GW - 28

MONITORING REPORTS

DATE:

1995 - 1998

TELEPHONE
(505) 748-3311

EASYLINK
62905278

Navajo REFINING COMPANY

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

'95 JAN 19 AM 8 52

January 16, 1995

Mr. Roger Anderson
Environmental Bureau
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87502

RE: 4th Quarter 1994 Report on RO Reject Water, Navajo Refining Company, Eddy County, New Mexico

Dear Roger,

This letter is sent in regard to Navajo's permit modification of our discharge plan GW-28 which allows us to put Reverse Osmosis reject water on our farm or into Eagle Draw. The sampling results from this stream for the 4th quarter of 1994 are included. There is only one set of results for November. I simply let it slip by me and I didn't realize it had been missed until I started compiling this report. I'm sorry for the oversite.

For this quarter we discharged a total of 34,261,715 gallons. This is broken down as follows: 7,314,860 gallons discharged to Eagle Draw and 26,946,855 gallons discharged to the farm. Since this project began, we have discharged a total of 239,357,089 gallons. This is broken down as follows: 50,905,304 gallons have been put into Eagle Draw and 188,451,785 gallons have been put on the farm.

If you have any questions concerning this matter, please call me at 505-748-3311. Thank you for your time.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

Encl.

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 09, 1994
Receiving Date: 12/01/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 12/01/94
Sampling Date: 11/30/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TA#	FIELD CODE	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	CO3	
T29036	RO Reject Biweekly	204	2.49	1,682	323	0	
QC	Quality Control	499	1.09	9	---	---	
% Precision		100	101	100	100	100	
% Extraction Accuracy		96	100	102	---	---	
% Instrument Accuracy		99	105	85	---	---	
DETECTION LIMIT		1	0.1	1	10	10	10

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 10.0 mg/L SULFATE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-12-94
Date

TRACEANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 09, 1994
Receiving Date: 12/01/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 12/08/94
Sampling Date: 11/30/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T29036	RO Reject Biweekly	3.2	193	542	135
QC	Quality Control	532	21.0	20.2	19.2
Detection Limit		0.1	0.1	0.05	0.1
% Precision		100	98	100	100
% Extraction Accuracy		109	97	93	95
% Instrument Accuracy		106	105	101	96

METHODS: EPA 200.7.
QC: Blank Spiked with 50.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-12-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 09, 1994
Receiving Date: 12/12/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 12/08/94
Sampling Date: 11/30/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	Se (ppm)	Pb (ppm)	Ag (ppm)	As (ppm)	Cr (ppm)	Cd (ppm)	Ba (ppm)	Hg (ppm)	Ni (ppm)	Be (ppm)	V (ppm)
T29036	RO Reject BiWkly	<0.001	<0.001	<0.001	<0.1	<0.01	<0.01	<0.5	<0.001	<0.05	<0.05	<0.05
QC	Quality Control	0.050	0.048	0.102	5.4	5.29	5.40	5.4	0.048	5.30	5.38	5.16
DETECTION LIMIT		0.001	0.001	0.001	0.1	0.01	0.01	0.5	0.001	0.05	0.05	0.05
% Precision		100	103	100	102	102	102	98	98	102	101	99
% Extraction Accuracy		108	124	112	105	98	100	102	108	99	101	99
% Instrument Accuracy		100	97	102	108	106	108	107	109	106	108	103

TA#	FIELD CODE	B (ppm)	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)
T29036	RO Reject BiWkly	0.12	<0.05	0.17	<0.01	<0.08	<0.05	<0.1	<0.05	<0.5
QC	Quality Control	5.33	5.11	5.32	5.31	4.8	5.22	5.20	5.32	10.4
DETECTION LIMIT		0.05	0.05	0.01	0.01	0.08	0.05	0.1	0.05	0.5
% Precision		102	102	103	102	100	103	103	101	100
% Extraction Accuracy		105	100	102	101	89	96	102	102	104
% Instrument Accuracy		106	102	106	106	97	104	106	106	107

METHODS: EPA 200.7, 239.2, 270.2, 272.2.
QC: Blank Spiked with 5.0 ppm As, Al, Ba; 5.00 ppm Mo, Cr, Zn, Cd, Ni, Be, Fe, Mn, V, Cu, B, Co; 9.8 ppm U; 0.044 ppm Hg; 0.050 ppm Se; 0.048 ppm Pb; 0.102 ppm Ag.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-12-94
DATE

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location: Artesia NM
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
29030	Alky Cooling Twr Inlet	2		X							X	X		11/30/94	13:30		See	List					
29031	" " " Outlet	2		X							X	X		" "	13:40		See	List					
29032	RA-2723	2		X							X	X		" "	14:00	X							
29033	RA-4196	2		X							X	X		" "	14:15	X							
29034	RA-4798	2		X							X	X		" "	14:30	X							
29035	Activated Alumina Sacks	1						X			X	X		" "	15:00							X	
29036	RO Reject Biweekly	2		X						(1) X	(1) X	(2) X		" "	15:30		See	List					

SPECIAL HANDLING: Turn around # of days; Fax ASAP; Report TWC direct; Hold

Relinquished by:	**Date:**	**Times:**	**Received by:** I/C
Relinquished by:	**Date:**	**Times:**	**Received by:**
Relinquished by:	**Date:** 12-1-94	**Times:**	**Received by Laboratory:** S. C

REMARKS

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

November 11, 1994
Receiving Date: 10/21/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 10/28/94
Sampling Date: 10/20/94
Sample Condition: Intact & Cool
Sample Received by: YL
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T27454	RO Reject BiWkly	3.0	200.7	545.5	155.3
QC	Quality Control	40.4	20.5	19.7	19.3
Detection Limit		0.1	0.1	0.05	0.1
% Precision		104	99	100	97
% Extraction Accuracy		103	98	92	100
% Instrument Accuracy		99	102	98	96

METHODS: EPA 200.7.
QC: Blank Spiked with 50.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

BL

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

11-11-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

November 10, 1994
Receiving Date: 10/21/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 10/21/94
Sampling Date: 10/20/94
Sample Condition: Intact & Cool
Sample Received by: YL
Project Name: NA

TA#	FIELD CODE	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	CO3
T27454	RO Reject BiWkly	223	2.2	1,944	311	0
QC	Quality Control	504	1.06	10	---	---
% Precision		100	100	99	100	100
% Extraction Accuracy		98	112	85	---	---
% Instrument Accuracy		101	102	105	---	---
DETECTION LIMIT		1	0.1	1	10	10

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 10.0 mg/L SULFATE.

BB

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

11-11-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

November 11, 1994
Receiving Date: 10/21/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 10/28/94
Sampling Date: 10/20/94
Sample Condition: Intact & Cool
Sample Received by: YL
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	Se (ppm)	Pb (ppm)	Ag (ppm)	As (ppm)	Cr (ppm)	Cd (ppm)	Ba (ppm)	Hg (ppm)	Ni (ppm)	Be (ppm)	V (ppm)
T27454	RO Reject BiWkly	0.002	<0.001	<0.001	<0.1	<0.01	<0.01	<0.05	<0.001	<0.05	<0.01	<0.05
QC	Quality Control	0.097	0.050	0.100	10.4	10.3	2.08	191.1	0.0049	5.22	5.50	5.51
DETECTION LIMIT		0.001	0.001	0.001	0.1	0.01	0.01	0.05	0.001	0.05	0.01	0.05
% Precision		101	102	92	102	101	102	100	100	99	95	102
% Extraction Accuracy		92	105	108	109	104	107	98	100	117	126	135
% Instrument Accuracy		97	100	100	104	103	104	96	98	104	110	110

TA#	FIELD CODE	B (ppm)	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	Tl (ppm)	U (ppm)
T27454	RO Reject BiWkly	0.05	<0.05	0.12	0.02	<0.08	<0.05	<0.05	<0.05	<0.1	<0.5
QC	Quality Control	5.95	5.01	5.47	5.29	5.6	5.30	5.31	5.46	5.5	9.9
DETECTION LIMIT		0.05	0.05	0.05	0.01	0.08	0.05	0.05	0.05	0.5	0.5
% Precision		89	112	96	96	95	97	98	97	101	99
% Extraction Accuracy		109	112	123	120	114	123	127	127	130	97
% Instrument Accuracy		119	100	109	106	112	106	106	109	110	101

METHODS: EPA 200.7, 239.2, 270.2, 272.2.
QC: Blank Spiked with 10.0 ppm As, Cr; 2.00 ppm Cd; 200.0 ppm Ba; 0.0050 ppm Hg; 5.00 ppm Ni, Be, V, B, Cu, Fe, Zn, Al, Co, Mn, Mo, Tl; 9.8 ppm U; 0.050 ppm Pb; 0.100 ppm Se, Ag.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

11-11-94
DATE

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location: Artesia NM
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
27452	RA-2723	2	40ml	X							X	X		10/20/94	13:00	X							
27453	RA-1227	"	"	"							"	"		"	13:15	X							
27454	RO Reject Bi wkly	2		X						X	(2)	(2)		"	13:30	*		See List					
27455	RA-313	"		"							"	"		"	13:45	X							
27456	RA-314	"		"							"	"		"	14:00	X							
27457	RA-4196	"		"							"	"		"	14:15	X							
27458	RA-307	"		"							"	"		"	14:30	X							
27459	RA-4798	"		"							"	"		"	14:45	X							
27460	RA-1331	"		"							"	"		"	15:00	X							
27461	BDAT'ed K Waste	4					*	X			"	"		"	16:00			X	X	X	X		X

SPECIAL HANDLING: Turn around # of days; Fax ASAP; Report TWC direct; Hold

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	10/20/94	16:30	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:
		10-21-94	

REMARKS: BDated K waste - RCRA + TC

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

October 28, 1994
Receiving Date: 10/12/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 10/22/94
Sampling Date: 10/11/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: RO Reject BiWkly

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T27049	RO Reject BiWkly	3.5	191.1	532.5	116.1
QC	Quality Control	49.4	20.5	19.67	19.3
Detection Limit		0.1	0.1	0.05	0.1
% Precision		100	99	100	97
% Extraction Accuracy		105	98	92	100
% Instrument Accuracy		99	102	98	96

METHODS: EPA 200.7.
QC: Blank Spiked with 50.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-28-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

October 17, 1994
Receiving Date: 10/12/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 10/12/94
Sampling Date: 10/12/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: RO Reject BiWkly

TA#	FIELD CODE	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	CO3
T27049	RO Reject BiWkly	195	2.3	2,202	346	0
QC	Quality Control	504	1.0	9	---	---
% Precision		98	98	103	100	100
% Extraction Accuracy		103	104	83	---	---
% Instrument Accuracy		101	102	92	---	---
DETECTION LIMIT		1	0.1	1	10	10

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 10.0 mg/L SULFATE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-27-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

October 26, 1994
Receiving Date: 10/12/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 10/22/94
Sampling Date: 10/11/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: RO Reject BiWkly

TOTAL METALS

TA#	FIELD CODE	Pb (ppm)	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Se (ppm)	Ag (ppm)	Hg (ppm)	Ni (ppm)	Be (ppm)	V (ppm)
T27049	RO Reject BiWkly	<0.001	<0.1	0.08	<0.01	<0.01	<0.001	<0.001	<0.001	<0.05	<0.01	<0.05
QC	Quality Control	0.050	5.4	5.02	5.36	5.49	0.098	0.050	0.0049	5.30	5.25	5.31
DETECTION LIMIT		0.001	0.1	0.05	0.01	0.01	0.001	0.001	0.001	0.05	0.01	0.05
% Precision		102	102	100	100	100	95	102	100	101	100	100
% Extraction Accuracy		105	100	96	98	98	95	105	100	97	102	103
% Instrument Accuracy		100	108	104	107	110	98	100	98	106	105	106

TA#	FIELD CODE	B (ppm)	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)
T27049	RO Reject BiWkly	<0.05	<0.05	<0.05	<0.01	<0.08	<0.05	<0.05	<0.05	<0.5
QC	Quality Control	4.85	5.18	5.36	5.4	5.0	5.33	5.32	5.48	9.9
DETECTION LIMIT		0.05	0.05	0.05	0.01	0.08	0.05	0.05	0.05	0.5
% Precision		104	100	100	101	106	100	99	100	99
% Extraction Accuracy		88	99	101	101	93	98	100	100	97
% Instrument Accuracy		97	104	107	108	100	107	106	110	101

METHODS: EPA 200.7, 239.2, 270.2, 272.2.
QC: Blank Spiked with 5.0 ppm As, Cr, Cd, Ba, Ni, Be, V, B, Cu, Fe, Zn, Al, Co, Mn, Mo; 0.050 ppm Pb; 0.100 ppm Se, Ag; 0.010 ppm Hg; 9.8 ppm U.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-27-94
DATE

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location: Artesia NM
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE	TPH 4/8.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
27048	RO Reject Biwkly	2		X						(1) X	(2) X	(1) X		10/11/94	15:00			See List					
27050	RA-2723	2		X							X			10/11/94	15:30	X							
27051	Lea Pipe Run	2			X							X		10/11/94	8:00		X						

SPECIAL HANDLING: Turn around # of days; Fax ASAP; Report TWC direct; Hold

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	10/11/94	16:30	
Relinquished by:	Date:	Times:	Received by: I/C
Relinquished by:	Date: 10-12-94	Times:	Received by Laboratory: S.C

REMARKS: Lea Pipe Run — run TPH by regular method. We want to see lights and heavies.

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

October 11, 1994
Receiving Date: 09/27/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 10/04/94
Sampling Date: 09/26/94
Sample Condition: Intact & Cool
Sample Received by: JW
Project Name: RO Reject BiWkly

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T26410	RO Reject BiWkly	4.0	196	490	130.9
QC	Quality Control	51.9	21.9	19.2	19.8
Detection Limit		0.1	0.1	0.05	0.1
% Precision		99	99	99	99
% Extraction Accuracy		115	102	94	99
% Instrument Accuracy		104	110	96	99

METHODS: EPA 200.7.
QC: Blank Spiked with 50.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-11-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

October 04, 1994
Receiving Date: 09/27/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 09/27/94
Sampling Date: 09/26/94
Sample Condition: Intact & Cool
Sample Received by: JW
Project Name: RO Reject BiWkly

TA#	FIELD CODE	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	CO3
T26410	RO Reject BiWkly	209	2.4	1,953	311	0
QC	Quality Control	508	1.0	9	---	---
% Precision		100	99	114	100	100
% Extraction Accuracy		103	102	78	---	---
% Instrument Accuracy		101	100	93	---	---
DETECTION LIMIT		1	0.1	1	10	---

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 20.0 mg/L SULFATE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-14-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

October 10, 1994
Receiving Date: 09/27/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 10/04/94
Sampling Date: 09/26/94
Sample Condition: Intact & Cool
Sample Received by: JW
Project Name: RO Reject BiWkly

TOTAL METALS

TA#	FIELD CODE	Pb (ppm)	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Se (ppm)	Ag (ppm)	Hg (ppm)	Ni (ppm)	Be (ppm)	V (ppm)
T26410	RO Reject BiWkly	<0.001	<0.1	0.09	<0.01	<0.01	0.001	<0.001	<0.001	<0.05	<0.01	<0.05
QC	Quality Control	0.046	4.9	5.02	4.91	4.90	0.096	0.095	0.005	5.01	5.06	4.99
DETECTION LIMIT		0.001	0.1	0.05	0.01	0.01	0.001	0.001	0.001	0.05	0.01	0.05
% Precision		98	100	100	99	100	93	95	100	99	99	100
% Extraction Accuracy		90	93	99	89	92	90	114	100	96	96	96
% Instrument Accuracy		92	95	100	98	98	96	95	100	100	101	100

TA#	FIELD CODE	B (ppm)	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)
T26410	RO Reject BiWkly	<0.05	<0.05	<0.05	0.01	0.4	<0.05	<0.05	<0.05	<0.5
QC	Quality Control	4.95	4.92	4.94	4.94	5.1	4.93	4.9	4.94	10.0
DETECTION LIMIT		0.05	0.05	0.05	0.01	0.08	0.05	0.05	0.05	0.5
% Precision		99	100	100	99	100	99	99	99	102
% Extraction Accuracy		99	95	94	95	100	92	94	94	96
% Instrument Accuracy		99	98	99	99	102	99	98	98	102

METHODS: EPA 200.7, 239.2, 270.2, 272.2.
QC: Blank Spiked with 5.0 ppm As, Cr, Cd, Ba, Ni, Be, V, B, Cu, Fe, Zn, Al, Co, Mn, Mo; 0.050 ppm Pb; 0.100 ppm Se, Ag; 0.010 ppm Hg; 9.8 ppm U.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-19-94
DATE

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: | **Phone #:** | **FAX #:**

Company Name & Address:

Project #: | **Project Name :**

Project Location: | **Sampler Signature:** Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
26406	~~KWB-7~~ (Cont)	2	40ml	X										9/26/94	11:30	X							
26407	KWB-2A	"	"	"										"	12:00	X							
26408	RA-313	"	"	"										"	12:30	X							
26409	RA-314	"	"	"										"	12:45	X							
26410	RO Reject B. wkly	2		X										"	13:30			See List					
26411	Spill Tk 437	2			X									"	14:00	X	X						

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	9/26/94	16:30	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory: GW 9-27-94

REMARKS Soil sample from Tk 431 is a composite.

ANALYSIS REQUEST | SPECIAL HANDLING: Turn around # of days; Fax ASAP; Report TWC direct; Hold

C/Z

TRACEANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 13, 1995
Receiving Date: 12/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 12/20/94
Sampling Date: 12/09/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	As (ppm)	Mo (ppm)	Cr (ppm)	Zn (ppm)	Cd (ppm)	Ni (ppm)	Be (ppm)	Fe (ppm)	Mn (ppm)	V (ppm)	Cu (ppm)
T29582	Reverse Osmosis Qtrly.	<0.1	<0.05	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05
QC	Quality Control	9.9	5.44	10.0	5.48	2.01	5.34	5.37	5.38	5.31	5.27	5.31
DETECTION LIMIT		0.1	0.05	0.01	0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05
% Precision		102	100	100	99	99	100	101	100	99	100	100
% Extraction Accuracy		89	99	90	104	90	101	100	102	101	104	101
% Instrument Accuracy		99	109	100	110	100	107	107	108	106	105	106

TA#	FIELD CODE	Al (ppm)	B (ppm)	Co (ppm)	Ba (ppm)	U (ppm)	Hg (ppm)	Se (ppm)	Pb (ppm)	Ag (ppm)
T29582	Reverse Osmosis Qtrly.	0.13	<0.05	<0.05	<0.05	<0.1	<0.001	<0.001	<0.001	<0.001
QC	Quality Control	5.22	5.14	5.40	192	10.7	0.022	0.046	0.051	0.096
DETECTION LIMIT		0.08	0.05	0.05	0.05	0.5	0.001	0.001	0.001	0.001
% Precision		98	100	100	99	99	102	100	98	100
% Extraction Accuracy		104	101	100	89	100	100	100	98	110
% Instrument Accuracy		104	103	108	96	109	100	92	102	96

METHODS: EPA 200.7, 239.2, 270.2, 272.2.
QC: Blank Spiked with 0.050 ppm Se, Pb; 0.100 ppm Ag; 10.0 ppm As, Cr; 5.00 ppm Mo, Cd, Ni, Fe, Mn, V, Cu, Al, B, Co; 2.00 ppm Cd; 200 ppm Ba; 9.8 ppm U; 0.022 ppm Hg.

