Los Alamos National Laboratory

ENVIRONMENTAL RESTORATION

Environmental Restoration
University of California
Environmental Restoration, MS M992
Los Alamos, New Mexico 87545
505-667-0808/FAX 505-665-4747

U. S. Department of Energy
Los Alamos Area Office, MS A316
Los Alamos, New Mexico 87544
505-665-7203
FAX 505-665-4504

APR 1996 RECEIVED

Date: April 19, 1996
Refer to: EM/ER:96-220

Mr. Benito Garcia
NMED-HRMB
P.O. Box 26110
Santa Fe, NM 87502

SUBJECT: FINAL ACCELERATED CLEANUP REPORTS 33-016

Dear Mr. Garcia:

Enclosed are the final reports and Certifications of Completion for the voluntary corrective actions completed in Fiscal Year 1995. The reports with potential release sites (PRSs) listed in the Hazardous and Solid Waste Amendments (HSWA) Module of the Los Alamos National Laboratory's Resource Conservation and Recovery Act operating permit contain our request for no further action (NFA). Upon your approval of these reports, we will submit a permit modification request for NFA of these PRSs.

For PRSs not listed in the HSWA Module, reports are included as informational copies for your records.

If you have any questions, please call David Bradbury at 505-665-6208.

Thank you for your timely attention to this matter.

Sincerely,

Jorg Jansen, Program Manager
Environmental Restoration

Sincerely,

Theodore Taylor, Program Manager
Los Alamos Area Office

JJ/TT/rfr

4733

Enclosures: (1) Final Reports for HSWA: C-9-001, 6-007(f), 8-005, 16-016(b), 18-001(a), 19-002, 21-013(c), 21-013(d), 21-013(e), 21-024(d), 21-024(e), 21-024(h), 31-001, 33-016, 39-007(a), and 69-001
(2) Final Reports for non-HSWA: C-0-036(a-d), C-0-041, C-10-001, C-21-027, C-36-001, 0-032, 1-001(f), 3-003(p), 3-022, 3-047(d), 3-051(c), 9-010(a-b), 16-011, 16-016(f), 20-003(c), 21-022(j), 39-002(c), 53-010, and 57-006
(3) Certifications of Completion

Cy (w/enclosures):
B. Driscoll, EPA, R.6, 6PD-N, (2 copies of HSWA)
D. Griswold, ERD, AL, MS A906
J. Harry, EM/ER, MS M992
B. Hoditschek, NMED-HRMB
R. Kern, NMED-HRMB
N. Naraine, EM-453, DOE-HQ
M. Shaner, P&PI, MS J591 (5 copies)
N. Weber, Bureau Chief, NMED-AIP, MS J993
J. White, ESH-19, MS K490
S. Yanicak, NMED-AIP, MS J993
RPF, MS M707

Cy (w/o enclosures):
T. Baca, EM, MS J591
D. Bradbury, EM/ER, MS M992
T. Glatzmaier, DDEES/ER, MS M992
D. McInroy, EM/ER, MS M992
G. Rael, ERD, AL, MS A906
W. Spurgeon, EM-453, DOE-HQ
T. Taylor, LAAO, MS A316
J. Vozella, LAAO, MS A316
EM/ER File, MS M992

Voluntary Corrective Action Completion Report for

Potential Release Site
33-016
Sump with Outfall

Field Unit 3

Environmental
Restoration
Project

January 1996
Revision 1

A Department of Energy
Environmental Cleanup Program

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Los Alamos
NATIONAL LABORATORY

LA-UR-96-191

CERTIFICATION OF COMPLETION

I certify that all work pertaining to the voluntary corrective action (VCA) 33-016 has been completed in accordance with the Department of Energy approved VCA plan entitled **VCA Plan for PRS 33-016, Sump with Outfall**. Based on my personal involvement or inquiry of the person or persons who managed this clean up, a review of all data gathered and a visit to the site, to the best of my knowledge and belief, all criteria of the plan have been met or exceeded. I believe that the completion of the VCA is both protective to human health and the environment. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Brad Martin

Brad Martin
Field Unit 3 Project leader
Environmental Restoration Program
Los Alamos National Laboratory

9/6/95
Date Signed

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1.0 DESCRIPTION

Potential Release Site (PRS) 33-016 is a sump that once served the sink and floor drain in a bunker located south of Main Site, building TA-33-23 (Fig. 1). The bunker was used to prepare propellant charges for use at South Site in the 1950s and then as storage for Los Alamos National Laboratory's (LANL's) Geology and Geochemistry Group. PRS 33-016 is listed in the Hazardous and Solid Waste Amendments (HSWA) Module of LANL's Resource Conservation and Recovery Act (RCRA) Permit.

The sump is on the west side of the building and is approximately 5 ft long X 2.5 ft wide X 7 ft deep. The sludge was analyzed during RCRA Facility Investigation (RFI) sampling in 1993. This analysis indicated the presence of high explosives byproducts, polycyclic aromatic hydrocarbons, and semivolatile organic compounds (SVOCs) above health-based levels and would therefore require corrective action at the sump. Analytical results for environmental samples are presented in Table 1. The soil at the outfall was sampled but revealed no contamination. The sludge was sampled again during the voluntary corrective action (VCA) cleanup and is addressed below.

2.0 CORRECTIVE ACTION

The cleanup activities started July 26, 1995, and ended September 1, 1995. The proposed treatment for the site was to remove the sludge, abandon the concrete sump in-place, and backfill with gravel and sand. The cleanup followed the VCA plan except in sampling. During sludge removal, there were elevated readings on the photoionization detector (PID). Because of the 10 to 20 ppm PID readings, additional sludge and liquid samples were collected and analyzed for lead, volatile organics, and SVOCs using Environmental Protection Agency (EPA) methods 6010, 8260 and 8270, respectively.

The initial cleanup involved pumping water from the sump into eight lined 55-gal barrels. During sludge removal it was decided to sample the sludge to examine the factor(s) contributing to the elevated PID readings. The analytical results were reviewed and determined to be non-RCRA by LANL's hazardous waste regulator and the field team leader. Analytical results are presented in Table 2 and are provided in Attachment A. Eight 55-gal. barrels of nonhazardous liquid was disposed of by Chemical Waste Management in Osco, Colorado on December 11, 1995. The sludge was removed and placed in one, lined 55-gal. barrel and will be transferred by Chemical Waste Management to Osco, Colorado in February 1996. The sump was filled with gravel and sand and capped with 1 ft of concrete. All samples were collected for waste characterization and are compared to RCRA limits; any data associated with this PRS can be found in Attachment A.

This VCA was considered a final remedy to PRS 33-016, and this report serves as the formal request for regulator concurrence to remove PRS 33-016 from the HSWA Module.

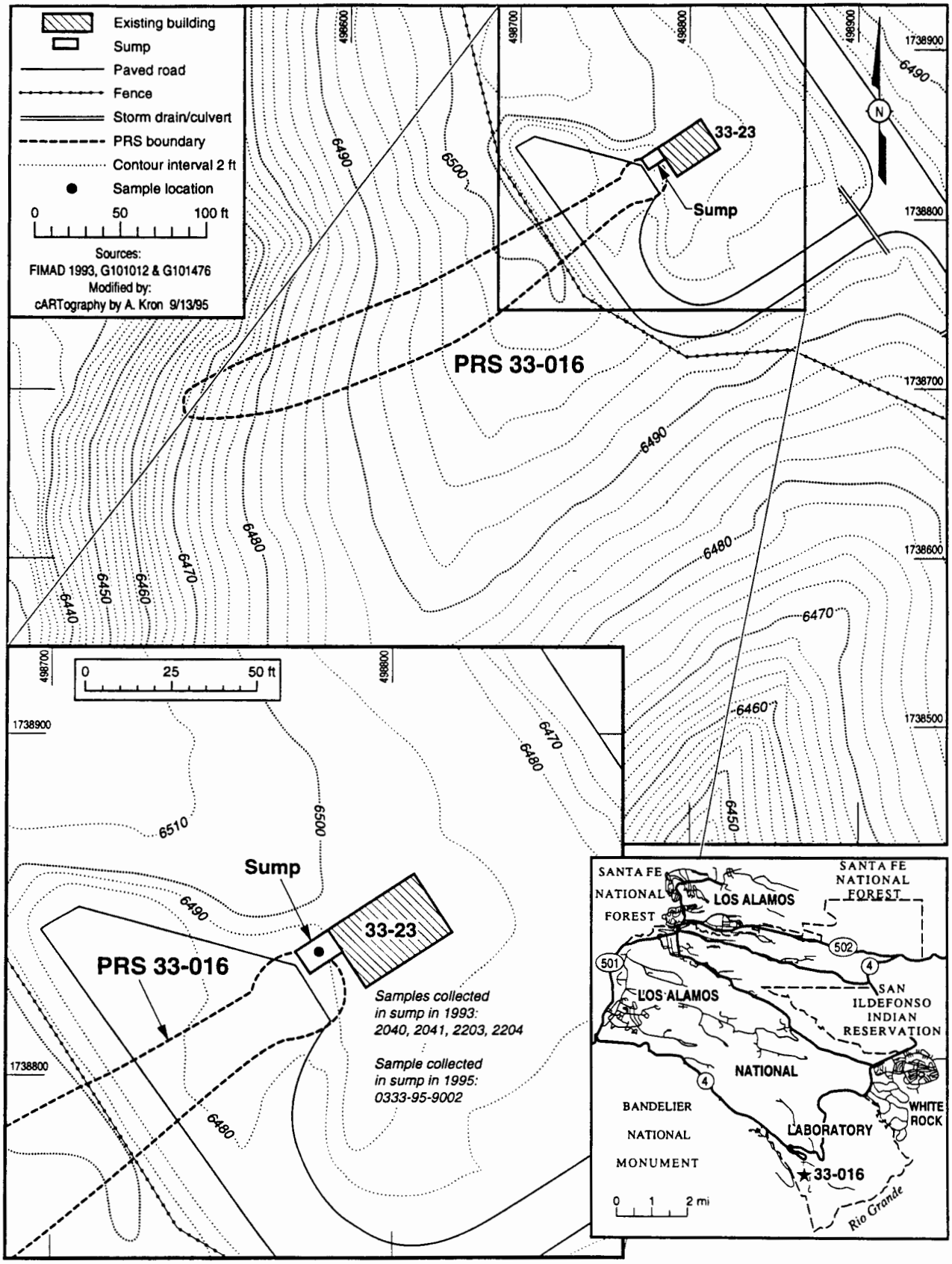

Fig. 1. Location of PRS 33-016.

