33.37	66.63
pan	---	0	0.00	33.37	66.63

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area I Phase I RI	Job No.: 99229
Project Location: Hinkley Cr. Upstream	Sample No.: DA10117
Sample Description: Brown Silty Sand	Sample Depth: NA
	Boring No.:
Tested By: FB	Date of Test.: 12/5/99

Mcws	Mcds	Mc:A9	Mw	Ms	w%	Mws	Ms
26.27	24.30	15.40	1.97	8.90	22.1	200.53	164.19

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	5.13	3.12	0.00	100.00
4	4.76	15.67	9.54	9.54	90.46
10	2.00	14.13	8.61	18.15	81.85
20	0.841	15.23	9.28	27.43	72.57
40	0.42	31.62	19.26	46.68	53.32
60	0.25	31.27	19.05	65.73	34.27
140	0.106	29.76	18.13	83.86	16.14
200	0.074	2.31	1.41	85.26	14.74
pan	---	0	0.00	85.26	14.74

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Demolition Area I Phase I RI	Job No.: 99229
Project Location: Inside Bermed Area	Sample No.: DA10040
Sample Description: Brown Lean Clay	Sample Depth: 1'- 3'
	Boring No.:
Tested By: FB	Date of Test.: 12/5/99

Mcws	Mcds	Mc:A25	Mw	Ms	w%	Mws	Ms
20.69	19.10	11.20	1.59	7.90	20.1	200.0	166.49

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	0	0.00	0.00	100.00
4	4.76	0.17	0.10	0.10	99.90
10	2.00	0.42	0.25	0.35	99.65
20	0.841	0.35	0.21	0.56	99.44
40	0.42	0.31	0.19	0.75	99.25
60	0.25	0.20	0.12	0.87	99.13
140	0.106	0.90	0.54	1.41	98.59
200	0.074	0.20	0.12	1.53	98.47
pan	---	0	0.00	1.53	98.47

CATLIN Engineers and Scientists
Geotechnical Laboratories

Project: Demolition Area 1 Phase I RI
Location of project: Inside Bermed Area
Description Of Soil: Brown Lean Clay
Tested By: FB

Job No.: 99229
Sample No.: DA10161
Depth of Sample: 6'- 8'
Date of Testing: 12/9/99

Liquid Limit Dermination

Can No.	A57	A55	A31	A56	A44
Wt of Soil + can, Mcws	17.04	12.65	14.77	18.33	16.12
Wt. of dry soil + can,Mcds	15.10	12.07	13.58	17.21	14.48
Wt. of can, Mc	11.19	10.90	11.14	14.94	11.24
Wt. of dry soil, Ms	3.91	1.17	2.44	2.27	3.24
Wt. of moisture	1.94	0.58	1.19	1.12	1.64
Water content, w%	49.62	49.57	48.77	49.34	50.62
No. of blows, N	15	28	39	21	10

Plastic Limit Determination

Can no.	C55	A20	A59
Wt. of wet soil + can, Mcws	5.54	5.34	5.41
Wt. of dry soil +can, Mcds	5.25	5.14	5.13
Wt. of can, Mc	4.12	4.32	4.12
Wt. of dry soil, Ms	1.13	0.82	1.01
Wt. of moisture, Mw	0.29	0.20	0.28
Water content, W% = Wp	25.66	24.39	27.72

LIQUID LIMIT =	49.1
PLASTIC LIMIT =	25.9
PLASTICITY INDEX =	23.2
CLASSIFICATION	CL

CATLIN Engineers and Scientists
Geotechnical Laboratories

Project: Demolition Area 1 Phase I RI
Location of project: Inside Bermed Area
Description Of Soil: Brown Lean Clay
Tested By: FB

Job No.: 99229
Sample No.: DA10039
Depth of Sample: 0'-1'
Date of Testing: 12/9/99

Liquid Limit Dermination

Can No.	A30	A52	A50	A36	A1
Wt of Soil + can, Mcws	19.07	20.50	17.01	17.77	21.34
Wt. of dry soil + can,Mcds	17.90	18.89	15.16	15.65	19.56
Wt. of can, Mc	15.22	15.06	10.91	10.88	15.30
Wt. of dry soil, Ms	2.68	3.83	4.25	4.77	4.26
Wt. of moisture	1.17	1.61	1.85	2.12	1.78
Water content, w%	43.66	42.04	43.53	44.44	41.78
No. of blows, N	19	39	29	10	46

