APPENDIX K

WASTE MANAGEMENT

DEPARTMENT OF THE ARMY
U.S. ARMY ENVIRONMENTAL CENTER
ABERDEEN PROVING GROUND, MARYLAND 21010-5401

REPLY TO
ATTENTION OF

April 27, 1993

Installation Restoration Division

Mr. Christopher S. Manikas
Project Manager
Science Applications International Corporation
P.O. Box 1303
1710 Goodridge Drive
MS 2-4-1
McLean, Virginia 22102

Dear Mr. Manikas:

In regard to the Site Investigation for Fort McClellan, under contract DAAA15-91-D-0017, task order number 1, the U.S. Army Environmental Center (USAEC) recommends that Science Applications International Corporation (SAIC) proceed with the disposal of Investigation Derived Waste (IDW) currently being stored at Fort McClellan (FTMC) in the manner outlined below. Liquids from each well were analyzed, showing low levels of organics and a few heavy metals. The levels of all contaminants were below toxicity characteristic concentrations, failing to qualify it as a hazardous waste under subparts C and D of 40 CFR Part 261. In addition, the TCLP data from soil cuttings does not indicate the presence of RCRA wastes. And finally, field screening for chemical agent and the laboratory analyses for chemical agent breakdown products does not indicate the presence of these compounds in waste soils bagged/drummed by the U.S. Army Technical Escort Unit during their investigations at FTMC.

The drummed liquid waste from wells OLF-2 and OLF-4, approximately five 55-gallon drums, shall be moved by SAIC personnel or their representatives to a hazardous waste storage area designated by FTMC personnel. The levels of metals and volatiles are not high enough for classification as a hazardous waste, but will be disposed of as such by FTMC as a prudent course of action.

All remaining drummed liquid waste including drilling, well development, purge, and decontamination water shall be consolidated and discharged at a designated sanitary sewer location on FTMC. This being in accordance with conversations, followed up with written confirmation, between SAIC and Mr. Charles Lay of the Anniston City Water Works and Sewer Board. Mr. Lay stated that the sanitary sewer system can handle the low levels of organics in the water in addition to the heavy metals concentrations (excluding CA, NA, Fe, Mg, Mn, and K) totaling

less than 5 ppm. Potable water shall not be added by SAIC to the consolidated waste water to reduce the concentrations of contaminants. SAIC shall provide Mr. Lay with documentation of the volumes of water, constituents, concentrations of constituents, time and date of discharge, location of discharge, and any other pertinent information required. Physical measurements of pH and specific conductance is recommended at the time of discharge.

All drummed soil cuttings shall be inverted and spread on sites of generation. The free liquids shall be pumped off the surface of these materials before inverting and their disposition shall be evaluated in the field as to a prudent course of action.

SAIC shall ensure that all emptied drums will be transported to the DEH yard at FTMC where they shall be washed and stacked by SAIC personnel or their representatives.

Should you have any questions please call Mr. Dean W. Hutchins, USAEC, at (410) 671-1530.

Sincerely,

Robert J. York
Chief
Installation Restoration Division

Copies Furnished:

Commander, U.S. Army Chemical and Biological Defense Agency, Attention: AMSCB-PCD (Ms. Field), Aberdeen Proving Ground, MD 21010-5423
Commander, U.S. Army Chemical and Military Police Center and Fort McClellan, Attention: ATZN-FEE (Mr. Levy), Fort McClellan, Alabama 36205
Mr. Charles Lay, Anniston City Water Works and Sewer Board, P.O. Box 2268, Anniston, Alabama 36202

Table 2–5. Toxicity Characteristic Leaching Procedure Results for Soil Cuttings
Ft. McClellan Site Investigation, Anniston, Alabama

Parameter	Regulatory Level (mg/L)	TCLPLF2S01 (mg/L)	TCLPLF2S02 (mg/L)	TCLPLF2S03 (mg/L)	TCLPOLF06 (mg/L)	TCLPOLF07 (mg/L)	TCLPOLF08 (mg/L)	TCLPOLF09 (mg/L)	TCLPOLF10 (mg/L)
Percent Moisture		15.5	16.2	9.7	55.9	24.4	26.6	30.6	24.2
Arsenic	5.0	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Barium	100.0	0.8	<0.5	0.7	0.6	0.7	0.6	<0.5	<0.5
Benzene	0.5	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Cadmium	1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.5	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
alpha–Chlordane	0.03	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
gamma–Chlordane	0.03	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	100.0	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
Chloroform	6.0	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018
Chromium	5.0	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05
o–Cresol (a)	200.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
m–Cresol (a)	200.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
p–Cresol (a)	200.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,4–D	10.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,4–Dichlorobenzene	7.5	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044
1,2–Dichloroethane	0.5	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024
1,1–Dichloroethylene	0.7	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
2,4–Dinitrotoluene	0.13	<0.057	<0.057	<0.057	<0.057	<0.057	<0.057	<0.057	<0.057
Endrin	0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Heptachlor	0.008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Heptachlor Epoxide	0.008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachlorobenzene	0.13	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
Hexachlorobutadiene	0.5	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
Hexachloroethane	3.0	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Lead	5.0	<0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Lindane	0.4	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	0.2	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Methoxychlor	10.0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Methyl ethyl ketone	200.0	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038
Nitrobenzene	2.0	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
Pentachlorophenol	100.0	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036
Pyridine	5.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Selenium	1.0	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver	5.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.7	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Toxaphene	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.5	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
2,4,5–Trichlorophenol	400.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,4,6–Trichlorophenol	2.0	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027
2,4,5–TP (Silvex)	1.0	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Vinyl chloride	0.2	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017

(a) Cresol isomers ,o–, m–, and p–cresol, are reported as 2–, 3–, and 4–methylphenol, respectively.