TABLE 1

1993 ENVIRONMENTAL SAMPLE RESULTS FOR SLUDGE (AAA2041 AND AAA2204[a])

ANALYTE	SAMPLE RESULT AAA2041 (ppm)	SAMPLE RESULT AAA2204 (ppm)	SCREENING ACTION LEVEL (ppm)
Benzo(a)anthracene	23.0	20	1
Benzo(a)pyrene	16.0	18	0.1
Benzo(b)fluoranthene	13.0	12	1
Benzo(k)fluoranthene	19.0	19	1
Bis(2-ethylhexyl)phthalate	24	111	50
Chrysene	24	24	22
2,4-Dinitrotoluene	ND[b]	2.5	1
Indeno[1,2,3-cd]pyrene	9.7	15	1

[a] Only samples results above screening action levels are reported.
[b] ND = No analytes detected above laboratory detection limits.

TABLE 2

1995 WASTE SAMPLE RESULTS FOR SLUDGE AND LIQUID[a]

ANALYTE	SAMPLE ID (SLUDGE) 0333-95-0002 (µg/g)	SAMPLE ID (LIQUID) 0333-95-0001 (µg/l)	SAMPLE ID (LIQUID) 0333-95-0003 (µg/l)	RCRA LIMIT [b] (mg/L)
Acetone	ND[c]	18.9	142	NA[d]
Aluminum	5 010	102	293	NA
Antimony	1.49	ND	ND	NA
Arsenic	7.06	ND	ND	5.0
Barium	94.3	186	105	100.0
bis(2-Ethylhexyl) phthalate	244	ND	24.6	NA
Cadmium	1.76	ND	ND	1.0
Calcium	4 750	68 600	73 300	NA
Chromium	52.4	ND	ND	5.0
Cobalt	4.47	ND	ND	NA
Copper	285	ND	18.8	NA
1,1-Dichloroethane	ND	3.84	3.45	NA
1,1-Dichloroethylene	210	ND	ND	0.7
Di-n-butyl phthalate	ND	ND	15.2	NA
Iron	12 600	802	1 310	NA
Lead	293[e]	14.5	17	5.0
Magnesium	2 970	2 580	2 660	NA
Manganese	112	199	114	NA
Mercury	0.291	ND	ND	0.2
2-Methylnaphthalene	73.5	ND	ND	NA
Methyl chloride	ND	ND	2.34	NA
Nickel	88.5	29.9	35.2	NA
Phenathrene	70.2	ND	ND	NA
Potassium	768	12 300	12 700	NA
Selenium	0.972	ND	ND	1.0
Silver	20.1	ND	ND	5.0
Sodium	414	34 300	24 500	NA
Vanadium	28.2	ND	ND	NA
Zinc	458	69.3	87.6	NA

[a] Only sample results above detection limits are reported.
[b] Maximum concentration of contaminants for the toxicity characteristic, 40 CFR 261.24.
[c] ND = No analytes detected above laboratory detection limits.
[d] NA = Not applicable.
[e] Lead was the only sludge component that resulted in a detectable value (245µg/L) during toxicity characteristic leaching procedure analysis.

3.0 COST SUMMARY

TABLE 3

VCA COSTS

ACTIVITIES	COST
Planning	$ 15 000
Cleanup	$ 10 000
Verification sampling	$ 3 000
Disposal	$ 500
Develop VCA report	$ 10 000
TOTAL COST	$ 38 500

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ATTACHMENT A ANALYTICAL DATA

Included in this attachment are the analytical data from General Engineering Laboratories, Inc. for sludge and liquid.

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TO: Roy Michelotti CST-18	FROM: Lynn Kidman 21651	DATE: 8/22/95 PAGES INCLUDING THIS PAGE: 13
FAX #: 665 4632	FAX #: PHONE #:	

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COC 1082-95-9014
Page 1 of 1

P.20

9508069-

Los Alamos National Laboratory Environmental Restoration (Los Alamos, NM 87545)
CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

17171

Date 08/01/95		**Destination:** General Engineering Laboratories, Inc.	Rush 2
LANL Contact	Fred Shore	2040 Savage Road	**Non-RADTurnaround** 10 days
Mail Stop	ICFKE, M992	Charleston, SC 29414	**RADTurnaround** 10 days
Phone	(505) 661-5200	**Contact:** Pete Ballou (803) 566-8171	**Contract No** 11259-SC-81

Relinquished by: Linda Flu **(Signature):** **Affiliation:** ICF K	**Date:** 8/1/95	**Relinquished by:** **(Signature):** **Affiliation:**	**Date:**	**Relinquished by:** **(Signature):** **Affiliation:**	**Date:**
Received by: **(Signature):** 8-3-95 **Affiliation:** GCL 8:45	**Time:** 1430	**Received by:** **(Signature):** **Affiliation:**	**Time:**	**Received by:** **(Signature):** **Affiliation:**	**Time:**

Comments:
Radiochemistry is at background levels (as determined by hand held instrument). Analyze for TCLP for analytes which have concentrations greater than 20 times TCLP values.

SCREENING METHOD: none
SAMPLE DISPOSAL: Return to Client

Field Unique Sample #/ID	Cont ID	Date & Time Collected	Sample Container Volume/Material	Matrix	Preserv	ANALYSIS REQUESTED: (Order Codes)	REMARKS (Conditions of receipt, etc.)
0333-95-0001	01	08/01/95 1208	1 L Amber Glass	Liquid	Ice	HEXP	
0333-95-0001	02	08/01/95 1208	1 L Amber Glass	Liquid	Ice	SEMI	
0333-95-0001	03	08/01/95 1208	500 ml Polyethylene	Liquid	HNO3	TAL METALS	
0333-95-0001	04	08/01/95 1208	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	
0333-95-0001	05	08/01/95 1208	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	
0333-95-0003	01	08/01/95 1215	1 L Amber Glass	Liquid	Ice	HEXP	
0333-95-0003	02	08/01/95 1215	1 L Amber Glass	Liquid	Ice	SEMI	
0333-95-0003	03	08/01/95 1215	500 ml Polyethylene	Liquid	HNO3	TAL METALS	
0333-95-0003	04	08/01/95 1215	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	
0333-95-0003	05	08/01/95 1215	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	

01
02

GENERAL ENGINEERING

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TO: Roy Michelotti CST-18	FROM: Lynn Redmon 21651	DATE: 8/22/95 PAGES INCLUDING THIS PAGE: 13
FAX #: 665 4632	FAX #: PHONE #:	TOPS 14850

COC 1082-95-9014
Page 1 of 1

9508069-

Los Alamos National Laboratory Environmental Restoration (Los Alamos, NM 87545)
CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

17171

Date 08/01/95	**Destination:** General Engineering Laboratories, Inc.		Rush 2
LANL Contact Fred Shore	2040 Savage Road		**Non-RADTurnaround** 10 days
Mail Stop ICFKE, M892	Charleston, SC 29414		**RADTurnaround** 10 days
Phone (505) 661-5200	**Contact:** Pete Ballou	(803) 566-8171	**Contract No** 11259-SC-81

Relinquished by: Linda Fluk **(Signature):** **Affiliation:** ICF Kaiser	**Date:** 8/1/95	**Relinquished by:** **(Signature):** **Affiliation:**	**Date:**	**Relinquished by:** **(Signature):** **Affiliation:**	**Date:**
Received by: [signature] 8.3.95 **(Signature):** **Affiliation:** GCL 8.45	**Time:** 1430	**Received by:** **(Signature):** **Affiliation:**	**Time:**	**Received by:** **(Signature):** **Affiliation:**	**Time:**

Comments:
Radiochemistry is at background levels (as determined by hand held instrument). Analyze for TCLP for analytes which have concentrations greater than 20 times TCLP values.

SCREENING METHOD: none
SAMPLE DISPOSAL: Return to Client

Field Unique Sample #/ID	Cont ID	Date & Time Collected	Sample Container Volume/Material	Matrix	Preserv	ANALYSIS REQUESTED: (Order Codes)	REMARKS (Conditions of receipt, etc.)
0333-95-0001	01	08/01/95 1208	1 L Amber Glass	Liquid	Ice	HEXP	
0333-95-0001	02	08/01/95 1208	1 L Amber Glass	Liquid	Ice	SEMI	
0333-95-0001	03	08/01/95 1208	500 ml Polyethylene	Liquid	HNO3	TAL METALS	
0333-95-0001	04	08/01/95 1208	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	
0333-95-0001	05	08/01/95 1208	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	
0333-95-0003	01	08/01/95 1215	1 L Amber Glass	Liquid	Ice	HEXP	
0333-95-0003	02	08/01/95 1215	1 L Amber Glass	Liquid	Ice	SEMI	
0333-95-0003	03	08/01/95 1215	500 ml Polyethylene	Liquid	HNO3	TAL METALS	
0333-95-0003	04	08/01/95 1215	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	
0333-95-0003	05	08/01/95 1215	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	

Q1

Q2

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Los Alamos National Laboratory Environmental Restoration (Los Alamos, NM 87546)

CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

17171

Date 08/01/95		Destination: General Engineering Laboratories, Inc.	Rush 2
LANL Contact	Fred Shore	2040 Savage Road	Non-RADTurnaround 10 days
Mail Stop	ICFKE, M992	Charleston, SC 29414	RADTurnaround 10 days
Phone	(505) 661-5200	Contact: Pete Ballou (803) 566-8171	Contract No 11259-SC-81

Relinquished by: Linda Flute (Signature): Affiliation: ICF K	Date: 8/1/95	Relinquished by: (Signature): Affiliation:	Date:	Relinquished by: (Signature): Affiliation:	Date:
Received by: (Signature): 8-3-95 Affiliation: GCL 8:45	Time: 1430	Received by: (Signature): Affiliation:	Time:	Received by: (Signature): Affiliation:	Time:

Comments:
Radiochemistry is at background levels (as determined by hand held instrument). Analyze for TCLP for analytes which have concentrations greater than 20 times TCLP values.

