DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

March 27, 1995

0328-3187-95

Mr. Cornelius Amindyas
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
525 Camino de los Marquez, Suite 4
Santa Fe, NM 87502

Re: Post-Closure Plan Quarterly Monitoring
Kirtland Air Force Base Sewage Lagoons and Golf Course Main Pond

Dear Mr. Amindyas:

This letter serves as the third of five Phase I quarterly monitoring reports as required by the post-closure plan (PCP) for the Kirtland Air Force Base (KAFB) sewage lagoons and golf course main pond. The sampling was conducted by Daniel B. Stephens and Associates, Inc. (DBS&A) personnel and covers the period November 1, 1994 through January 31, 1995. The principal accomplishments of the last quarter include:

- Measurement of depth to ground water in all wells
- Collection of ground-water samples on January 31, 1995 through February 7, 1995 from sewage lagoons monitor wells 0501, 0502, 0503, and 0504, from golf course main pond monitor wells 0602, 0608, 0609, and 0610, and from production well number 4

Ground-Water Table Elevations

Depth to ground water was measured at each well. Table 1 (Attachment 1) presents ground-water table elevation data calculated for each individual monitor well sampling date. Little change was noted in the ground-water elevations at the sewage lagoons wells from the October values, except for monitor well 0501 where a decrease of almost 9 inches occurred. Figure 1 (Attachment 2) shows that ground-water flow appears to be influenced by pumping at production well number 4, which was initiated in August 1994 after an 18-month period of inactivity. Ground-water elevations in the wells at the golf course main pond rose about 6 inches between October 1994 and January 1995. This change had no effect on the ground-water surface (Figure 2).

Purge Water Volume and Recharge

All monitor wells were purged and sampled as specified in the PCP and DBS&A standard operating procedures. Purging at low flow rates was continued until field parameters had stabilized. Approximately three casing volumes were removed from all sewage lagoon wells to ensure that all stagnant water was removed from these monitor wells.

Ground-Water Quality

Ground-water samples were collected on January 31 through February 7, 1995 from KAFB monitor wells 0501, 0502, 0503, and 0504 located at the sewage lagoons, from KAFB monitor wells 0602, 0608,

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0609, and 0610 located at the golf course main pond, and from production well number 4. Ground-water samples were collected using a submersible pump. Turbidity measurements were recorded in the field, and extreme care was taken to minimize the turbidity of the ground-water samples. Samples were collected in clean bottles provided by the analytical laboratory and were handled as specified in the PCP, except for hand-delivery to a local laboratory, Soil and Water West of Rio Rancho. The samples were analyzed for total chromium (Cr) by Environmental Protection Agency (EPA) method 7190, hexavalent Cr by EPA method 7196, and turbidity by EPA method 180.1. Chain-of-custody documentation is included in Attachment 2.

Table 2 summarizes the results of ground-water chemical analytical data from this quarter's sampling activities. All hexavalent Cr values were below the New Mexico Water Quality Control Commission (WQCC) standard of 0.050 milligrams per liter (mg/L). However, total Cr values exceeded the WQCC standard in three of the sewage lagoon wells (0502, 0503, and 0504) and one of the golf course main pond wells (0608). In addition, the highest total Cr value, 0.250 mg/L, was observed in the sample collected from production well number 4.

The detection of elevated Cr concentrations in these wells is puzzling. Cr concentrations in excess of the WQCC standard had been observed only once previously in monitor wells 0608 at the golf course main pond and 0502 at the sewage lagoons. Water samples from monitor well 0503 at the sewage lagoons had exceeded the WQCC Cr standard on several occasions. Samples from monitor well 0504 had never been observed to even approach the standard, much less exceed it three-fold.

The Cr concentration observed in production well number 4 was reported to the Kirtland Bioenvironmental Engineering Division. Resampling is currently underway. Results will be forwarded when they become available.

We believe that this report satisfactorily describes all significant activities undertaken during the quarter. If you have any questions or comments, please call me at 822-9400.

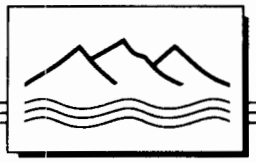
Sincerely yours,

DANIEL B. STEPHENS & ASSOCIATES, INC.