Plastic Limit Determination

Can no.	A54	A15	A39
Wt. of wet soil + can, Mcws	5.17	5.28	5.14
Wt. of dry soil +can, Mcds	4.97	5.06	4.95
Wt. of can, Mc	4.10	4.11	4.09
Wt. of dry soil, Ms	0.87	0.95	0.86
Wt. of moisture, Mw	0.20	0.22	0.19
Water content, W% = Wp	22.99	23.16	22.09

LIQUID LIMIT =	43.3
PLASTIC LIMIT =	22.7
PLASTICITY INDEX =	20.6
CLASSIFICATION	CL

CATLIN Engineers and Scientists
Geotechnical Laboratories

Project: Demolition Area 1 Phase I RI
Location of project: Inside Bermed Area
Description Of Soil: Brown Lean Clay
Tested By: FB

Job No.: 99229
Sample No.: DA10041
Depth of Sample: 3'- 5'
Date of Testing: 12/9/99

Liquid Limit Dermination

Can No.	A48	A21	A19	A23	A38
Wt of Soil + can, Mcws	20.32	17.93	19.31	17.22	19.64
Wt. of dry soil + can,Mcds	18.88	17.17	18.07	15.50	18.26
Wt. of can, Mc	15.32	15.37	15.03	11.35	14.95
Wt. of dry soil, Ms	3.56	1.80	3.04	4.15	3.31
Wt. of moisture	1.44	0.76	1.24	1.72	1.38
Water content, w%	40.45	42.22	40.79	41.45	41.69
No. of blows, N	38	10	32	26	19

Plastic Limit Determination

Can no.	A58	A22	C7
Wt. of wet soil + can, Mcws	5.28	4.84	3.18
Wt. of dry soil +can, Mcds	5.08	4.71	2.96
Wt. of can, Mc	4.11	4.10	1.91
Wt. of dry soil, Ms	0.97	0.61	1.05
Wt. of moisture, Mw	0.20	0.13	0.22
Water content, W% = Wp	20.62	21.31	20.95

LIQUID LIMIT =	41.3
PLASTIC LIMIT =	21.0
PLASTICITY INDEX =	20.3
CLASSIFICATION	CL

CATLIN Engineers and Scientists
Geotechnical Laboratories

Project: Demolition Area 1 Phase I RI
Location of project: Inside Bermed Area
Description Of Soil: Brown Lean Clay
Tested By: FB

Job No.: 99229
Sample No.: DA10040
Depth of Sample: 1'- 3'
Date of Testing: 12/9/99

Liquid Limit Dermination

Can No.	A5	A8	A12	A43	A4
Wt of Soil + can, Mcws	15.82	17.11	20.54	16.11	18.24
Wt. of dry soil + can,Mcds	14.61	15.71	19.28	15.92	17.59
Wt. of can, Mc	10.95	11.31	15.28	15.33	15.56
Wt. of dry soil, Ms	3.66	4.40	4.00	0.59	2.03
Wt. of moisture	1.21	1.40	1.26	0.19	0.65
Water content, w%	33.06	31.82	31.50	32.20	32.02
No. of blows, N	10	26	35	15	21

Plastic Limit Determination

Can no.	C1	C11	C63
Wt. of wet soil + can, Mcws	5.23	4.14	4.71
Wt. of dry soil +can, Mcds	4.95	3.97	4.51
Wt. of can, Mc	2.38	1.92	2.41
Wt. of dry soil, Ms	2.57	2.05	2.10
Wt. of moisture, Mw	0.28	0.17	0.20
Water content, W% = Wp	10.89	8.29	9.52

LIQUID LIMIT = 31.7
PLASTIC LIMIT = 9.6
PLASTICITY INDEX = 22.1
CLASSIFICATION CL

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ATTERBERG LIMITS DETERMINATION (ASTM D4318-93)