SCREENING METHOD: none

SAMPLE DISPOSAL: Return to Client

	Field Unique Sample ID	Cont ID	Date & Time Collected	Sample Container Volume/Material	Matrix	Preserv	ANALYSIS REQUESTED: (Order Codes)	REMARKS (Conditions of receipt, etc.)
P1	0333-95-0001	01	08/01/95 1208	1 L Amber Glass	Liquid	Ice	HEXP	
	0333-95-0001	02	08/01/95 1208	1 L Amber Glass	Liquid	Ice	SEMI	
	0333-95-0001	03	08/01/95 1208	500 ml Polyethylene	Liquid	HNO3	TAL METALS	
	0333-95-0001	04	08/01/95 1208	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	
	0333-95-0001	05	08/01/95 1208	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	
P2	0333-95-0003	01	08/01/95 1215	1 L Amber Glass	Liquid	Ice	HEXP	
	0333-95-0003	02	08/01/95 1215	1 L Amber Glass	Liquid	Ice	SEMI	
	0333-95-0003	03	08/01/95 1215	500 ml Polyethylene	Liquid	HNO3	TAL METALS	
	0333-95-0003	04	08/01/95 1215	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	
	0333-95-0003	05	08/01/95 1215	40 ml Septum Amber Glass	Liquid	HCl	VOAGCMS	

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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	
VA	00151	
WI	999847779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 Report Date: August 18, 1995

Sample ID	: 0333-95-0001
Lab ID	: 9508069-01
Matrix	: Misc.-L
Date Collected	: 08/01/95
Date Received	: 08/03/95
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Volatile Organics								
LANL Volatiles, short list - 49 items								
1,1,1-Trichloroethane	<	2.00	UGL	EPA 8260	TLD	08/14/95	1740	70962
1,1,2,2-Tetrachloroethane	<	2.00	UGL	EPA 8260				
1,1,2-Trichloroethane	<	2.00	UGL	EPA 8260				
1,1-Dichloroethane	<	2.00	UGL	EPA 8260				
1,1-Dichloroethylene	<	2.00	UGL	EPA 8260				
1,1-Dichloropropene	<	2.00	UGL	EPA 8260				
1,2-Dichlorobenzene	<	2.00	UGL	EPA 8260				
1,2-Dichloroethane		3.84	UGL	EPA 8260				
1,2-Dichloropropane	<	2.00	UGL	EPA 8260				
1,2-cis-Dichloroethylene	<	2.00	UGL	EPA 8260				
1,2-trans-Dichloroethylene	<	2.00	UGL	EPA 8260				
1,3-Dichlorobenzene	<	2.00	UGL	EPA 8260				
1,3-Dichloropropane	<	2.00	UGL	EPA 8260				
1,4-Dichlorobenzene	<	2.00	UGL	EPA 8260				
2-Butanone	<	10.0	UGL	EPA 8260				
2-Chloroethylvinyl ether	<	10.0	UGL	EPA 8260				
2-Hexanone	<	10.0	UGL	EPA 8260				
4-Methyl-2-pentanone	<	10.0	UGL	EPA 8260				
Acetone		18.9	UGL	EPA 8260				
Acrolein	<	20.0	UGL	EPA 8260				
Acrylonitrile	<	20.0	UGL	EPA 8260				
Benzene	<	2.00	UGL	EPA 8260				
Bromoform	<	2.00	UGL	EPA 8260				
Carbon Disulfide	<	10.0	UGL	EPA 8260				
Carbon Tetrachloride	<	2.00	UGL	EPA 8260				
Chlorobenzene	<	2.00	UGL	EPA 8260				
Chlorodibromomethane	<	2.00	UGL	EPA 8260				

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STATE	CEL	SPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	
VA	00151	
WI	99986779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 Report Date: August 18, 1995

Sample ID : 0333-95-0001

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Chloroethane	<	2.00	UGL	EPA 8260				
Chloroform	<	2.00	UGL	EPA 8260	TLD	08/14/95	1740	70962
Dibromomethane	<	2.00	UGL	EPA 8260				
Dichlorobromomethane	<	2.00	UGL	EPA 8260				
Dichlorodifluoromethane	<	2.00	UGL	EPA 8260				
Ethylbenzene	<	2.00	UGL	EPA 8260				
Isopropyl benzene	<	2.00	UGL	EPA 8260				
Methyl Bromide	<	2.00	UGL	EPA 8260				
Methyl Chloride	<	2.00	UGL	EPA 8260				
Methylene Chloride	<	5.00	UGL	EPA 8260				
Styrene	<	10.0	UGL	EPA 8260				
Tetrachloroethylene	<	2.00	UGL	EPA 8260				
Toluene	<	2.00	UGL	EPA 8260				
Trichloroethylene	<	2.00	UGL	EPA 8260				
Trichlorofluoromethane	<	2.00	UGL	EPA 8260				
Vinyl Acetate	<	10.0	UGL	EPA 8260				
Vinyl chloride	<	2.00	UGL	EPA 8260				
bis(2-Chloromethylethyl)ether	<	20.0	UGL	EPA 8260				
cis-1,3-Dichloropropylene	<	2.00	UGL	EPA 8260				
meta- and para-Xylenes	<	4.00	UGL	EPA 8260				
ortho-Xylene	<	2.00	UGL	EPA 8260				
trans-1,3-Dichloropropylene	<	2.00	UGL	EPA 8260				
GCMS Library Search-VOA				EPA 8260 extended	TLD	08/14/95	1740	70962
Extractable Organics								
LANL Semivolatiles, short list - 88 items								
1,2,4-Trichlorobenzene	<	10.0	UGL	EPA 8270	TNF	08/09/95	1610	70412
1,2-Dichlorobenzene	<	10.0	UGL	EPA 8270				
1,2-Diphenylhydrazine	<	10.0	UGL	EPA 8270				
1,3-Dichlorobenzene	<	10.0	UGL	EPA 8270				
1,4-Dichlorobenzene	<	10.0	UGL	EPA 8270				
2,4,5-Trichlorophenol	<	10.0	UGL	EPA 8270				
2,4,6-Trichlorophenol	<	10.0	UGL	EPA 8270				
2,4-Dichlorophenol	<	10.0	UGL	EPA 8270				
2,4-Dimethylphenol	<	10.0	UGL	EPA 8270				
2,4-Dinitrophenol	<	45.0	UGL	EPA 8270				

GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	
VA	00151	
WI	99988779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 Report Date: August 18, 1995

Sample ID : 0333-95-0001

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
2,4-Dinitrotoluene	<	10.0	UGL	EPA 8270				
2,6-Dinitrotoluene	<	10.0	UGL	EPA 8270	TNF	08/09/95	1610	70412
2-Chloronaphthalene	<	10.0	UGL	EPA 8270				
2-Chlorophenol	<	10.0	UGL	EPA 8270				
2-Methylnaphthalene	<	10.0	UGL	EPA 8270				
2-Nitrophenol	<	10.0	UGL	EPA 8270				
2-methyl-4,6-dinitrophenol	<	50.0	UGL	EPA 8270				
3,3'-Dichlorobenzidine	<	50.0	UGL	EPA 8270				
4,4'-DDD	<	10.0	UGL	EPA 8270				
4,4'-DDE	<	10.0	UGL	EPA 8270				
4,4'-DDT	<	10.0	UGL	EPA 8270				
4-Bromophenyl phenyl ether	<	10.0	UGL	EPA 8270				
4-Chloroaniline	<	10.0	UGL	EPA 8270				
4-Chlorophenyl phenyl ether	<	10.0	UGL	EPA 8270				
4-Nitrophenol	<	20.0	UGL	EPA 8270				
4-chloro-3-methyl phenol	<	10.0	UGL	EPA 8270				
Acenaphthene	<	10.0	UGL	EPA 8270				
Acenaphthylene	<	10.0	UGL	EPA 8270				
Acetophenone	<	10.0	UGL	EPA 8270				
Aldrin	<	10.0	UGL	EPA 8270				
Aniline	<	10.0	UGL	EPA 8270				
Anthracene	<	10.0	UGL	EPA 8270				
Benzidine	<	50.0	UGL	EPA 8270				
Benzo(a)anthracene	<	10.0	UGL	EPA 8270				
Benzo(a)pyrene	<	10.0	UGL	EPA 8270				
Benzo(b)fluoranthene	<	10.0	UGL	EPA 8270				
Benzo(ghi)perylene	<	10.0	UGL	EPA 8270				
Benzo(k)fluoranthene	<	10.0	UGL	EPA 8270				
Benzoic Acid	<	20.0	UGL	EPA 8270				
Benzyl Alcohol	<	10.0	UGL	EPA 8270				
Butyl benzyl phthalate	<	10.0	UGL	EPA 8270				
Chrysene	<	10.0	UGL	EPA 8270				
Di-n-butyl phthalate	<	10.0	UGL	EPA 8270				
Di-n-octyl phthalate	<	10.0	UGL	EPA 8270				
Dibenzo(a,h)anthracene	<	10.0	UGL	EPA 8270				

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GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02954	
VA	00151	
WI	999827779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 Report Date: August 18, 1995

Sample ID : 0333-95-0001

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Dibenzofuran	<	10.0	UGL	EPA 8270				
Dieldrin	<	10.0	UGL	EPA 8270	TNF	08/09/95	1610	70412
Diethyl phthalate	<	10.0	UGL	EPA 8270				
Dimethyl phthalate	<	10.0	UGL	EPA 8270				
Endosulfan I	<	10.0	UGL	EPA 8270				
Endosulfan II	<	10.0	UGL	EPA 8270				
Endosulfan sulfate	<	10.0	UGL	EPA 8270				
Endrin	<	10.0	UGL	EPA 8270				
Endrin aldehyde	<	10.0	UGL	EPA 8270				
Fluoranthene	<	10.0	UGL	EPA 8270				
Fluorene	<	10.0	UGL	EPA 8270				
Heptachlor	<	10.0	UGL	EPA 8270				
Heptachlor epoxide	<	10.0	UGL	EPA 8270				
Hexachlorobenzene	<	10.0	UGL	EPA 8270				
Hexachlorobutadiene	<	10.0	UGL	EPA 8270				
Hexachlorocyclopentadiene	<	10.0	UGL	EPA 8270				
Hexachloroethane	<	10.0	UGL	EPA 8270				
Indeno(1,2,3-c,d)pyrene	<	10.0	UGL	EPA 8270				
Isophorone	<	10.0	UGL	EPA 8270				
N-Nitrosodimethylamine	<	10.0	UGL	EPA 8270				
N-Nitrosodiphenylamine	<	10.0	UGL	EPA 8270				
N-Nitrosodipropylamine	<	10.0	UGL	EPA 8270				
Naphthalene	<	10.0	UGL	EPA 8270				
Nitrobenzene	<	10.0	UGL	EPA 8270				
Pentachlorophenol	<	10.0	UGL	EPA 8270				
Phenanthrene	<	10.0	UGL	EPA 8270				
Phenol	<	10.0	UGL	EPA 8270				
Pyrene	<	10.0	UGL	EPA 8270				
Pyridine	<	10.0	UGL	EPA 8270				
Tributylphosphate	<	10.0	UGL	EPA 8270				
alpha-BHC	<	10.0	UGL	EPA 8270				
beta-BHC	<	10.0	UGL	EPA 8270				
bis(2-Chloroethoxy)methane	<	10.0	UGL	EPA 8270				
bis(2-Chloroethyl) ether	<	10.0	UGL	EPA 8270				
bis(2-Chloroisopropyl)ether	<	10.0	UGL	EPA 8270				

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GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	
VA	00151	
WI	99980779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 | Report Date: August 18, 1995 |