Table 3–31. Data Summary: Groundwater – Former Landfill #2, Ft. McClellan, Anniston, Alabama

SAIC ID Number				LF2–G01		LF2–G02		LF2–G03		LF2–G03D
Depth BLS				(17.89)		(3.93)		(4.70)		(4.70)
Collection Date				6/11/92		6/11/92		6/11/92		6/11/92
Associated Field QCSample				TB–0016		TB–0016		TB–0016		TB–0016
				FMP003		FMP003		FMP003		FMP003
Parameter	Units	CRL	UCR	RB–009		RB–009		RB–009		RB–009
Method SS12 (ICP Metals in Water)										
Aluminum	µg/L	112	125,000	2110		636		1340		Analysis not Requested
Barium	µg/L	2.82	12,000	19.3		12.9		30.4		
Boron	µg/L	230	10,000	271		230 LT		230 LT		
Calcium	µg/L	105	200,000	5370		120000		154000		
Iron	µg/L	77.5	500,000	3640		2390		5420		
Magnesium	µg/L	135	250,000	6200		99200		72900		
Manganese	µg/L	9.67	10,000	102		296		2080		
Potassium	µg/L	1240	250,000	1630		1760		1800		
Sodium	µg/L	279	50,000	14500		110000		35000		
Zinc	µg/L	18.0	10,000	28.7		18 LT		165		
Lead	µg/L	43.4	10,000	43.4 LT		43.4 LT		46.9		
Method UM21 (VOCs in Water)										
Acetone	µg/L	8	100	100 GT		100 GT		100 GT		
Unknown	µg/L	--	--	1000 (1)		6000 (1)		400 (1)		
Method UH20 (Organochlorine Pesticides in Water)										
delta–BHC	µg/L	0.0034	0.500	0.00386	C	0.0034 LT		0.0034 LT		
Isodrin	µg/L	0.0025	0.500	0.0116	U	0.00511	U	0.011	U	
Lindane	µg/L	0.0025	0.500	0.0025 LT		✓0.00429	U	0.0025 LT		

-- The certification ofthese analyteswill be submitted at a later date
CRL – Certified Reporting Limit
UCR – Upper Certified Range
C – analysis is confirmed
GT – greater than the upper certified range
LT – less than the certified reporting limit
U – analysis is unconfirmed
Unknown – The following tentatively identified compounds were identified for sample:
LF2–G01 – UNK036 1000 S µg/L
LF2–G02 – UNK037 6000 S µg/L
LF2–G03 – UNK035 400 S µg/L

Table 3-32. Data Summary: Groundwater – Former Landfill #3, Ft. McClellan, Anniston, Alabama

SAIC ID Number				OLF-G01	OLF-G02	OLF-G03	OLF-G03D	
Depth BLS				(15.10)	(12.20)	(11.70)	(11.70)	
Collection Date				6/09/92	6/10/92	6/10/92	6/10/92	
Associated Field QC Sample				TB-0013,14	TB-0015	TB-0015	TB-0015	
				FMP003	FMP003	FMP003	FMP003	
Parameter	Units	CRL	UCR	RB-008	RB-009	RB-009	RB-009	
Method AX8 (As in Water)								
Arsenic	µg/L	2.35	121	2.35 LT	2.35 LT	2.79	7.87	D
Method CC8 (Hg in Water)								
Mercury	µg/L	0.100	2.00	0.309	1.02	0.842	1.14	D
Method SS12 (ICP Metals in Water)								
Aluminum	µg/L	112	125,000	7040	240000	7320	18300	D
Barium	µg/L	2.82	12,000	42.1	775	172	196	D
Calcium	µg/L	105	200,000	916	250000	19100	20500	D
Chromium	µg/L	16.8	1,000	16.8 LT	271	16.8 LT	26.6	D
Cobalt	µg/L	25.0	10,000	25 LT	120	25 LT	25 LT	D
Copper	µg/L	18.8	10,000	18.8 LT	252	88.5	162	D
Iron	µg/L	77.5	500,000	5320	271000	17400	48400	D
Magnesium	µg/L	135	250,000	2700	280000	12700	20800	D
Manganese	µg/L	9.67	10,000	210	3820	686	831	D
Nickel	µg/L	32.1	20,000	32.1 LT	239	47.8	65.4	D
Silver	µg/L	10.0	2,000	10 LT	10 LT	10 LT	10 LT	D
Vanadium	µg/L	27.6	10,000	27.6 LT	390	27.6 LT	32	D
Zinc	µg/L	18.0	10,000	27.6	576	91.8	139	D
Lead	µg/L	43.4	10,000	43.4 LT	1470	43.4 LT	43.4 LT	D
Method UM21 (VOCs in Water)								
1,1-Dichloroethane	µg/L	1	150	1 LT	1 LT	1 LT	1 LT	D
Benzene	µg/L	1	150	1 LT	1 LT	1 LT	1 LT	D
Methylisobutylketone	µg/L	1.4	100	1.4 LT	1.4 LT	1.4 LT	1.4 LT	D
1,1,2,2-Tetrachloroethane	µg/L	1.5	150	1.5 LT	1.5 LT	1.5 LT	1.5 LT	D
Tetrachloroethene	µg/L	1	150	1 LT	1 LT	1.7	4.3	D
Trichloroethene	µg/L	1	150	1 LT	1 LT	1 LT	1 LT	D
Unknown	µg/L	--	--	0 (0)	100 (1)	0 (0)	20 (1)	

Table 3–32. Data Summary: Groundwater – Former Landfill #3, Ft. McClellan, Anniston, Alabama (Continued)