BS
Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

1-13-94
DATE

TRACEANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

January 13, 1995
Receiving Date: 12/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 12/20/94
Sampling Date: 12/09/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T29582	Reverse Osmosis Qtrly.	3.6	209	550	144
QC	Quality Control	11.0	21.8	20.6	20.3
Detection Limit		0.1	0.1	0.05	0.1
% Precision		101	99	99	95
% Extraction Accuracy		112	104	98	102
% Instrument Accuracy		110	109	103	102

METHODS: EPA 200.7.
QC: Blank Spiked with 10.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

1-13-95
Date

TRACEANALYSIS TEL:806-794-1296 JAN 13 95 13:45 NO.001 P.02

EPA 625 (ppm)	DL	Osmosis Qlty.	QC	%P	%EA	%IA
Fluorene	0.001	ND	0.463			93
Diethylphthalate	0.001	ND	0.469			94
4-Chlorophenyl-phenylether	0.001	ND	0.438			88
4,6-Dinitro-2-methylphenol	0.001	ND	0.441			88
n-Nitrosodiphenylamine	0.001	ND	0.972			97
Diphenylhydrazine	0.005	ND	0.405			81
4-Bromophenyl-phenylether	0.001	ND	0.523			104
Hexachlorobenzene	0.001	ND	0.501			100
Pentachlorophenol	0.005	ND	0.502	102	93	100
Phenanthrene	0.001	ND	0.503			101
Anthracene	0.001	ND	0.496			99
Di-n-butylphthalate	0.001	ND	0.404			81
Fluoranthene	0.001	ND	0.469			94
Benzidine	0.01	ND	0.281			56
Pyrene	0.001	ND	0.452	102	130	90
Butylbenzylphthalate	0.001	ND	0.469			94
Benz[a]anthracene	0.001	ND	0.401			80
3,3-Dichlorobenzidine	0.001	ND	0.332			66
Chrysene	0.001	ND	0.417			83
bis(2-Ethylhexyl)phthalate	0.001	ND	0.462			92
Di-n-octylphthalate	0.001	ND	0.387			77
Benzo[b]fluoranthene	0.001	ND	0.397			79
Benzo[k]fluoranthene	0.001	ND	0.375			75
Benzo[a]pyrene	0.001	ND	0.483			97
Indeno[1,2,3-cd]pyrene	0.001	ND	0.303			61
Dibenz[a,h]anthracene	0.001	ND	0.367			63
Benzo[g,h,i]perylene	0.001	ND	0.366			63

ND = Not Detected

	% RECOVERY
2-Fluorophenol SURR	97
Phenol-d5 SURR	90
Nitrobenzene-d5 SURR	82
2-Fluorobiphenyl SURR	80
2,4,6-Tribromophenol SURR	81
Terphenyl-d14 SURR	103

METHODS: EPA 625.

Director, Dr. Blair Leftwich
Dr. Bruce McDonell

12-23-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 22, 1994
Receiving Date: 12/10/94
Sample Type: Water
Sample Condition: I & C
Sample Received by: BL
Project Location: Artesia, NM
Analysis Date: 12/13/94

T29582
Reverse Osmosis Qtrly.

EPA 625 (ppm)	DL	Osmosis Qtrly.	QC	%P	%EA	%IA
N-Nitrosodimethylamine	0.001	ND	0.406			81
Phenol	0.001	ND	0.499	94	86	100
bis(2-Chloroethyl)ether	0.005	ND	0.314			63
2-Chlorophenol	0.005	ND	0.457	96	94	91
1,3-Dichlorobenzene	0.001	ND	0.496	90	97	99
1,4-Dichlorobenzene	0.001	ND	0.437			87
1,2-Dichlorobenzene	0.001	ND	0.502			100
bis(2-chloroisopropyl)ether	0.005	ND	0.410			82
n-Nitrosodi-n-propylamine	0.001	ND	0.473	95	99	95
Hexachloroethane	0.001	ND	0.513			103
Nitrobenzene	0.001	ND	0.422			84
Isophorone	0.005	ND	0.464			93
2-Nitrophenol	0.005	ND	0.431			86
2,4-Dimethylphenol	0.005	ND	0.462			92
bis(2-Chloroethoxy)methane	0.001	ND	0.482			96
2,4-Dichlorophenol	0.005	ND	0.497			99
1,2,4-Trichlorobenzene	0.001	ND	0.468	96	112	94
Naphthalene	0.001	ND	0.397			79
Hexachlorobutadiene	0.001	ND	0.467			93
4-Chloro-3-methylphenol	0.005	ND	0.508	98	93	102
Hexachlorocyclopentadiene	0.001	ND	0.566			113
2,4,6-Trichlorophenol	0.005	ND	0.374			75
2-Chloronaphthalene	0.001	ND	0.483			97
Dimethylphthalate	0.001	ND	0.465			93
Acenaphthylene	0.001	ND	0.447	100	87	89
2,6-Dinitrotoluene	0.001	ND	0.480			96
Acenaphthene	0.001	ND	0.466			93
2,4-Dinitrophenol	0.005	ND	0.432			86
4-Nitrophenol	0.005	ND	0.258	92	69	52
2,4-Dinitrotoluene	0.001	ND	0.457	99	71	91

TRACEANALYSIS, INC.
A Laboratory for Advanced Environmental Research and Analysis

TRACEANALYSIS TEL:806-7941296 Jan 10 95 14:59 NO.012 P.04

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 23, 1994
Receiving Date: 12/23/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 12/13/94
Sampling Date: 12/09/94
Sample Condition: I & C
Sample Received by: BL
Project Name: NA

ORGANOCHLORINE INSECTICIDES (mg/L)	T29582 RO Reject Qtrly.	Detection Limit	QC	%R	%EA	%IA
a-BHC	ND	0.0001	0.0020	98	95	100
b-BHC	ND	0.0001	0.0020	98	95	100
g-BHC	ND	0.0001	0.0020	98	95	100
s-BHC	ND	0.0001	0.0020	92	90	100
Heptachlor	ND	0.0001	0.0020	100	100	100
Aldrin	ND	0.0001	0.0020	100	95	100
Heptachlor epoxide	ND	0.0001	0.0020	98	95	100
Endosulfan-1	ND	0.0001	0.0020	98	95	100
Endosulfan-2	ND	0.0001	0.0020	98	95	100
DDE	ND	0.0001	0.0020	100	100	100
Dieldrin	ND	0.0001	0.0020	98	95	100
Endrin	ND	0.0001	0.0020	100	100	100
DDD	ND	0.0001	0.0020	100	100	100
Endrin Aldehyde	ND	0.0005	0.0020	103	100	100
Endosulfan Sulphate	ND	0.0005	0.0020	100	100	100
DDT	ND	0.0001	0.0020	100	105	100
Methoxychlor	ND	0.0005	0.0020	98	95	100
Total PCB	ND	0.0001	0.0052	100	120	104
Chlordane	ND	0.0002	0.0020	100	90	100
Toxaphene	ND	0.005	0.020	99	80	100

ND = Not Detected

METHODS: EPA 608.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-23-94
DATE

TRACEANALYSIS, INC.
A Laboratory for Advanced Environmental Research and Analysis

TRACEANALYSIS TEL:806-794129 Jan 10 95 15:01 NO.012 P.09

NAVAJO REFINING COMPANY
Project Location: Artesia, NM

EPA 624 Compounds (ppb)	T29582 RO Reject Qtrly.	Detection Limit	QC	%P	%EA	%IA
Dibromochloromethane	ND	1				
Tetrachloroethene	ND	2				
Chlorobenzene	ND	1	48	97		96
Ethylbenzene	ND	0.5				
m & p-Xylene	ND	0.5				
Bromoform	ND	1				
Styrene	ND	0.5				
o-Xylene	ND	0.5				
1,1,2,2-Tetrachloroethane	ND	1				
1,4-Dichloro-2-butene	ND	5				
1,4-Dichlorobenzene	ND	2				
1,3-Dichlorobenzene	ND	2				
1,2-Dichlorobenzene	ND	2				
1,2-Dibromethane	ND	1				

ND = Not Detected

SURROGATES	% RECOVERY
1,2-Dichloroethane-d	81
Toluene-d8	93
4-Bromofluorobenzene	89

METHODS: EPA 624

Dr. Blair Leftwich, Director
Dr. Bruce McDonell, Directo

12-23-94
Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 23, 1994
Receiving Date: 12/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 12/16/94
Sampling Date: 12/09/94
Sample Condition: I & C
Sample Received by: BL
Project Name: NA

EPA 624 Compounds (ppb)	T29582 RO Reject Qtrly.	Detection Limit	QC	%P	%EA	%IA
Dichlorodifluoromethane	ND	1				
Chloromethane	ND	1				
Vinyl chloride	ND	2				
Bromomethane	ND	1				
Chloroethane	ND	1				
Trichlorofluoromethane	ND	1				
1,1-Dichloroethene	ND	2	44	105		88
Iodomethane	ND	1				
Carbon disulfide	ND	1				
Methylene chloride	ND	1				
trans-1,2-Dichloroethene	ND	1				
1,1-Dichloroethane	ND	1				
Vinyl acetate	ND	1				
2-Butanone	ND	20				
Chloroform	ND	1				
1,1,1-Trichloroethane	ND	1				
1,2-Dichloroethane	ND	2				
Benzene	ND	0.2	71	98		142
Carbon Tetrachloride	ND	10				
1,2-Dichloropropane	ND	2				
Trichloroethene	ND	2	56	90		112
Bromodichloromethane	ND	1				
cis-1,3-Dichloropropene	ND	2				
4-Methyl-2-pentanone	ND	10				
trans-1,3-Dichloropropene	ND	2	93	101		93
Toluene	ND	0.5				
1,1,2-Trichloroethane	ND	1				
2-Hexanone	ND	10				

TRACEANALYSIS TEL:806-7941296 Jan 10 95 15:00 No.012 P.02

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 23, 1994
Receiving Date: 12/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 12/10/94
Sampling Date: 12/09/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

PARAMETERS (mg/L)	T29582 Reverse Osmosis Qtrly.	QC	%P	%EA	%IA
Phenol	<0.002	0.395	101	101	0
(NO3-NO2)-N	0.58	1.00	95	102	102
NH3-N	0.64	76	103	106	78
CN-	<0.01	0.04	102	103	103
BOD	<3	194	108	---	97
TSS	<1	---	103	---	---
pH (s.u.)	7.8	7.0	100	---	100
TDS	2,776	---	99	---	---
EC (uMHOs/cm)	3,097	1,410	100	---	100
COD	<60	77	106	103	103
Chlorine	<0.1	---	100	---	---
Fecal Coliform	Not Found	---	---	---	---

Methods: EPA 420.1, 353.3, 350.3, 335.2, 405.1, 160.2, 150.1, 160.1, 410.4, 335.3, 120.1; EPA 600/8-78-017.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-23-94
DATE

TRACEANALYSIS, INC.
A Laboratory for Advanced Environmental Research and Analysis

TRACEANALYSIS TEL:806-7941296 Jan 10 95 15:00 No.012 P.06

TRACEANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

December 21, 1994
Receiving Date: 12/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 12/10/94
Sampling Date: 12/09/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	FIELD CODE	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	CO3	
T29582	Reverse Osmosis Qtrly.	197	2.3	2,096	280	0	
QC	Quality Control	499	1.0	9	---	---	
% Precision		100	99	103	102	102	
% Extraction Accuracy		97	97	101	---	---	
% Instrument Accuracy		99	100	97	---	---	
DETECTION LIMIT		1	0.1	1	10	10	10

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 10.0 mg/L SULFATE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-21-94
Date

Jan 10 95 14:58 NO.012 P.03
TEL:806-7941296
TRACEANALYSIS

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Mooro
501 E. Main
Artesia, NM 88210

January 13, 1995
Receiving Date: 12/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 01/11/95
Sampling Date: 12/09/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	FIELD CODE	TOTAL RADIUM (pCi/liter)
T29582	Reverse Osmosis Qtrly.	5+/-1
Detection Limit		1

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

1-13-95
DATE

Kerr For your file. ML

TELEPHONE
(505) 748-3311

EASYLINK
62905278

Navajo REFINING COMPANY

501 EAST MAIN STREET ○ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

October 26, 1994

RECEIVED
NOV 1 1994

RECEIVED
DEC 14 1994
GROUND WATER BUR

OIL CONSERVATION DIV.
SANTA FE

New Mexico Environment Dept.
Water Quality Management
Harold Runnels Bldg.
P.O. Box 26110
1190 St. Francis Dr.
Santa Fe, NM 87502

RE: 3rd Quarter 1994 Report on RO Reject Water, Navajo Refining Co.,Eddy County, NM

To whom it may concern:

This letter is sent in regard to Navajo Refining's permit modification of our discharge plan GW-28 which allows us to put our Reverse Osmosis (RO) reject water on our farm or into Eagle Draw. This permit is administered by OCD and the parameters we sample for was set up by OCD. We are sending these results to NMED for your files. We are required by OCD to sample this stream every two weeks and those results for this quarter are enclosed.

This water is being put on our farm and into Eagle Draw. For this sampling period we discharged a total of 11,914,778 gallons. This is broken down as follows: 5,681,741 gallons discharged to Eagle Draw and 6,233,037 gallons discharged to the farm. Since we started discharging the RO reject water we have discharged a total of 205,095,374 gallons. This is broken down as follows: 43,590,444 gallons have been put into Eagle Draw and 161,504,930 gallons have been put on the farm.

If you have any questions concerning this matter, please call me at 505-748-3311. Thank you for your time.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

encl.
cc:USEPA

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

September 08, 1994
Receiving Date: 08/31/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 08/31/94
Sampling Date: 08/30/94
Sample Condition: Intact & Cool
Sample Received by: YL
Project Name: RO Reject BiWkly

TA#	FIELD CODE	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	CO3
T25272	RO Reject BiWkly	218	2.5	2,830	346	0
QC	Quality Control	488	0.94	10	---	---
% Precision		100	100	106	100	100
% Extraction Accuracy		95	104	100	---	---
% Instrument Accuracy		98	95	100	---	---
DETECTION LIMIT		1	0.1	1	10	---

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 20.0 mg/L SULFATE.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

9-9-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

September 08, 1994
Receiving Date: 08/31/94
Sample Type: Water
Project No: NA
Project Location: NA

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 09/06/94
Sampling Date: 08/30/94
Sample Condition: Intact & Cool
Sample Received by: YL
Project Name: RO Reject BiWkly

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T25272	RO Reject BiWkly	3.6	186	523.1	132
QC	Quality Control	100.8	20.4	19.1	19.8
Detection Limit		0.1	0.1	0.05	0.1
% Precision		101	100	99	100
% Extraction Accuracy		113	97	92	100
% Instrument Accuracy		100	102	97	99

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

9-9-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

September 08, 1994
Receiving Date: 08/30/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 09/06/94
Sampling Date: 08/30/94
Sample Condition: Intact & Cool
Sample Received by: YL
Project Name: RO Reject BiWkly

TOTAL METALS

TA#	FIELD CODE	Pb (ppm)	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Se (ppm)	Ag (ppm)	Hg (ppm)	Ni (ppm)	Be (ppm)	V (ppm)
T25272	RO Reject BiWkly	<0.001	<0.1	0.10	<0.01	0.02	<0.001	<0.001	<0.001	<0.05	<0.01	<0.05
QC	Quality Control	0.048	5.1	5.20	4.93	5.22	0.095	0.099	0.010	5.00	4.95	5.05
DETECTION LIMIT		0.001	0.1	0.05	0.01	0.01	0.001	0.001	0.001	0.05	0.01	0.05
% Precision		100	96	100	96	100	100	99	100	96	98	94
% Extraction Accuracy		100	86	101	86	87	108	108	100	91	96	97
% Instrument Accuracy		96	100	104	98	101	95	99	100	99	100	100

TA#	FIELD CODE	B (ppm)	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)
T25272	RO Reject BiWkly	0.28	<0.05	0.08	0.07	0.3	<0.05	<0.05	<0.05	<0.5
QC	Quality Control	6.06	4.96	5.19	4.94	5.7	5.20	4.96	5.19	9.9
DETECTION LIMIT		0.05	0.05	0.05	0.01	0.08	0.05	0.05	0.05	0.5
% Precision		101	94	97	96	103	95	96	97	106
% Extraction Accuracy		133	100	94	88	114	92	93	87	89
% Instrument Accuracy		121	98	102	98	108	101	98	101	100

METHODS: EPA 200.7, 239.2, 270.2, 272.2.
QC: Blank Spiked with 5.0 ppm As, Cr, Cd, Ba, Ni, Be, V, B, Cu, Fe, Zn, Al, Co, Mn, Mo; 0.050 ppm Pb; 0.100 ppm Se, Ag; 0.010 ppm Hg; 9.8 ppm U.