Sample ID : 0333-95-0001

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
bis(2-Ethylhexyl)phthalate		16.3	UGL	EPA 8270				
delta-BHC	<	10.0	UGL	EPA 8270	TNF	08/09/95	1610	70412
gamma-BHC	<	10.0	UGL	EPA 8270				
m,p-Cresol	<	10.0	UGL	EPA 8270				
m-Nitroaniline	<	10.0	UGL	EPA 8270				
o-Cresol	<	10.0	UGL	EPA 8270				
o-Nitroaniline	<	10.0	UGL	EPA 8270				
p-Nitroaniline	<	10.0	UGL	EPA 8270				
GCMS Library Search-ACID		yes		EPA 8270				
GCMS Library Search-B/N		yes		EPA 8270				
Nitroaromatics and Nitroamines - 14 items								
2,4,6-Trinitrotoluene	<	100	UGL	EPA 8330	GWL	08/07/95	1503	70434
2,4-Dinitrotoluene	<	100	UGL	EPA 8330				
2,6-Dinitrotoluene	<	100	UGL	EPA 8330				
2-Amino-4,6-dinitrotoluene	<	100	UGL	EPA 8330				
4-Amino-2,6-dinitrotoluene	<	100	UGL	EPA 8330				
HMX	<	300	UGL	EPA 8330				
Nitrobenzene	<	150	UGL	EPA 8330				
RDX	<	300	UGL	EPA 8330				
TETRYL	<	300	UGL	EPA 8330				
m-Dinitrobenzene	<	100	UGL	EPA 8330				
m-Nitrotoluene	<	100	UGL	EPA 8330				
o-Nitrotoluene	<	100	UGL	EPA 8330				
p-Nitrotoluene	<	100	UGL	EPA 8330				
sym-Trinitrobenzene	<	150	UGL	EPA 8330				
Metals Analysis								
Mercury	<	0.500	UGL	EPA 7470	DVW	08/16/95	2147	70696
Silver	<	10.0	UGL	EPA 6010A	NRM	08/10/95	0120	70471
Aluminum		102	UGL	EPA 6010A				
Arsenic	<	10.0	UGL	EPA 6010A				
Barium		186	UGL	EPA 6010A				
Beryllium	<	5.00	UGL	EPA 6010A				
Calcium		68600	UGL	EPA 6010A				
Cadmium	<	5.00	UGL	EPA 6010A				
Cobalt	<	10.0	UGL	EPA 6010A				

GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10562
TN	02934	
VA	00151	
WI	99985779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 Report Date: August 18, 1995

Sample ID : 0333-95-0001

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Chromium	<	10.0	UGL	EPA 6010A				
Copper	<	10.0	UGL	EPA 6010A	NRM	08/10/95	0120	70471
Iron		802	UGL	EPA 6010A				
Potassium		12300	UGL	EPA 6010A				
Magnesium		2580	UGL	EPA 6010A				
Manganese		199	UGL	EPA 6010A				
Sodium		34300	UGL	EPA 6010A				
Nickel		29.9	UGL	EPA 6010A				
Lead		14.5	UGL	EPA 6010A				
Antimony	<	10.0	UGL	EPA 6010A				
Selenium	<	5.00	UGL	EPA 6010A				
Thallium	<	10.0	UGL	EPA 6010A				
Vanadium	<	10.0	UGL	EPA 6010A				
Zinc		69.3	UGL	EPA 6010A				

The following prep procedures were performed:

GC/MS Extractables	EPA 3500/3520	TSD	08/04/95	0925	70412
Mercury	EPA 7470	BBJ	08/15/95	1800	70696
TRACE	EPA 3005	FGD	08/08/95	1530	70471

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Nancy Slater at (803) 556-8171.

Analytical Report Specialist

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COC 1082-95-9016
Page 1 of 1

9508068-

Los Alamos National Laboratory Environmental Restoration (Los Alamos, NM 87545)

CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

17166

Date 08/01/95		Destination: General Engineering Laboratories, Inc.	Emergency
LANL Contact	Fred Shore	2040 Savage Road	Non-RAD Turnaround 2 days
Mail Stop	ICRKE, M992	Charleston, SC 29414	RAD Turnaround 2 days
Phone	(505) 661-5200	Contact: Pete Bellou (803) 566-8171	Contract No 11259-SC-81

Relinquished by: Linda Fink (Signature): Affiliation: ICR	Date: 8/1/95	Relinquished by: (Signature): Affiliation:	Date:	Relinquished by: (Signature): Affiliation:	Date:
Received by: (Signature): 8-3-95 Affiliation: GEL 8:45	Time: 1415	Received by: (Signature): Affiliation:	Time:	Received by: (Signature): Affiliation:	Time:

Comments:
Radiochemistry is at background levels. Analyze for TCLP for all analytes which have concentrations greater than 20 times the TCLP values.

SCREENING METHOD: none

SAMPLE DISPOSAL: Return to Client

Field Unique Sample ID	Cont ID	Date & Time Collected	Sample Container Volume/Material	Matrix	Preserv	ANALYSIS REQUESTED: (Order Codes)	REMARKS (Conditions of receipt, etc.)
0333-95-0002	01	08/01/95 1057	125 ml Glass	Sludge	Ice	HEXP	
0333-95-0002	02	08/01/95 1057	125 ml Glass	Sludge	Ice	SEMI	
0333-95-0002	03	08/01/95 1057	125 ml Polyethylene	Sludge	Ice	TAL METALS	
0333-95-0002	04	08/01/95 1057	125 ml Septum Amber glass	Sludge	Ice	VOA/GCMS	

Original - Destination & RPF Yellow - FTL Copy Pink - FTL Copy

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	CERL	EPA
FL	E87156/87204	E87472/87481
NC	233	
SC	10120	10583
TN	02934	
VA	00151	
WI	999819779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 Report Date: August 10, 1995

Sample ID : 0533-95-0002
Lab ID : 9508068-01
Matrix : Sludge
Date Collected : 08/01/95
Date Received : 08/03/95
Priority : Urgent
Collector : Client

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Volatile Organics								
LANL Volatiles, short list - 49 items								
1,1,1-Trichloroethane	<	200000	UG/KG	EPA 8260	TLD	08/08/95	0058	70446
1,1,2,2-Tetrachloroethane	<	200000	UG/KG	EPA 8260				
1,1,2-Trichloroethane	<	200000	UG/KG	EPA 8260				
1,1-Dichloroethane	<	200000	UG/KG	EPA 8260				
1,1-Dichloroethylene		210000	UG/KG	EPA 8260				
1,1-Dichloropropene	<	200000	UG/KG	EPA 8260				
1,2-Dichlorobenzene	<	200000	UG/KG	EPA 8260				
1,2-Dichloroethane	<	200000	UG/KG	EPA 8260				
1,2-Dichloropropane	<	200000	UG/KG	EPA 8260				
1,2-cis-Dichloroethylene	<	200000	UG/KG	EPA 8260				
1,2-trans-Dichloroethylene	<	200000	UG/KG	EPA 8260				
1,3-Dichlorobenzene	<	200000	UG/KG	EPA 8260				
1,3-Dichloropropane	<	200000	UG/KG	EPA 8260				
1,4-Dichlorobenzene	<	200000	UG/KG	EPA 8260				
2-Butanone	<	1000000	UG/KG	EPA 8260				
2-Chloroethylvinyl ether	<	500000	UG/KG	EPA 8260				
2-Hexanone	<	1000000	UG/KG	EPA 8260				
4-Methyl-2-pentanone	<	1000000	UG/KG	EPA 8260				
Acetone	<	1000000	UG/KG	EPA 8260				
Acrolein	<	2000000	UG/KG	EPA 8260				
Acrylonitrile	<	2000000	UG/KG	EPA 8260				
Benzene	<	200000	UG/KG	EPA 8260				
Bromoform	<	200000	UG/KG	EPA 8260				
Carbon Disulfide	<	1000000	UG/KG	EPA 8260				
Carbon Tetrachloride	<	200000	UG/KG	EPA 8260				
Chlorobenzene	<	200000	UG/KG	EPA 8260				
Chlorodibromomethane	<	200000	UG/KG	EPA 8260				

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9508068-01

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08-10-1995 15:57 7661176 GENERAL ENGINEERING P.03

GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	
VA	00151	
WI	99988779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544
Contact: Mr Fred Shore
Project Description: Routine Analysis

cc: ICFK00295 Report Date: August 10, 1995

Sample ID : 0333-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Chloroethane	<	200000	UGKG	EPA 8260				
Chloroform	<	200000	UGKG	EPA 8260	TLD	08/08/95	0058	70446
Dibromomethane	<	200000	UGKG	EPA 8260				
Dichlorobromomethane	<	200000	UGKG	EPA 8260				
Dichlorodifluoromethane	<	200000	UGKG	EPA 8260				
Ethylbenzene	<	200000	UGKG	EPA 8260				
Isopropyl benzene	<	200000	UGKG	EPA 8260				
Methyl Bromide	<	200000	UGKG	EPA 8260				
Methyl Chloride	<	200000	UGKG	EPA 8260				
Methylene Chloride	<	500000	UGKG	EPA 8260				
Styrene	<	1000000	UGKG	EPA 8260				
Tetrachloroethylene	<	200000	UGKG	EPA 8260				
Toluene	<	200000	UGKG	EPA 8260				
Trichloroethylene	<	200000	UGKG	EPA 8260				
Trichlorofluoromethane	<	200000	UGKG	EPA 8260				
Vinyl Acetate	<	1000000	UGKG	EPA 8260				
Vinyl chloride	<	200000	UGKG	EPA 8260				
bis(2-Chloromethylethyl)ether	<	1000000	UGKG	EPA 8260				
cis-1,3-Dichloropropylene	<	200000	UGKG	EPA 8260				
meta- and para-Xylenes	<	400000	UGKG	EPA 8260				
ortho-Xylene	<	200000	UGKG	EPA 8260				
trans-1,3-Dichloropropylene	<	200000	UGKG	EPA 8260				
GCMS Library Search-VOA				EPA 8260 extended	TLD	08/08/95	0058	70446
Extractable Organics								
LANL Semivolatiles, short list - 88 items								
1,2,4-Trichlorobenzene	<	65000	UGKG	EPA 8270	WAM	08/08/95	1620	70384
1,2-Dichlorobenzene	<	65000	UGKG	EPA 8270				
1,2-Diphenylhydrazine	<	65000	UGKG	EPA 8270				
1,3-Dichlorobenzene	<	65000	UGKG	EPA 8270				
1,4-Dichlorobenzene	<	65000	UGKG	EPA 8270				
2,4,5-Trichlorophenol	<	65000	UGKG	EPA 8270				
2,4,6-Trichlorophenol	<	65000	UGKG	EPA 8270				
2,4-Dichlorophenol	<	65000	UGKG	EPA 8270				
2,4-Dimethylphenol	<	65000	UGKG	EPA 8270				
2,4-Dinitrophenol	<	130000	UGKG	EPA 8270				

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPA
FL	E87156/87294	E87472/87451
NC	233	
SC	10120	10582
TN	02934	
VA	00151	
WI	9998779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295