Project Demolition Area 1 Phase 1 R1 Job No. ______

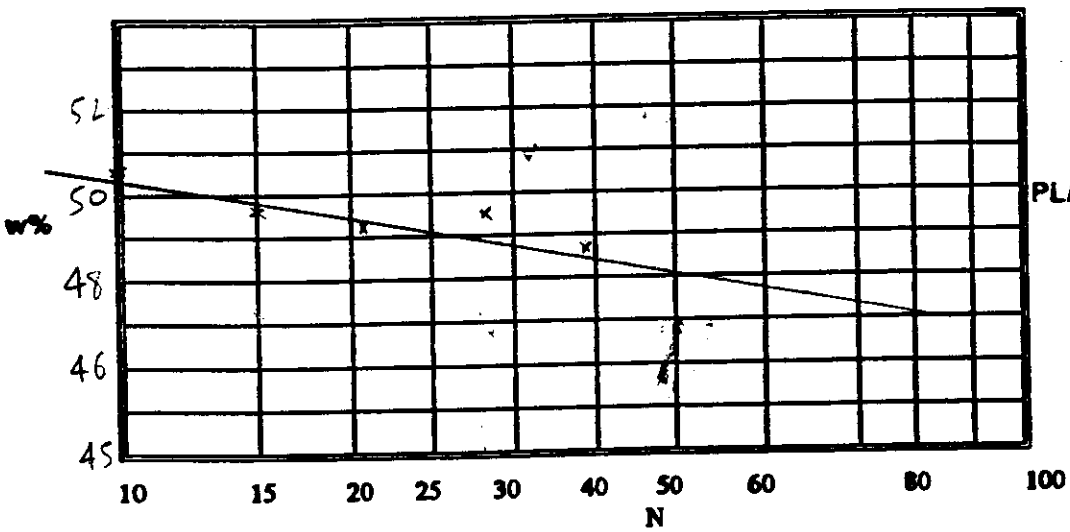
Location of Project Inside Bennet Area Boring No. ______ Sample No. DAL 0161

Description of Soil Brown clayey Sand

Depth of Sample 6'-8' Tested By ______ Date of Testing ______

Liquid Limit Determination

Can no.	A57	A55	A31	A56	A44	
Wt. of soil + can, M_{cws}	17.04	12.65	14.77	17.22	16.12	
Wt. of dry soil + can, M_{cds}	15.10	12.07	13.58	17.21	14.48	
Wt. of can, M_c	11.19	10.9	11.14	14.94	11.24	
Wt. of dry soil, M_s						
Wt. of moisture						
Water content, w%						
No. of blows, N	15	28	39	21	10	



LIQUID LIMIT = 49.1

PLASTIC LIMIT = ______

PLASTICITY INDEX = ______

Plastic Limit Determination

Can no.	C55	A20	A59	
Wt. of wet soil + can, M_{cws}	5.54	5.34	5.41	
Wt. of dry soil + can, M_{cds}	5.25	5.14	5.13	
Wt. of can, M_c	4.12	4.32	4.12	
Wt. of dry soil, M_s				
Wt. of moisture, M_w				
Water content, w% = w_p				

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ATTERBERG LIMITS DETERMINATION (ASTM D4318-93)

Project ______________________ Job No. ______________

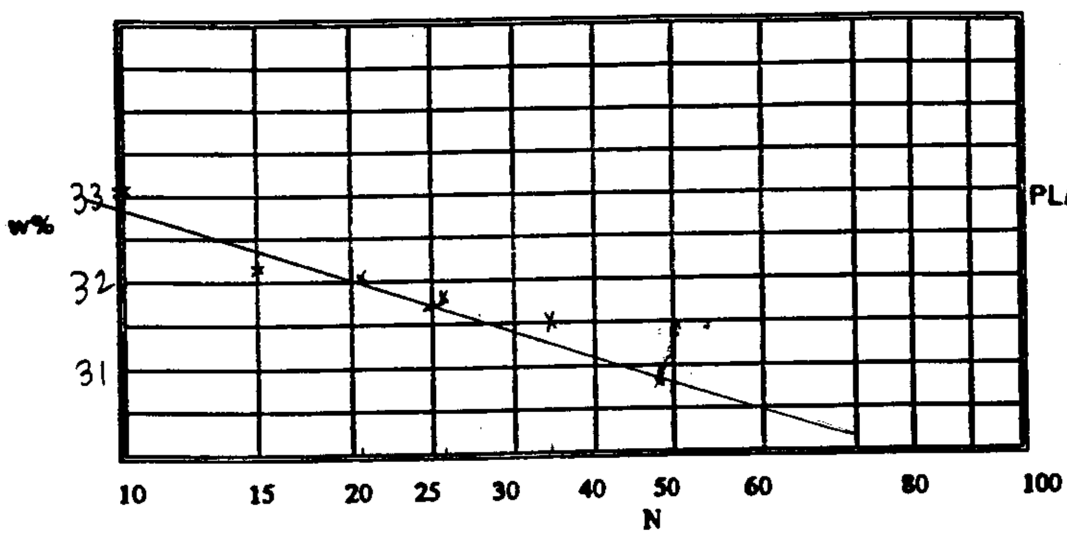
Location of Project ______________________ Boring No. ________ Sample No. DA10040