BL

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

9-9-94

DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

August 29, 1994
Receiving Date: 08/12/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 08/15/94
Sampling Date: 08/11/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: RO Reject Biwkly

TA#	FIELD CODE	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	CO3
T24505	RO Reject Biwkly	222.9	2.5	1,577	323	0
QC	Quality Control	473	0.95	9.2	---	---
% Precision		100	100	98	100	---
% Extraction Accuracy		91	106	90	---	---
% Instrument Accuracy		95	96	91	---	---
DETECTION LIMIT		1	0.1	1	10	---

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 20.0 mg/L SULFATE.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

8-29-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

August 29, 1994
Receiving Date: 08/12/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 08/25/94
Sampling Date: 08/11/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: RO Reject Biwkly

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T24505	RO Reject Biwkly	3.6	258	707	169.5
QC	Quality Control	100.9	20.2	19.39	19.0
Detection Limit		0.1	0.1	0.05	0.1
% Precision		96	97	100	100
% Extraction Accuracy		102	84	78	89
% Instrument Accuracy		101	101	97	95

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

8-29-94
Date

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ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

August 29, 1994
Receiving Date: 08/12/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 08/25/94
Sampling Date: 08/11/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: RO Reject BiWkly

TOTAL METALS

TA#	FIELD CODE	Pb (ppm)	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Se (ppm)	Ag (ppm)	Hg (ppm)	Ni (ppm)	Be (ppm)	V (ppm)
T24505	RO Reject Biwkly	<0.001	<0.1	0.15	<0.01	<0.01	<0.001	<0.001	<0.001	<0.05	<0.01	<0.01
QC	Quality Control	0.048	5.3	4.98	5.28	5.29	0.099	0.094	0.01	5.0	5.18	5.2
DETECTION LIMIT		0.001	0.1	0.05	0.01	0.01	0.001	0.001	0.001	0.05	0.01	0.01
% Precision		100	101	99	100	100	96	100	100	101	101	91
% Extraction Accuracy		104	100	89	99	100	92	108	100	98	99	79
% Instrument Accuracy		97	101	100	106	106	99	94	100	100	104	104

TA#	FIELD CODE	B (ppm)	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)
T24505	RO Reject Biwkly	<0.05	<0.05	<0.05	0.01	<0.08	<0.05	<0.05	<0.05	<0.5
QC	Quality Control	4.85	5.08	5.2	5.10	4.8	5.0	5.3	5.23	10.4
DETECTION LIMIT		0.05	0.05	0.05	0.01	0.08	0.05	0.05	0.05	0.5
% Precision		99	100	100	99	100	100	100	101	101
% Extraction Accuracy		94	66	100	98	94	92	103	98	99
% Instrument Accuracy		97	102	104	102	96	100	106	105	106

METHODS: EPA 200.7, 245.1, 239.2, 270.2, 272.2.
QC: Blank Spiked with 5.0 ppm As, Cd, Cr, Ni, Be, V, B, Cu, Fe, Zn, Co, Mn, Mo; 0.050 ppm Pb; 100 ppm Ba; 0.100 ppm Se, Ag; 0.020 ppm Hg; 1.00 ppm Al; 9.8 ppm U.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

8-29-94
DATE

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

September 30, 1994
Receiving Date: 09/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia

Analysis Date: 08/01/94
Sampling Date: 09/09/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

PARAMETERS (mg/L)	T25716 RO Reject Qtrly.	QC	%P	%EA	%IA
Phenol	<0.002	0.39	100	81	100
NO3-N	0.83	1.09	90	110	110
COD	98	75	100	91	106
NH3	0.08	0.97	94	91	96
CN-	<0.02	0.05	100	98	100
BOD	<3	216	98	---	108
TSS	<1	---	98	---	---
pH (s.u.)	7.1	7.0	100	---	100
TDS	2,928	---	100	---	---
EC (uMHOs/cm)	3,102	1,367	99	---	97
Chlorine	0.1	---	100	---	---
Fecal Coliform (100mL)	Not Found	---	---	---	---

Methods: **EPA 600/8-78-017, 330.1, 120.1, 160.1, 150.1, 160.2, 405.1, 335.2, 350.3, 410.4, 353.3, 420.2.**

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

9-30-94
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

September 30, 1994
Receiving Date: 09/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 09/13/94
Sampling Date: 09/09/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	Pb (ppm)	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Se (ppm)	Ag (ppm)	Hg (ppm)	Ni (ppm)	Be (ppm)	V (ppm)
T25716	RO Reject Qtrly.	<0.001	<0.1	0.09	<0.01	0.01	<0.001	0.012	<0.001	<0.05	<0.01	<0.05
QC	Quality Control	0.048	5.0	4.94	4.95	4.89	0.098	0.051	0.0051	4.92	4.92	5.06
DETECTION LIMIT		0.001	0.1	0.05	0.01	0.01	0.001	0.001	0.001	0.05	0.01	0.05
% Precision		94	98	100	98	98	93	100	104	97	99	98
% Extraction Accuracy		102	100	97	92	93	90	122	115	94	97	96
% Instrument Accuracy		103	100	101	101	101	98	98	102	101	101	102

TA#	FIELD CODE	B (ppm)	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)
T25716	RO Reject Qtrly.	0.06	<0.05	0.11	0.05	0.28	<0.05	<0.05	<0.05	<0.5
QC	Quality Control	5.00	4.93	5.06	4.95	5.05	5.00	5.19	4.92	9.5
DETECTION LIMIT		0.05	0.05	0.05	0.01	0.08	0.05	0.05	0.05	0.5
% Precision		100	98	99	98	102	100	98	97	100
% Extraction Accuracy		100	94	94	94	101	93	96	94	89
% Instrument Accuracy		100	100	102	101	102	101	105	102	97

METHODS: EPA 200.7, 245.1, 239.2, 270.2, 272.2.
QC: Blank Spiked with 5.0 ppm As, Cr, Cd, Ba, Ni, Be, V, B, Cu, Fe, Zn, Al, Co, Mn, Mo; 0.050 ppm Pb, Ag; 0.100 ppm Se; 0.0050 ppm Hg; 9.8 ppm U.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

9-30-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

September 30, 1994
Receiving Date: 09/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 09/23/94
Sampling Date: 09/09/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	FIELD CODE	TOTAL RADIUM 226/228 (pci/liter)
T25716	RO Reject Qtrly.	<1
Detection Limit		1

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

9-30-94
DATE

TRACE ANALYSIS, INC.
A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue
Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

September 30, 1994
Receiving Date: 09/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 09/16/94
Sampling Date: 09/09/94
Sample Condition: I & C
Sample Received by: McD
Project Name: NA

EPA 624 Compounds (ppb)	T25716 RO Reject Qtrly.	Detection Limit	QC	%P	%EA	%IA
Dichlorodifluoromethane	ND	1	54			108
Chloromethane	ND	1	66			132
Vinyl chloride	ND	2	60			120
Bromomethane	ND	1	53			106
Chloroethane	ND	1	57			114
Trichlorofluoromethane	ND	1	51			102
1,1-Dichloroethene	ND	2	44	100	114	88
Iodomethane	ND	1	47			94
Carbon disulfide	ND	1	46			92
Methylene chloride	ND	1	53			106
trans-1,2-Dichloroethene	ND	1	46			92
1,1-Dichloroethane	ND	1	54			108
Vinyl acetate	ND	1	45			90
2-Butanone	ND	20	56			112
Chloroform	ND	1	53			106
1,1,1-Trichloroethane	ND	1	52			104
1,2-Dichloroethane	ND	2	53			106
Benzene	ND	0.2	55	100	110	110
Carbon Tetrachloride	ND	10	51			102
1,2-Dichloropropane	ND	2	54			108
Trichloroethene	ND	2	49	99	98	98
Bromodichloromethane	ND	1	49			98
cis-1,3-Dichloropropene	ND	2	42			84
4-Methyl-2-pentanone	ND	10	51			102
trans-1,3-Dichloropropene	ND	2	52	101	84	104
Toluene	ND	0.5	56			112
1,1,2-Trichloroethane	ND	1	52			104
2-Hexanone	ND	10	46			92

EPA 624 Compounds (ppb)	T25716 RO Reject Qtrly.	Detection Limit	QC	%P	%EA	%IA
Dibromochloromethane	ND	1	45			90
Tetrachloroethene	ND	2	50			100
Chlorobenzene	ND	1	57	99	110	114
Ethylbenzene	ND	0.5	54			108
m & p-Xylene	ND	0.5	109			109
Bromoform	ND	1	43			86
Styrene	ND	0.5	60			120
o-Xylene	ND	0.5	61			122
1,1,2,2-Tetrachloroethane	ND	1	47			94
1,4-Dichloro-2-butene	ND	5	48			96
1,4-Dichlorobenzene	ND	2	54			108
1,3-Dichlorobenzene	ND	2	54			108
1,2-Dichlorobenzene	ND	2	57			114
Acentonitrile	ND	30				
Acetone	ND	10				
3-Chloropropionitrile	ND	10				
Ethanol	ND	50				
Acrylonitrile	ND	30				
Allyl chloride	ND	5				
Methyl tert-Butyl Ether	ND	10				
Propionitrile	ND	5				
Allyl alcohol	ND	50				
Propargyl alcohol	ND	30				
Methacrylonitrile	ND	10				
1,2-Dichloroethene	ND	10				
2,2-Dichloropropane	ND	10				
Isobutyl alcohol	ND	50				
1,1-Dichloropropene	ND	10				
2-Hydroxypropionitrile	ND	20				
Acrolein	ND	30				
2-Chloroethyl vinyl ether	ND	10				
Dibromomethane	ND	0.1				
1,4-Dioxane	ND	1				
Methyl methacrylate	ND	10				
2-Chloroethanol	ND	50				
Epichlohydrin	ND	10				
Pyridine	ND	30				

EPA 624 Compounds (ppb)	T25716 RO Reject Qtrly.	Detection Limit	QC	%P	%EA	%IA
1,3-Dichloropropane	ND	10				
Ethyl methacrylate	ND	10				
1,2,3,5-Diepoxybutane	ND	20				
1,2-Dibromoethane	ND	0.1				
2-Picoline	ND	1				
1,1,1,2-Tetrachloroethane	ND	1				
1,2,3-Trichloropropane	ND	1				
Isopropylbenzene	ND	1				
Bromobenzene	ND	1				
n-Propylbenzene	ND	1				
2-Chlorotoluene	ND	1				
4-Chlorotoluene	ND	1				
1,3,5-Trimethylbenzene	ND	1				
Pentachloroethane	ND	0.1				
1,2,4-Trimethylbenzene	ND	1				
tert-Butylbenzene	ND	1				
Benzyl chloride	ND	5				
sec-Butylbenzene	ND	1				
Isopropyl toluene	ND	1				
n-Butylbenzene	ND	1				
1,3-Dichloro-2-propanol	ND	5				
1,2-Dibromo-3-chloropropane	ND	5				
1,2,3-trichlorobenzene	ND	10				
Naphthalene	ND	1				
1,2,4-trichlorobenzene	ND	10				
Hexachlorobutadiene	ND	10				

	% RECOVERY
1,2-Dichloroethane-d4 SURR	108
Toluene-d8 SURR	107
4-Bromofluorobenzene SURR	107

***ND = Not Detected**
METHODS: EPA 624.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

9-30-94
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

September 30, 1994
Receiving Date: 09/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 09/12-13/94
Sampling Date: 09/09/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	FIELD CODE	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	CO3
T25716	RO Reject Qtrly.	227.6	2.5	2,080	322.8	0
QC	Quality Control	492	0.98	9.6	---	---
% Precision		101	102	102	100	---
% Extraction Accuracy		94	104	90	---	---
% Instrument Accuracy		98	99	98	---	---
DETECTION LIMIT		1	0.1	1	10	---

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 10.0 mg/L SULFATE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

9-30-94
Date

TRACE ANALYSIS, INC.
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

September 30, 1994
Receiving Date: 09/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 09/13/94
Sampling Date: 09/09/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T25716	RO Reject Qtrly.	3.7	188.3	523.2	146.0
QC	Quality Control	51.0	19.9	19.9	20.0
Detection Limit		0.1	0.1	0.05	0.1
% Precision		100	99	100	100
% Extraction Accuracy		109	97	94	102
% Instrument Accuracy		101	100	99	101

METHODS: EPA 200.7.
POTASSIUM SPIKE AND QC: Sample spiked with 29.4 mg/L POTASSIUM and Blank Spiked with 50.0 mg/L POTASSIUM.
MAGNESIUM SPIKE AND QC: Sample spiked with 194.2 mg/L MAGNESIUM and Blank Spiked with 20.0 mg/L MAGNESIUM.
CALCIUM SPIKE AND QC: Sample spiked with 361.6 mg/L CALCIUM and Blank Spiked with 20.0 mg/L CALCIUM.
SODIUM SPIKE AND QC: Sample spiked with 183.0 mg/L SODIUM and Blank Spiked with 20.0 mg/L SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

9-30-94
Date

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806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

September 30, 1994
Receiving Date: 09/10/94
Sample Type: Water
Sampling Date: 09/09/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Location: Artesia, NM
Analysis Date: 09/14/94

T25716
RO Reject

EPA 625 (ppm)	DL	Qtrly.	QC	%P	%EA	%IA
N-Nitrosodimethylamine	0.001	ND	0.471			94
Phenol	0.001	ND	0.483	100	76	97
bis(2-Chloroethyl)ether	0.005	ND	0.484			97
2-Chlorophenol	0.005	ND	0.506	100	88	101
1,3-Dichlorobenzene	0.001	ND	0.501			100
1,4-Dichlorobenzene	0.001	ND	0.493	100	108	99
1,2-Dichlorobenzene	0.001	ND	0.503			101
bis(2-chloroisopropyl)ether	0.005	ND	0.374			75
n-Nitrosodi-n-propylamine	0.001	ND	0.503	100	100	101
Hexachloroethane	0.001	ND	0.502			100
Nitrobenzene	0.001	ND	0.470			94
Isophorone	0.005	ND	0.467			93
2-Nitrophenol	0.005	ND	0.430			86
2,4-Dimethylphenol	0.005	ND	0.454			91
bis(2-Chloroethoxy)methane	0.001	ND	0.450			90
2,4-Dichlorophenol	0.005	ND	0.469			94
1,2,4-Trichlorobenzene	0.001	ND	0.476	99	110	95
Naphthalene	0.001	ND	0.456			91
Hexachlorobutadiene	0.001	ND	0.504			101
4-Chloro-3-methylphenol	0.005	ND	0.471	99	78	94
Hexachlorocyclopentadiene	0.001	ND	0.444			89
2,4,6-Trichlorophenol	0.005	ND	0.439			88
2-Chloronaphthalene	0.001	ND	0.465			93
Dimethylphthalate	0.001	ND	0.473			95
Acenaphthylene	0.001	ND	0.458			92
2,6-Dinitrotoluene	0.001	ND	0.432			86
Acenaphthene	0.001	ND	0.476	98	89	95
2,4-Dinitrophenol	0.005	ND	0.331			66
4-Nitrophenol	0.005	ND	0.293	99	80	59
2,4-Dinitrotoluene	0.001	ND	0.471	99	80	94

NAVAJO REFINING COMPANY

September 30, 1994

T25716

RO Reject

EPA 625 (ppm)	DL	Qtrly.	QC	%P	%EA	%IA
Fluorene	0.001	ND	0.470			94
Diethylphthalate	0.001	ND	0.472			94
4-Chlorophenyl-phenylether	0.001	ND	0.516			103
4,6-Dinitro-2-methylphenol	0.001	ND	0.343			69
n-Nitrosodiphenylamine	0.001	ND	100.02			100
Diphenylhydrazine	0.005	ND	0.451			90
4-Bromophenyl-phenylether	0.001	ND	0.527			105
Hexachlorobenzene	0.001	ND	0.522			104
Pentachlorophenol	0.005	ND	0.475	99	66	95
Phenanthrene	0.001	ND	0.520			104
Anthracene	0.001	ND	0.512			102
Di-n-butylphthalate	0.001	ND	0.496			99
Fluoranthene	0.001	ND	0.511			102
Benzidine	0.01	ND	0.211			42
Pyrene	0.001	ND	0.533	105	136	107
Butylbenzylphthalate	0.001	ND	0.496			99
Benz[a]anthracene	0.001	ND	0.439			88
3,3-Dichlorobenzidine	0.001	ND	0.362			72
Chyrsene	0.001	ND	0.453			91
bis(2-Ethylhexyl)phthalate	0.001	ND	0.467			93
Di-n-octlphthalate	0.001	ND	0.544			109
Benzo[b]fluoranthene	0.001	ND	0.417			83
Benzo[k]fluoranthene	0.001	ND	0.466			93
Benzo[a]pyrene	0.001	ND	0.472			94
Indeno[1,2,3-cd]pyrene	0.001	ND	0.355			71
Dibenz[a,h]anthracene	0.001	ND	0.333			67
Benzo[g,h,i]perylene	0.001	ND	0.349			70

ND = Not Detected

	% RECOVERY
2-Fluorophenol SURR	86
Phenol-d5 SURR	96
Nitrobenzene-d5 SURR	98
2-Fluorobiphenyl SURR	96
2,4,6-Tribromophenol SURR	82
Terphenyl-d14 SURR	118

METHODS: EPA 625.

Director, Dr. Blair Leftwich
Dr. Bruce McDonell

9-30-94

DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

September 30, 1994
Receiving Date: 09/10/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 09/14/94
Sampling Date: 09/09/94
Sample Condition: I & C
Sample Received by: McD
Project Name: NA

ORGANOCHLORINE INSECTICIDES (mg/L)	T25716 RO Reject Qtrly.	Detection Limit	QC	%P	%EA	%IA
a-BHC	ND	0.0001	0.0040	99	100	100
b-BHC	ND	0.0001	0.0040	101	102	100
g-BHC	ND	0.0001	0.0040	99	100	100
s-BHC	ND	0.0001	0.0040	98	100	100
Heptachlor	ND	0.0001	0.0040	103	100	100
Aldrin	ND	0.0001	0.0040	107	95	100
Heptachlor epoxide	ND	0.0001	0.0040	105	97	100
Endosulfan-1	ND	0.0001	0.0040	105	100	100
Endosulfan-2	ND	0.0001	0.0040	101	100	100
DDE	ND	0.0001	0.0040	100	97	100
Dieldrin	ND	0.0001	0.0040	101	100	100
Endrin	ND	0.0001	0.0040	103	97	100
DDD	ND	0.0001	0.0040	101	95	100
Endrin Aldehyde	ND	0.0005	0.0040	109	95	100
Endosulfan Sulphate	ND	0.0005	0.0040	100	97	100
DDT	ND	0.0001	0.0040	104	100	100
Methoxychlor	ND	0.0005	0.0040	99	95	100
Total PCB	ND	0.0001	0.0049	101	80	96
Chlordane	ND	0.0002	0.0020	102	105	100
Toxaphene	ND	0.005	0.0200	94	103	100

ND = Not Detected

METHODS: EPA 608.

9-30-94

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

NAVAJO REFINING COMPANY

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

TELEPHONE
(505) 748-3311

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

CONSERVATION DIVISION
RECEIVED
'94 MAY 25 AM 8 50

May 23, 1994

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our May 6, 1994 sampling of the reverse osmosis reject water that is being put into Eagle Creek and/or on our farm. If there are any questions, please call me at (505) 748-3311.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

Encl.