Report Date: August 10, 1995

Sample ID : 0373-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
2,4-Dinitrotoluene	<	65000	UG/KG	EPA 8270				
2,6-Dinitrotoluene	<	65000	UG/KG	EPA 8270	WAM	08/08/95	1620	70384
2-Chloronaphthalene	<	65000	UG/KG	EPA 8270				
2-Chlorophenol	<	65000	UG/KG	EPA 8270				
2-Methylnaphthalene		73500	UG/KG	EPA 8270				
2-Nitrophenol	<	65000	UG/KG	EPA 8270				
2-methyl-4,6-dinitrophenol	<	65000	UG/KG	EPA 8270				
3,3'-Dichlorobenzidine	<	325000	UG/KG	EPA 8270				
4,4'-DDD	<	65000	UG/KG	EPA 8270				
4,4'-DDE	<	65000	UG/KG	EPA 8270				
4,4'-DDT	<	65000	UG/KG	EPA 8270				
4-Bromophenyl phenyl ether	<	65000	UG/KG	EPA 8270				
4-Chloroaniline	<	65000	UG/KG	EPA 8270				
4-Chlorophenyl phenyl ether	<	65000	UG/KG	EPA 8270				
4-Nitrophenol	<	130000	UG/KG	EPA 8270				
4-chloro-3-methyl phenol	<	65000	UG/KG	EPA 8270				
Acenaphthene	<	65000	UG/KG	EPA 8270				
Acenaphthylene	<	65000	UG/KG	EPA 8270				
Acetophenone	<	65000	UG/KG	EPA 8270				
Aldrin	<	65000	UG/KG	EPA 8270				
Aniline	<	65000	UG/KG	EPA 8270				
Anthracene	<	65000	UG/KG	EPA 8270				
Benzidine	<	325000	UG/KG	EPA 8270				
Benzo(a)anthracene	<	65000	UG/KG	EPA 8270				
Benzo(a)pyrene	<	65000	UG/KG	EPA 8270				
Benzo(b)fluoranthene	<	65000	UG/KG	EPA 8270				
Benzo(g,h,i)perylene	<	65000	UG/KG	EPA 8270				
Benzo(k)fluoranthene	<	65000	UG/KG	EPA 8270				
Benzoic Acid	<	130000	UG/KG	EPA 8270				
Benzyl Alcohol	<	65000	UG/KG	EPA 8270				
Butyl benzyl phthalate	<	65000	UG/KG	EPA 8270				
Chrysene	<	65000	UG/KG	EPA 8270				
Di-n-butyl phthalate	<	65000	UG/KG	EPA 8270				
Di-n-octyl phthalate	<	65000	UG/KG	EPA 8270				
Dibenzo(a,h)anthracene	<	65000	UG/KG	EPA 8270				

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87284	E87472/87485
NC	233	
SC	10120	10582
TN	02936	
VA	00151	
WI	99968779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295

Report Date: August 10, 1995

Sample ID : 0333-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Dibenzofuran	<	65000	UG/KG	EPA 8270				
Dieldrin	<	65000	UG/KG	EPA 8270	WAM	08/08/95	1620	70384
Diethyl phthalate	<	65000	UG/KG	EPA 8270				
Dimethyl phthalate	<	65000	UG/KG	EPA 8270				
Endosulfan I	<	65000	UG/KG	EPA 8270				
Endosulfan II	<	65000	UG/KG	EPA 8270				
Endosulfan sulfate	<	65000	UG/KG	EPA 8270				
Endrin	<	65000	UG/KG	EPA 8270				
Endrin aldehyde	<	65000	UG/KG	EPA 8270				
Fluoranthene	<	65000	UG/KG	EPA 8270				
Fluorene	<	65000	UG/KG	EPA 8270				
Heptachlor	<	65000	UG/KG	EPA 8270				
Heptachlor epoxide	<	65000	UG/KG	EPA 8270				
Hexachlorobenzene	<	65000	UG/KG	EPA 8270				
Hexachlorobutadiene	<	65000	UG/KG	EPA 8270				
Hexachlorocyclopentadiene	<	65000	UG/KG	EPA 8270				
Hexachloroethane	<	65000	UG/KG	EPA 8270				
Indeno(1,2,3-c,d)pyrene	<	65000	UG/KG	EPA 8270				
Isophorone	<	65000	UG/KG	EPA 8270				
N-Nitrosodimethylamine	<	65000	UG/KG	EPA 8270				
N-Nitrosodiphenylamine	<	65000	UG/KG	EPA 8270				
N-Nitrosodipropylamine	<	65000	UG/KG	EPA 8270				
Naphthalene	<	65000	UG/KG	EPA 8270				
Nitrobenzene	<	65000	UG/KG	EPA 8270				
Pentachlorophenol	<	65000	UG/KG	EPA 8270				
Phenanthrene		70200	UG/KG	EPA 8270				
Phenol	<	65000	UG/KG	EPA 8270				
Pyrene	<	65000	UG/KG	EPA 8270				
Pyridine	<	65000	UG/KG	EPA 8270				
Tributylphosphate	<	65000	UG/KG	EPA 8270				
alpha-BHC	<	65000	UG/KG	EPA 8270				
beta-BHC	<	65000	UG/KG	EPA 8270				
bis(2-Chloroethoxy)methane	<	65000	UG/KG	EPA 8270				
bis(2-Chloroethyl) ether	<	65000	UG/KG	EPA 8270				
bis(2-Chloroisopropyl)ether	<	65000	UG/KG	EPA 8270				

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPA
FL	E87156/87294	E87472/87451
NC	283	
SC	10120	10582
TN	02834	
VA	00151	
WI	99968779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

Sample ID : 0333-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
bis(2-Ethylhexyl)phthalate		244000	UG/KG	EPA 8270				
delta-BHC	<	65000	UG/KG	EPA 8270	WAM	08/08/95	1620	70384
gamma-BHC	<	65000	UG/KG	EPA 8270				
m,p-Cresol	<	65000	UG/KG	EPA 8270				
m-Nitroaniline	<	65000	UG/KG	EPA 8270				
o-Cresol	<	65000	UG/KG	EPA 8270				
o-Nitroaniline	<	65000	UG/KG	EPA 8270				
p-Nitroaniline	<	65000	UG/KG	EPA 8270				
GCMS Library Search-ACID		yes		EPA 8270				
GCMS Library Search-B/N		yes		EPA 8270				
Nitroaromatics and Nitroamines - 14 items								
2,4,6-Trinitrotoluene	<	1880	UG/KG	EPA 8330	JFB	08/07/95	1359	70436
2,4-Dinitrotoluene	<	1880	UG/KG	EPA 8330				
2,6-Dinitrotoluene	<	1880	UG/KG	EPA 8330				
2-Amino-4,6-dinitrotoluene	<	1880	UG/KG	EPA 8330				
4-Amino-2,6-dinitrotoluene	<	1880	UG/KG	EPA 8330				
HMX	<	7500	UG/KG	EPA 8330				
Nitrobenzene	<	1880	UG/KG	EPA 8330				
RDX	<	7500	UG/KG	EPA 8330				
TETRYL	<	3750	UG/KG	EPA 8330				
m-Dinitrobenzene	<	1880	UG/KG	EPA 8330				
m-Nitrotoluene	<	1880	UG/KG	EPA 8330				
o-Nitrotoluene	<	1880	UG/KG	EPA 8330				
p-Nitrotoluene	<	1880	UG/KG	EPA 8330				
sym-Trinitrobenzene	<	1880	UG/KG	EPA 8330				
Metals Analysis								
Mercury		0.291	MG/KG	EPA 7471	ADF	08/08/95	2110	70568
Silver		20100	UG/KG	EPA 6010A	WCC	08/06/95	1552	70425
Aluminum		5010000	UG/KG	EPA 6010A				
Arsenic		7060	UG/KG	EPA 6010A				
Barium		94300	UG/KG	EPA 6010A				
Beryllium	<	495	UG/KG	EPA 6010A				
Calcium		4750000	UG/KG	EPA 6010A				
Cadmium		1760	UG/KG	EPA 6010A				
Cobalt		4470	UG/KG	EPA 6010A				

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Laboratory Certifications

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NC	233	
SC	10120	10982
TN	02934	
VA	00151	
WV	[illegible]	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 | Report Date: August 10, 1995 |

Sample ID : 0333-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Chromium		52400	UG/KG	EPA 6010A				
Copper		285000	UG/KG	EPA 6010A	WCC	08/04/95	1552	70425
Iron		12600000	UG/KG	EPA 6010A				
Potassium		768000	UG/KG	EPA 6010A				
Magnesium		2970000	UG/KG	EPA 6010A				
Manganese		112000	UG/KG	EPA 6010A				
Sodium		414000	UG/KG	EPA 6010A				
Nickel		88500	UG/KG	EPA 6010A				
* Lead		293000	UG/KG	EPA 6010A				
Antimony		1490	UG/KG	EPA 6010A				
Selenium		972	UG/KG	EPA 6010A				
Thallium	<	990	UG/KG	EPA 6010A				
Vanadium		28200	UG/KG	EPA 6010A				
Zinc		458000	UG/KG	EPA 6010A				

The following prep procedures were performed:

GC/MS Extractables	EPA 3500/3520	DDT	08/03/95	0010	70384
Mercury	EPA 7471	DVW	08/07/95	2000	70568
TRACE	EPA 3050	FCD	08/04/95	1330	70425

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Laboratory Certifications

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FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	
VA	00151	
WV	[illegible]	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295

Report Date: August 30, 1995

Sample ID : 9508068-01 0333-95-0002
Lab ID : 9508444-01
Matrix : TCLP
Date Collected : 08/01/95
Date Received : 08/01/95
Priority : Rush
Collector : Client

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Metals Analysis								
Lead		245	UGL	EPA 6010A	RMJ	08/29/95	1645	71761
The following prep procedures were performed:								
TCLP Prep for Metals				EPA 1311	JL	08/23/95	2010	71579

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Nancy Slater at (803) 556-8171.

Analytical Report Specialist

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9508444-01

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87204	E87472/87468
NC	233	
SC	10120	10983
TN	02934	
VA	00151	
WV	9956/9729	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 | Report Date: September 01, 1995 |

Sample ID	: 9508068-01 0333-95-0002
Lab ID	: 9508444-01
Matrix	: TCLP
Date Collected	: 08/01/95
Date Received	: 08/01/95
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Volatile Organics								
TCLP Volatile Compounds - 11 items								
1,1-Dichloroethylene	<	0.0700	MGL	EPA 8260	TLD	08/29/95	1525	71822
1,2-Dichloroethane	<	0.0500	MGL	EPA 8260				
1,4-Dichlorobenzene	<	0.750	MGL	EPA 8260				
2-Butanone	<	20.0	MGL	EPA 8260				
Benzene	<	0.0500	MGL	EPA 8260				
Carbon Tetrachloride	<	0.0500	MGL	EPA 8260				
Chlorobenzene	<	10.0	MGL	EPA 8260	TLD	08/29/95	1553	71822
Chloroform	<	0.600	MGL	EPA 8260	TLD	08/29/95	1525	71822
Tetrachloroethylene	<	0.0700	MGL	EPA 8260				
Trichloroethylene	<	0.0500	MGL	EPA 8260				
Vinyl chloride	<	0.0200	MGL	EPA 8260				
Metals Analysis								
Lead		245	UGL	EPA 6010A	RMJ	08/29/95	1645	71761

The following prep procedures were performed:

TCLP Prep for Metals				EPA 1311	JL	08/23/95	2010	71579

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SC	10120	10582
TN	02934	
VA	00151	
WI	99986779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295

Report Date: September 01, 1995

Sample ID : 9508068-01 0533-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Nancy Sizer at (803) 556-8171.

