



DEPARTMENT OF THE AIR FORCE

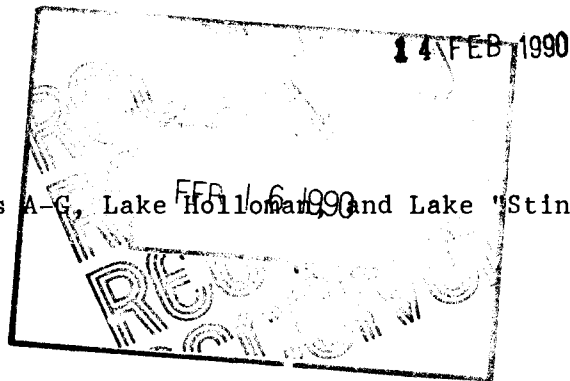
HEADQUARTERS 833D COMBAT SUPPORT GROUP (TAC)

HOLLOMAN AIR FORCE BASE NM 88330-5000


REPLY TO
ATTN OF: 833 CSG/DEV

SUBJECT: Composite Sample Analyses for Lagoons A-G, Lake Holloman, and Lake "Stinky"

TO: Bureau of Land Management
Attn: Jim Fox
1800 Marquess
Las Cruces, New Mexico 88001



1. Per our discussion on 6 Feb 90, we are providing you a copy of our Appendix IX Composite Samples of Lagoons A, B, C, D, E, F, G, Lake Holloman, and Lake "Stinky". We will provide the A-E Groundwater Monitoring Report/Quality Control Summary for the First Groundwater Sampling Round during the week of 22 Feb.
2. Second Round Sampling was conducted in Sep 1989; report has not yet been provided to the base. When we receive this report, copies will be sent to the NMEID, US EPA Region VI, and you.
3. We would like to express our thanks to the BLM for coordinating our recent meeting. We believe it was necessary in the development of understanding of each of our interests. We would like to invite you to meet on a semiannual basis in the future to discuss our continued efforts for closure of the lagoons as hazardous waste surface impoundments. These meetings could be held here at Holloman in January and July at a mutually-agreed upon date and time.
4. As stated during our meeting, at this time we have no plans to conduct sampling in Lake Holloman or Lake Stinky. Given the protocol we have established to clean our lagoons; i.e., clean Lagoons A & B and conduct verification testing in Lagoon C; if contamination is found in Lagoon C then clean Lagoon C and conduct verification testing in Lagoon D; etc.; at this time, we do not believe such a study would be of benefit. However, if at some point in the future there is a requirement by regulation or by the NMEID or US EPA Region VI, we will pursue funding sources for such a study.
5. If at any time you have questions, please contact Sharon Moore at 479-3931.


WILLIAM W. KOELM, Colonel, USAF
Commander

Atch
Appendix IX

cc: w/Atch
Raymond P Churan, DOI
Tom O'Brien, F&W Service
Bruce Swanton, NMEID

Readiness is our Profession

Results of July 1987 Sampling for Appendix IX
Analysis of Sludge and Water

Lagoon A

	Liquid (mg/l)	Sludge (mg/kg)
Organics:	ND	
Bis(2-ethylhexyl)phthalate		4.9 mg/kg
Methyl decane (TIC)*		~1.2
Unknown peaks (3)		~3.9 (total)
Metals		
Aluminum		510.
Arsenic	0.02	
Barium	1.6	100.
Cadmium	0.05	1.8
Calcium	250.	5700.
Chromium		11
Copper		36.
Iron		670.
Lead	0.18	25.
Magnesium	140.	1200.
Manganese	0.16	22.
Mercury		0.43
Potassium	17.	160.
Silver		2.6
Sodium	520.	750.
Zinc	0.26	52.
Cyanide	0.02	
Fluoride	1.0	3.3
Phenols, total	0.006	
Sulfide		790.

* TIC = Tentatively identified compounds

Lagoon B

	Liquid (mg/l)§	Sludge (mg/kg)
Organics:		
Bis (2-ethylhexyl)phthalate		3.8
Nonhexacontanoic acid		~3.2
Unknown hydrocarbon		~1.0
Unknown acid		~2.0
Unknown		~2.6
Thiobismethane (TIC)*	10 ug/l	
Dichlorotetrafluoroethane	20.ug/l	
Butoxy ethanol phosphate	13	
Pentacosane	14	
Metals		
Aluminum		490.
Arsenic	0.026 mg/l	
Barium	2.5	87.
Cadmium	0.06	1.3
Calcium	530.	3900.
Chromium		8.7
Copper		59.
Iron		620.
Lead	0.18	13.
Magnesium	150.	660.
Manganese	0.18	19.
Potassium	15.	120.
Silver		2.2
Sodium	580.	670.
Zinc	0.08	51.
Cyanide	0.02	
Fluoride	1.0	3.8
Phenols, total	0.01	
Sulfide		600.