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

May 16, 1994
Receiving Date: 05/06/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 05/09/94
Sampling Date: 05/06/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	Field Code	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaC03) HC03	C03
T21143	RO Reject Bi-Weekly	248.0	2.32	1,328	285	0
QC	Quality Control	500	1.93	20.0	---	---
% Precision		100	100	95	100	100
% Extraction Accuracy		98	93	90	---	---
% Instrument Accuracy		99	98	99	---	---
DETECTION LIMIT		1	0.1	1	10	---

METHODS: EPA 375.4, 310.1, 340.2, 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 20.0 mg/L SULFATE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-17-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

May 16, 1994
Receiving Date: 05/06/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 05/11/94
Sampling Date: 05/06/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T21143	RO Reject Bi-Weekly	3.2	15.3	42.7	13.9
QC	Quality Control	98	19.6	20.0	19.4
Detection Limit		0.1	0.1	0.05	0.1
% Precision		100	100	100	95
% Extraction Accuracy		104	93	97	102
% Instrument Accuracy		98	100	100	97

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-17-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

May 16, 1994
Receiving Date: 05/06/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 05/11/94
Sampling Date: 05/06/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	Pb (ppm)	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Se (ppm)	Ag (ppm)	Ni (ppm)	Be (ppm)	V (ppm)	B (ppm)
T21143	RO Reject Bi-Weekly	<0.1	<0.1	<0.05	<0.01	<0.01	<0.2	<0.01	<0.05	<0.05	<0.05	<0.05
QC	Quality Control	5.2	5.2	101	1.1	5.2	1.0	5.0	4.9	5.1	4.9	4.9
DETECTION LIMIT		0.1	0.1	0.05	0.01	0.01	0.2	0.01	0.05	0.05	0.05	0.05
% Precision		100	100	97	100	100	100	100	100	100	100	100
% Extraction Accuracy		96	104	98	98	96	100	92	92	96	92	96
% Instrument Accuracy		104	104	101	110	104	100	100	98	102	98	98

TA#	FIELD CODE	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)	Hg (ppm)
T21143	RO Reject Bi-Weekly	<0.05	0.13	0.01	0.1	<0.05	<0.05	<0.05	<0.5	<0.001
QC	Quality Control	5.0	4.9	5.0	5.1	4.8	4.8	4.9	9.7	0.020
DETECTION LIMIT		0.05	0.05	0.01	0.1	0.05	0.05	0.05	0.5	0.001
% Precision		100	100	100	100	100	100	100	100	100
% Extraction Accuracy		92	96	96	96	92	92	92	97	100
% Instrument Accuracy		100	100	104	102	99	96	100	99	100

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Mo, Cr, Zn, Cd, Pb, Ni, Be, Fe, Co, Mn, V, Cu, Ag; 100.0 ppm Ba; 10.0 ppm Al, B; 9.7 ppm U; 0.020 ppm Hg.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-17-94
DATE

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location: Artesia NM
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
21143	RO Reject Bi-Weekly	2		X						(2) X	(2) X	(1) X		5/6/93	9:30			See	List				
21144	RA-2723	2		X							(2) X	(2) X		5/6/93	9:45	X		See	List				

ANALYSIS REQUEST

SPECIAL HANDLING: Turn around # of days; Fax ASAP; Report TWC direct; Hold

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	5/6/93		
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory: 5/6/93 1/c

REMARKS

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

May 23, 1994

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P 111 334 319

Mr. Darrell Moore
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159

RE: Reverse Osmosis Reject Sampling
Navajo Artesia Refinery
Eddy County, New Mexico

Dear Mr. Moore,

The New Mexico Oil Conservation Division (OCD) has received your May 13, 1994 proposal to continue quarterly sampling of the Reverse Osmosis (RO) reject water and discontinue the bi-weekly analyses which were required in the April 27, 1993 discharge plan modification approval. This proposal is based on the data submitted with the proposal summarizing the historical sample analyses.

In the April 27, 1993 discharge plan modification approval, condition 7 states that "Major cations/anions and heavy metal analysis frequency can be reduced to quarterly, on a parameter-by-parameter basis, upon application and OCD approval provided all analytical data in the previous year was no greater than seventy-five (75) percent of the effluent limit." The submitted summary indicates that:

1) five of the analyzed parameters (chloride, fluoride, aluminum, manganese and lead) exceeded the discharge standard at least once during the first year of analysis;

2) chloride exceeded the 75% of standard threshold on eighteen of the nineteen analyses tabulated, fluoride nine of thirteen times, and sulfate two of nineteen times;

3) several of the parameter detection limits equaled or were greater than the relevant standard (aluminum, arsenic, beryllium, cadmium, cobalt, selenium, silver, lead and mercury); and

4) Several parameters were not measured at the required frequency.

Therefore, based on this review of the submitted data, the request to discontinue bi-weekly analysis of the RO Reject Water **is denied.**

If you have any questions, call me at (505)827-4080 or Roger Anderson at 827-5812.

Sincerely,

Robert L. Myers II
Petroleum Engineer Specialist

xc: OCD Artesia Office

DIVISION
REFINING COMPANY

'94 MAY 17 AM 8 50

TELEPHONE
(505) 748-3311

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

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62905278
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(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

May 16, 1994

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our April 8, 1994 quarterly sampling and our April 21, 1994 bi-weekly sampling of the reverse osmosis reject water. This water is being put on our farm and/or into Eagle Draw. As of March 31, 1994 the totals for the water were:

Total Water Discharged	106,154,171 gallons
Total to Eagle Draw	26,208,697 gallons
Total to Farm	79,945,474 gallons

This is broken down for the first quarter of the year as follows:

Total Water Discharged this Quarter	35,327,141 gallons
Total Water Eagle Draw this Quarter	0 gallons
Total Water Farm this Quarter	35,327,141 gallons

If you have any questions on this matter, please call me at 505-748-3311. Thank you for your time in this matter.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

Encl.
cc: EPA

5-16-94

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

May 6, 1994
Receiving Date: 04/09/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 05/02/94
Sampling Date: 04/08/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	FIELD CODE	TOTAL RADIUM 226/228 (pci/liter)
T20247	Quarterly RO Reject	<1
Detection Limit		1

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-6-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NA[redacted]JO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

T20247
Quarterly RO

May 05, 1994
Receiving Date: 04/09/94
Sample Type: Water
Sampling Date: 04/08/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Location: Artesia, NM
Analysis Date: 05/04/94

EPA 625 (ppm)	DL	Reject	QC	%P	%EA	%IA
N-Nitrosodimethylamine	0.001	ND	0.482	NR	NR	96
Phenol	0.001	ND	0.518	101	88	103
bis(2-Chloroethyl)ether	0.005	ND	0.430	NR	NR	86
2-Chlorophenol	0.005	ND	0.506	99	94	101
1,3-Dichlorobenzene	0.001	ND	0.541	NR	NR	108
1,4-Dichlorobenzene	0.001	ND	0.521	99	98	104
1,2-Dichlorobenzene	0.001	ND	0.549	NR	NR	109
bis(2-chloroisopropyl)ether	0.005	ND	0.595	NR	NR	119
n-Nitrosodi-n-propylamine	0.001	ND	0.515	100	87	103
Hexachloroethane	0.001	ND	0.521	NR	NR	104
Nitrobenzene	0.001	ND	0.511	NR	NR	102
Isophorone	0.005	ND	0.568	NR	NR	113
2-Nitrophenol	0.005	ND	0.478	NR	NR	95
2,4-Dimethylphenol	0.005	ND	0.457	NR	NR	91
bis(2-Chloroethoxy)methane	0.001	ND	0.536	NR	NR	107
2,4-Dichlorophenol	0.005	ND	0.520	NR	NR	104
1,2,4-Trichlorobenzene	0.001	ND	0.506	100	95	101
Naphthalene	0.001	ND	0.543	NR	NR	108
Hexachlorobutadiene	0.001	ND	0.501	NR	NR	100
4-Chloro-3-methylphenol	0.005	ND	0.519	97	75	103
Hexachlorocyclopentadiene	0.001	ND	0.380	NR	NR	76
2,4,6-Trichlorophenol	0.005	ND	0.474	NR	NR	94
2-Chloronaphthalene	0.001	ND	0.433	NR	NR	86
Dimethylphthalate	0.001	ND	0.479	NR	NR	95
Acenaphthylene	0.001	ND	0.490	NR	NR	98
2,6-Dinitrotoluene	0.001	ND	0.456	NR	NR	91
Acenaphthene	0.001	ND	0.493	100	85	98
2,4-Dinitrophenol	0.005	ND	0.421	NR	NR	84
4-Nitrophenol	0.005	ND	0.472	100	84	94
2,4-Dinitrotoluene	0.001	ND	0.482	101	85	96

T20247
Quarterly RO

EPA 625 (ppm)	DL	Reject	QC	%P	%EA	%IA
Fluorene	0.001	ND	0.498	NR	NR	99
Diethylphthalate	0.001	ND	0.503	NR	NR	100
4-Chlorophenyl-phenylether	0.001	ND	0.479	NR	NR	95
4,6-Dinitro-2-methylphenol	0.001	ND	0.426	NR	NR	85
n-Nitrosodiphenylamine	0.001	ND	0.980	NR	NR	98
Diphenylhydrazine	0.005	ND	0.543	NR	NR	108
4-Bromophenyl-phenylether	0.001	ND	0.475	NR	NR	95
Hexachlorobenzene	0.001	ND	0.479	NR	NR	95
Pentachlorophenol	0.005	ND	0.366	112	92	73
Phenanthrene	0.001	ND	0.504	NR	NR	100
Anthracene	0.001	ND	0.518	NR	NR	103
Di-n-butylphthalate	0.001	ND	0.576	NR	NR	115
Fluoranthene	0.001	ND	0.483	NR	NR	96
Benzidine	0.01	ND	0.404	NR	NR	80
Pyrene	0.001	ND	0.553	98	111	110
Butylbenzylphthalate	0.001	ND	0.582	NR	NR	116
Benz[a]anthracene	0.001	ND	0.516	NR	NR	103
3,3-Dichlorobenzidine	0.001	ND	0.429	NR	NR	85
Chyrsene	0.001	ND	0.526	NR	NR	105
bis(2-Ethylhexyl)phthalate	0.001	ND	0.610	NR	NR	121
Di-n-octlphthalate	0.001	ND	0.474	NR	NR	94
Benzo[b]fluoranthene	0.001	ND	0.530	NR	NR	106
Benzo[k]fluoranthene	0.001	ND	0.494	NR	NR	98
Benzo[a]pyrene	0.001	ND	0.557	NR	NR	111
Indeno[1,2,3-cd]pyrene	0.001	ND	0.421	NR	NR	84
Dibenz[a,h]anthracene	0.001	ND	0.365	NR	NR	73
Benzo[g,h,i]perylene	0.001	ND	0.424	NR	NR	84

ND = Not Detected

	% RECOVERY
2-Fluorophenol SURR	121
Phenol-d5 SURR	87
Nitrobenzene-d5 SURR	87
2-Fluorobiphenyl SURR	92
2,4,6-Tribromophenol SURR	96
Terphenyl-d14 SURR	90

METHODS: EPA 625.

Director, Dr. Blair Leftwich
Dr. Bruce McDonell

5-6-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

May 05, 1994
Receiving Date: 04/09/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 05/03/94
Sampling Date: 04/08/94
Sample Condition: I & C
Sample Received by: McD
Project Name: NA

ORGANOCHLORINE INSECTICIDES (mg/L)	T20247 Quarterly RO Reject	Detection Limit	QC	%P	%EA	%IA
a-BHC	ND	0.00003	0.0022	100	NR	110
b-BHC	ND	0.00006	0.0021	100	NR	105
g-BHC	ND	0.00004	0.0022	100	NR	110
s-BHC	ND	0.00009	0.0020	100	NR	100
Heptachlor	ND	0.00003	0.0020	100	NR	100
Aldrin	ND	0.00004	0.0021	100	NR	105
Heptachlor epoxide	ND	0.00004	0.0023	100	NR	115
Endosulfan-1	ND	0.00004	0.0024	100	NR	120
Endosulfan-2	ND	0.00004	0.0023	100	NR	115
DDE	ND	0.00004	0.0022	100	NR	110
Dieldrin	ND	0.00002	0.0020	100	NR	100
Endrin	ND	0.00006	0.0023	100	NR	115
DDD	ND	0.00005	0.0022	100	NR	110
Endrin Aldehyde	ND	0.0001	0.0025	100	NR	125
Endosulfan Sulphate	ND	0.0005	0.0023	100	NR	115
DDT	ND	0.00005	0.0026	100	NR	130
Methoxychlor	ND	0.0001	0.0093	100	NR	116
Total PCB	ND	0.0001	0.0053	100	95	105
Chlordane	ND	0.0002	0.002	100	110	106
Toxaphene	ND	0.005	0.0214	100	108	107

ND = Not Detected

METHODS: EPA 608.

BE 5-6-94

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

May 02, 1994
Receiving Date: 04/09/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 04/11/94
Sampling Date: 04/08/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	FIELD CODE	COD (mg/L)	AMMONIA-N (mg/L)	NO2-NO3 (mg/L)
T20247	Quarterly RO Reject	49	0.72	0.8
QC	Quality Control	122	1.02	2.0
Detection Limit		0.5	0.1	0.1
% Precision		95	97	99
% Extraction Accuracy		96	98	100
% Instrument Accuracy		98	105	100

METHODS: EPA 410.4, 350.3, 353.3.
QC: Blank spiked with 125 mg/L COD; 1.0 mg/L AMMONIA-N; 2.0 mg/L NO2-NO3.

5-2-94

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell
DATE

TRACEANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

May 02, 1994
Receiving Date: 04/09/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 04/11/94
Sampling Date: 04/08/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	FIELD CODE	PHENOLS (mg/L)	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	ALKALINITY (mg/L as CaCo3) CO3	CN- (mg/L)
T20247	Quarterly RO Reject	<0.1	234	2.3	899	255	0	<0.01
QC	Quality Control	0.4	496	2.03	19.7	---	---	0.102
% Precision		100	100	99	95	100	100	100
% Extraction Accuracy		99	98	105	112	---	---	97
% Instrument Accuracy		99	99	103	98	---	---	101
DETECTION LIMIT		0.1	1	0.1	1	10	---	0.01

METHODS: EPA 375.4, 310.1, 340.2, 335.2; 4500 Cl-B, 420.2.
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 20.0 mg/L SULFATE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-2-94
Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

April 15, 1994
Receiving Date: 04/09/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 04/09/94
Sampling Date: 04/08/94
Sample Condition: I & C
Sample Received by: McD
Project Name: NA

EPA 624 Compounds (ppb)	T20247 Quarterly RO Reject	Detection Limit	QC	%P	%EA	%IA
Chloromethane	ND	1	40	100	80	100
Vinyl chloride	ND	2	61	100	122	88
Bromomethane	ND	1	52	100	104	98
Chloroethane	ND	1	57	100	114	90
1,1-Dichloroethene	ND	2	54	100	108	114
Methylene chloride	ND	1	42	100	84	84
trans-1,2-Dichloroethene	ND	1	46	100	92	74
1,1-Dichloroethane	ND	1	53	100	106	86
Chloroform	ND	1	57	100	114	86
1,1,1-Trichloroethane	ND	1	61	100	122	76
1,2-Dichloroethane	ND	2	55	100	110	74
Benzene	ND	0.2	58	92	116	116
Carbon Tetrachloride	ND	10	48	100	96	94
1,2-Dichloropropane	ND	2	43	100	86	80
Trichloroethene	ND	2	45	100	90	86
Bromodichloromethane	ND	1	40	100	80	112
trans-1,3-Dichloropropene	ND	2	44	100	88	82
Toluene	ND	0.5	47	96	94	78
1,1,2-Trichloroethane	ND	1	39	100	78	76
Dibromochloromethane	ND	1	49	100	98	98
Tetrachloroethene	ND	2	51	100	102	106
Chlorobenzene	ND	1	51	100	102	100
Ethylbenzene	ND	0.5	46	98	92	90
Bromoform	ND	1	38	99	76	70
1,1,2,2-Tetrachloroethane	ND	1	48	100	96	90
Acentonitrile	ND	30	NR	100	NR	NR
Acrylonitrile	ND	30	NR	100	NR	NR

NAVAJO REFINING
Project Location: Artesia, NM

EPA 624 Compounds (ppb)	T20247 Quarterly RO Reject	Detection Limit	QC	%P	%EA	%IA
1,2-Dichloroethene	ND	10	NR	100	NR	NR
Acrolein	ND	30	NR	100	NR	NR
2-Chloroethyl vinyl ether	ND	10	NR	100	NR	NR

	% RECOVERY
1,2-Dichloroethane-d4 SURR	86
Toluene-d8 SURR	93
4-Bromofluorobenzene SURR	94

***ND = Not Detected**

METHODS: EPA 624.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-2-94
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

May 02, 1994
Receiving Date: 04/09/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 04/17/94
Sampling Date: 04/08/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	Pb (ppm)	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Se (ppm)	Ag (ppm)	Ni (ppm)	Be (ppm)	V (ppm)	B (ppm)
T20247	Quarterly RO Reject	<0.1	<0.1	<0.1	<0.01	<0.01	<0.2	<0.01	<0.05	<0.05	<0.05	<0.05
QC	Quality Control	5.1	5.0	106.6	5.12	5.27	5.2	5.1	5.04	4.97	5.3	9.96
DETECTION LIMIT		0.1	0.1	0.1	0.01	0.01	0.2	0.01	0.05	0.05	0.05	0.05
% Precision		100	100	103	100	100	100	100	100	100	100	100
% Extraction Accuracy		96	100	102	102	96	102	100	95	96	96	104
% Instrument Accuracy		102	102	107	102	105	104	103	101	99	101	100

TA#	FIELD CODE	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)	Hg (ppm)
T20247	Quarterly RO Reject	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.5	<0.001
QC	Quality Control	4.99	5.23	5.05	10.2	5.09	5.05	5.04	10.0	0.020
DETECTION LIMIT		0.05	0.05	0.01	0.1	0.05	0.05	0.05	0.5	0.001
% Precision		100	100	100	100	100	100	100	100	100
% Extraction Accuracy		91	99	97	104	94	97	92	100	103
% Instrument Accuracy		100	105	101	102	102	101	101	102	100

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Mo, Cr, Zn, Cd, Pb, Ni, Be, Fe, Co, Mn, V, Cu, Ag; 100.0 ppm Ba; 10.0 ppm Al, B, U; 0.020 ppm Hg.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-2-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

May 02, 1994
Receiving Date: 04/09/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 04/11/94
Sampling Date: 04/08/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	FIELD CODE	BOD5 (mg/L)	TSS (mg/L)	pH (s.u.)
T20247	Quarterly RO Reject	<3	14	7.29

QUALITY CONTROL SUMMARY

BOD5 Precision = 100%
BOD5 Instrument Accuracy = 88%
TSS Precision = 96%
pH Precision = 100%

METHODS: EPA 150.1, 405.1, 160.2.

5-2-94

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

May 03, 1994
Receiving Date: 04/09/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 04/17/94
Sampling Date: 04/08/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T20247	Quarterly RO Reject	4.1	161	468	144
QC	Quality Control	103.2	19.7	19.3	20.3
Detection Limit		0.1	0.1	0.05	0.1
% Precision		101	101	101	98
% Extraction Accuracy		103	101	100	102
% Instrument Accuracy		103	98	97	101

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-3-94
Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

May 02, 1994
Receiving Date: 04/09/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 04/11/94
Sampling Date: 04/08/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	FIELD CODE	COLIFORM (/100mL)
T20247	Quarterly RO Reject	Not Found

METHODS: EPA 600/8-78-017.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-2-94
DATE

TRACE ANALYSIS, INC.
A Laboratory for Advanced Environmental Research and Analysis

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #:
FAX #:

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location: Artesia NM
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
24249	Quarterly ED Reject	14		X						X	X	X	X	4/8/94	14:30				"See List"				
48	RA-2723 (offsite)	2	40ml	X							X	X		4/8/94	15:00	X			~~See List~~				

SPECIAL HANDLING: Turn around # of days; Fax ASAP; Report TWC direct; Hold

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	4/8/94	16:30	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

April 28, 1994
Receiving Date: 04/22/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 04/22/94
Sampling Date: 04/21/94
Sample Condition: Intact & Cool
Sample Received by: MS
Project Name: NA

TA#	Field Code	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	Alkalinity CARBONATE (as CaCO3) (mg/L)	Alkalinity BICARBONATE (as CaCO3) (mg/L)
T20683	RO Reject Bi-Weekly	257	<0.1	1,622	0	306
QC	Quality Control	501	2.03	20.5	---	---
% Precision		100	100	100	---	100
% Extraction Accuracy		99	106	94	---	---
% Instrument Accuracy		100	103	93	---	---
DETECTION LIMIT		1	0.1	1	---	5

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 30.0 mg/L SULFATE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

4-28-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

April 28, 1994
Receiving Date: 04/22/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 04/26/94
Sampling Date: 04/21/94
Sample Condition: Intact & Cool
Sample Received by: MS
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	Pb (ppm)	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Se (ppm)	Ag (ppm)	Ni (ppm)	Be (ppm)	V (ppm)	B (ppm)
T20683	RO Reject Bi-Weekly	<0.1	<0.1	<0.05	<0.01	<0.01	<0.2	<0.01	<0.05	<0.05	<0.05	<0.05
QC	Quality Control	4.88	5.1	100.6	5.02	4.81	5.2	5.18	5.06	4.86	4.87	10.56
DETECTION LIMIT		0.1	0.1	0.05	0.01	0.01	0.2	0.01	0.05	0.05	0.05	0.05
% Precision		100	100	100	100	100	100	100	100	100	100	100
% Extraction Accuracy		97	99	98	102	103	95	104	98	94	101	100
% Instrument Accuracy		98	102	101	100	96	103	102	101	97	97	106

TA#	FIELD CODE	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)	Hg (ppm)
T20683	RO Reject Bi-Weekly	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.5	<0.001
QC	Quality Control	4.82	4.71	4.97	9.96	4.92	5.21	5.25	9.7	0.020
DETECTION LIMIT		0.05	0.05	0.01	0.1	0.05	0.05	0.05	0.5	0.001
% Precision		100	100	100	100	100	100	100	92	100
% Extraction Accuracy		98	96	94	101	96	103	101	96	103
% Instrument Accuracy		96	94	99	100	98	104	105	99	100

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Mo, Cr, Zn, Cd, Pb, Ni, Be, Fe, Co, Mn, V, Cu, Ag; 100.0 ppm Ba; 10.0 ppm Al, B; 9.7 ppm U; 0.020 ppm Hg.