Richard Meixner, Ph.D.
Senior Scientist

RM/sd
Attachments (3)
cc: Steve Lee, KAFB

J:\3187\PC-MNTRG\AMINDYAS.327



DANIEL B. STEPHENS & ASSOCIATES, INC.

ENVIRONMENTAL SCIENTISTS AND ENGINEERS

SEWAGE LAGOON AND GOLF COURSE MAIN POND POST-CLOSURE MONITORING QUARTERLY REPORT

Prepared for

Kirtland Air Force Base

Albuquerque, New Mexico

March 27, 1995

6020 ACADEMY NE • SUITE 100 • ALBUQUERQUE, NM 87109 • (505)

Attachment 1

Tables

Table 1. Ground-Water Elevation Data
Post-Closure Monitoring

Well Designation	Water Elevation (fmsl)	Date of Measurement	Depth to Water[1]
KAFB0501	4869.59	02/01/95	489.45
KAFB0502	4867.45	02/01/95	493.76
KAFB0503	4867.61	02/01/95	490.11
KAFB0504	4869.47	02/01/95	484.76
KAFB0602	5046.78	01/31/95	314.71
KAFB0608	5051.64	01/31/95	305.59
KAFB0609	5052.08	01/31/95	309.87
KAFB0610	5053.80	01/31/95	301.80

fmsl = feet above mean sea level

[1] All depths measured from top of well casing

Table 2. Chromium and Turbidity Post-Closure Monitoring

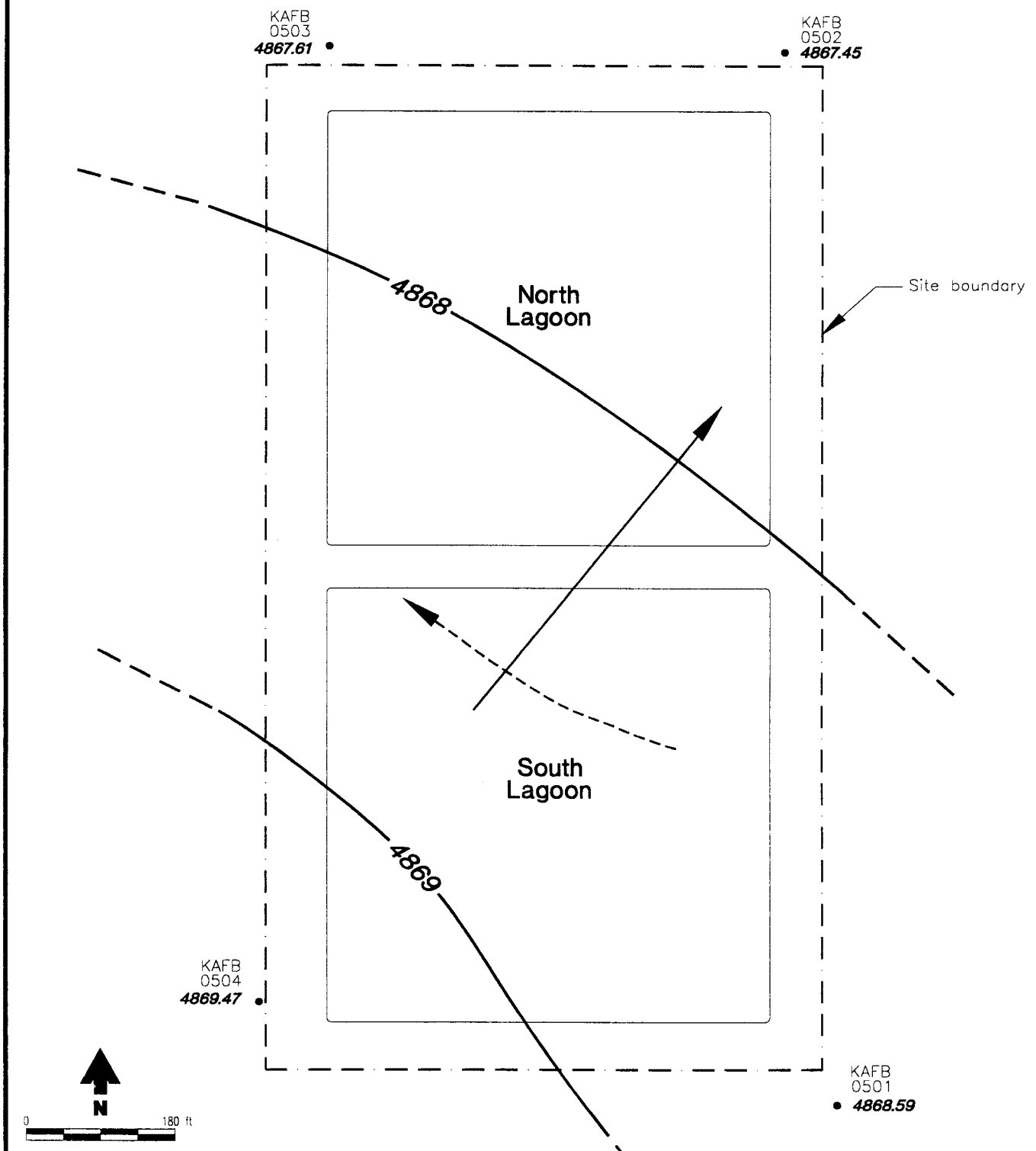
Well Designation	Date Sampled	Total Chromium (mg/L)	Hexavalent Chromium (mg/L)	Turbidity (NTU)
Sewage Lagoons				
KAFB0501	02/02/95	<0.02	<0.01	<1
KAFB0501ad*	02/02/95	NA	<0.01	<1
KAFB0502	02/02/95	0.11	<0.01	1.2
KAFB0502D**	02/02/95	0.12	<0.01	1.2
KAFB0503	02/02/95	0.10	<0.01	<1
KAFB0504	02/02/95	0.16	<0.01	<1
Golf Course Main Pond				
KAFB0602	02/02/95	<0.02	<0.01	<1
KAFB0608	02/02/95	0.12	<0.01	1.5
KAFB0609	02/02/95	<0.02	<0.01	<1
KAFB0610	02/02/95	<0.02	<0.01	<1
KAFB0611	02/02/95	<0.02	<0.01	<1
KAFB0615	02/02/95	<0.02	<0.01	<1
Production Well				
4	02/07/95	0.25	<0.01	<1