Analytical Report Specialist

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ICF Kaiser Engineers, Inc.
1900 Diamond Drive
Los Alamos, NM 87544
505/661-5200
FAX: 505/661-5222

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DATE: 9/14/95 FAX # 665-4632 JOB NO: 93069-046-00

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FROM: Lynn Kidman

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REMARKS / SPECIAL INSTRUCTIONS:

Analysis of TA-33-23

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NC	233	
SC	10120	10582
TN	02904	
VA	00151	
WV	[illegible]	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295

Report Date: August 18, 1995

Sample ID : 0333-95-0003

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Chromium	<	10.0	UGL	EPA 6010A				
Copper		18.8	UGL	EPA 6010A	NRM	08/10/95	0125	70471
Iron		1310	UGL	EPA 6010A				
Potassium		12700	UGL	EPA 6010A				
Magnesium		2660	UGL	EPA 6010A				
Manganese		116	UGL	EPA 6010A				
Sodium		24500	UGL	EPA 6010A				
Nickel		35.2	UGL	EPA 6010A				
Lead		17.0	UGL	EPA 6010A				
Antimony	<	10.0	UGL	EPA 6010A				
Selenium	<	5.00	UGL	EPA 6010A				
Thallium	<	10.0	UGL	EPA 6010A				
Vanadium	<	10.0	UGL	EPA 6010A				
Zinc		87.6	UGL	EPA 6010A				

The following prep procedures were performed:

GC/MS Extractables	EPA 3500/3520	TSD	08/04/95	0925	70412
Mercury	EPA 7470	BBJ	08/15/95	1800	70696
TRACE	EPA 3005	PGD	08/08/95	1530	70471

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Laboratory Certifications

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NC	231	
SC	10120	10182
TN	02934	
VA	00151	
WV	[illegible]	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 Report Date: August 18, 1995

Sample ID : 0333-93-0003

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
bis(2-Ethylhexyl)phthalate		24.6	UGL	EPA 8270				
delta-BHC	<	10.0	UGL	EPA 8270	TNF	08/09/95	1643	70412
gamma-BHC	<	10.0	UGL	EPA 8270				
m,p-Cresol	<	10.0	UGL	EPA 8270				
m-Nitroaniline	<	10.0	UGL	EPA 8270				
o-Cresol	<	10.0	UGL	EPA 8270				
o-Nitroaniline	<	10.0	UGL	EPA 8270				
p-Nitroaniline	<	10.0	UGL	EPA 8270				
GCMS Library Search-ACID		yes		EPA 8270				
GCMS Library Search-B/N		yes		EPA 8270				
Nitroaromatics and Nitroamines - 14 items								
2,4,6-Trinitrotoluene	<	100	UGL	EPA 8330	GWL	08/07/95	1536	70434
2,4-Dinitrotoluene	<	100	UGL	EPA 8330				
2,6-Dinitrotoluene	<	100	UGL	EPA 8330				
2-Amino-4,6-dinitrotoluene	<	100	UGL	EPA 8330				
4-Amino-2,6-dinitrotoluene	<	100	UGL	EPA 8330				
HMX	<	300	UGL	EPA 8330				
Nitrobenzene	<	150	UGL	EPA 8330				
RDX	<	300	UGL	EPA 8330				
TETRYL	<	300	UGL	EPA 8330				
m-Dinitrobenzene	<	100	UGL	EPA 8330				
m-Nitrotoluene	<	100	UGL	EPA 8330				
o-Nitrotoluene	<	100	UGL	EPA 8330				
p-Nitrotoluene	<	100	UGL	EPA 8330				
sym-Trinitrobenzene	<	150	UGL	EPA 8330				
Metals Analysis								
Mercury	<	0.500	UGL	EPA 7470	DVW	08/16/95	2149	70696
Silver	<	10.0	UGL	EPA 6010A	NRM	08/10/95	0125	70471
Aluminum		293	UGL	EPA 6010A				
Arsenic	<	10.0	UGL	EPA 6010A				
Barium		105	UGL	EPA 6010A				
Beryllium	<	5.00	UGL	EPA 6010A				
Calcium		73300	UGL	EPA 6010A				
Cadmium	<	5.00	UGL	EPA 6010A				
Cobalt	<	10.0	UGL	EPA 6010A				

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SC	10120	10582
TN	02934	
VA	00151	
WI	[illegible]	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544
Contact: Mr Fred Shore
Project Description: Routine Analysis

cc: ICFKX0295 Report Date: August 18, 1995

Sample ID : 0333-95-0003

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Dibenzofuran	<	10.0	UGL	EPA 8270				
Dieldrin	<	10.0	UGL	EPA 8270	TNF	08/09/95	1643	70412
Diethyl phthalate	<	10.0	UGL	EPA 8270				
Dimethyl phthalate	<	10.0	UGL	EPA 8270				
Endosulfan I	<	10.0	UGL	EPA 8270				
Endosulfan II	<	10.0	UGL	EPA 8270				
Endosulfan sulfate	<	10.0	UGL	EPA 8270				
Endrin	<	10.0	UGL	EPA 8270				
Endrin aldehyde	<	10.0	UGL	EPA 8270				
Fluoranthene	<	10.0	UGL	EPA 8270				
Fluorene	<	10.0	UGL	EPA 8270				
Heptachlor	<	10.0	UGL	EPA 8270				
Heptachlor epoxide	<	10.0	UGL	EPA 8270				
Hexachlorobenzene	<	10.0	UGL	EPA 8270				
Hexachlorobutadiene	<	10.0	UGL	EPA 8270				
Hexachlorocyclopentadiene	<	10.0	UGL	EPA 8270				
Hexachloroethane	<	10.0	UGL	EPA 8270				
Indeno(1,2,3-c,d)pyrene	<	10.0	UGL	EPA 8270				
Isophorone	<	10.0	UGL	EPA 8270				
N-Nitrosodimethylamine	<	10.0	UGL	EPA 8270				
N-Nitrosodiphenylamine	<	10.0	UGL	EPA 8270				
N-Nitrosodipropylamine	<	10.0	UGL	EPA 8270				
Naphthalene	<	10.0	UGL	EPA 8270				
Nitrobenzene	<	10.0	UGL	EPA 8270				
Pentachlorophenol	<	10.0	UGL	EPA 8270				
Phenanthrene	<	10.0	UGL	EPA 8270				
Phenol	<	10.0	UGL	EPA 8270				
Pyrene	<	10.0	UGL	EPA 8270				
Pyridine	<	10.0	UGL	EPA 8270				
Tributylphosphate	<	10.0	UGL	EPA 8270				
alpha-BHC	<	10.0	UGL	EPA 8270				
beta-BHC	<	10.0	UGL	EPA 8270				
bis(2-Chloroethoxy)methane	<	10.0	UGL	EPA 8270				
bis(2-Chloroethyl) ether	<	10.0	UGL	EPA 8270				
bis(2-Chloroisopropyl)ether	<	10.0	UGL	EPA 8270				

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87284	E87472/87458
NC	233	
SC	10120	10582
TN	02834	
VA	00151	
WV	9958/999	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00293

Report Date: August 18, 1995

Sample ID : 0333-95-0003

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
2,4-Dinitrotoluene	<	10.0	UGL	EPA 8270				
2,6-Dinitrotoluene	<	10.0	UGL	EPA 8270	TNF	08/09/95	1643	70412
2-Chloronaphthalene	<	10.0	UGL	EPA 8270				
2-Chlorophenol	<	10.0	UGL	EPA 8270				
2-Methylnaphthalene	<	10.0	UGL	EPA 8270				
2-Nitrophenol	<	10.0	UGL	EPA 8270				
2-methyl-4,6-dinitrophenol	<	50.0	UGL	EPA 8270				
3,3'-Dichlorobenzidine	<	50.0	UGL	EPA 8270				
4,4'-DDD	<	10.0	UGL	EPA 8270				
4,4'-DDE	<	10.0	UGL	EPA 8270				
4,4'-DDT	<	10.0	UGL	EPA 8270				
4-Bromophenyl phenyl ether	<	10.0	UGL	EPA 8270				
4-Chloroaniline	<	10.0	UGL	EPA 8270				
4-Chlorophenyl phenyl ether	<	10.0	UGL	EPA 8270				
4-Nitrophenol	<	20.0	UGL	EPA 8270				
4-chloro-3-methyl phenol	<	10.0	UGL	EPA 8270				
Acenaphthene	<	10.0	UGL	EPA 8270				
Acenaphthylene	<	10.0	UGL	EPA 8270				
Acetophenone	<	10.0	UGL	EPA 8270				
Aldrin	<	10.0	UGL	EPA 8270				
Aniline	<	10.0	UGL	EPA 8270				
Anthracene	<	10.0	UGL	EPA 8270				
Benzidine	<	50.0	UGL	EPA 8270				
Benzo(a)anthracene	<	10.0	UGL	EPA 8270				
Benzo(a)pyrene	<	10.0	UGL	EPA 8270				
Benzo(b)fluoranthene	<	10.0	UGL	EPA 8270				
Benzo(ghi)perylene	<	10.0	UGL	EPA 8270				
Benzo(k)fluoranthene	<	10.0	UGL	EPA 8270				
Benzoic Acid	<	20.0	UGL	EPA 8270				
Benzyl Alcohol	<	10.0	UGL	EPA 8270				
Butyl benzyl phthalate	<	10.0	UGL	EPA 8270				
Chrysene	<	10.0	UGL	EPA 8270				
Di-n-butyl phthalate		15.2	UGL	EPA 8270				
Di-n-octyl phthalate	<	10.0	UGL	EPA 8270				
Dibenzo(a,h)anthracene	<	10.0	UGL	EPA 8270				

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Laboratory Certifications

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FL	E87156/E7284	E87472/E7458
NC	233	
SC	10120	10583
TN	02934	
VA	00151	
WV	9950779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295