BS
Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

4-28-94
DATE

TRACEANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

April 28, 1994
Receiving Date: 04/22/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 04/27/94
Sampling Date: 04/21/94
Sample Condition: Intact & Cool
Sample Received by: MS
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T20683	RO Reject Bi-Weekly	4.9	177	474	171
QC	Quality Control	102.4	19.4	20.2	20.0
Detection Limit		0.1	0.1	0.05	0.1
% Precision		96	103	98	95
% Extraction Accuracy		107	104	99	92
% Instrument Accuracy		102	97	101	100

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

4-28-94
Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining

Project #:
Project Name :

Project Location:
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
20683	RO Reject Bi-wkly	2		X							X	X		4/21/94	13:00				"See List"				
84	RA-2723	2		X							X	X		"	13:15	X							
85	RA-313	2		X							X	X		"	13:30	X							
86	RA-314	2		X							X	X		"	13:45	X							
87	RA-4196	2		X							X	X		"	14:00	X							
88	RA-307	2		X							X	X		"	14:15	X							
89	RA-4798	2		X							X	X		"	14:30	X							
90	RA-1331	2		X							X	X		"	14:45	X							
91	RA-1227	2		X							X	X		"	15:00	X							

SPECIAL HANDLING

Turn around # of days	Fax ASAP	Report TWC direct	Hold

Relinquished by: Darrell Moore	**Date:** 4/21/94	**Times:** 16:30	**Received by:**
Relinquished by:	**Date:**	**Times:**	**Received by:**
Relinquished by:	**Date:** 4-22-94	**Times:**	**Received by Laboratory:** MS CF

REMARKS

OIL CONSERVATION DIVISION
RECEIVED
'94 MAY

REFINING COMPANY

TELEPHONE
(505) 748-3311

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

May 13, 1994

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed is a summary of the data on our RO Reject analysis. We are currently sampling this stream every two weeks at a cost of $640.00. We feel that these results have shown that this water is doing no harm to the environment and that bi-weekly sampling is excessive. We would like to propose continuing the quarterly sampling and doing away with the bi-weekly sampling. This would save Navajo not only some money but also some man-hours without affecting the quality of the ground water.

As you can see, the analysis from the reject has been very consistent with only two busts on fluoride, five on aluminum, and two on chloride. The piping to the sample point is aluminum which may help explain the hits on that metal.

In your original letter approving this discharge, OCD agreed to review the sampling requirements after some data had been built up. We would appreciate your looking into this matter. Thank you for your time.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

Encl.

BI-WEEKLY
RO REJECT ANALYSIS

		Limits					QRTLY							QRTLY						QRTLY	
DATE SAMPLED			05/17/93	06/03/93	06/15/93	07/02/93	08/11/93	09/21/93	10/21/93	11/12/93	11/18/93	12/02/93	12/17/93	01/12/94	01/26/94	02/16/94	02/28/94	03/10/94	03/30/94	04/08/94	04/21/94
SODIUM	mg/l	no limit	NM	125	134	123	137	136	143	156	318	159	154	154	145	193	144	134	210	144	171
POTASSIUM	mg/l	no limit	NM	3.4	3.9	3	7	3	4	4.6	4.5	4.9	3.1	3	3	3.9	3.4	3.9	4.2	4.1	4.9
CALCIUM	mg/l	no limit	NM	442	448	413	511	542	515	511	605	513	510	480	528	513	426	360	503	468	474
MAGNESIUM	mg/l	no limit	NM	143	146	148	166	175	167	173	180	177	175	160	186	184	147	132	136	161	177
CHLORIDE	mg/l	275 mg/l	254	237	227	212	192	214	218	261	257	266	266	269	278	267	269	227	304	234	257
SULFATE	mg/l	2661 mg/l	1640	1520	1650	1660	1570	1610	1500	1517	1218	2080	2235	1559	1803	102	38	1473	1458	899	1622
CARBONATE	mg/l	no limit	NM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BICARBONATE	mg/l	no limit	NM	328	311	376	348	428	389	311	347	368	317	367	322	332	709	286	265	255	306
FLUORIDE	mg/l	2.5 mg/l	2.2	1.8	1.6	1.7	2.3	NM						2.8	2.7	2.24	2.2	2.2	2.4	2.3	ND
METALS																					
AL	mg/l	.087 mg/l	ND	0.14	ND	ND	ND	0.1	0.6	ND	ND	ND	ND	ND	ND	0.2	ND	0.4	ND	ND	ND
AS	mg/l	.1 mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BE	mg/l	.018 mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BA	mg/l	1 mg/l	0.06	0.06	0.06	0.06	0.04	0.05	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	ND	ND
B	mg/l	.75 mg/l	0.08	0.09	0.1	0.07	ND	ND	ND	ND	ND	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
CD	mg/l	.010 mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CR	mg/l	.05 mg/l	0.01	ND	ND	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CO	mg/l	.05 mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CU	mg/l	1 mg/l	0.03	ND	0.02	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SE	mg/l	.012 mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AG	mg/l	.0004 mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
V	mg/l	.282 mg/l	ND	ND	0.01	ND	0.01	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZN	mg/l	10 mg/l	0.02	ND	0.02	0.02	0.04	0.03	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RADIUM 226	pCi/l	30 pCi/L					0.6+/- 0.4							ND	NM	NM	NM	NM	ND	ND	NM
RADIUM 228	pCi/l	30 pCi/L					ND							ND	NM	NM	NM	NM	ND	ND	NM
U	mg/l	5 mg/l	ND	ND	ND	0.006	0.1	ND	ND	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MO	mg/l	1 mg/l	0.2	ND	0.16	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MN	mg/l	.20 mg/l					ND							0.34			ND	ND	ND	ND	ND
PB	mg/l	.006 mg/l					0.02							ND			ND	ND	ND	ND	ND
NI	mg/l	.20 mg/l					0.01							ND			0.02	ND	ND	ND	ND
FE	mg/l	1 mg/l					ND							0.05			ND	ND	ND	ND	ND
HG	mg/l	.000042 mg/l					ND							ND			ND	ND	ND	ND	ND
NO3-N	mg/l													0.8						0.8	
pH		6.6 - 8.6					7							7.26						7.29	
PHENOLS	mg/l	.005 mg/l												ND						ND	
COD	mg/l	125 mg/l					ND							22						49	
NH3-N	mg/l	.00007 mg/l												0.1							
CN-	mg/l	.018 mg/l					ND							ND						ND	
FECAL COLIFORM							ND							ND						Not Found	
BOD5	mg/l						ND							ND						ND	
TSS	mg/l						4							13						14	
CONDUCTIVITY							3790														
TDS	mg/l	4555 mg/l					3100														
ALKALINTY AS CaCO3	mg/l						286														
HARDNESS AS CaCO3	mg/l						1960														
TOTAL WATER DISCHARGED														35327141							
EAGLE DRAW														4342921							
FARM														30984220							

NAVAJO REFINING COMPANY

TELEPHONE
(505) 748-3311

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

OIL CONSERVATION DIVISION
RECEIVED
'94 APR 25 AM 8 50

April 21, 1994

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our March 30, 1994 sampling of the reverse osmosis reject water that is being put into Eagle Creek and/or on our farm. If there are any questions, please call me at (505) 748-3311.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

Encl.

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

April 07, 1994
Receiving Date: 03/31/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 04/04/94
Sampling Date: 03/30/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	Pb (ppm)	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Se (ppm)	Ag (ppm)	Hg (ppm)	Ni (ppm)	Be (ppm)	V (ppm)
T19928	Bi-Weekly RO Reject	<0.1	<0.1	0.12	<0.01	<0.01	<0.2	<0.01	<0.001	<0.05	<0.05	<0.05
QC	Quality Control	4.7	4.8	96.0	5.00	4.89	4.9	5.04	0.020	5.06	5.03	4.83
DETECTION LIMIT		0.1	0.1	0.05	0.01	0.01	0.2	0.01	0.001	0.05	0.05	0.05
% Precision		100	100	102	100	100	100	100	100	100	100	100
% Extraction Accuracy		93	100	105	99	99	103	95	100	100	104	101
% Instrument Accuracy		95	96	96	100	98	98	101	100	101	101	97

TA#	FIELD CODE	B (ppm)	Cu (ppm)	Fe (ppm)	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)
T19928	Bi-Weekly RO Reject	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.01	<0.05	<0.5
QC	Quality Control	9.5	5.24	5.24	4.83	9.5	5.41	5.22	4.99	9.9
DETECTION LIMIT		0.05	0.05	0.05	0.01	0.1	0.05	0.01	0.05	0.5
% Precision		100	100	100	100	100	100	100	100	100
% Extraction Accuracy		89	104	106	98	91	107	104	99	102
% Instrument Accuracy		95	105	105	97	95	108	104	100	101

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Mo, Cr, Zn, Cd, Pb, Ni, Be, Fe, Co, Mn, V, Cu, Ag; 100.0 ppm Ba; 10.0 ppm Al, B; 9.8 ppm U; 0.020 ppm Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

4-10-94
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

April 07, 1994
Receiving Date: 03/31/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 04/04/94
Sampling Date: 03/30/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T19928	Bi-Weekly RO Reject	4.2	186	503	210
QC	Quality Control	100	20.1	19.8	20.4
Detection Limit		0.1	1.0	0.5	1.0
% Precision		103	100	101	102
% Extraction Accuracy		111	105	103	101
% Instrument Accuracy		100	100	99	102

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

4-10-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

April 08, 1994
Receiving Date: 03/31/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 04/04/94
Sampling Date: 03/30/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TA#	Field Code	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	Alkalinity CARBONATE (mg/L)	Alkalinity BICARBONATE (as CaCO3) (mg/L)
T19928	Bi-Weekly RO Reject	304	2.4	1,458	0	265
QC	Quality Control	496	2.04	19.2	---	---
% Precision		100	100	92	---	100
% Extraction Accuracy		96	109	93	---	---
% Instrument Accuracy		100	102	97	---	---
DETECTION LIMIT		1	0.1	1	---	5

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 30.0 mg/L SULFATE.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

4-10-94
Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location: Artesia NM
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX					PRESERVATIVE METHOD					SAMPLING		ANALYSIS REQUEST													SPECIAL HANDLING				
				WATER	SOIL	AIR	SLUDGE	OTHER	HCL	HNO3	ICE	NONE	OTHER	DATE	TIME	BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI						Turn around # of days	Fax ASAP	Report TWC direct	Hold	
19914	RA-2723	2	40ml	X							X	X		3/30/94	1300	X																
19915	RA-4196	2	"	X							X	X		"	1330	X																
19916	RA-4798	2	"	X							X	X		"	1345	X																
19917	KWB-7	2	"	X							X	X		"	1400	X																
19918	RA-3353	2	"	X							X	X		"	1430	X																
19919	RA-3156	2	"	X							X	X		"	1445	X																
19920	KWB-3A	2	"	X							X	X		"	1455	X																
19921	KWB-9	2	"	X							X	X		"	1515	X																
19922	KWB-2A	2	"	X							X	X		"	1545	X																
19923	RA-313	2	"	X							X	X		"	1615	X																
19924	RA-314	2	"	X							X	X		"	1630	X																

Relinquished by: Darrell Moore	**Date:** 3/30/94	**Times:** 1800	**Received by:**	**REMARKS** 1/2
Relinquished by:	**Date:**	**Times:** I/C	**Received by:**	
Relinquished by:	**Date:** 3-31-94	**Times:**	**Received by Laboratory:** S.C	

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Phone #:

FAX #:

Company Name & Address:

Project #:

Project Name :

Project Location:

Sampler Signature:

ANALYSIS REQUEST

SPECIAL HANDLING

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX					PRESERVATIVE METHOD					SAMPLING		BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	Turn around # of days	Fax ASAP	Report TWC direct	Hold
				WATER	SOIL	AIR	SLUDGE	OTHER	HCL	HNO3	ICE	NONE	OTHER	DATE	TIME												
19925	RA-1331	2	40ml	X							X	X		3/30/94	1645	X											
19926	RA-307	2	"	X							X	X		"	1700	X											
19927	RA-1227	2	"	X							X	X		"	1715	X											
19928	Bi weekly RO Reject	2		X						(1) X	X	(2) X		"	1000		See list										
19929	Alky Cooling Twr.	2	40ml	X							X	X		"	1730	X											

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	3/30/94	1800	
Relinquished by:	Date:	Times:	Received by:
		1/C	
Relinquished by:	Date:	Times:	Received by Laboratory:
	3-31-94		S. C

REMARKS

2/2

NAVAJO REFINING COMPANY

TELEPHONE
(505) 748-3311

501 EAST MAIN STREET ° P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

March 25, 1994

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our March 10, 1994 sampling of the reverse osmosis reject water that is being put into Eagle Creek and/or on our farm. If there are any questions, please call me at (505) 748-3311.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

Encl.

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

March 21, 1994
Receiving Date: 03/11/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 03/15/94
Sampling Date: 03/10/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TA#	Field Code	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	Alkalinity CARBONATE (as CaCO3) (mg/L)	Alkalinity BICARBONATE (as CaCO3) (mg/L)
T19181	RO Reject Bi-Wkly	227	2.2	1,473	0	286
QC	Quality Control	499	2.05	20.0	---	---
% Precision		100	99	93	100	95
% Extraction Accuracy		100	96	92	---	---
% Instrument Accuracy		100	101	94	---	---
TECTION LIMIT		1	0.1	1	---	10

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 30.0 mg/L SULFATE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

3-21-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

March 21, 1994
Receiving Date: 03/11/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 03/18/94
Sampling Date: 03/10/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T19181	RO Reject Bi-Wkly	3.9	132	360	134
QC	Quality Control	97.5	20.8	19.3	18.8
Detection Limit		1.0	1.0	1.0	1.0
% Precision		91	99	100	98
% Extraction Accuracy		106	108	101	98
% Instrument Accuracy		97	104	97	94

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

BB

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

3-21-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR

March , 1994
Receiving Date: 03/11/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 03/18/94
Sampling Date: 03/10/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	As (ppm)	Se (ppm)	Mo (ppm)	Cr (ppm)	Zn (ppm)	Cd (ppm)	Pb (ppm)	Ni (ppm)	Be (ppm)	Fe (ppm)	Co (ppm)
T19181	RO Reject Bi-Wkly	<0.1	<0.1	<0.05	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01
QC	Quality Control	5.2	5.1	5.0	5.1	5.1	5.3	5.2	5.1	5.1	5.4	5.1
DETECTION LIMIT		0.1	0.1	0.05	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01
% Precision		100	100	100	100	100	100	100	100	100	100	100
% Extraction Accuracy		100	100	96	96	96	96	93	97	95	99	97
% Instrument Accuracy		104	101	101	102	102	105	104	103	101	108	103

TA#	FIELD CODE	Mn (ppm)	V (ppm)	Cu (ppm)	Ag (ppm)	Ba (ppm)	Al (ppm)	B (ppm)	U (ppm)	Hg (ppm)
T19181	RO Reject Bi-Wkly	<0.01	<0.05	<0.01	<0.01	<0.1	0.4	<0.05	<0.5	<0.001
QC	Quality Control	5.2	5.2	5.1	5.1	107.5	9.6	9.7	4.7	0.020
DETECTION LIMIT		0.01	0.05	0.01	0.01	0.1	0.1	0.05	0.5	0.001
% Precision		100	100	100	100	100	114	100	100	100
% Extraction Accuracy		100	99	101	96	---	102	99	96	101
% Instrument Accuracy		105	105	102	100	107	96	97	99	100

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Mo, Cr, Zn, Cd, Pb, Ni, Be, Fe, Co, Mn, V, Cu, Ag; 100.0 ppm Ba; 10.0 ppm Al, B; 9.8 ppm U; 0.020 ppm Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

3-21-94
DATE

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining

Project #:
Project Name :

Project Location: Artesia NM
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
19181	RO Reject Bi-Wkly	2		X					(-) X		(2) X	(-) X		3/10/94	11:30				"See List"				
19182	RA-2728	2	40ml	X							(2) X	(2) X		" "	11:45	X							
19183	RA-4196	2	40ml	X							(2) X	(2) X		" "	12:00	X							
19184	RA-4798	2	40ml	X							(2) X	(2) X		" "	12:15	X							

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	3/10/94	16:30	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date: 3-11-94	Times: 5.C.	Received by Laboratory:

REMARKS

SPECIAL HANDLING

Turn around # of days
Fax ASAP
Report TWC direct
Hold

NAVAJO REFINING COMPANY

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

TELEPHONE
(505) 748-3311

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

March 21, 1994

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

RECEIVED
MAR 2 3 1994
OIL CONSERVATION DIV.
SANTA FE

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our February 28, 1994 sampling of the reverse osmosis reject water that is being put into Eagle Creek and/or on our farm. If there are any questions, please call me at (505) 748-3311.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

Encl.