SAIC ID Number				OLF–G01		OLF–G02		OLF–G03		OLF–G03D	
Depth BLS				(15.10)		(12.20)		(11.70)		(11.70)	
Collection Date				6/09/92		6/10/92		6/10/92		6/10/92	
Associated Field QC Sample				TB–0013,14		TB–0015		TB–0015		TB–0015	
				FMP003		FMP003		FMP003		FMP003	
Parameter	Units	CRL	UCR	RB–008		RB–009		RB–009		RB–009	
Method UM25 (SVOCs in Water)											
bis(2–Ethylhexyl)phthalate	µg/L	7.7	200	7.7 LT		7.7 LT		7.7 LT		7.7 LT	D
Unknown	µg/L	--	--	0 (0)		0 (0)		0 (0)		0 (0)	
Method UW25 (Explosives in Water)											
1,3,5–Trinitrobenzene	µg/L	0.210	20	0.21 LT		0.21 LT	G	0.21 LT	G	0.21 LT	G
2,4–Dinitrotoluene	µg/L	0.397	20	0.397 LT		0.397 LT		0.397 LT		0.397 LT	D
Method UH20 (Organochlorine Pesticides in Water)											
alpha–Hexachlorocyclohexane	µg/L	0.0025	0.500	0.0025 LT		0.0128	U	0.0025 LT		0.0025 LT	D
Endosulfan I	µg/L	0.0025	0.500	0.0025 LT		0.0025 LT		0.0025 LT		0.0025 LT	D
Aldrin	µg/L	0.0074	0.500	0.0074 LT		0.0344	U	0.0074 LT		0.0074 LT	D
Endosulfan II	µg/L	0.0077	0.500	0.0077 LT		0.00996	U	0.0077 LT		0.0077 LT	D
delta–BHC	µg/L	0.0034	0.500	0.0034 LT		0.0117	U	0.0034 LT		0.0034 LT	D
Dieldrin	µg/L	0.0074	0.500	0.0074 LT		0.0271	C	0.0074 LT		0.0074 LT	D
Endrin	µg/L	0.0176	0.500	0.0176 LT		0.0356	U	0.0176 LT		0.0176 LT	D
Heptachlor	µg/L	0.0025	0.250	0.0025 LT		0.00546	C	0.0025 LT		0.0025 LT	D
Heptachlor epoxide	µg/L	0.0063	0.184	0.00692	U	0.0063 LT		0.0063 LT		0.0063 LT	D
Isodrin	µg/L	0.0025	0.500	0.00967	U	0.0183	U	0.00778	U	0.0145	U
Lindane	µg/L	0.0025	0.500	0.0025 LT		0.0025 LT		0.0025 LT		0.00318	U
p,p'–DDD	µg/L	0.0081	0.572	0.0081 LT		0.0312	U	0.0081 LT		0.0081 LT	D
p,p'–DDE	µg/L	0.0039	0.537	0.0039 LT		0.0039 LT		0.0039 LT		0.0057	U
p,p'–DDT	µg/L	0.0025	0.250	0.0025 LT		0.0025 LT		0.0025 LT		0.0025 LT	D

-- The certification of these analytes will be submitted at a later date
CRL – Certified Reporting Limit
UCR – Upper Certified Range
C – analysis is confirmed
D – duplicate sample
G – reported results are affected by interferences or high background
LT – less than the certified reporting limit
U – analysis is unconfirmed
Unknown – The following tentatively identified compounds were identified for sample:
OLF–G02 – UNK037 100 S µg/L
OLF–G03D – UNK147 20 S µg/L

Table 3–32. Data Summary: Groundwater – Former Landfill #3, Ft. McClellan, Anniston, Alabama (Continued)

SAIC ID Number				OLF–G04		OLF–G05	OLF–G06		OLF–G07
Depth BLS				(39.40)		(30.70)	(64.40)		(41.30)
Collection Date				6/10/92		6/07/92	6/09/92		6/07/92
Associated Field QC Sample				TB–0015		TB–0010	TB–0013,14		TB–0010
				FMP003		FMP003	FMP003		FMP003
Parameter	Units	CRL	UCR	RB–009		RB–008	RB–008		RB–008
Method AX8 (As in Water)									
Arsenic	µg/L	2.35	121	2.35 LT		2.35 LT	2.35 LT		2.35 LT
Method CC8 (Hg in Water)									
Mercury	µg/L	0.100	2.00	1.49	D	0.1 LT	0.1 LT	D	0.1 LT
Method SS12 (ICP Metals in Water)									
Aluminum	µg/L	112	125,000	1570		2310	1730		1350
Barium	µg/L	2.82	12,000	84.8		36.1	12.9		55.4
Calcium	µg/L	105	200,000	1000		4920	614		13100
Chromium	µg/L	16.8	1,000	16.8 LT		18.3	16.8 LT		16.8 LT
Cobalt	µg/L	25.0	10,000	25 LT		25 LT	25 LT		25 LT
Copper	µg/L	18.8	10,000	18.8 LT		18.8 LT	18.8 LT		18.8 LT
Iron	µg/L	77.5	500,000	1620		5870	1940		1030
Magnesium	µg/L	135	250,000	6420		3390	499		7050
Manganese	µg/L	9.67	10,000	354		257	39.5		414
Nickel	µg/L	32.1	20,000	32.1 LT		32.1 LT	32.1 LT		32.1 LT
Silver	µg/L	10.0	2,000	10 LT		10 LT	10 LT		10 LT
Vanadium	µg/L	27.6	10,000	27.6 LT		27.6 LT	27.6 LT		27.6 LT
Zinc	µg/L	18.0	10,000	18 LT		35.8	18 LT		18 LT
Lead	µg/L	43.4	10,000	43.4 LT		43.4 LT	43.4 LT		43.4 LT
Method UM21 (VOCs in Water)									
1,1–Dichloroethane	µg/L	1	150	9.6		1 LT	1 LT		1 LT
Benzene	µg/L	1	150	1.9		1 LT	1 LT		1 LT
Methylisobutylketone	µg/L	1.4	100	1.4 LT		3	1.4 LT		1.4 LT
1,1,2,2–Tetrachloroethane	µg/L	1.5	150	1.5 LT		1.5 LT	1.5 LT		17
Tetrachloroethene	µg/L	1	150	1 LT		1 LT	1 LT		1 LT
Trichloroethene	µg/L	1	150	1 LT		1 LT	1 LT		3.8
Unknown	µg/L	--	--	300 (1)		300 (1)	0 (0)		0 (0)