* ad = Analytical duplicate
**D = Duplicate sample

0611 = Duplicate sample from well KAFB0610
0615 = Equipment rinseate blank collected during sampling at well KAFB0610
mg/L = Milligrams per liter
NTU = Nephelometric turbidity units
NA = Not analyzed

Attachment 2

Figures



Explanation

- 4869.47 — Monitor well, number is ground-water elevation (fmsl), February 1, 1995
- 4869 — Water-level contour (fmsl), February 1, 1995 Contour interval = 1 ft
- Regional ground-water-flow direction, 1960
- Regional ground-water-flow direction, February 1, 1995

KAFB POST-CLOSURE MONITORING

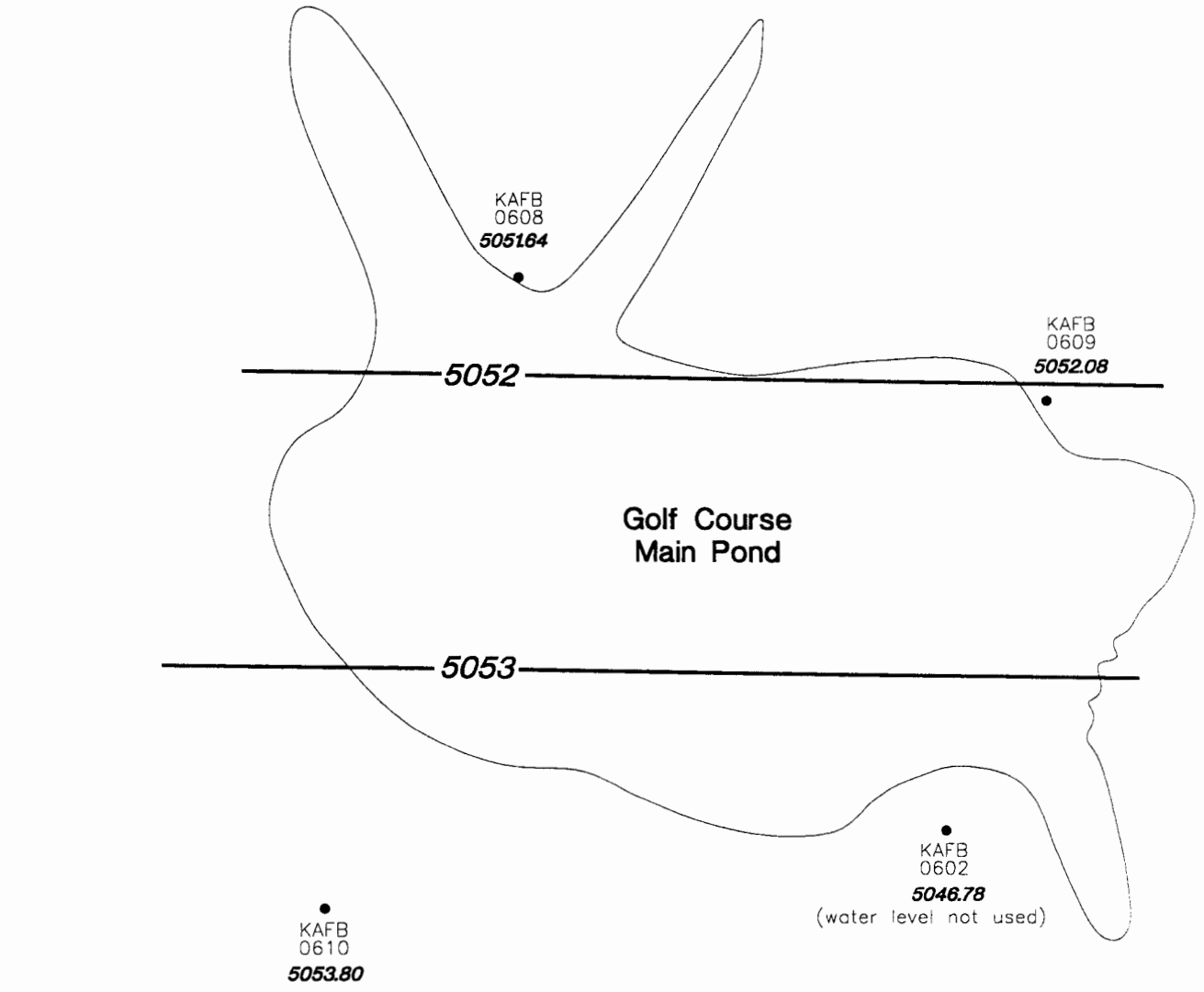
Sewage Lagoons Water Table Contour Map
February 1995

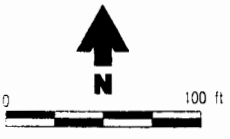
DANIEL B. STEPHENS & ASSOCIATES, INC.