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining

Project #:
Project Name :

Project Location:
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME
16829	RA-2723	2	40ml	X							X	X		2/28/94	1315
30	RO Reject (Bi weekly)	2		X						X	X	X		2/28/94	1330
31	Alky Cooling Tower	2	40ml	X							X	X		2/28/94	1345

ANALYSIS REQUEST

BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
X			See List				
			EPA SW 846-9060				

SPECIAL HANDLING

- Turn around # of days
- Fax ASAP
- Report TWC direct
- Hold

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	2/28/94	16:30	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory: Cell IR 3-1-94

REMARKS

1 of 1

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

March 14, 1994
Receiving Date: 03/01/94
Sample Type: Water
Project No: NA
Project Location: NA

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 03/02/94
Sampling Date: 02/28/94
Sample Condition: Intact & Cool
Sample Received by: JC
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	As (ppm)	Se (ppm)	Cr (ppm)	Cd (ppm)	Pb (ppm)	Ag (ppm)	Ba (ppm)	Mo (ppm)	Zn (ppm)	Ni (ppm)	Be (ppm)
T18830	RO Reject (Biweekly)	<0.1	<0.1	<0.01	<0.01	<0.05	<0.01	<0.1	<0.05	<0.01	0.02	<0.01
QC	Quality Control	5.1	1.0	5.1	1.0	5.1	5.0	100.0	5.0	5.4	5.0	5.0
DETECTION LIMIT		0.1	0.1	0.01	0.01	0.05	0.01	0.1	0.05	0.01	0.01	0.01
% Precision		100	100	100	100	100	100	100	100	100	100	100
% Extraction Accuracy		104	113	99	97	---	80	---	92	104	96	98
% Instrument Accuracy		102	102	102	100	101	100	100	99	108	101	100

TA#	FIELD CODE	Fe (ppm)	Co (ppm)	Mn (ppm)	V (ppm)	Cu (ppm)	Al (ppm)	B (ppm)	U (ppm)	Hg (ppm)
T18506	Bi-Weekly RO Reject	<0.05	<0.01	<0.01	<0.05	<0.01	<0.1	<0.05	<0.5	<0.001
QC	Quality Control	5.0	4.6	4.9	4.9	4.9	10.2	9.6	9.8	0.020
DETECTION LIMIT		0.05	0.01	0.01	0.05	0.01	0.1	0.05	0.5	0.001
% Precision		100	100	100	100	100	100	10	100	100
% Extraction Accuracy		108	93	92	96	95	102	101	92	100
% Instrument Accuracy		100	92	98	99	98	102	96	100	100

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Mo, Cr, Zn, Cd, Pb, Ni, Be, Fe, Co, Mn, V, Cu, Ag; 100.0 ppm Ba; 10.0 ppm Al, B; 9.8 ppm U; 0.020 ppm Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

3-14-94
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

March 07, 1994
Receiving Date: 03/01/94
Sample Type: Water
Project No: NA
Project Location: NA

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 03/02/94
Sampling Date: 02/286/94
Sample Condition: Intact & Cool
Sample Received by: JC
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T18830	Bi-Weekly RO Reject	3.4	147	426	144
QC	Quality Control	99.0	19.5	19.3	19.3
Detection Limit		1.0	1.0	1.0	1.0
% Precision		100	95	95	95
% Extraction Accuracy		103	103	99	100
% Instrument Accuracy		99	97	96	97

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

3-14-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

March 14, 1994
Receiving Date: 03/01/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 03/08/94
Sampling Date: 02/28/94
Sample Condition: Intact & Cool
Sample Received by: JC
Project Name: NA

TA#	Field Code	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	Alkalinity CARBONATE (as CaCO3) (mg/L)	Alkalinity BICARBONATE (as CaCO3) (mg/L)
T18830	Bi-Weekly RO Reject	259	2.2	38	0	709
QC	Quality Control	499	1.9	20	---	---
% Precision		102	98	98	---	100
% Extraction Accuracy		99	106	115	---	---
% Instrument Accuracy		100	95	99	---	---
[illegible]ECTION LIMIT		1	0.1	1	---	10

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 30.0 mg/L SULFATE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

3-14-94
Date

NAVAJO REFINING COMPANY

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

TELEPHONE
(505) 748-3311

'94 MAR 3 AM 8 58 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

March 2, 1994

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our January 26, 1994 and February 16, 1994 sampling of the reverse osmosis reject water that is being put into Eagle Creek and/or on our farm. If there are any questions, please call me at (505) 748-3311.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

Encl.

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

February 07, 1994
Receiving Date: 01/27/94
Sample Type: Water
Project No: NA
Project Location: NA

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 01/31/94
Sampling Date: 01/26/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	As (ppm)	Se (ppm)	Cr (ppm)	Zn (ppm)	Cd (ppm)	Hg (ppm)	Pb (ppm)	Ni (ppm)	Fe (ppm)	V (ppm)	Mo (ppm)
T17865	Biweekly RO Reject	<0.1	<0.1	<0.01	<0.01	<0.01	<0.001	<0.05	<0.05	<0.05	<0.05	<0.05
QC	Quality Control	4.9	4.7	5.0	5.0	5.1	0.020	5.1	5.3	5.0	4.8	5.0
DETECTION LIMIT		0.1	0.1	0.01	0.01	0.01	0.001	0.05	0.05	0.05	0.05	0.05
% Precision		100	100	100	100	100	100	100	100	100	100	100
% Extraction Accuracy		108	108	101	104	106	100	101	104	101	102	99
% Instrument Accuracy		97	95	100	100	102	100	102	105	100	96	100

TA#	FIELD CODE	Be (ppm)	Co (ppm)	Mn (ppm)	Cu (ppm)	Al (ppm)	B (ppm)	Ag (ppm)	Ba (ppm)	V (ppm)
T17865	Biweekly RO Reject	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.01	<0.1	<0.5
QC	Quality Control	5.0	4.9	5.0	5.0	10.3	10.0	10.9	10.0	9.4
DETECTION LIMIT		0.01	0.01	0.01	0.01	0.1	0.05	0.01	0.1	0.5
% Precision		100	100	100	100	100	100	100	100	100
% Extraction Accuracy		99	94	97	102	100	98	96	96	98
% Instrument Accuracy		100	99	100	100	103	100	109	100	96

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Cr, Zn, Cd, Pb, Ni, Fe, V, Mo, Be, Co, Mn, Cu; 10.0 ppm Al, B, Ag, Ba; 9.8 ppm U; 0.020 ppm Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

2-7-94
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

February 01, 1994
Receiving Date: 01/27/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 01/28/94
Sampling Date: 01/26/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	FIELD CODE	CHLORIDE (mg/L)	SULFATE (mg/L)	FLUORIDE (mg/L)	Alkalinity CARBONATE (as CaCO3) (mg/L)	Alkalinity BICARBONATE (as CaCO3) (mg/L)
T17865	Biweekly RO Reject	278	1,803	2.7	0	322
QC	Quality Control	509	19.8	2.1	---	---
Detection Limit		1.0	1.0	0.1	---	---
% Precision		99	97	99	100	98
% Extraction Accuracy		98	130	109	---	---
% Instrument Accuracy		102	94	105	---	---

METHODS: EPA 375.4, 310.1, 340.1; 3500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 20.0 mg/L SULFATE; 2.0 mg/L FLUORIDE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

2/3/94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

February 01, 1994
Receiving Date: 01/27/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 01/31/94
Sampling Date: 01/26/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	Field Code	SODIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	POTASSIUM (mg/L)
T17865	Biweekly RO Reject	145	186	528	3
QC	Quality Control	18.6	20.1	20.1	101
Detection Limit		0.1	1	1	1
% Precision		100	97	99	100
% Extraction Accuracy		100	98	101	110
% Instrument Accuracy		93	101	101	101

METHODS: EPA 200.7.
QC: Blank Spiked with 100 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. ~~Blair~~ Leftwich
Director, Dr. Bruce McDonell

2/3/94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

February 23, 1994
Receiving Date: 02/17/94
Sample Type: Water
Project No: NA
Project Location: NA

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 02/21/94
Sampling Date: 02/16/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T18506	Bi-Weekly RO Reject	3.9	184	513	193
QC	Quality Control	100.8	19.8	19.9	17.8
Detection Limit		1.0	1.0	1.0	1.0
% Precision		94	97	98	105
% Extraction Accuracy		106	112	118	96
% Instrument Accuracy		101	99	99	89

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

BL

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

2-23-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

February 23, 1994
Receiving Date: 02/17/94
Sample Type: Water
Project No: NA
Project Location: NA

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 02/21/94
Sampling Date: 02/16/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	As (ppm)	Se (ppm)	Mo (ppm)	Cr (ppm)	Zn (ppm)	Cd (ppm)	Pb (ppm)	Ni (ppm)	Be (ppm)	Fe (ppm)	Co (ppm)
T18506	Bi-Weekly RO Reject	<0.1	<0.1	<0.05	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.01
QC	Quality Control	5.3	5.3	5.3	5.3	5.2	5.3	5.3	5.3	5.2	5.3	5.2
DETECTION LIMIT		0.1	0.1	0.05	0.01	0.01	0.01	0.05	0.01	0.01	0.05	0.01
% Precision		100	100	100	100	100	100	100	100	100	100	100
% Extraction Accuracy		111	110	104	104	106	108	101	101	100	100	101
% Instrument Accuracy		107	107	107	106	104	107	106	105	105	106	104

TA#	FIELD CODE	Mn (ppm)	V (ppm)	Cu (ppm)	Ag (ppm)	Ba (ppm)	Al (ppm)	B (ppm)	U (ppm)	Hg (ppm)
T18506	Bi-Weekly RO Reject	<0.01	<0.05	<0.01	<0.01	<0.1	0.2	<0.1	<0.5	<0.001
QC	Quality Control	5.1	5.2	5.1	5.0	103.0	10.3	10.4	9.6	0.020
DETECTION LIMIT		0.01	0.05	0.01	0.01	0.1	0.1	0.1	0.5	0.001
% Precision		100	100	100	100	100	100	100	100	100
% Extraction Accuracy		100	107	99	94	95	108	109	96	100
% Instrument Accuracy		103	103	102	100	103	103	104	98	100

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Mo, Cr, Zn, Cd, Pb, Ni, Be, Fe, Co, Mn, V, Cu, Ag; 100.0 ppm Ba; 10.0 ppm Al, B; 9.8 ppm U; 0.020 ppm Hg.

BS

2-23-94

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

February 24, 1994
Receiving Date: 02/17/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 02/17/94
Sampling Date: 02/16/94
Sample Condition: Intact & Cool
Sample Received by: SC
Project Name: NA

TA#	Field Code	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	Alkalinity CARBONATE (as CaCO3) (mg/L)	Alkalinity BICARBONATE (as CaCO3) (mg/L)
T18506	Bi-Weekly RO Reject	267	2.24	102	0	332
QC	Quality Control	499	0.93	20.2	---	---
% Precision		98	100	103	---	98
% Extraction Accuracy		98	---	133	---	---
% Instrument Accuracy		100	94	100	---	---
ETECTION LIMIT		1	0.1	1	---	10

METHODS: EPA 375.4, 310.1, 340.2; 4500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 30.0 mg/L SULFATE.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

2-24-94
Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-9311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location:
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	8240, 8270 Tot'l, Zn, Ni
18502	RA-4798	2		X								X		2/16/94	8:30	X								
18503	RA-2723	2		X								X		" "	9:00	X								
18504	RA-4196	2		X								X		" "	9:15	X								
18505	DAF Sludge	5					X					X		" "	9:30		X	~~5~~			~~List~~		X	X
18506	Bi weekly RO Project	2		X								X		" "	9:50			See List						

SPECIAL HANDLING: Turn around # of days; Fax ASAP; Report TWC direct; Hold

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	2/16/94	16:30	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date: 2-17-94	Times: 5c	Received by Laboratory:

REMARKS

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location:
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME
10966	RA-2723	2	40 ml	X								X		1/26/94	10:15
10967	RO Reject	2		X						(1) X		(1) X		1/26/94	14:00

ANALYSIS REQUEST

BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	Cations/Anions/Metals
X								
								X

SPECIAL HANDLING

- Turn around # of days
- Fax ASAP
- Report TWC direct
- Hold

Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory: 1/27/94 1/c

REMARKS

REFINING COMPANY

TELEPHONE
(505) 748-3311

501 EAST MAIN STREET P.O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

DIVISION
RECEIVED
94 FEB 23 AM 8 35

February 15, 1994

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our January 26, 1994 sampling of the reverse osmosis reject water that is being put into Eagle Creek and/or on our farm. If there are any questions, please call me at (505) 748-3311.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

Encl.

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

February 01, 1994
Receiving Date: 01/27/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 01/31/94
Sampling Date: 01/26/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	Field Code	SODIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	POTASSIUM (mg/L)
T17865	Biweekly RO Reject	145	186	528	3
QC	Quality Control	18.6	20.1	20.1	101
Detection Limit		0.1	1	1	1
% Precision		100	97	99	100
% Extraction Accuracy		100	98	101	110
% Instrument Accuracy		93	101	101	101

METHODS: EPA 200.7.
QC: Blank Spiked with 100 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

2/3/94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

February 01, 1994
Receiving Date: 01/27/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 01/28/94
Sampling Date: 01/26/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	FIELD CODE	CHLORIDE (mg/L)	SULFATE (mg/L)	FLUORIDE (mg/L)	Alkalinity CARBONATE (as CaCO3) (mg/L)	Alkalinity BICARBONATE (as CaCO3) (mg/L)
T17865	Biweekly RO Reject	278	1,803	2.7	0	322
QC	Quality Control	509	19.8	2.1	---	---
Detection Limit		1.0	1.0	0.1	---	---
% Precision		99	97	99	100	98
% Extraction Accuracy		98	130	109	---	---
% Instrument Accuracy		102	94	105	---	---

METHODS: EPA 375.4, 310.1, 340.1; 3500 Cl-B.
QC: Blank Spiked with 500 mg/L CHLORIDE; 20.0 mg/L SULFATE; 2.0 mg/L FLUORIDE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

2/3/94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

February 07, 1994
Receiving Date: 01/27/94
Sample Type: Water
Project No: NA
Project Location: NA

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 01/31/94
Sampling Date: 01/26/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	As (ppm)	Se (ppm)	Cr (ppm)	Zn (ppm)	Cd (ppm)	Hg (ppm)	Pb (ppm)	Ni (ppm)	Fe (ppm)	V (ppm)	Mo (ppm)
T17865	Biweekly RO Reject	<0.1	<0.1	<0.01	<0.01	<0.01	<0.001	<0.05	<0.05	<0.05	<0.05	<0.05
QC	Quality Control	4.9	4.7	5.0	5.0	5.1	0.020	5.1	5.3	5.0	4.8	5.0
DETECTION LIMIT		0.1	0.1	0.01	0.01	0.01	0.001	0.05	0.05	0.05	0.05	0.05
% Precision		100	100	100	100	100	100	100	100	100	100	100
% Extraction Accuracy		108	108	101	104	106	100	101	104	101	102	99
% Instrument Accuracy		97	95	100	100	102	100	102	105	100	96	100

TA#	FIELD CODE	Be (ppm)	Co (ppm)	Mn (ppm)	Cu (ppm)	Al (ppm)	B (ppm)	Ag (ppm)	Ba (ppm)	V (ppm)
T17865	Biweekly RO Reject	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.01	<0.1	<0.5
QC	Quality Control	5.0	4.9	5.0	5.0	10.3	10.0	10.9	10.0	9.4
DETECTION LIMIT		0.01	0.01	0.01	0.01	0.1	0.05	0.01	0.1	0.5
% Precision		100	100	100	100	100	100	100	100	100
% Extraction Accuracy		99	94	97	102	100	98	96	96	98
% Instrument Accuracy		100	99	100	100	103	100	109	100	96

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Cr, Zn, Cd, Pb, Ni, Fe, V, Mo, Be, Co, Mn, Cu; 10.0 ppm Al, B, Ag, Ba; 9.8 ppm U; 0.020 ppm Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

2-1-94
DATE

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location:
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	Cations/Anions/Metals
17866	RA-2723	2	40 ml	X								X		1/26/94	10:15	X								
17865	RO Reject	2		X						(1) X		(1) X		1/26/94	11:00									X

ANALYSIS REQUEST

SPECIAL HANDLING

Turn around # of days
Fax ASAP
Report TWC direct
Hold

Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory: 1/27/94 T/C

REMARKS

7

NAVAJO REFINING COMPANY

TELEPHONE
(505) 748-3311

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

OIL CONSERV
RECEIVED
'94 FE- 3 AM 8 25

February 2,1994

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87504

RE: 4th Quarter 1993 Report on RO Reject Water, Navajo Refining Co.,Eddy County, NM

Dear Roger,

Enclosed are the results of our quarterly sampling of the RO reject water that is being put on our farm and into Eagle Draw. For this quarter we discharged a total of 35,327,141 gallons. This is broken down as follows: 4,342,921 gallons discharged to Eagle Draw and 30,984,220 gallons discharged to the farm. Since we started discharging the RO reject water we have discharged a total of 105,614,171 gallons. This is broken down as follows:26,208,697 gallons have been put into Eagle Draw and 79,945,474 gallons have been put on the farm.

If you have any questions concerning this matter, please call me at 505-748-3311. Thank you for your time.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

encl.
cc:USEPA

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 18, 1994
Receiving Date: 01/13/94
Sample Type: Water
Project No: NA
Project Location: NA

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 01/14/94
Sampling Date: 01/12/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	As (ppm)	Se (ppm)	Cr (ppm)	Zn (ppm)	Cd (ppm)	Pb (ppm)	Ni (ppm)	Fe (ppm)	Mo (ppm)	Be (ppm)	Co (ppm)
T17398	Reverse Osmosis	<0.1	<0.1	<0.05	<0.01	<0.01	<0.05	<0.05	0.05	<0.05	<0.01	<0.05
QC	Quality Control	4.9	5.0	4.9	5.0	5.0	5.0	5.4	5.0	5.1	5.2	5.2
DETECTION LIMIT		0.1	0.1	0.05	0.01	0.01	0.05	0.05	0.05	0.05	0.01	0.05
% Precision		100	100	100	100	100	100	100	92	100	100	100
% Extraction Accuracy		99	100	95	96	97	104	105	100	112	111	109
% Instrument Accuracy		99	100	99	100	99	101	108	100	101	103	104

TA#	FIELD CODE	Mn (ppm)	V (ppm)	Cu (ppm)	Al (ppm)	B (ppm)	Ag (ppm)	Ba (ppm)	U (ppm)	Hg (ppm)
T17398	Reverse Osmosis	0.34	<0.05	<0.01	<0.2	<0.1	<0.01	<0.1	<0.5	<0.001
QC	Quality Control	5.3	5.3	5.2	10.0	10.0	10.4	9.7	9.5	0.020
DETECTION LIMIT		0.01	0.05	0.01	0.2	0.1	0.01	0.1	0.5	0.001
% Precision		97	100	100	100	100	100	100	100	100
% Extraction Accuracy		108	112	104	96	104	100	98	104	105
% Instrument Accuracy		106	105	104	100	100	104	97	97	100

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Cr, Zn, Cd, Pb, Ni, Fe, Mo, Be, Co, Mn, V, Cu; 10.0 ppm Al, B, Ag, Ba; 9.8 ppm U; 0.020 ppm Hg.