Table 3–32. Data Summary: Groundwater – Former Landfill #3, Ft. McClellan, Anniston, Alabama (Continued)

SAIC ID Number				OLF–G04		OLF–G05		OLF–G06		OLF–G07	
Depth BLS				(39.40)		(30.70)		(64.40)		(41.30)	
Collection Date				6/10/92		6/07/92		6/09/92		6/07/92	
Associated Field QC Sample				TB–0015		TB–0010		TB–0013,14		TB–0010	
				FMP003		FMP003		FMP003		FMP003	
Parameter	Units	CRL	UCR	RB–009		RB–008		RB–008		RB–008	
Method UM25 (SVOCs in Water) (Continued)											
bis(2–Ethylhexyl)phthalate	µg/L	7.7	200	7.7 LT		17		7.7 LT		17	
Unknown	µg/L	– –	– –	20 (1)		0 (0)		0 (0)		0 (0)	
Method UW25 (Explosives in Water)											
1,3,5–Trinitrobenzene	µg/L	0.210	20	0.249 LT	G	0.21 LT		0.21 LT		0.804 LT	G
2,4–Dinitrotoluene	µg/L	0.397	20	0.397 LT		0.397 LT		0.397 LT		0.397 LT	
Method UH20 (Organochlorine Pesticides in Water)											
alpha–Hexachlorocyclohexane	µg/L	0.0025	0.500	0.222	C	0.0025 LT		0.0026	U	0.0025 LT	
Endosulfan I	µg/L	0.0025	0.500	0.0177	U	0.0025 LT		0.0025 LT		0.0025 LT	
Aldrin	µg/L	0.0074	0.500	0.0074 LT		0.0074 LT		0.0074 LT		0.0074 LT	
Endosulfan II	µg/L	0.0077	0.500	0.0195	C	0.0077 LT		0.0077 LT		0.0077 LT	
delta–BHC	µg/L	0.0034	0.500	0.0034 LT		0.0034 LT		0.0034 LT		0.0034 LT	
Dieldrin	µg/L	0.0074	0.500	0.0074 LT		0.0074 LT		0.0074 LT		0.0074 LT	
Endrin	µg/L	0.0176	0.500	0.169	C	0.0176 LT		0.0176 LT		0.0176 LT	
Heptachlor	µg/L	0.0025	0.250	0.126	U	0.0025 LT		0.0025 LT		0.0025 LT	
Heptachlor epoxide	µg/L	0.0063	0.184	0.0253	U	0.0063 LT		0.0063 LT		0.0063 LT	
Isodrin	µg/L	0.0025	0.500	0.00785	U	0.0131	U	0.0184	U	0.00611	U
Lindane	µg/L	0.0025	0.500	0.0025 LT		0.0025 LT		0.0025 LT		0.0025 LT	
p,p'–DDD	µg/L	0.0081	0.572	0.0307	C	0.0081 LT		0.0081 LT		0.0081 LT	
p,p'–DDE	µg/L	0.0039	0.537	0.0752	U	0.00489	U	0.0039 LT		0.0039 LT	
p,p'–DDT	µg/L	0.0025	0.250	0.00309	U	0.0025 LT		0.0025 LT		0.00392	U

– – The certification of these analytes will be submitted at a later date
CRL – Certified Reporting Limit
UCR – Upper Certified Range
C – analysis is confirmed
D – duplicate sample
G – reported results are affected by interferences or high background
LT – less than the certified reporting limit
U – analysis is unconfirmed
Unknown – The following tentatively identified compounds were identified for sample:
OLF–G04 – UNK037 300 S µg/L, UNK588 20 S µg/L
OLF–G05 – UNK037 300 S µg/L

Table 3–32. Data Summary: Groundwater – Former Landfill #3, Ft. McClellan, Anniston, Alabama (Continued)

SAIC ID Number				OLF–G07D		OLF–G08	OLF–G09	OLF–G10
Depth BLS				(41.30)		(29.34)	(20.10)	(16.42)
Collection Date				6/07/92		6/07/92	6/08/92	6/11/92
Associated Field QC Sample				TB–0010		TB–0010	TB–0011	TB–0015
				FMP003		FMP003	FMP003	FMP003
Parameter	Units	CRL	UCR	RB–008		RB–008	RB–008	RB–009
Method AX8 (As in Water)								
Arsenic	µg/L	2.35	121	2.35 LT	D	2.35 LT	2.35 LT	2.35 LT
Method CC8 (Hg in Water)								
Mercury	µg/L	0.100	2.00	0.1 LT	D	0.191	0.1 LT	0.1 LT
Method SS12 (ICP Metals in Water)								
Aluminum	µg/L	112	125,000	1430	D	566	318	23600
Barium	µg/L	2.82	12,000	55.1	D	25.7	9.8	122
Calcium	µg/L	105	200,000	9740	D	8080	564	4950
Chromium	µg/L	16.8	1,000	16.8 LT	D	16.8 LT	16.8 LT	16.8 LT
Cobalt	µg/L	25.0	10,000	25 LT	D	25 LT	25 LT	25 LT
Copper	µg/L	18.8	10,000	18.8 LT	D	18.8 LT	18.8 LT	18.8 LT
Iron	µg/L	77.5	500,000	919	D	1390	849	18300
Magnesium	µg/L	135	250,000	4980	D	4440	823	8260
Manganese	µg/L	9.67	10,000	305	D	53.7	12.3	354
Nickel	µg/L	32.1	20,000	32.1	D	32.1 LT	32.1 LT	32.1 LT
Silver	µg/L	10.0	2,000	10 LT	D	10 LT	10 LT	10 LT
Vanadium	µg/L	27.6	10,000	27.6 LT	D	27.6 LT	27.6 LT	27.6 LT
Zinc	µg/L	18.0	10,000	32	D	35.5	19.6	93.5
Lead	µg/L	43.4	10,000	43.4 LT	D	43.4 LT	43.4 LT	43.4 LT
Method UM21 (VOCs in Water)								
1,1–Dichloroethane	µg/L	1	150	1 LT	D	1 LT	1 LT	1 LT
Benzene	µg/L	1	150	1 LT	D	1 LT	1 LT	1 LT
Methylisobutylketone	µg/L	1.4	100	1.4 LT	D	1.4 LT	1.4 LT	1.4 LT
1,1,2,2–Tetrachloroethane	µg/L	1.5	150	22.1	D	1.5 LT	1.5 LT	1.5 LT
Tetrachloroethene	µg/L	1	150	1 LT	D	1 LT	1 LT	1 LT
Trichloroethene	µg/L	1	150	6.3	D	1 LT	1 LT	1 LT
Unknown	µg/L	--	--	0 (0)		0 (0)	30 (1)	50 (1)