Report Date: August 18, 1995

Sample ID : 0333-95-0003

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Chloroethane	<	2.00	UGL	EPA 8260				
Chloroform	<	2.00	UGL	EPA 8260	TLD	08/15/95	2237	70962
Dibromomethane	<	2.00	UGL	EPA 8260				
Dichlorobromomethane	<	2.00	UGL	EPA 8260				
Dichlorodifluoromethane	<	2.00	UGL	EPA 8260				
Ethylbenzene	<	2.00	UGL	EPA 8260				
Isopropyl benzene	<	2.00	UGL	EPA 8260				
Methyl Bromide	<	2.00	UGL	EPA 8260				
Methyl Chloride		2.34	UGL	EPA 8260				
Methylene Chloride	<	5.00	UGL	EPA 8260				
Styrene	<	10.0	UGL	EPA 8260				
Tetrachloroethylene	<	2.00	UGL	EPA 8260				
Toluene	<	2.00	UGL	EPA 8260				
Trichloroethylene	<	2.00	UGL	EPA 8260				
Trichlorofluoromethane	<	2.00	UGL	EPA 8260				
Vinyl Acetate	<	10.0	UGL	EPA 8260				
Vinyl chloride	<	2.00	UGL	EPA 8260				
bis(2-Chloromethylethyl)ether	<	20.0	UGL	EPA 8260				
cis-1,3-Dichloropropylene	<	2.00	UGL	EPA 8260				
meta- and para-Xylenes	<	4.00	UGL	EPA 8260				
ortho-Xylene	<	2.00	UGL	EPA 8260				
trans-1,3-Dichloropropylene	<	2.00	UGL	EPA 8260				
GCMS Library Search-VOA				EPA 8260 extended	TLD	08/15/95	2237	70962
Extractable Organics								
LANL Semivolatiles, short list - 88 items								
1,2,4-Trichlorobenzene	<	10.0	UGL	EPA 8270	TNP	08/09/95	1643	70412
1,2-Dichlorobenzene	<	10.0	UGL	EPA 8270				
1,2-Diphenylhydrazine	<	10.0	UGL	EPA 8270				
1,3-Dichlorobenzene	<	10.0	UGL	EPA 8270				
1,4-Dichlorobenzene	<	10.0	UGL	EPA 8270				
2,4,5-Trichlorophenol	<	10.0	UGL	EPA 8270				
2,4,6-Trichlorophenol	<	10.0	UGL	EPA 8270				
2,4-Dichlorophenol	<	10.0	UGL	EPA 8270				
2,4-Dimethylphenol	<	10.0	UGL	EPA 8270				
2,4-Dinitrophenol	<	45.0	UGL	EPA 8270				

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	
VA	00151	
WV	9950779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

sc: ICFK00295 | Report Date: August 18, 1995 |

Sample ID : 0333-95-0003
Lab ID : 9508069-02
Matrix : Misc.-L
Date Collected : 08/01/95
Date Received : 08/03/95
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Volatile Organics								
LANL Volatiles, short list - 49 items								
1,1,1-Trichloroethane	<	2.00	UGL	EPA 8260	TLD	08/15/95	2237	70962
1,1,2,2-Tetrachloroethane	<	2.00	UGL	EPA 8260				
1,1,2-Trichloroethane	<	2.00	UGL	EPA 8260				
1,1-Dichloroethane	<	2.00	UGL	EPA 8260				
1,1-Dichloroethylene	<	2.00	UGL	EPA 8260				
1,1-Dichloropropene	<	2.00	UGL	EPA 8260				
1,2-Dichlorobenzene	<	2.00	UGL	EPA 8260				
1,2-Dichloroethane		3.45	UGL	EPA 8260				
1,2-Dichloropropane	<	2.00	UGL	EPA 8260				
1,2-cis-Dichloroethylene	<	2.00	UGL	EPA 8260				
1,2-trans-Dichloroethylene	<	2.00	UGL	EPA 8260				
1,3-Dichlorobenzene	<	2.00	UGL	EPA 8260				
1,3-Dichloropropane	<	2.00	UGL	EPA 8260				
1,4-Dichlorobenzene	<	2.00	UGL	EPA 8260				
2-Butanone	<	10.0	UGL	EPA 8260				
2-Chloroethylvinyl ether	<	10.0	UGL	EPA 8260				
2-Hexanone	<	10.0	UGL	EPA 8260				
4-Methyl-2-pentanone	<	10.0	UGL	EPA 8260				
Acetone		142	UGL	EPA 8260				
Acrolein	<	20.0	UGL	EPA 8260				
Acrylonitrile	<	20.0	UGL	EPA 8260				
Benzene	<	2.00	UGL	EPA 8260				
Bromoform	<	2.00	UGL	EPA 8260				
Carbon Disulfide	<	10.0	UGL	EPA 8260				
Carbon Tetrachloride	<	2.00	UGL	EPA 8260				
Chlorobenzene	<	2.00	UGL	EPA 8260				
Chlorodibromomethane	<	2.00	UGL	EPA 8260				

Los Alamos National Laboratory Environmental Restoration (Los Alamos, NM 87545)

9508068-

CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

17166

Date 08/01/95	Destination: General Engineering Laboratories, Inc.	Emergency	
LANL Contact Fred Shore	2040 Savage Road	Non-RAD Turnaround	2 days
Mail Stop ICFKE, M992	Charleston, SC 29414	RAD Turnaround	2 days
Phone (505) 661-5200	Contact: Pete Ballou (803) 556-8171	Contract No 11259-SC-81	

Relinquished by: Linda Fink (Signature): Affiliation: ICF Kaiser	Date: 8/1/95	Relinquished by: (Signature): Affiliation:	Date:	Relinquished by: (Signature): Affiliation:	Date:
Received by: (Signature): 8-3-95 Affiliation: GEL 8:45	Time: 1415	Received by: (Signature): Affiliation:	Time:	Received by: (Signature): Affiliation:	Time:

Comments:
Radiochemistry is at background levels. Analyze for TCLP for all analytes which have concentrations greater than 20 times the TCLP values.

SCREENING METHOD: none

SAMPLE DISPOSAL: Return to Client

Field Unique Sample IMD	Cont ID	Date & Time Collected		Sample Container Volume/Material	Matrix	Preserv	ANALYSIS REQUESTED: (Order Codes)	REMARKS (Conditions of receipt, etc.)
0333-95-0002	01	08/01/95	1057	125 ml Glass	Sludge	Ice	HEXP	
0333-95-0002	02	08/01/95	1057	125 ml Glass	Sludge	Ice	SEMI	
0333-95-0002	03	08/01/95	1057	125 ml Polyethylene	Sludge	Ice	TAL METALS	
0333-95-0002	04	08/01/95	1057	125 ml Septum Amber glass	Sludge	Ice	VOA/GCMS	

-01

Original - Destination & RPF Yellow - FTL Copy Pink - FTL Copy

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPA
FL	E87156/87294	E87472/87451
NC	223	
SC	10120	10532
TN	02934	
VA	00151	
WI	998177	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295

Report Date: August 10, 1995

Sample ID : 0833-95-0002
Lab ID : 9508068-01
Matrix : Sludge
Date Collected : 08/01/95
Date Received : 08/03/95
Priority : Urgent
Collector : Client

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Volatile Organics								
LANL Volatiles, short list - 49 items								
1,1,1-Trichloroethane	<	200000	UG/KG	EPA 8260	TLD	08/08/95	0058	70446
1,1,2,2-Tetrachloroethane	<	200000	UG/KG	EPA 8260				
1,1,2-Trichloroethane	<	200000	UG/KG	EPA 8260				
1,1-Dichloroethane	<	200000	UG/KG	EPA 8260				
1,1-Dichloroethylene		210000	UG/KG	EPA 8260				
1,1-Dichloropropene	<	200000	UG/KG	EPA 8260				
1,2-Dichlorobenzene	<	200000	UG/KG	EPA 8260				
1,2-Dichloroethane	<	200000	UG/KG	EPA 8260				
1,2-Dichloropropane	<	200000	UG/KG	EPA 8260				
1,2-cis-Dichloroethylene	<	200000	UG/KG	EPA 8260				
1,2-trans-Dichloroethylene	<	200000	UG/KG	EPA 8260				
1,3-Dichlorobenzene	<	200000	UG/KG	EPA 8260				
1,3-Dichloropropene	<	200000	UG/KG	EPA 8260				
1,4-Dichlorobenzene	<	200000	UG/KG	EPA 8260				
2-Butanone	<	1000000	UG/KG	EPA 8260				
2-Chloroethylvinyl ether	<	500000	UG/KG	EPA 8260				
2-Hexanone	<	1000000	UG/KG	EPA 8260				
4-Methyl-2-pentanone	<	1000000	UG/KG	EPA 8260				
Acetone	<	1000000	UG/KG	EPA 8260				
Acrolein	<	2000000	UG/KG	EPA 8260				
Acrylonitrile	<	2000000	UG/KG	EPA 8260				
Benzene	<	200000	UG/KG	EPA 8260				
Bromoform	<	200000	UG/KG	EPA 8260				
Carbon Disulfide	<	1000000	UG/KG	EPA 8260				
Carbon Tetrachloride	<	200000	UG/KG	EPA 8260				
Chlorobenzene	<	200000	UG/KG	EPA 8260				
Chlorodibromomethane	<	200000	UG/KG	EPA 8260				

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPA
FL	E87156/87256	E87472/87458
NC	233	
SC	10120	10582
TN	02804	
VA	00151	
WV	9904/779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

sox ICFK00295 | Report Date: August 10, 1995 |

Sample ID: 10333-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Chloroethane	<	200000	UG/KG	EPA 8260				
Chloroform	<	200000	UG/KG	EPA 8260	TLD	08/08/95	0058	70446
Dibromomethane	<	200000	UG/KG	EPA 8260				
Dichlorobromomethane	<	200000	UG/KG	EPA 8260				
Dichlorodifluoromethane	<	200000	UG/KG	EPA 8260				
Ethylbenzene	<	200000	UG/KG	EPA 8260				
Isopropyl benzene	<	200000	UG/KG	EPA 8260				
Methyl Bromide	<	200000	UG/KG	EPA 8260				
Methyl Chloride	<	200000	UG/KG	EPA 8260				
Methylene Chloride	<	500000	UG/KG	EPA 8260				
Styrene	<	1000000	UG/KG	EPA 8260				
Tetrachloroethylene	<	200000	UG/KG	EPA 8260				
Toluene	<	200000	UG/KG	EPA 8260				
Trichloroethylene	<	200000	UG/KG	EPA 8260				
Trichlorofluoromethane	<	200000	UG/KG	EPA 8260				
Vinyl Acetate	<	1000000	UG/KG	EPA 8260				
Vinyl chloride	<	200000	UG/KG	EPA 8260				
bis(2-Chloroethylethyl)ether	<	1000000	UG/KG	EPA 8260				
cis-1,3-Dichloropropylene	<	200000	UG/KG	EPA 8260				
meta- and para-Xylenes	<	400000	UG/KG	EPA 8260				
ortho-Xylene	<	200000	UG/KG	EPA 8260				
trans-1,3-Dichloropropylene	<	200000	UG/KG	EPA 8260				
GCMS Library Search-VOA				EPA 8260 extended	TLD	08/08/95	0058	70446
Extractable Organics								
LANL Semivolatiles, short list - 88 items								
1,2,4-Trichlorobenzene	<	65000	UG/KG	EPA 8270	WAM	08/08/95	1620	70384
1,2-Dichlorobenzene	<	65000	UG/KG	EPA 8270				
1,2-Diphenylhydrazine	<	65000	UG/KG	EPA 8270				
1,3-Dichlorobenzene	<	65000	UG/KG	EPA 8270				
1,4-Dichlorobenzene	<	65000	UG/KG	EPA 8270				
2,4,5-Trichlorophenol	<	65000	UG/KG	EPA 8270				
2,4,6-Trichlorophenol	<	65000	UG/KG	EPA 8270				
2,4-Dichlorophenol	<	65000	UG/KG	EPA 8270				
2,4-Dimethylphenol	<	65000	UG/KG	EPA 8270				
2,4-Dinitrophenol	<	130000	UG/KG	EPA 8270				