BS
Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

1-19-94
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

January 18, 1994
Receiving Date: 01/13/94
Sample Type: Water
Project No: NA
Project Location: NA

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 01/14/94
Sampling Date: 01/12/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T17398	Reverse Osmosis	3	160	480	154
QC	Quality Control	97	18.4	18.9	20.3
Detection Limit		1.0	1.0	0.1	1.0
% Precision		100	102	102	103
% Extraction Accuracy		96	97	99	99
% Instrument Accuracy		97	92	94	101

METHODS: EPA 200.7.
QC: Blank Spiked with 100 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

1-19-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

January 19, 1994
Receiving Date: 01/13/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 01/18/94
Sampling Date: 01/12/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	Field Code	NO3-N (mg/L)	pH (s.u.)	PHENOLS (mg/L)	COD (mg/L)	NH3-N (mg/L)	CN- (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)	Alkalinity (as CaCO3) CARBONATE (mg/L)	Alkalinity (as CaCO3) BICARBONATE (mg/L)
T17398	Reverse Osmosis	0.8	7.26	<0.1	22	0.1	<0.01	2.8	269	1,559	0	367
QC	Quality Control	2.0	7.01	18.6	122	2.03	0.03	2.07	495	20.6	---	---
% Precision		100	100	100	93	100	100	98	100	92	100	100
% Extraction Accuracy		88	100	84	89	101	94	114	99	122	---	---
% Instrument Accuracy		100	100	94	98	103	100	107	99	98	---	---

METHODS: EPA 353.3, 150.1, 420.3, 410.4, 350.3, 335.3, 340.1, 375.4, 310.1; 3500 Cl-B.
QC: Blank Spiked with 125 mg/L COD; 2.0 mg/L NH3-N, FLUORIDE, NO3-N; 0.03 mg/L CN-; 20.0 mg/L PHENOLS, SULFATE; 500 mg/L CHLORIDE.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

1-19-94
Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

January 21, 1994
Receiving Date: 01/13/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 01/14/94
Sampling Date: 01/12/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	FIELD CODE	FECAL COLIFORM (/100 ml)
T17398	Reverse Osmosis	Not Found

METHODS: EPA 600/8-78-017.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

1-21-94
DATE

TRACE ANALYSIS, INC.
A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

Analytical Results for
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

January 25, 1994 PO #

SAMPLE #	FIELD CODE	Date of Receiving	Date of Analysis	BOD5 (mg/l)	TSS (mg/l)
T17398	Reverse Osmosis	1/13/94	1/14/94	<3	13

QUALITY CONTROL SUMMARY

BOD5 Precision = 102%
BOD5 Instrument Accuracy = 131%
TSS Precision = 108%

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

1-25-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

January 18, 1994
Receiving Date: 01/13/94
Sample Type: Water
Project# NA
Project Location: NA

Analysis Date: 01/17/94
Sampling Date: 01/12/94
Sample Condition: I & C
Sample Received by: BL
Project Name: NA

EPA 624 Compounds (ppb)	T17398 Reverse Osmosis	Detection Limit	QC	%P	%EA	%IA
Dichlorodifluoromethane	ND	1	57	100	124	114
Chloromethane	ND	1	51	100	107	102
Vinyl chloride	ND	2	56	100	104	112
Bromomethane	ND	1	54	100	105	108
Chloroethane	ND	1	53	100	102	106
Trichlorofluoromethane	ND	1	44	100	88	88
1,1-Dichloroethene	ND	2	57	100	106	114
Iodomethane	ND	1	58	100	112	116
Carbon disulfide	ND	1	51	100	104	102
Methylene chloride	ND	1	43	100	90	86
trans-1,2-Dichloroethene	ND	1	46	100	111	92
1,1-Dichloroethane	ND	1	59	100	121	118
Vinyl acetate	ND	1	58	100	101	116
2-Butanone	ND	20	53	100	111	106
Chloroform	ND	1	55	100	104	110
1,1,1-Trichloroethane	ND	1	55	100	104	110
1,2-Dichloroethane	ND	2	55	100	102	110
Benzene	ND	0.2	59	100	121	119
Carbon Tetrachloride	ND	10	48	100	91	96
1,2-Dichloropropane	ND	2	42	100	82	84
Trichloroethene	ND	2	40	100	88	80
Bromodichloromethane	ND	1	56	100	102	112
cis-1,3-Dichloropropene	ND	2	46	100	89	92
4-Methyl-2-pentanone	ND	10	54	100	98	108
trans-1,3-Dichloropropene	ND	2	45	100	103	90
Toluene	ND	0.5	43	100	84	86
1,1,2-Trichloroethane	ND	1	40	100	86	80
2-Hexanone	ND	10	39	100	96	78

EPA 624 Compounds (ppb)	T17398 Reverse Osmosis	Detection Limit	QC	%P	%EA	%IA
Dibromochloromethane	ND	1	47	100	90	94
Tetrachloroethene	ND	2	53	100	106	106
Chlorobenzene	ND	1	49	100	102	98
Ethylbenzene	ND	0.5	47	100	92	94
m & p-Xylene	ND	0.5	97	100	96	97
Bromoform	ND	1	54	100	101	108
Styrene	ND	0.5	47	100	93	94
o-Xylene	ND	0.5	53	100	109	106
1,1,2,2-Tetrachloroethane	ND	1	49	100	105	98
1,4-Dichloro-2-butene	ND	5	55	100	107	110
1,4-Dichlorobenzene	ND	2	53	100	102	106
1,3-Dichlorobenzene	ND	2	51	100	108	102
1,2-Dichlorobenzene	ND	2	49	100	94	98
Acentonitrile	ND	30	NR	100	NR	NR
Acetone	ND	10	NR	100	NR	NR
3-Chloropropionitrile	ND	10	NR	100	NR	NR
Ethanol	ND	50	NR	100	NR	NR
Acrylonitrile	ND	30	NR	100	NR	NR
Allyl chloride	ND	5	NR	100	NR	NR
Methyl tert-Butyl Ether	ND	10	NR	100	NR	NR
Propionitrile	ND	5	NR	100	NR	NR
Allyl alcohol	ND	50	NR	100	NR	NR
Propargyl alcohol	ND	30	NR	100	NR	NR
Methacrylonitrile	ND	10	NR	100	NR	NR
1,2-Dichloroethene	ND	10	NR	100	NR	NR
2,2-Dichloropropane	ND	10	NR	100	NR	NR
Isobutyl alcohol	ND	50	NR	100	NR	NR
1,1-Dichloropropene	ND	10	NR	100	NR	NR
2-Hydroxypropionitrile	ND	20	NR	100	NR	NR
Acrolein	ND	30	NR	100	NR	NR
2-Chloroethyl vinyl ether	ND	10	NR	100	NR	NR
Dibromomethane	ND	0.1	NR	100	NR	NR
1,4-Dioxane	ND	1	NR	100	NR	NR
Methyl methacrylate	ND	10	NR	100	NR	NR
2-Chloroethanol	ND	50	NR	100	NR	NR
Epichlohydrin	ND	10	NR	100	NR	NR
Pyridine	ND	30	NR	100	NR	NR

EPA 624 Compounds (ppb)	T17398 Reverse Osmosis	Detection Limit	QC	%P	%EA	%IA
1,3-Dichloropropane	ND	10	NR	100	NR	NR
Ethyl methacrylate	ND	10	NR	100	NR	NR
1,2,3,5-Diepoxybutane	ND	20	NR	100	NR	NR
1,2-Dibromoethane	ND	0.1	NR	100	NR	NR
2-Picoline	ND	1	NR	100	NR	NR
1,1,1,2-Tetrachloroethane	ND	1	NR	100	NR	NR
1,2,3-Trichloropropane	ND	1	NR	100	NR	NR
Isopropylbenzene	ND	1	NR	100	NR	NR
Bromobenzene	ND	1	NR	100	NR	NR
n-Propylbenzene	ND	1	NR	100	NR	NR
2-Chlorotoluene	ND	1	NR	100	NR	NR
4-Chlorotoluene	ND	1	NR	100	NR	NR
1,3,5-Trimethylbenzene	ND	1	NR	100	NR	NR
Pentachloroethane	ND	0.1	NR	100	NR	NR
1,2,4-Trimethylbenzene	ND	1	NR	100	NR	NR
tert-Butylbenzene	ND	1	NR	100	NR	NR
Benzyl chloride	ND	1	NR	100	NR	NR
sec-Butylbenzene	ND	5	NR	100	NR	NR
Isopropyl toluene	ND	1	NR	100	NR	NR
n-Butylbenzene	ND	1	NR	100	NR	NR
1,3-Dichloro-2-propanol	ND	5	NR	100	NR	NR
1,2-Dibromo-3-chloropropane	ND	5	NR	100	NR	NR
1,2,3-trichlorobenzene	ND	10	NR	100	NR	NR
Naphthalene	ND	1	NR	100	NR	NR
1,2,4-trichlorobenzene	ND	10	NR	100	NR	NR
Hexachlorobutadiene	ND	10	NR	100	NR	NR
	% RECOVERY					
1,2-Dichloroethane-d4 SURR	71					
Toluene-d8 SURR	98					
4-Bromofluorobenzene SURR	82					

***ND = Not Detected**

METHODS: EPA 624.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

1-15-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

January 18, 1994
Receiving Date: 01/13/94
Sample Type: Water
Sample Condition: Intact & Cool
Sample Received by: BL
Analysis Date: 01/17/94

T17398

EPA 625 (ppm)	DL	Reverse Osmosis	QC	%P	%EA	%IA
N-Nitrosodimethylamine	0.001	ND	0.633	100	NR	126
Phenol	0.001	ND	0.569	100	NR	113
bis(2-Chloroethyl)ether	0.005	ND	0.523	100	NR	104
2-Chlorophenol	0.005	ND	0.529	100	NR	105
1,3-Dichlorobenzene	0.001	ND	0.541	100	117	108
1,4-Dichlorobenzene	0.001	ND	0.527	100	116	105
1,2-Dichlorobenzene	0.001	ND	0.545	100	NR	109
bis(2-chloroisopropyl)ether	0.005	ND	0.543	100	NR	108
n-Nitrosodi-n-propylamine	0.001	ND	0.558	100	NR	111
Hexachloroethane	0.001	ND	0.506	100	110	101
Nitrobenzene	0.001	ND	0.508	100	106	101
Isophorone	0.005	ND	0.516	100	NR	103
2-Nitrophenol	0.005	ND	0.466	100	NR	93
2,4-Dimethylphenol	0.005	ND	0.488	100	NR	97
bis(2-Chloroethoxy)methane	0.001	ND	0.518	100	NR	103
2,4-Dichlorophenol	0.005	ND	0.499	100	NR	99
1,2,4-Trichlorobenzene	0.001	ND	0.476	100	NR	95
Naphthalene	0.001	ND	0.466	100	NR	93
Hexachlorobutadiene	0.001	ND	0.471	100	106	94
4-Chloro-3-methylphenol	0.005	ND	0.520	100	NR	104
Hexachlorocyclopentadiene	0.001	ND	0.452	100	NR	90
2,4,6-Trichlorophenol	0.005	ND	0.466	100	98	93
2-Chloronaphthalene	0.001	ND	0.441	100	NR	88
Dimethylphthalate	0.001	ND	0.481	100	NR	96
Acenaphthylene	0.001	ND	0.479	100	NR	95
2,6-Dinitrotoluene	0.001	ND	0.418	100	NR	83
Acenaphthene	0.001	ND	0.503	100	NR	100
2,4-Dinitrophenol	0.005	ND	0.441	100	NR	88
4-Nitrophenol	0.005	ND	0.470	100	NR	94
2,4-Dinitrotoluene	0.001	ND	0.464	100	94	92

EPA 625 (ppm)	DL	Reverse Osmosis	QC	%P	%EA	%IA
Fluorene	0.001	ND	0.479	100	NR	95
Diethylphthalate	0.001	ND	0.518	100	NR	103
4-Chlorophenyl-phenylether	0.001	ND	0.489	100	NR	99
4,6-Dinitro-2-methylphenol	0.001	ND	0.442	100	NR	88
n-Nitrosodiphenylamine	0.001	ND	1.103	100	NR	103
Diphenylhydrazine	0.005	ND	0.558	100	NR	111
4-Bromophenyl-phenylether	0.001	ND	0.495	100	NR	99
Hexachlorobenzene	0.001	ND	0.467	100	102	93
Pentachlorophenol	0.005	ND	0.390	100	81	78
Phenanthrene	0.001	ND	0.521	100	NR	104
Anthracene	0.001	ND	0.532	100	NR	106
Di-n-butylphthalate	0.001	ND	0.505	100	NR	101
Fluoranthene	0.001	ND	0.492	100	NR	98
Benzidine	0.01	ND	0.474	100	NR	94
Pyrene	0.001	ND	0.499	100	NR	99
Butylbenzylphthalate	0.001	ND	0.520	100	NR	104
Benz[a]anthracene	0.001	ND	0.531	100	NR	106
3,3-Dichlorobenzidine	0.001	ND	0.464	100	NR	92
Chyrsene	0.001	ND	0.521	100	NR	104
bis(2-Ethylhexyl)phthalate	0.001	ND	0.550	100	NR	110
Di-n-octlphthalate	0.001	ND	0.462	100	NR	92
Benzo[b]fluoranthene	0.001	ND	0.628	100	NR	125
Benzo[k]fluoranthene	0.001	ND	0.429	100	NR	85
Benzo[a]pyrene	0.001	ND	0.544	100	NR	108
Indeno[1,2,3-cd]pyrene	0.001	ND	0.427	100	NR	85
Dibenz[a,h]anthracene	0.001	ND	0.479	100	NR	95
Benzo[g,h,i]perylene	0.001	ND	0.495	100	NR	99

ND = Not Detected

	% RECOVERY
2-Fluorophenol SURR	83
Phenol-d5 SURR	94
Nitrobenzene-d5 SURR	75
2-Fluorobiphenyl SURR	92
2,4,6-Tribromophenol SURR	70
Terphenyl-d14 SURR	109

METHODS: EPA 625.

Director, Dr. Blair Leftwich
Dr. Bruce McDonell

1-19-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

January 19, 1994
Receiving Date: 01/13/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 01/17/94
Sampling Date: 01/12/94
Sample Condition: I & C
Sample Received by: BL
Project Name: NA

ORGANOCHLORINE INSECTICIDES (mg/L)	T17398 Reverse Osmosis	Detection Limit	QC	%P	%EA	%IA
a-BHC	ND	0.00003	0.00020	100	NR	100
b-BHC	ND	0.00006	0.00022	100	NR	110
g-BHC	ND	0.00004	0.00021	100	NR	105
s-BHC	ND	0.00009	0.00020	100	NR	100
Heptachlor	ND	0.00003	0.00020	100	NR	100
Aldrin	ND	0.00004	0.00021	100	NR	105
Heptachlor epoxide	ND	0.00004	0.00023	100	NR	115
Endosulfan-1	ND	0.00004	0.00025	100	NR	125
Endosulfan-2	ND	0.00004	0.00022	100	NR	110
DDE	ND	0.00004	0.00021	100	NR	105
Dieldrin	ND	0.00002	0.00021	100	NR	105
Endrin	ND	0.00006	0.00020	100	NR	100
DDD	ND	0.00005	0.00026	100	NR	130
Endrin Aldehyde	ND	0.0001	0.00023	100	NR	115
Endosulfan Sulphate	ND	0.0005	0.00023	100	NR	115
DDT	ND	0.00005	0.00021	100	NR	105
Methoxychlor	ND	0.0001	0.00090	100	NR	113
Total PCB	ND	0.0001	0.0008	91	NR	103
Chlordane	ND	0.0002	0.0017	100	90	85
Toxaphene	ND	0.005	0.0200	100	110	100

ND = Not Detected

METHODS: EPA 608.

1-19-94

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location:
Sampler Signature:

ANALYSIS REQUEST / **SPECIAL HANDLING**

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
17388	~~Evap.~~ Evap. Pond Effl.	5		X						1	5	4		1/12/93	10:30		See List			Annual Effluent			
17389	KWB-3A	2	40ml	X								X		"	11:00	X							
17390	RA-3353	2	"	X								X		"	11:30	X							
17391	RA-4196	2	"	X								X		"	11:40	X							
17392	RA-2723	2	"	X								X		"	13:00	X							
17393	~~RA-4798~~ RA-4798	2	"	X								X		"	13:40	X							
17394	KWB-7	2	"	X								X		"	13:50	X							
17395	KWB-9	2	"	X								X		"	14:10	X							
17396	RA-3156	2	"	X								X		"	14:20	X							
17397	KWB-2A	2	"	X								X		"	14:30	X							
17398	Reverse Osmosis 624 66	14		X						2	14	5	7	"	15:00		See List.			Quarterly Reverse Osmosis			

Turn around # of days
Fax ASAP
Report TWC direct
Hold

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	1/12/93	16:30	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS
One vial for KWB-2A broke.