Description of Soil Brown sand w/ clay

Depth of Sample 1'-3' Tested By ______________ Date of Testing ________

Liquid Limit Determination

Can no.	A5	A8	A12	A43	A4	
Wt. of soil + can, M_{cws}	15.82	17.11	20.54	16.11	18.24	
Wt. of dry soil + can, M_{cds}	14.61	15.71	19.28	15.92	17.59	
Wt. of can, M_c	10.95	11.31	15.28	15.32	15.36	
Wt. of dry soil, M_s						
Wt. of moisture						
Water content, w%						
No. of blows, N	10	26	35	15	21	



LIQUID LIMIT = ______

PLASTIC LIMIT = ______

PLASTICITY INDEX = ______

Plastic Limit Determination

Can no.	C1	C11	G63	
Wt. of wet soil + can, M_{cws}	5.23	4.14	4.71	
Wt. of dry soil + can, M_{cds}	4.95	3.97	4.51	
Wt. of can, M_c	2.38	1.92	2.41	
Wt. of dry soil, M_s				
Wt. of moisture, M_w				
Water content, w% = w_p				

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ATTERBERG LIMITS DETERMINATION (ASTM D4318-93)

Project ____________ Job No. ____________

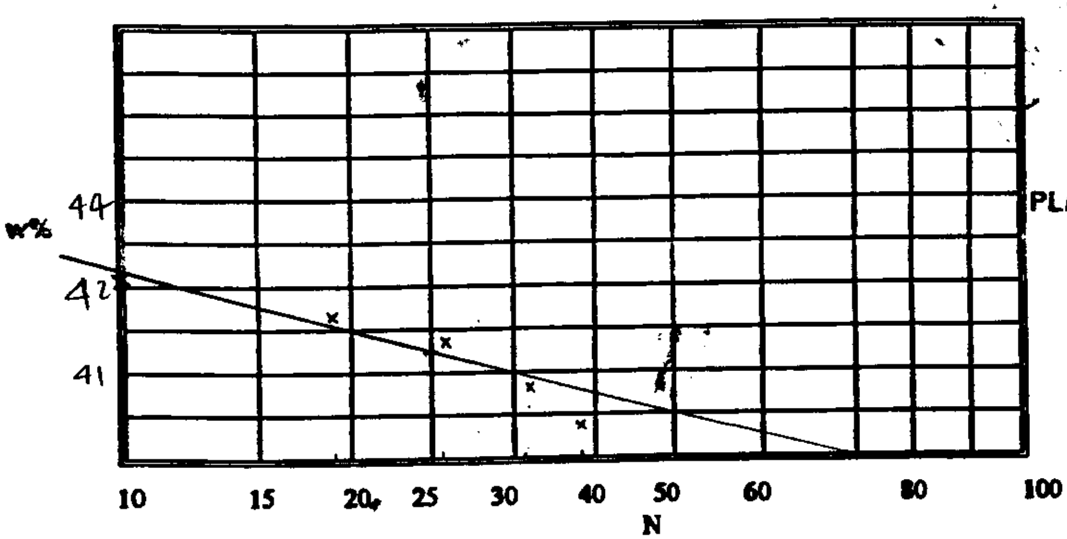
Location of Project Br ____________ Boring No. ______ Sample No. DA10041

Description of Soil Brown clayey sand

Depth of Sample 3'-5' Tested By FB Date of Testing ______

Liquid Limit Determination

Can no.	A48	A21	A19	A23	A38	
Wt. of soil + can, M_{cws}	20.32	17.93	19.31	17.22	19.64	
Wt. of dry soil + can, M_{cds}	18.88	17.17	18.07	15.50	18.26	
Wt. of can, M_c	15.32	15.27	15.03	11.35	14.95	
Wt. of dry soil, M_s						
Wt. of moisture						
Water content, w%						
No. of blows, N	38	10	32	26	19	