3-95 JN 3187

Figure 1

P:\3187\318722W.DWG





Explanation

5053.80 Monitor well, number is ground-water elevation (fmsl), January 31, 1995

5053 Water-level contour (fmsl), January 31, 1995
Contour interval = 1 ft

P:\3187\318723W.DWG

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3-95 JN 3187

KAFB POST-CLOSURE MONITORING

Golf Course Main Pond Water Table Contour Map, January 1995

Figure 2

Attachment 3

Laboratory Data and Chain-of-Custody Sheets

SOIL AND WATER WEST, INC

NATURAL RESOURCE CONSULTANTS
AND TESTING LABORATORIES

1700 Southern Blvd.
Rio Rancho, NM 87124

Phone: (505) 891-9472
Fax: (505) 892-6607

1792-Revised Report

NAME: **D.B. Stephens & Associates** DATE: **3/3/95**

ADDRESS: **6020 Academy, Suite 100** PHONE: **822-8877**

Albuquerque, N.M. 87109 NUMBER OF SAMPLES: **2**

CONTACT: **Rich Meixner** PROJECT / PO#: **3187.18.03.18BB**

DATE RECEIVED: **2/7/95** TIME RECEIVED: **4:00pm**

LAB #	SAMPLE ID	T. Cr mg/L	Hex Cr mg/L	Turbidity NTU's	Nitrate mg/L	Nitrite mg/L	Ammonia mg/L
1792-1	KAFB-0504	0.16	<0.01	<1.0	1.4	<0.01	<0.1
1792MS	MATRIX SPIKE REC.	95%	100%				
1792MSD	MATRIS SPIKE REC. DUP.	94%	100%				
1792-2	KAFB-PW-4	0.25	<0.01	<1.0	0.6	<0.01	<0.1
Method #:							
Method D/L:							

Comments: Perform MS/MSD for Chromium (Total & Hex) on KAFB-0504 (1792)

SIGNED: Rhonda H Gittleson DATE: 3/3/95

SIGNED: Jerry Sierra DATE: 3/3/95

RECEIVED FEB 2 7 1995

SOIL AND WATER WEST, INC

NATURAL RESOURCE CONSULTANTS
AND TESTING LABORATORIES

1700 Southern Blvd.
Rio Rancho, NM 87124

Phone: (505) 891-9472
Fax: (505) 892-6607

NAME: **D. B. Stephens & Associates** DATE: **2/22/95**

ADDRESS: **6020 Academy NE, Suite 100** PHONE: **822-9400**

Albuquerque, N.M. 87103 NUMBER OF SAMPLES: **2**

CONTACT: **Rich Meixner** PROJECT / PO#: **3187 18 02 18BB**

DATE RECEIVED: **2/8/95** TIME RECEIVED: **4:00 p.m.**

LAB #	SAMPLE ID	T. Cr mg/L	Cr VI mg/L	Turbidity NTU's	NO3-N mg/L	NO2-N mg/L	NH4-N mg/L	
1793-1	KAFB 0502 (Unpreserved)	0.11	<0.01	1.2	8.0			
1793-2	KAFB 0502 (Preserved)					<0.01	<0.1	
1793-1D	DUPLICATE	0.12	<0.01	1.2	8.0			
1793-2D	DUPLICATE					<0.01	<0.1	
Method #:								
Method D/L:								

Comments:

SIGNED: J. Clarke DATE: 02/22/95

SIGNED: Larry Sierra DATE: 2/22/95

SOIL AND WATER WEST, INC

NATURAL RESOURCE CONSULTANTS
AND TESTING LABORATORIES

1700 Southern Blvd.
Rio Rancho, NM 87124

Phone: (505) 891-9472
Fax: (505) 892-6607

NAME: **D.B. Stephens & Associates** DATE: **2/10/95**

ADDRESS: **6020 Academy NE, Suite 100** PHONE: **822-9400**

Albuquerque, N.M. 87109 NUMBER OF SAMPLES: **2**

CONTACT: **Rich Meixner** PROJECT / PO#: **3187.18.03.1888**

DATE RECEIVED: **2/3/95** TIME RECEIVED: **7:35 a.m.**

LAB #	SAMPLE ID	T Cr* mg/L	Hex Cr* mg/L	Turbidity* NTU's	Nitrate* mg/L	Nitrite** mg/L	Ammonia** mg/L
1789-1	KAFB-0503	0.10	<0.01	<1.0	8.4	<0.01	<0.1
1789-2	KAFB-0501	<0.02	<0.01	<1.0	4.1	<0.01	<0.1
1789-2D	DUPLICATE		<0.01	<1.0	4.2	<0.01	<0.1
Method #:							
Method D/L:							

Comments:

SIGNED: DATE: 2/10/95

SIGNED: DATE: 2/10/95

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NATURAL RESOURCE CONSULTANTS
AND TESTING LABORATORIES

1700 Southern Blvd.
Rio Rancho, NM 87124

Phone: (505) 891-9472
Fax: (505) 892-6607

NAME: D.B. Stephens & Associates
DATE: 2/10/95
ADDRESS: 6020 Academy NE, Suite 100
PHONE: 822-8877
Albuquerque, N.M. 87109
NUMBER OF SAMPLES: 2
CONTACT: Rich Meixner
PROJECT / PO#: 3187.18.03.18BB
DATE RECEIVED: 2/2/95
TIME RECEIVED: 8:00am