Table 3–32. Data Summary: Groundwater – Former Landfill #3, Ft. McClellan, Anniston, Alabama (Continued)

SAIC ID Number				OLF–G07D		OLF–G08		OLF–G09		OLF–G10	
Depth BLS				(41.30)		(29.34)		(20.10)		(16.42)	
Collection Date				6/07/92		6/07/92		6/08/92		6/11/92	
Associated Field QC Sample				TB–0010		TB–0010		TB–0011		TB–0015	
				FMP003		FMP003		FMP003		FMP003	
Parameter	Units	CRL	UCR	RB–008		RB–008		RB–008		RB–009	
Method UM25 (SVOCs in Water) (Continued)											
bis(2–Ethylhexyl)phthalate	µg/L	7.7	200	17	D	36		7.7 LT		7.7 LT	
Unknown	µg/L	--	--	0 (0)		0 (0)		0 (0)		0 (0)	
Method UW25 (Explosives in Water)											
1,3,5–Trinitrobenzene	µg/L	0.210	20	0.994 LT	G	0.568 LT	G	0.21 LT		1.7	U
2,4–Dinitrotoluene	µg/L	0.397	20	0.397 LT	D	0.397 LT		0.397 LT		0.773	U
Method UH20 (Organochlorine Pesticides in Water)											
alpha–Hexachlorocyclohexane	µg/L	0.0025	0.500	0.0025 LT	D	0.0025 LT		0.0025 LT		0.0025 LT	
Endosulfan I	µg/L	0.0025	0.500	0.0025 LT	D	0.0025 LT		0.0025 LT		0.0025 LT	
Aldrin	µg/L	0.0074	0.500	0.0074 LT	D	0.0074 LT		0.0074 LT		0.0074 LT	
Endosulfan II	µg/L	0.0077	0.500	0.0077 LT	D	0.0077 LT		0.0077 LT		0.0077 LT	
delta–BHC	µg/L	0.0034	0.500	0.0034 LT	D	0.0034 LT		0.0034 LT		0.0034 LT	
Dieldrin	µg/L	0.0074	0.500	0.0074 LT	D	0.0074 LT		0.0074 LT		0.0074 LT	
Endrin	µg/L	0.0176	0.500	0.0176 LT	D	0.0176 LT		0.0176 LT		0.0176 LT	
Heptachlor	µg/L	0.0025	0.250	0.0025 LT	D	0.0025 LT		0.0025 LT		0.0025 LT	
Heptachlor epoxide	µg/L	0.0063	0.184	0.0063 LT	D	0.0063 LT		0.0063 LT		0.0063 LT	
Isodrin	µg/L	0.0025	0.500	0.189	U	0.0025	U	0.00883	U	0.00479	U
Lindane	µg/L	0.0025	0.500	0.0025 LT	D	0.00839	U	0.00828	U	0.0025 LT	
p,p'–DDD	µg/L	0.0081	0.572	0.0081 LT	D	0.0081 LT		0.0081 LT		0.0081 LT	
p,p'–DDE	µg/L	0.0039	0.537	0.0039 LT	D	0.0039 LT		0.00654	U	0.0039 LT	
p,p'–DDT	µg/L	0.0025	0.250	0.0675	C	0.0025 LT		0.0025 LT		0.0025 LT	

-- The certification of these analytes will be submitted at a later date
CRL – Certified Reporting Limit
UCR – Upper Certified Range
C – analysis is confirmed
D – duplicate sample
G – reported results are affected by interferences or high background
LT – less than the certified reporting limit
U – analysis is unconfirmed
Unknown – The following tentatively identified compounds were identified for sample:
OLF–G09 – UNK038 30 S µg/L
OLF–G010 – UNK036 50 S µg/L

MEMORANDUM

827.93.0421.002

To: Dean Hutchins
From: Christopher Manikas (SAIC)
Date: April 21, 1993
Subject: Approximate IDW Water Generated at Fort McClellan, Alabama

---

Based on our records, the following quantities of water were removed from new and existing wells at Fort McClellan during the SI:

Well	Sampling	Development*
OLF-1	90 gal	0 gal
OLF-2	55 gal	0 gal
OLF-3	120 gal	0 gal
OLF-4	53 gal	0 gal
OLF-5	100 gal	0 gal
OLF-6	10 gal	120 gal
OLF-7	80 gal	690 gal
OLF-8	40 gal	420 gal
OLF-9	55 gal	240 gal
OLF-10	45 gal	300 gal
LF2-1	45 gal	260 gal
LF2-2	53 gal	360 gal
LF2-3	80 gal	420 gal
Total:	826 gal	2,810 gal

* May include slurry.