LIQUID LIMIT = ______

PLASTIC LIMIT = ______

PLASTICITY INDEX = ______

Plastic Limit Determination

Can no.	A58	A22	C7	
Wt. of wet soil + can, M_{cws}	5.28	4.84	3.18	
Wt. of dry soil + can, M_{cds}	5.08	4.71	2.96	
Wt. of can, M_c	4.11	4.10	1.91	
Wt. of dry soil, M_s				
Wt. of moisture, M_w				
Water content, w% = w_p				

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ATTERBERG LIMITS DETERMINATION (ASTM D4318-93)

Project ______________________ Job No. ______________________

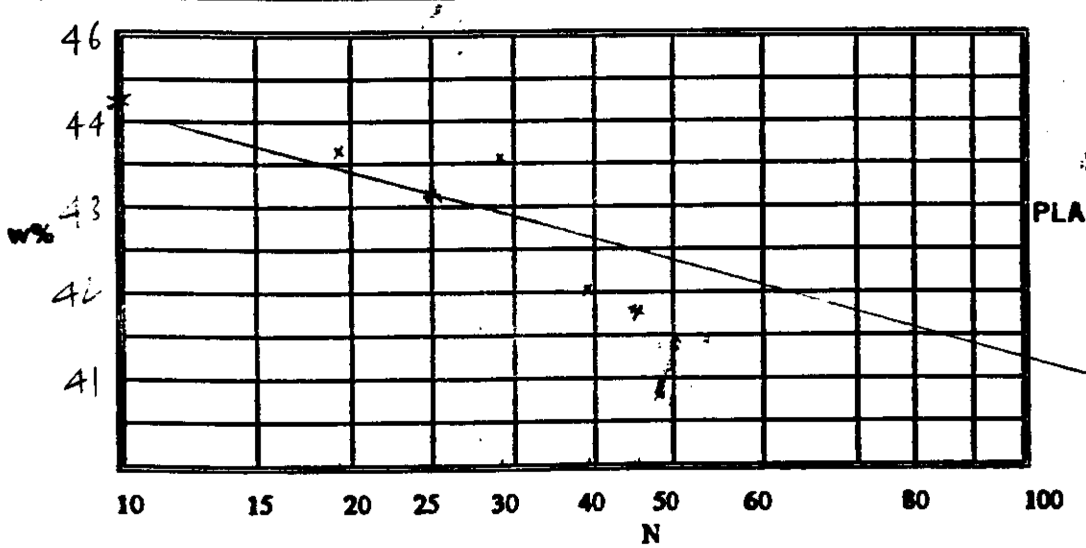
Location of Project Inside Bermuda Area Boring No. ________ Sample No. DA10039

Description of Soil Brown Sand w/ clay

Depth of Sample 0'-1' Tested By ______________ Date of Testing ________

Liquid Limit Determination

Can no.	A30	A52	A50	A36	A1	
Wt. of soil + can, M_{cws}	19.07	20.50	17.01	17.77	21.34	
Wt. of dry soil + can, M_{cds}	17.90	18.84	15.16	15.65	14.56	
Wt. of can, M_c	15.22	15.06	10.91	10.88	15.30	
Wt. of dry soil, M_s						
Wt. of moisture						
Water content, w%						
No. of blows, N	19	39	29	10	46	



LIQUID LIMIT = ______

PLASTIC LIMIT = ______

PLASTICITY INDEX = ______

Plastic Limit Determination

Can no.	A54	A15	A39	
Wt. of wet soil + can, M_{cws}	5.17	5.28	5.14	
Wt. of dry soil + can, M_{cds}	4.97	5.06	4.95	
Wt. of can, M_c	4.10	4.11	4.09	
Wt. of dry soil, M_s				
Wt. of moisture, M_w				
Water content, w% = w_p				

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ATTERBERG LIMITS DETERMINATION (ASTM D4318-93)