LAB #	SAMPLE ID	Total Chromium mg/L	Hexavalent Chromium mg/L	Turbidity NTU's
1788-1	KAFB-0608	0.12	0.01	1.5
1788-2	KAFB-0609	<0.02	<0.01	<1.0
Method #:				
Method D/L:				

Comments:

SIGNED: [signature] DATE: 2/10/95

SIGNED: [signature] DATE: 2/10/95

SOIL AND WATER WEST, INC

NATURAL RESOURCE CONSULTANTS
AND TESTING LABORATORIES

1700 Southern Blvd.
Rio Rancho, NM 87124

Phone: (505) 891-9472
Fax: (505) 892-6607

RECEIVED FEB 0 3 1995

NAME: **D. B. Stephens & Associates** DATE: **2/3/95**

ADDRESS: **6020 Academy Rd., NE, #100** PHONE: **822-9400**

Albuquerque, NM 87109 NUMBER OF SAMPLES: **4**

CONTACT: **Rich Meixner** PROJECT / PO#: **3187.18.03.18BB**

DATE RECEIVED: **1/31/95** TIME RECEIVED: **6:30 p.m.**

LAB #	SAMPLE ID	T Cr mg/L	Cr Hexavalent mg/L	Turbidity NTU's
1787-1	KAFB-0602	<0.02	<0.01	<1.0
1787-2	KAFB-0610	<0.02	<0.01	<1.0
1787-3	KAFB-0611	<0.02	<0.01	<1.0
1787-4	KAFB-0615	<0.02	<0.01	<1.0
1787-4D	DUPLICATE	<0.02	<0.01	<1.0
Method #:				
Method D/L:				

Comments:

SIGNED: Richard H. Fittinen DATE: 2/3/95

SIGNED: Larry Sierra DATE: 2/3/95

Soil and Water West, Inc.

Natural Resource Consultants and Testing Laboratories
1700 Southern Blvd., Rio Rancho, NM 87124
(505) 891-9472 FAX (505) 892-6607

Chain of Custody Record

Page 1 of 1

Laboratory ID No.:

Date Delivered:

Time in Lab:

Contact: Rich Meixner

Company: Daniel B. Stephens & Assoc.

Address: 6020 Academy Rd., NE., #100
Albuquerque, NM. 87109

Phone (FAX): 822-8871

Proj. #: 3187.18.03.1888

Proj. Name: KAFB Golf Course Lands.

Analysis Request

Matrix	Date	Time	Sample ID	Lab ID	Total Chromium	Hexavalent Chromium	TDS/Bicarb	Remarks
Water	1/31/95	1350	KAFB-0602		X	X	X	
↓	↓	1615	KAFB-0610		X	X	X	
		1618	KAFB-0611		X	X	X	
↓	↓		KAFB-0615		X	X	X	

Relinquished by: [signature]
Received by: [signature]
Date and Time: 1/31/95 1635

Relinquished by: _____
Received by: _____
Date and Time: _____

Remarks:

Soil and Water West, Inc.

Natural Resource Consultants and Testing Laboratories
1700 Southern Blvd., Rio Rancho, NM 87124
(505) 891-9472 FAX (505) 892-6607

Chain of Custody Record

Page 1 of 1

Laboratory ID No.:

Date Delivered:

Time in Lab:

Contact: Rich Meixner

Company: Daniel B. Stephens & Assoc.

Address: 6020 Academy NE, #100
Albuquerque, NM 87109

Phone (FAX): 822-8877

Proj. #: 3187.19.03.15 BB

Proj. Name: KAFB Golf Course Road

Analysis Request

Matrix	Date	Time	Sample ID	Lab ID	Total Chromium	Hexavalent Chromium	Turbidity	Remarks
water	2/1/95	1240	KAFB-0608		X	X	X	
"	"	1550	KAFB-0609		X	X	X	

Relinquished by: Kelly Stadtwald

Received by: [illegible]

Date and Time: 2/1/95 1830

Relinquished by: _____

Received by: _____

Date and Time: _____

Remarks:

Soil and Water West, Inc.