Science Applications International Corporation
An Employee-Owned Company

827.93.0503.002

May 3, 1993

Mr. Charles Lay
Anniston City Water Works and Sewer Board
131 West 11th Street
P.O. Box 2268
Anniston, Alabama 36202

Subject: Discharge of Well Water to Sanitary Sewer System on Fort McClellan

Dear Mr. Lay:

To assist you in your evaluation of the metals data provided for well water samples from Fort McClellan, I have compiled the attached table specifying the estimated volumes of water and the calculated mass of each metal. I have utilized the values of the detection limits where a concentration was not detected, therefore the calculated total masses can be taken to be a conservative total. Since the data tables included with my initial letter contained only those metals that were detected in a well from each site, I am also enclosing comprehensive data tables for the metals analyses.

Based on revisions made by the Army Environmental Center, potable water will not be used to dilute high lead concentrations prior to discharge to the sanitary sewer as previously outlined in my letter of April 20, 1993. This water will be disposed of by the Army through a hazardous materials disposal contractor and will not be discharged to the sanitary sewer.

As we discussed on the telephone (5/3/93) I will need a written response to this information so that we may expedite the removal of the stored water from the base. If you have questions regarding the provided information or procedures to be followed, please do not hesitate to contact me at (703) 827-4832 or (703) 506-9689 (fax).

Sincerely,

Christopher S. Manikas
Project Manager

cc Lisa Jones-Bateman (SAIC)
D. Hutchins (USAEC)
A. Wickline (SAIC)

1710 Goodridge Drive, P.O. Box 1303, McLean, Virginia 22102 (703) 821-4300
Other SAIC Offices: Albuquerque, Boston, Colorado Springs, Dayton, Huntsville, Las Vegas, Los Angeles, Oak Ridge, Orlando, Palo Alto, San Diego, Seattle, and Tucson

The Water Works and Sewer Board
of the City of Anniston

131 West 11th Street - P.O. Box 2268
Anniston, Alabama 36202-2268

Phone: 205 236-3429

May 4, 1993

Mr. Christopher S. Manikas, Project Manager
Science Applications International Corporation
P.O. Box 1303
McClean, Virginia 22102

PROPOSED DISCHARGE OF WELL SAMPLING WATER
TO FORT MCCLELLAN SANITARY SEWER SYSTEM

Thank you for providing the additional information contained in your letter dated May 3, 1993. Based upon your letter, I do not believe that the proposed discharge will be deleterious to the Fort McClellan Wastewater Treatment Plant.

This Board has no objection to your proposed discharge.

CHARLES M. LAY, JR., P.E.
GENERAL MANAGER AND CHIEF ENGINEER

copies: Mr. Benn Sherman
Mr. Don Miller
Mr. Wayne Mizell
rf

MEMORANDUM

827.93.0524.004

To: Dean Hutchins
From: Christopher Manikas
Date: May 24,1993
Subject: IDW Handling at Fort Mcclellan, Alabama
Reference: AEC Contract No. DAAA15-91-D-0017, Task Order No. 1
SAIC Project No. 01-827-03-0424-020

A chronology of IDW handling operations at Fort McClellan, Alabama is provided below:

Monday, May 10, 1993

0900: W. Stoner, T. Viets on site at Fort McClellan, Alabama. Met with Dr. Wang at Bldg 3270. Dr. Wang provided hazardous waste labels for drums to be retained by U.S. Army for disposal.

1040: L. Smith (DEH) showed SAIC manhole on 11th Avenue to be used for discharge of IDW water. Drums are to be cleaned, stacked, and stored in fenced area near DEH building.

1315: Subcontractor arrived on site. Began setting up at Landfill #3. Calibrated instruments.

1430: Begin pumping liquids from drums at location OLF-7. Total of 26 drums at this location including 14 mud rotary cuttings/water, 3 soil, and 9 development and purge water. Liquids are filtered to avoid excess solids in water to be discharged.

1630-1700: Discharge 550 gallons at manhole. Specific conductance = 285 μmohs/cm; pH= 10.3 (pH was 6.6 at time of well sampling on 6/7/92).

1818-1830: Discharge 700 gallons at manhole. Specific conductance= 569 μmohs/cm; pH=11.2 (pH was 6.6 at time of well sampling on 6/7/92).

1855: Left site for day.

Tuesday, May 11, 1993

0730: SAIC on site at Landfill #3.

0730-0850: Obtain keys for site areas and travel to D & I area.

0850: Arrive at D & I area. One drum w/ ~25 gallons of USATEU decon water loaded. Soil on plastic sheeting was spread in place and sheeting was removed.

0905: Loaded one drum w/ ~40 gallons USATEU decon water at site T-5. Soil on plastic sheeting was spread in place and sheeting was removed.

0920: Loaded additional two drums at site T-5 containing ~70 gallons of USATEU decon water. Soil on plastic sheeting was spread in place and sheeting was removed.

0930: Soil on plastic sheeting at two locations in Old Toxic Training Area (behind building 3183) was spread in place and sheeting was removed.

0944: Loaded one drum USATEU decon water at site T-6. Soil on plastic sheeting was spread in place and sheeting was removed. Additional drilling site located and soils spread in place, however, road was blocked by fallen trees and will need to be cleared to recover the drum at this location.

1034: Arrive at site T-24A. Loaded one drum USATEU decon water at site T-24A. Soil on plastic sheeting was spread in place and sheeting was removed.

1045: Soil on plastic sheeting at background location near T-24A was spread in place and sheeting was removed.

1100: Return to bldg 3270 to obtain keys for other sites.

1130: Met representative from Fort McClellan Forestry Department who arrived with bolt cutters to remove keyless locks at Pelham Range sites.

1200: Arrive at Fort McClellan to coordinate with Range control office and to determine which areas are restricted due to training maneuvers.

1330: Arrive at Range K. No drums or soil cuttings found in this area.