Project ______________________ Job No. ______________

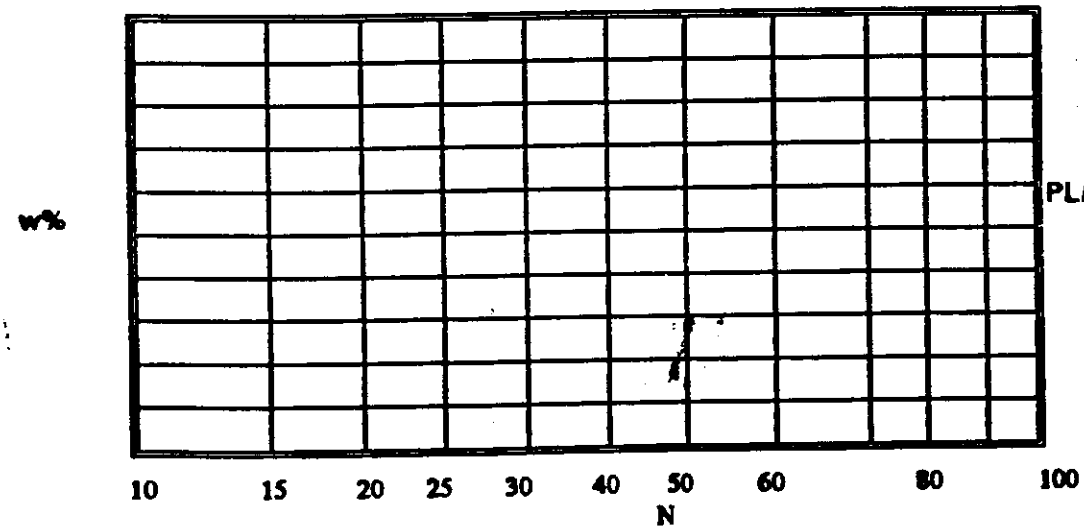
Location of Project On Berm Boring No. ________ Sample No. DA1 0021

Description of Soil Brown clayey sand

Depth of Sample 0'–1' Tested By ______________ Date of Testing ________

Liquid Limit Determination

Can no.						
Wt. of soil + can, M_{cws}						
Wt. of dry soil + can, M_{cds}						
Wt. of can, M_c						
Wt. of dry soil, M_s						
Wt. of moisture						
Water content, w%						
No. of blows, N						



LIQUID LIMIT = ______
PLASTIC LIMIT = ______
PLASTICITY INDEX = ______

NP

Plastic Limit Determination

Can no.				
Wt. of wet soil + can, M_{cws}				
Wt. of dry soil + can, M_{cds}				
Wt. of can, M_c				
Wt. of dry soil, M_s				
Wt. of moisture, M_w				
Water content, w% = w_p				

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~~99277 Y~~

99229 Y COC NO.: DA1CE-

page 1 of 1

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Science Applications International Corporation

800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

PROJECT NAME: Demolition Area 1 Phase I RI

DELIVERY ORDER NO: 0076

PROJECT MANAGER: Steve Selecman 423-481-8761

Sampler (Signature) Vicki Brumbach **(Printed Name)** Vicki Brumback

LABORATORY NAME: Catlin Engineers

LABORATORY ADDRESS: 1051 Johnnie Dodds Blvd. Suite C Mt. Pleasant, SC 29464

PHONE NO: 803-881-6000

REQUESTED PARAMETERS

	Sample ID	Date Collected	Time Collected	Matrix	Grain Size	Moisture	Atterberg Limits	USCS Classification	pH	Redox Potential	Organic Carbon	Content	Bulk Density	Specific Gravity	Soil Permeability	No. of Containers:	OBSERVATIONS, COMMENTS,
	DA1Ø161	1Ø-22-99	1215	Soil	✓	✓	✓	✓								1	
✓	DA1ØØ39	1Ø-21-99	163Ø	↓	✓	✓	✓	✓								1	
✓	DA1ØØ21	1Ø-2Ø-99	162Ø		✓	✓	✓	✓								1	
✓	DA1ØØ41	1Ø-21-99	17ØØ		✓	✓	✓	✓								1	
✓	DA1ØØ4Ø	1Ø-21-99	165Ø		✓	✓	✓	✓								1	
I-40	DA1Ø119	1Ø-24-99	1155		✓											1	
	DA1Ø118	1Ø-24-99	1535		✓											1	
✓	DA1Ø12Ø	1Ø-24-99	14Ø5		✓											1	
✓	DA1Ø117	1Ø-24-99	1ØØØ		✓											1	

VB 11-4-99

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Vicki Brumbach	11-4-99 1ØØØ	[illegible signature]	11/5/99
COMPANY NAME: SAIC		COMPANY NAME: Catlin	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 9

Cooler Temperature: NA

Cooler ID: SAIC #901

FEDEX NUMBER: 81Ø254671269