§ unless otherwise noted

Lagoon C

	Liquid (mg/l)§	Solid (mg/kg)
Organics:	ND	
Dichlorotetrafluoroethane (TIC)	~20. ug/l	
Unknown long chain aliphatic alcohols (4 peaks)	~120 ug/l	
Docosane (TIC)		~3.2
Tricosane		~5.8
Triacontane		~7.1
Pentacosane		~6.6
Unknown peaks (3 peaks)		~15 (total)
Unknown long chain aliphatic hydrocarbons (4 peaks)		11. (total)
Metals		
Aluminum		430.
Antimony		62.
Arsenic		
Barium	3.0	240.
Cadmium	0.06	1.3
Calcium	160.	6500.
Chromium		6.2
Copper		30.
Iron		350.
Lead	0.17	
Magnesium	100.	660.
Manganese	0.11	28.
Potassium	23.	140.
Silver		
Sodium	340.	690.
Zinc	0.22	29.
Cyanide		
Fluoride	1.0	1.9
Phenols, total	0.01	
Sulfide		200.

§ unless otherwise noted

Lagoon D

	Liquid (mg/l)	Sludge (mg/kg)
Organics:		
Di-n-butyl phthalate		1.7
Metals:		
Aluminum		1100.
Antimony		71.
Barium	2.9	310.
Cadmium	0.08	
Calcium	420.	29,000.
Copper		6.0
Iron		380.
Lead	0.18	
Magnesium	220.	600.
Manganese	0.19	35.
Potassium	18.	200.
Silver		
Sodium	860.	460.
Zinc		3.6
Cyanide		
Fluoride	1.0	2.2
Phenols, total	0.02	
Sulfide		250.

Lagoon E

	Liquid (mg/l)§	Sludge (mg/kg)
Organics:		
Dichlorotetrafluoroethane (TIC)	~10 ug/l	
Di-n-butyl phthalate		1.2
Metals		
Aluminum		850.
Antimony		88.
Arsenic	0.03	
Barium	2.4	270.
Cadmium	0.06	1.5
Calcium	260.	20,000.
Chromium		
Copper		21.
Iron		720.
Lead	0.08	
Magnesium	140.	1200.
Manganese	0.22	62.
Potassium	18.	250.
Selenium	0.02	
Silver		2.0
Sodium	520.	790.
Zinc	0.32	20.
Cyanide		
Fluoride	1.0	3.1
Phenols, total	0.02	
Sulfide		280.

§ unless otherwise noted

Lagoon F

	Liquid (mg/l)	Sludge (mg/kg)
Organics:		
Diethyl phthalate		1.6
Metals:		
Aluminum		1500.
Antimony		79.
Arsenic	0.02	
Barium	2.1	230.
Cadmium	0.06	1.2
Calcium	240.	26,000.
Copper	0.21	19.
Iron		140.
Magnesium	130.	3000.
Manganese	0.18	55.
Potassium	17.	440.
Selenium	0.02	
Silver		
Sodium	510.	850.
Zinc	0.05	21.
Cyanide		
Fluoride	1.0	2.2
Phenols, total	0.02	
Sulfide		230.

Lagoon G

	Liquid (mg/l)	Sludge (mg/kg)
Organics:		
Di-n-butyl phthalate		1.2
Diethyl phthalate		1.9
Metals		
Aluminum		430.
Antimony		79.
Arsenic	0.03	
Barium	2.6	190.
Cadmium	0.09	1.0
Calcium	320.	6700.
Copper	0.21	7.1
Iron		240.
Magnesium	190.	660.
Manganese	0.14	26.
Potassium	21.	130.
Selenium	0.02	
Silver		
Sodium	800.	620.
Zinc		6.7
Fluoride	1.0	3.4
Phenols, total	0.18	
Sulfide		270.

Lake Holloman

	Liquid (mg/l)	Sludge (mg/kg)
Organics:		
Diethyl phthalate		1.7
Di-n-butyl phthalate		1.9
Metals		
Aluminum		610.
Antimony		83.
Arsenic	0.05	
Barium		230.
Cadmium	0.07	1.3
Calcium	600.	25,000.
Copper		7.5
Magnesium	320.	1500.
Manganese	0.28	44.
Potassium	300.	160.
Selenium	0.03	
Silver	0.06	
Sodium	1100.	1200.
Zinc	0.05	5.9
Fluoride	1.0	4.1
Phenols, total	0.01	
Sulfide		180.

Lake Stinky*

	Liquid (mg/l)	Solid (mg/kg)
Metals:		
Aluminum		1000.
Antimony	23.	79.
Barium	1.7	110.
Cadmium	0.64	0.89
Calcium	1200.	13,000.
Copper		4.0
Iron		74.
Lead	0.62	
Magnesium	3400.	3000.
Manganese	1.1	140.
Potassium	49.	47.
Silver	0.59	
Sodium	17,000.	5500.
Thallium	6.2	
Zinc	0.13	5.0
Fluoride	0.6	
Phenols, total	0.02	
Sulfide		400.

* No organics were detected in Lake Stinky.

Trip Blank

	Liquid	Sludge (mg/kg)
Mercury	0.003 mg/l	
Di-n-butyl phthalate	7. ug/l (J)	1.2
Acetone		5.
Methylene chloride		1.
Bis(2-ethylhexyl)phthalate	17. ug/l	

(J) Detected, but below quantitation limit