1410: Arrive at Range I. Loaded one drum (~25 gallons) USATEU decon water at Range I. Soil on plastic sheeting was spread in place and sheeting was removed.

1430-1515: Access to Range J blocked by downed trees.

1600: Loaded two drums USATEU decon water at site T-31. Soil on plastic sheeting at two locations was spread in place and sheeting was removed.

1630: Arrived at T-38. Gate locked and key did not fit. Began consolidating USATEU drums while W. Stoner went to Chem School to locate correct key.

1715: Finished consolidating USATEU drums.

1630-1800: Attempting to locate key for Site T-38.

1800: Left site for day.

Wednesday, May 12, 1993

0630: SAIC on site at Landfill #3.

0645-0745: Pumped 100 gallons from OLF-6, 250 gallons from OLF-7, and 200 gallons from OLF-8 to holding tank.

0745-0800: Discharge 550 gallons to sanitary sewer. Specific conductance= 360 μmohs/cm, pH=10.5 (pH was 6.5 to 7.43 at time of sampling on 6/9/92).

0800-0940: Continued pumping drums at Landfill #3.

0940: Discharge 700 gallons to sanitary sewer. Specific conductance= 360 μmohs/cm, pH=8.6 (pH was 6.5 to 7.43 at time of sampling on 6/9/92).

0940-1030: Remove soils from drums and spread on site at Landfill #3.

1030-1230: Arranging access to T-6 and Range J with DEH personnel.

1230-1315: Pumped 300 gallons of OLF-9 liquids to tank.

1315-1330: Discharged 300 gallons to sanitary sewer. Specific conductance= 540 μmohs/cm, pH=9.7.

1330-1540: Loaded one drum USATEU decon water at Range J. Soil on plastic sheeting was spread in place and sheeting was removed.

1645: Placing seals on drums to be treated as hazardous materials.

1715: Left site for day.

Thursday, May 13, 1993

0630: SAIC on site at Landfill #3. Site is very muddy because of severe overnight thunderstorms. Cannot reach OLF-1 and OLF-4 today because of site conditions.

0730: Arrange for access to bldg 348 hazardous materials storage area with Dr. Wang. Keys for T-38 returned to Glenda at bldg 3270.

0840: Finished unloading drums onto pallets at bldg 348.

0900-1000: Vehicles stuck in mud.

1000-1100: Transporting empty drums to engineering supply for cleaning and storage.

1215-1315: Washing drums.

1315-1500: Site access problems due to mud.

1500-1630: Obtained loader from off site.

1630: Left site for day due to weather.

Friday, May 14, 1993

0630: SAIC on site at Landfill #3.

0640-0745: Cleaning drums with high pressure hose and steam cleaner.

0745-1145: Transporting and cleaning drums. DEH requests that drums be stacked w/o lids.

1300: Finish cleaning drums.

1330: Pump 6 drums of development/purge water at LF2-1. One drum of soil cuttings scattered.

1420-1500: Vehicles stuck in mud.

1500: Pump 7 drums of development/purge water at LF2-1. One drum of soil cuttings scattered.

1530: Discharged 700 gallons of water from Landfill #2 to sanitary sewer. Specific conductance= 934; pH=8.45 (pH was 6.24 at time of sampling on 6/11/92).

1600: Pump 6 drums of development/purge water at LF2-2. Four drums of soil cuttings scattered.

1650: Pump 9 drums of development/purge water at LF2-3. Three drums of soil cuttings scattered.

1700: Discharged 450 gallons of water from Landfill #2 to sanitary sewer. Specific conductance= 945; pH=8.5 (ph was 7.08 to 7.58 on 6/11/92).

1730: Clean and stack drums.

1800-1940: Loader stuck in mud near OLF-1.

1940: Loaded final six drums for hazardous materials disposal.

2000: Gate to engineering supply yard is locked. Left site for day.

Saturday, May 15, 1993

0700: SAIC on site at Hazardous Waste Storage Yard.

0700-0715: Storing and labelling drums. A total of 14 drums have been deposited in storage facility for U.S. Army disposal.

0715-0825: Arrange for outside wrecker service to pull loader out of mud near OLF-1.

0825-0930: Washing and stacking drums.

0930-1045: Pulling loader out of mud.

1045: Pump 2 drums of development/purge water at OLF-1.

1100: Discharged OLF-1 liquids (~55 gallons) to sanitary sewer. Specific conductance= 935; pH=9.0.

1120-1200: Clearing access to site T-6. Recovered drum for hazardous materials disposal and transported drum to HAZMAT storage yard. Total number of stored drums= 15.

1200-1235: Final smoothing of soils at Landfill #3.

1235 Demobilized from site.

Total number of drums handled: 139
Total number of drums stored at HazMat Storage Yard: 15
Total number of consolidated USATEU drums stored at HazMat Storage Yard: 8
Total Number of USATEU drums: 11
Total gallons water discharged to sanitary sewer: 4005

Science Applications International Corporation
An Employee-Owned Company

827.93.0604.001

June 4, 1993

Mr. Charles Lay
Anniston City Water Works and Sewer Board
131 West 11th Street
Anniston, Alabama 36202

Subject: Discharge of Well Water to Sanitary Sewer System on Fort McClellan

Dear Mr. Lay:

The quantities of well water discharged to the sanitary sewer system on Fort McClellan between May 10, 1993 and May 15, 1993 are summarized in the attached table. The discharged volume (4005 gallons) exceeded our initial estimate of approximately 2800 gallons. The measured pH of the water at the time of removal from the wells (6/92) ranged from 6.24 to 7.58. The measured pH of the water at the time of discharge to the sanitary sewer after approximately 11 months of storage in sealed 55 gallon drums ranged from 8.5 to 11.2. The measured range of specific conductivity values was between 285 and 945 μmhos/cm. If you have questions regarding this information, please do not hesitate to contact me at (703) 827-4832.