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EM
FL	E87156/87294	E87472/87451
NC	233	
SC	10120	10532
TN	02894	
VA	00151	
WI	99986779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

cc: ICFK00295 Report Date: August 10, 1995

Sample ID : 0533-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
2,4-Dinitrotoluene	<	65000	UGKG	EPA 8270				
2,6-Dinitrotoluene	<	65000	UGKG	EPA 8270	WAM	08/08/95	1620	70384
2-Chloronaphthalene	<	65000	UGKG	EPA 8270				
2-Chlorophenol	<	65000	UGKG	EPA 8270				
2-Methylnaphthalene		73500	UGKG	EPA 8270				
2-Nitrophenol	<	65000	UGKG	EPA 8270				
2-methyl-4,6-dinitrophenol	<	65000	UGKG	EPA 8270				
3,3'-Dichlorobenzidine	<	325000	UGKG	EPA 8270				
4,4'-DDD	<	65000	UGKG	EPA 8270				
4,4'-DDE	<	65000	UGKG	EPA 8270				
4,4'-DDT	<	65000	UGKG	EPA 8270				
4-Bromophenyl phenyl ether	<	65000	UGKG	EPA 8270				
4-Chloroaniline	<	65000	UGKG	EPA 8270				
4-Chlorophenyl phenyl ether	<	65000	UGKG	EPA 8270				
4-Nitrophenol	<	130000	UGKG	EPA 8270				
4-chloro-3-methyl phenol	<	65000	UGKG	EPA 8270				
Acenaphthene	<	65000	UGKG	EPA 8270				
Acenaphthylene	<	65000	UGKG	EPA 8270				
Acetophenone	<	65000	UGKG	EPA 8270				
Aldrin	<	65000	UGKG	EPA 8270				
Aniline	<	65000	UGKG	EPA 8270				
Anthracene	<	65000	UGKG	EPA 8270				
Benzidine	<	325000	UGKG	EPA 8270				
Benzo(a)anthracene	<	65000	UGKG	EPA 8270				
Benzo(a)pyrene	<	65000	UGKG	EPA 8270				
Benzo(b)fluoranthene	<	65000	UGKG	EPA 8270				
Benzo(ghi)perylene	<	65000	UGKG	EPA 8270				
Benzo(k)fluoranthene	<	65000	UGKG	EPA 8270				
Benzoic Acid	<	130000	UGKG	EPA 8270				
Benzyl Alcohol	<	65000	UGKG	EPA 8270				
Butyl benzyl phthalate	<	65000	UGKG	EPA 8270				
Chrysene	<	65000	UGKG	EPA 8270				
Di-n-butyl phthalate	<	65000	UGKG	EPA 8270				
Di-n-octyl phthalate	<	65000	UGKG	EPA 8270				
Dibenzo(a,h)anthracene	<	65000	UGKG	EPA 8270				

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87284	E87472/87483
NC	233	
SC	10120	10582
TN	02936	
VA	00151	
WI	998018779	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Paul Shore

Project Description: Routine Analysis

cc: ICFK00295

Report Date: August 10, 1995

Sample ID : 0833-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Dibenzofuran	<	65000	UG/KG	EPA 8270				
Dieldrin	<	65000	UG/KG	EPA 8270	WAM	08/08/95	1820	70384
Diethyl phthalate	<	65000	UG/KG	EPA 8270				
Dimethyl phthalate	<	65000	UG/KG	EPA 8270				
Endosulfan I	<	65000	UG/KG	EPA 8270				
Endosulfan II	<	65000	UG/KG	EPA 8270				
Endosulfan sulfate	<	65000	UG/KG	EPA 8270				
Endrin	<	65000	UG/KG	EPA 8270				
Endrin aldehyde	<	65000	UG/KG	EPA 8270				
Fluoranthene	<	65000	UG/KG	EPA 8270				
Fluorene	<	65000	UG/KG	EPA 8270				
Heptachlor	<	65000	UG/KG	EPA 8270				
Heptachlor epoxide	<	65000	UG/KG	EPA 8270				
Hexachlorobenzene	<	65000	UG/KG	EPA 8270				
Hexachlorobutadiene	<	65000	UG/KG	EPA 8270				
Hexachlorocyclopentadiene	<	65000	UG/KG	EPA 8270				
Hexachloroethane	<	65000	UG/KG	EPA 8270				
Indeno(1,2,3-c,d)pyrene	<	65000	UG/KG	EPA 8270				
Isophorone	<	65000	UG/KG	EPA 8270				
N-Nitrosodimethylamine	<	65000	UG/KG	EPA 8270				
N-Nitrosodiphenylamine	<	65000	UG/KG	EPA 8270				
N-Nitrosodipropylamine	<	65000	UG/KG	EPA 8270				
Naphthalene	<	65000	UG/KG	EPA 8270				
Nitrobenzene	<	65000	UG/KG	EPA 8270				
Pentachlorophenol	<	65000	UG/KG	EPA 8270				
Phenanthrene		70200	UG/KG	EPA 8270				
Phenol	<	65000	UG/KG	EPA 8270				
Pyrene	<	65000	UG/KG	EPA 8270				
Pyridine	<	65000	UG/KG	EPA 8270				
Tributylphosphate	<	65000	UG/KG	EPA 8270				
alpha-BHC	<	65000	UG/KG	EPA 8270				
beta-BHC	<	65000	UG/KG	EPA 8270				
bis(2-Chloroethoxy)methane	<	65000	UG/KG	EPA 8270				
bis(2-Chloroethyl) ether	<	65000	UG/KG	EPA 8270				
bis(2-Chloroisopropyl)ether	<	65000	UG/KG	EPA 8270				

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87136/87294	E87472/87458
NC	232	
SC	10120	10582
TN	02934	
VA	00151	
WI	99988779	

CERTIFICATE OF ANALYSIS

Client: JCF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544
Contact: Mr Fred Shore
Project Description: Routine Analysis

cor ICFK00295 Report Date: August 10, 1995

Sample ID : 0333-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
bis(2-Ethylhexyl)phthalate		244000	UGKG	EPA 8270				
delta-BHC	<	65000	UGKG	EPA 8270	WAM	08/08/95	1620	70384
gamma-BHC	<	65000	UGKG	EPA 8270				
m,p-Cresol	<	65000	UGKG	EPA 8270				
m-Nitroaniline	<	65000	UGKG	EPA 8270				
o-Cresol	<	65000	UGKG	EPA 8270				
o-Nitroaniline	<	65000	UGKG	EPA 8270				
p-Nitroaniline	<	65000	UGKG	EPA 8270				
GCMS Library Search-ACID		yes		EPA 8270				
GCMS Library Search-B/N		yes		EPA 8270				
Nitroaromatics and Nitroamines - 14 items								
2,4,6-Trinitrotoluene	<	1880	UGKG	EPA 8330	JFB	08/07/95	1359	70436
2,4-Dinitrotoluene	<	1880	UGKG	EPA 8330				
2,6-Dinitrotoluene	<	1880	UGKG	EPA 8330				
2-Amino-4,6-dinitrotoluene	<	1880	UGKG	EPA 8330				
4-Amino-2,6-dinitrotoluene	<	1880	UGKG	EPA 8330				
HMX	<	7500	UGKG	EPA 8330				
Nitrobenzene	<	1880	UGKG	EPA 8330				
RDX	<	7500	UGKG	EPA 8330				
TETRYL	<	3750	UGKG	EPA 8330				
m-Dinitrobenzene	<	1880	UGKG	EPA 8330				
m-Nitrotoluene	<	1880	UGKG	EPA 8330				
o-Nitrotoluene	<	1880	UGKG	EPA 8330				
p-Nitrotoluene	<	1880	UGKG	EPA 8330				
sym-Trinitrobenzene	<	1880	UGKG	EPA 8330				
Metals Analysis								
Mercury		0.291	MGKG	EPA 7471	ADF	08/08/95	2110	70568
Silver		20100	UGKG	EPA 6010A	WCC	08/06/95	1552	70425
Aluminum		5010000	UGKG	EPA 6010A				
Arsenic		7060	UGKG	EPA 6010A				
Barium		94300	UGKG	EPA 6010A				
Beryllium	<	495	UGKG	EPA 6010A				
Calcium		4750000	UGKG	EPA 6010A				
Cadmium		1760	UGKG	EPA 6010A				
Cobalt		4470	UGKG	EPA 6010A				

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	[illegible]	[illegible]
NC	231	
SC	10120	10032
TN	02934	
VA	00151	
WV	[illegible]	

CERTIFICATE OF ANALYSIS

Client: ICF Kaiser Engineers
1900 Diamond Drive
Los Alamos, New Mexico 87544

Contact: Mr Fred Shore

Project Description: Routine Analysis

sc: ICFK00295 Report Date: August 10, 1995

Sample ID : 0835-95-0002

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Chromium		52400	UG/KG	EPA 6010A				
Copper		285000	UG/KG	EPA 6010A	WCC	08/06/95	1552	70425
Iron		12600000	UG/KG	EPA 6010A				
Potassium		768000	UG/KG	EPA 6010A				
Magnesium		2970000	UG/KG	EPA 6010A				
Manganese		112000	UG/KG	EPA 6010A				
Sodium		414000	UG/KG	EPA 6010A				
Nickel		88900	UG/KG	EPA 6010A				
Lead		293000	UG/KG	EPA 6010A				
Antimony		1490	UG/KG	EPA 6010A				
Selenium		972	UG/KG	EPA 6010A				
Thallium	<	990	UG/KG	EPA 6010A				
Vanadium		28200	UG/KG	EPA 6010A				
Zinc		458000	UG/KG	EPA 6010A				

The following prep procedures were performed:

GC/MS Extractables	EPA 3500/3520	DDT	08/03/95	0010	70384
Mercury	EPA 7471	DVW	08/07/95	2000	70568
TRACE	EPA 3050	FCD	08/04/95	1330	70425

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Nancy Slater at (803) 556-8171.

Analytical Report Specialist