Natural Resource Consultants and Testing Laboratories
1700 Southern Blvd., Rio Rancho, NM 87124
(505) 891-9472 FAX (505) 892-6607

Chain of Custody Record

Page 1 of 1

Laboratory ID No.:

Date Delivered:

Time in Lab:

Contact: RICH MEIXNER

Company: DANIEL B. STEPHENS & ASSOC.

Address: 6020 ACADEMY NE, SUITE 100
ALBUQUERQUE, NM 87109

Phone (FAX): 505-822-8877

Proj. #: 3187.18.03.188B

Proj. Name: KAFB SEWAGE LAGOONS.

Analysis Request

Matrix	Date	Time	Sample ID	Lab ID	TOTAL CHROMIUM *	HEXAVALENT CHROMIUM *	TURBIDITY *	NITRATE *	NITRITE **	AMMONIA **	Remarks
WATER	2/2/95	1100	KAFB-0503		X	X	X	X	X	X	
"	"	1707	KAFB-0501		X	X	X	X	X	X	

Relinquished by: [signature]
Received by: [signature]
Date and Time: [illegible]

Relinquished by:
Received by:
Date and Time:

Remarks:
* : 1 × 32 oz. poly w/o preserv.
** : 1 × 8 oz. poly w/ H_2SO_4

Soil and Water West, Inc.

Natural Resource Consultants and Testing Laboratories
1700 Southern Blvd., Rio Rancho, NM 87124
(505) 891-9472 FAX (505) 892-6607

Chain of Custody Record

Page 1 of 1

Laboratory ID No.: 1192
Date Delivered: 2/7/95
Time in Lab: 4:00

Contact: Ron Meixner
Company: Daniel B Stephens & Assoc.
Address: 5200 Academy NE, Suite 100
Albuquerque, NM 87109
Phone (FAX): 822-8877
Proj. #: 3187.18.03.18BB
Proj. Name: KAFB Sewage Lagoons

Analysis Request

Matrix	Date	Time	Sample ID	Lab ID	Total Chromium	Hexavalent Chromium	Turbidity	Nitrate	Nitrite	Ammonia	Remarks
Water	2/7/95	0830	KAFB-0504	1	X	X	X	X	X	X	
"	"	1150	KAFB-PW-4	2	X	X	X	X	X	X	

Relinquished by: Ron Meixner
Received by: [illegible]
Date and Time: 2/7/95 @ 1600

Relinquished by:
Received by: [illegible]
Date and Time:

Remarks:
Perform MS/MSD for chromium (total & hex) on KAFB-0504.

Soil and Water West, Inc.

Natural Resource Consultants and Testing Laboratories
1700 Southern Blvd., Rio Rancho, NM 87124
(505) 891-9472 FAX (505) 892-6607

Chain of Custody Record

Page _____ of _____

Laboratory ID No.: 1193
Date Delivered: 2/6/05
Time in Lab: 4:00pm

Contact: RICH MAXWELL
Company: ~~6020 ACADEMY NE~~
Address: DANIEL B STEPHENS & ASSOCIATES
6020 ACADEMY NE SUITE 100
ALBUQUERQUE NM 87109
Phone (FAX): 822 9400
Proj. #: 3137 13 02 1BBB
Proj. Name: WETLAND GW MONITORING

Analysis Request

Matrix	Date	Time	Sample ID	Lab ID	TDS	Cl	TURBIDITY	NO3	NO2	NH3	Remarks
W	2/5	0935	WWTP, 0502	1	X	X	X	X	X	X	
↓	2/5	0955	WWTP, 0502	2	X	X	X	X	X	X	

Relinquished by: _____
Received by: Sabrina Garcia
Date and Time: 2/6/05 4:00pm

Relinquished by: _____
Received by: _____
Date and Time: _____

Remarks: #2 (2 containers)