Sincerely,

Christopher S. Manikas
Project Manager

cc Lisa Jones-Bateman (SAIC)
D. Hutchins (USAEC)

1710 Goodridge Drive, P.O. Box 1303, McLean, Virginia 22102 (703) 821-4300
Other SAIC Offices: Albuquerque, Boston, Colorado Springs, Dayton, Huntsville, Las Vegas, Los Angeles, Oak Ridge, Orlando, Palo Alto, San Diego, Seattle, and Tucson

Well Water Discharged to Fort McClellan Sanitary Sewer

Well	OLF-7	OLF-7	OLF-6	OLF-7	OLF-8	OLF-3	OLF-5	OLF-10	OLF-9	LF2-1	LF2-2	LF2-3	OLF-1	Total
Date	5/10/93	5/10/93	5/12/93	5/12/93	5/12/93	5/12/93	5/12/93	5/12/93	5/12/93	5/14/93	5/14/93	5/14/93	5/15/93	
Time	1630-1700	1830	0800	0800	0800	0940	0940	0940	1330	1530	1700	1700	1100	
Gallons	700	550	100	250	200	147	126	427	300	700	180	270	55	4005
Liters	2649.50	2081.75	378.50	946.25	757.00	556.40	476.91	1616.20	1135.50	2649.50	681.30	1021.95	208.18	15158.93
pH	10.3	11.2	10.5	10.5	10.5	8.6	8.6	8.6	9.7	8.5	8.5	8.5	9.0	
Specific Cond (umhos/cm	285	569	360	360	360	360	360	360	540	934	945	945	935	

Concentration (ug/L)

Metal													
Arsenic	0.62	0.62	2.35	0.62	2.35	7.87	2.35	2.35	2.35	2.35	2.35	2.35	2.35
Cadmium	6.78	6.78	6.78	6.78	6.78	6.78	6.78	6.78	6.78	6.78	6.78	6.78	6.78
Cobalt	6.60	6.60	25.00	6.60	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Copper	4.97	4.97	18.80	4.97	18.80	161.98	18.80	18.80	18.80	18.80	18.80	18.80	18.80
Chromium	4.44	4.44	16.80	4.44	16.80	16.80	18.30	16.80	16.80	16.80	16.80	16.80	16.80
Lead	11.47	11.47	43.40	11.47	43.40	43.39	43.40	43.40	43.39	43.40	11.46	46.89	43.39
Mercury	0.03	0.03	0.10	0.03	0.19	1.14	0.10	0.10	0.10	0.10	0.10	0.10	0.31
Nickel	8.48	8.48	32.09	8.48	32.10	65.39	32.10	32.10	32.10	32.10	32.10	32.10	32.09
Silver	2.64	2.64	10.00	2.64	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Tin	59.89	59.89	59.89	59.89	59.89	59.89	59.89	59.89	59.89	59.89	59.89	59.89	59.89
Zinc	4.76	4.76	18.00	4.76	35.50	138.99	35.80	93.49	19.60	28.70	4.76	164.98	27.60

Mass (ug)

Metal														Total (ug)	Total (lbs)
Arsenic	1645.276	1292.717	889.134	587.5984	1778.937	4378.899	1121.278	3798.03	2668.184	6225.88	1601.085	2401.119	488.8357	28876.97	0.000064
Cadmium	17961.68	14112.75	2565.875	6414.887	5132.05	3771.365	3232.808	10956	7697.468	17961.65	4618.916	6927.986	1411.513	102765	0.000226
Cobalt	17498.1	13748.5	9461.278	6249.32	18923.16	13908.36	11922.08	40400.94	28384.03	66231.16	17030.59	25546.24	5203.656	274507.4	0.000605
Copper	13158.57	10338.88	7115.38	4699.489	14230.19	90125.69	8965.185	30381.77	21345.47	49804.75	12806.94	19210.57	3913.13	286096	0.00063
Chromium	11758.72	9238.995	6357.77	4199.543	12716.01	9346.958	8727.071	27149.3	19074.87	44505.98	11444.66	17166.89	3497.008	185183.8	0.000408
Lead	30376.7	23867.4	16425.14	10848.82	32850.34	24144.57	20695.77	70135.47	49274.98	114975.7	7811.063	47924.11	9033.684	458363.7	0.00101
Mercury	69.99239	54.99402	37.68821	24.99728	144.7669	634.481	47.87479	162.1186	113.8859	263.9057	67.98292	102.0489	64.15969	1788.896	3.9E-06
Nickel	22467.56	17653.08	12147.91	8024.127	24296.92	36384.67	15307.33	51874.24	36445.53	85039.6	21867.4	32800.89	6681.162	370990.4	0.000817
Silver	6999.239	5499.402	3784.973	2499.728	7569.177	5563.345	4768.581	16159.88	11354.02	26491.54	6812.237	10218.39	2081.829	109802.3	0.000242
Tin	158688.2	124683.6	22669.84	56674.35	45339.42	33324.95	28563.61	96799.65	68009.21	158687.7	40805.44	61208.28	12468.37	907922.5	0.002
Zinc	12598.63	9898.923	6812.336	4499.51	26870.99	77330.74	17071.14	151098.2	22253.51	76032.38	3239.648	168603.7	5745.042	582054.8	0.001282
Total ug:	293222.6	230389.2	88267.32	104722.4	189852	298914	120422.7	498915.6	266621.2	646220.2	128106	392110.2	50588.39	3308352	0.007287
Total (lbs):	0.000646	0.000507	0.000194	0.000231	0.000418	0.000658	0.000265	0.001099	0.000587	0.001423	0.000282	0.000864	0.000111		
Total ug/L:	110.6709	110.6709	233.203	110.6709	250.7952	537.2335	252.5062	308.6977	234.8051	243.9027	188.0317	383.6882	243.0089		

An Employee-Owned Company