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

February 1, 1994
Receiving Date: 01/13/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 01/26/94
Sampling Date: 01/12/94
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: NA

TA#	FIELD CODE	Radium-226 (pCi/L)	Radium-228 (pCi/L)
T17398	Reverse Osmosis	<0.6	<1
Detection Limit		0.6	1

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

2-1-94
DATE

NAVAJO REFINING COMPANY

TELEPHONE
(505) 748-3311

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

OIL CONSERVATION DIVISION
RECEIVED
'94 JAN 13 AM 9 23

January 11, 1994

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our October 21, 1993, November 12, 1993, November 18, 1993, December 2,1993, and December 17, 1993 sampling of the reverse osmosis reject water that is being put into Eagle Creek and/or on our farm. If there are any questions, please call me at (505) 748-3311.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

cc:MFB, file

Encl.

jml
Inter-Mountain Laboratories, Inc.
Phone (409) 776-8945 FAX (409) 774-4705
11163 SH 30 College Station, Texas 77845

Project #93100813

QUALITY CONTROL REPORT
REFERENCE STANDARD ANALYSIS

CLIENT: NAVAJO REFINING COMPANY
PROJECT: N/A

Analyte	Standard I.D.	Found	Known	Units	Method Reference
Total Aluminum	ICP 7	1.0	1.0	mg/L	EPA 200.7
Total Arsenic	SPEX	0.010	0.010	mg/L	EPA 206.3
Total Barium	ICP 7	0.99	1.00	mg/L	EPA 200.7
Total Beryllium	ICP 19	1.03	1.00	mg/L	EPA 200.7
Total Boron	ICP 7	1.06	1.00	mg/L	EPA 200.7
Total Cadmium	SPEX	0.004	0.004	mg/L	EPA 213.2
Total Chromium	ICP 19	1.04	1.00	mg/L	EPA 200.7
Total Cobalt	ICP 19	0.97	1.00	mg/L	EPA 200.7
Total Copper	ICP 19	1.04	1.00	mg/L	EPA 200.7
Total Molybdenum	ICP 19	1.01	1.00	mg/L	EPA 200.7
Total Selenium	SPEX	0.010	0.010	mg/L	EPA 270.3
Total Silver	ICP 7	1.03	1.00	mg/L	EPA 200.7
Total Vanadium	ICP 19	0.94	1.00	mg/L	EPA 200.7
Total Zinc	ICP 19	1.00	1.00	mg/L	EPA 200.7

Reviewed by:

Mitch Swan
Supervisor--Water Operations

imi
Phone (409) 776-8945 FAX (409) 774-4705

Inter-Mountain Laboratories, Inc.
11183 SH 30 College Station, Texas 77845

Project #93100813

WATER QUALITY REPORT
TRACE METALS

CLIENT: NAVAJO REFINING COMPANY
PROJECT: N/A

Sample ID:	R.O. Reject	**Report Date:**	11/11/93
Laboratory Number:	W08816	**Date Sampled:**	10/21/93
Sample Matrix:	Water	**Date Received:**	10/25/93

Analyte	Concentration	Units	Detection Limit	Method Reference
Total Aluminum	0.6	mg/L	0.1	EPA 200.7
Total Arsenic	ND	mg/L	0.005	EPA 206.3
Total Barium	0.06	mg/L	0.01	EPA 200.7
Total Beryllium	ND	mg/L	0.01	EPA 200.7
Total Boron	ND	mg/L	0.05	EPA 200.7
Total Cadmium	ND	mg/L	0.002	EPA 213.2
Total Chromium	ND	mg/L	0.02	EPA 200.7
Total Cobalt	ND	mg/L	0.02	EPA 200.7
Total Copper	ND	mg/L	0.01	EPA 200.7
Total Molybdenum	ND	mg/L	0.05	EPA 200.7
Total Selenium	ND	mg/L	0.005	EPA 270.3
Total Silver	ND	mg/L	0.01	EPA 200.7
Total Vanadium	ND	mg/L	0.01	EPA 200.7
Total Uranium	ND	mg/L	0.2	EPA 200.7
Total Zinc	0.05	mg/L	0.01	EPA 200.7

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

Reviewed by:

Mitch Swan
Supervisor--Water Operations

imL
Phone (409) 776-8945 FAX (409) 774-4705
Inter-Mountain Laboratories, Inc.
11183 SH 30 College Station, Texas 77845

Project #93100813

WATER QUALITY REPORT
GENERAL CHEMISTRY

CLIENT: NAVAJO REFINING COMPANY
PROJECT: N/A

Sample ID:	R.O. Reject	**Report Date:**	11/11/93
Laboratory Number:	W08816	**Date Sampled:**	10/21/93
Sample Matrix:	Water	**Date Received:**	10/25/93

Analyte	Concentration mg/L	Concentration meq/L	Detection Limit mg/L	Method Reference
Calcium	515.	25.70	1.	EPA 200.7
Magnesium	167.	13.73	1.	EPA 200.7
Potassium	4.	0.10	1.	EPA 200.7
Sodium	143.	6.22	1.	EPA 200.7
Bicarbonate	389.	6.38	1.	EPA 310.1
Carbonate	0.	0.00	1.	EPA 310.1
Hydroxide	0.	0.00	1.	EPA 310.1
Chloride	218.	6.15	1.	EPA 325.2
Sulfate	1500.	31.23	1.	EPA 375.3
Major Cation Sum		45.75	N/A	Calc.
Major Anion Sum		43.76	N/A	Calc.
Cation/Anion Balance	% Difference =	2.23	N/A	Calc.

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

Reviewed by:

Mitch Swan
Supervisor--Water Operations

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

November 18, 1993
Receiving Date: 11/15/93
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 11/16/93
Sampling Date: 11/12/93
Sample Condition: Intact & Cool
Sample Received by: JT
Project Name: NA

TA#	Field Code	SODIUM (mg/l)	POTASSIUM (mg/l)	CALCIUM (mg/l)	MAGNESIUM (mg/l)	CHLORIDE (mg/l)	SULFATE (mg/l)	Alkalinity (as CaCO3) CARBONATE (mg/l)	Alkalinity (as CaCO3) BICARBONATE (mg/l)
T15608	RO Reject	156	4.6	511	173	261	1,517	0	311
QC	Quality Control	19.8	101	19.5	19.3	504	19.7	---	---
Detection Limit		1.0	1.0	0.1	1.0	1	1	---	---
% Precision		96	100	100	100	100	98	---	100
% Extraction Accuracy		101	102	92	92	99	106	---	---
% Instrument Accuracy		99	101	98	94	101	103	---	---

METHODS: EPA 200.7; 3500 Cl-B; 375.4, 310.1.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

11/19/93
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

November 19, 1993
Receiving Date: 11/15/93
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 11/18/93
Sampling Date: 11/12/93
Sample Condition: Intact & Cool
Sample Received by: JT
Project Name: NA

TOTAL METALS

TA#	Field Code	Al (mg/L)	As (mg/L)	Be (mg/L)	Ba (mg/L)	B (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	Cu (mg/L)
T15608	RO Reject	<0.1	<0.1	<0.01	<0.1	<0.05	<0.01	<0.01	<0.01	<0.01
QC	Quality Control	9.8	5.1	5.1	9.8	9.2	5.1	5.0	5.1	4.9
Detection Limit		0.1	0.1	0.01	0.1	0.05	0.01	0.01	0.01	0.01
% Precision		100	100	100	100	100	100	100	100	100
% Extraction Accuracy		97	98	97	94	94	92	92	99	93
% Instrument Accuracy		98	101	102	98	92	102	100	102	98

TA#	Field Code	Se (mg/L)	Ag (mg/L)	V (mg/L)	Zn (mg/L)	U (mg/L)	Mo (mg/L)
T15608	RO Reject	<0.1	<0.01	<0.05	<0.05	1.3	<0.05
QC	Quality Control	5.4	9.4	5.1	5.2	9.9	4.9
Detection Limit		0.1	0.01	0.05	0.05	1.0	0.05
% Precision		100	100	100	100	100	100
% Extraction Accuracy		106	96	98	98	102	95
% Instrument Accuracy		108	94	101	104	101	98

METHODS: EPA 200.7.
TOTAL METALS QC: Blank Spiked with 5.0 mg/L As, Se, Mo, Cr, Zn, Cd, Be, Co, V, Cu; 10.0 mg/L B, Al, Ba, Ag, U.

Director, ~~Dr.~~ Blair Leftwich
Director, Dr. Bruce McDonell

11/22/93
Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location: Artesia NM
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE 8020	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI per DM 11/22/93	Metals *	Major Cations/Anions *					Turn around # of days	Fax ASAP	Report TWC direct	Hold
15605	RA-2723	2	40ml	X							X			11/12/93	14:00	X									X							
15606	RA-4196	2	40ml	X							X			11/12/93	14:20	X									X							
15607	RA-4798	2	"	"							"			" "	14:40	X									X							
15608	RO Reject	2	1L	X							"			" "	13:30									X	X							
15609	BDAT	1	1L		X						"			" "	12:30			X		X	X		X			X						
15610	Travel Blank	1	40ml	X							"					X																

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	11/12/93	16:30	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date: 11-15-93	Times:	Received by Laboratory: Taylor CT

REMARKS: Metals are Al, As, Be, Ba, B, Cd, Cr, Co, Cu, Se, Ag, V, Zn, U, and Mo.
Major Cations/Anions are sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate, and bicarbonate.

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

November 24, 1993
Receiving Date: 11/19/93
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 11/20/93
Sampling Date: 11/18/93
Sample Condition: Intact & Cool
Sample Received by: YL
Project Name: NA

TA#	Field Code	SODIUM (mg/l)	POTASSIUM (mg/l)	CALCIUM (mg/l)	MAGNESIUM (mg/l)	CHLORIDE (mg/l)	SULFATE (mg/l)	Alkalinity CARBONATE (as CaCO3) (mg/l)	Alkalinity BICARBONATE (as CaCO3) (mg/l)
T15749	RO Reject	318	4.5	605	180	257	1,218	0	347
QC	Quality Control	20.9	102	21.2	19.6	508	20.5	---	---
Detection Limit		1.0	1.0	0.1	1.0	1	1	---	---
% Precision		102	102	99	99	100	100	100	98
% Extraction Accuracy		98	98	102	98	99	103	---	---
% Instrument Accuracy		104	102	106	98	102	102	---	---

METHODS: EPA 200.7; 3500 Cl-B; 375.4, 310.1.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

11-24-93
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

November 24, 1993
Receiving Date: 11/19/93
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 11/20/93
Sampling Date: 11/18/93
Sample Condition: Intact & Cool
Sample Received by: YL
Project Name: NA

TOTAL METALS

TA#	Field Code	As (mg/L)	Se (mg/L)	Mo (mg/L)	Cr (mg/L)	Zn (mg/L)	Cd (mg/L)	Be (mg/L)	Co (mg/L)	V (mg/L)
T15749	RO Reject	<0.1	<0.1	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.07
QC	Quality Control	5.1	5.0	5.0	5.2	5.0	5.0	4.9	5.0	5.2
Detection Limit		0.1	0.1	0.05	0.01	0.05	0.01	0.01	0.01	0.05
% Precision		100	100	100	100	100	100	100	100	100
% Extraction Accuracy		107	104	100	96	97	99	101	97	101
% Instrument Accuracy		102	100	100	104	99	100	99	101	104

TA#	Field Code	Cu (mg/L)	Al (mg/L)	B (mg/L)	Ag (mg/L)	Ba (mg/L)	U (mg/L)
T15749	RO Reject	<0.01	<0.1	<0.05	<0.01	<0.1	<1.0
QC	Quality Control	5.1	10.0	9.8	100	9.5	9.9
Detection Limit		0.01	0.1	0.05	0.01	0.1	1.0
% Precision		100	100	100	100	100	100
% Extraction Accuracy		95	101	101	105	99	102
% Instrument Accuracy		101	100	98	100	95	101

METHODS: EPA 200.7.
TOTAL METALS QC: Blank Spiked with 5.0 mg/L As, Se, Mo, Cr, Zn, Cd, Be, Co, V, Cu; 10.0 mg/L B, Al, Ba, Ag, U.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

11-24-93
Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co. 501 E. Main P.O. Box 159

Project #:
Project Name :

Project Location: Artesia NM.
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME
15749	RO Reject	2	1L	X							X	~~X~~		11/18/93	13:45
15750	Outfall Box	1	1L	X							X			"	14:15
15751	NE Corner Pond	1	1L	X							X			"	14:30
15752	RA-2723	2	40ml	X							X				

ANALYSIS REQUEST: BTEX, MTBE | TPH | TCLP Metals Ag As Ba Cd Cr Pb Hg Se | Total Metals Ag As Ba Cd Cr Pb Hg Se | TCLP Volatiles | TCLP Semi Volatiles | TDS | RCI | COD | Metals | Major Cations/Anions

X											~~X~~		X	X	X
											X		X		
											X		X		
											X				

SPECIAL HANDLING: Turn around # of days | Fax ASAP | Report TWC direct | Hold

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	11/18/93	16:30	
Relinquished by:	Date:	Times:	Received by:
	11-19-93		
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS: Metals are Al, As, Ba, B... Co, Cu, Se, Ag, V, Zn, U... Major Cations/Anions ... potassium, calcium, ... sulfate, carbonate, ...

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 08, 1993
Receiving Date: 12/03/93
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 12/07/93
Sampling Date: 12/02/93
Sample Condition: Intact & Cool
Sample Received by: YL
Project Name: NA

TA#	Field Code	SODIUM (mg/L)	POTASSIUM (mg/L)	CALCIUM (mg/L)	MAGNESIUM (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)	Alkalinity CARBONATE (as CaCO3) (mg/L)	Alkalinity BICARBONATE (as CaCO3) (mg/L)
T16120	RO Reject	159	4.9	513	177	266	2,080	0	368
QC	Quality Control	20.0	104	4.8	5.0	504	18.7	---	---
Detection Limit		1.0	1.0	1.0	1.0	1	1	---	---
% Precision		98	100	100	100	99	93	---	100
% Extraction Accuracy		96	105	101	104	99	87	---	---
% Instrument Accuracy		100	104	97	99	101	96	---	---

METHODS: EPA 200.7; 3500 Cl-B; 375.4, 310.1.
QC: Blank Spiked with 100 mg/L POTASSIUM; 5.0 mg/L CALCIUM, MAGNESIUM; 20.0 mg/L SODIUM, SULFATE; 500 mg/L CHLORIDE.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-8-93
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING

December 07, 1993
Receiving Date: 12/03/93
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 12/04/93
Sampling Date: 12/02/93
Sample Condition: Intact & Cool
Sample Received by: YL
Project Name: NA

TOTAL METALS

TA#	Field Code	Al (mg/L)	As (mg/L)	Be (mg/L)	Ba (mg/L)	B (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	Cu (mg/L)
T16120	RO Reject	<0.1	<0.1	<0.01	<0.1	0.3	<0.01	<0.01	<0.01	<0.01
QC	Quality Control	9.8	0.099	5.0	96.5	10.2	5.1	5.0	5.2	4.9
Detection Limit		0.1	0.1	0.01	0.1	0.1	0.01	0.01	0.01	0.01
% Precision		100	100	100	100	100	100	100	100	100
% Extraction Accuracy		92	108	104	100	98	108	98	103	99
% Instrument Accuracy		98	99	100	97	102	101	101	104	98

TA#	Field Code	Se (mg/L)	Ag (mg/L)	V (mg/L)	Zn (mg/L)	U (mg/L)	Mo (mg/L)
T16120	RO Reject	<0.1	<0.01	<0.05	<0.05	<1.0	<0.05
QC	Quality Control	0.103	5.0	5.0	5.0	9.5	5.2
Detection Limit		0.1	0.01	0.05	0.05	1.0	0.05
% Precision		100	100	100	100	100	100
% Extraction Accuracy		102	103	101	103	106	105
% Instrument Accuracy		103	99	100	100	97	103

METHODS: EPA 200.7.
TOTAL METALS QC: Blank Spiked with 5.0 mg/L Be, Cd, Cr, Co, Cu, Ag, V, Zn, Mo; 10.0 mg/L Al, B; 0.100 mg/L As, Se; 100 mg/L Ba; 9.8 mg/L U.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-8-93
Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location: Artesia NM
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	Metals	Major Cations/Anions	SPECIAL HANDLING: Turn around # of days	Fax ASAP	Report TWC direct	Hold
11117	RA-2723	2	40ml	X										12/2/93	13:45	X													
11118	RA-4196	2	40ml	X										12/2/93	14:00	X													
11119	RA-4798	2	40ml	X										12/2/93	14:15	X													
11120	DO Reject	2	1qt 1.5gal	X										12/2/93	16:00									X	X				

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	12/2/93	16:30	
Relinquished by:	Date:	Times:	Received by:
	12-3-93	9 A.M.	
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS: Metals are Al, As, Be, Ba, B, Cd, Cr, Co, Cu, Sc, Ag, V, Zn, U and Mo.
Major Cations/Anions are sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate, and bi-carbonate.

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 22, 1993
Receiving Date: 12/18/93
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 12/20/93
Sampling Date: 12/17/93
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TA#	Field Code	SODIUM (mg/l)	POTASSIUM (mg/l)	CALCIUM (mg/l)	MAGNESIUM (mg/l)	CHLORIDE (mg/l)	SULFATE (mg/l)	Alkalinity CARBONATE (as CaCO3) (mg/l)	Alkalinity BICARBONATE (as CaCO3) (mg/l)
T16759	RO Reject	154	3.1	510	175	266	2,235	0	317
QC	Quality Control	20.1	95.6	19.2	19.5	504	19.6	---	---
Detection Limit		1.0	1.0	0.1	1.0	1	1	---	---
% Precision		100	100	100	98	100	99	100	100
% Extraction Accuracy		100	96	106	108	99	116	---	---
% Instrument Accuracy		100	96	96	97	101	94	---	---

METHODS: EPA 200.7; 3500 Cl-B; 375.4, 310.1.
QC: Blank Spiked with 20.0 mg/L Mg, Ca, Na; 100.0 mg/L K.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-22-93
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

December 21, 1993
Receiving Date: 12/18/93
Sample Type: Water
Project No: NA
Project Location: NA

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 12/20/93
Sampling Date: 12/17/93
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: NA

TOTAL METALS

TA#	FIELD CODE	As (ppm)	Se (ppm)	Mo (ppm)	Cr (ppm)	Zn (ppm)	Cd (ppm)	Pb (ppm)	Ni (ppm)	Be (ppm)	Fe (ppm)	Co (ppm)
T16759	RO Reject	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.30	<0.05
QC	Quality Control	4.7	5.1	4.8	5.1	4.9	4.9	5.0	5.1	4.9	4.9	5.3
DETECTION LIMIT		0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
% Precision		100	100	100	100	100	100	100	100	100	102	100
% Extraction Accuracy		96	98	99	97	93	101	103	101	100	100	93
% Instrument Accuracy		94	103	96	102	98	98	100	102	98	98	106

TA#	FIELD CODE	Mn (ppm)	V (ppm)	Cu (ppm)	Al (ppm)	B (ppm)	Ag (ppm)	Ba (ppm)	U (ppm)	Hg (ppm)
T16759	RO Reject	<0.05	<0.1	<0.05	<0.5	<0.1	<0.01	<0.1	<0.5	<0.001
QC	Quality Control	5.1	5.2	4.7	9.7	9.6	10.0	9.9	10.0	0.020
DETECTION LIMIT		0.05	0.1	0.05	0.5	0.1	0.01	0.1	0.5	0.001
% Precision		100	100	100	100	100	100	100	100	100
% Extraction Accuracy		97	96	99	109	100	96	98	100	104
% Instrument Accuracy		102	104	95	97	96	100	99	102	100

METHODS: EPA 200.7, 245.1.
QC: Blank Spiked with 5.0 ppm As, Se, Mo, Cr, Zn, Cd, Pb, Ni, Be, Fe, Co, Mn, V, Cu; 10.0 ppm Al, B, Ag, Ba; 9.8 ppm 0.020 ppm Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-21-93
DATE

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore
Phone #: 505-748-3311
FAX #: 505-748-9077

Company Name & Address: Navajo Refining Co.

Project #:
Project Name :

Project Location:
Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX, MTBE	TPH	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	Major Cations/Anions - Metals	Turn around # of days	Fax ASAP	Report TWC direct	Hold
16758	RA-2723	2		X							X			12/17/93	13:30	X												
59	RO Reject	2		X						X	X			12/17/93	12:15									X				
60	Alky Cooling Tower	1		X							X		X	12/17/93	13.40		X											

Relinquished by:	Date:	Times:	Received by:
Darrell Moore	12/17/93	16:30	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory: 12/18/93

REMARKS

F/C

TELEPHONE
(505) 748-3311

OIL CONSE[illegible] DIVISION
RE[illegible]
'93 OC[illegible] 25 AM 9 39

REFINING COMPANY
501 EAST MAIN STREET ◦ P.O. DRAWER 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

October 21, 1993

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our September 21, 1993 sampling of the reverse osmosis reject water that is being put into Eagle Creek. If there are any questions, please call me at (505) 748-3311.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

DGM/te

Encl.

imi
Phone (409) 776-8945 FAX (409) 774-4705

Inter-Mountain Laboratories, Inc.
11183 SH 30 College Station, Texas 77845

Project #93090726

WATER QUALITY REPORT
GENERAL CHEMISTRY

CLIENT: NAVAJO REFINING COMPANY
PROJECT: N/A

Sample ID: R.O. Reject
Laboratory Number: W07819/G02316
Sample Matrix: Water

Report Date: 10/12/93
Date Sampled: 09/21/93
Date Received: 09/27/93

Analyte	Concentration mg/L	Concentration meq/L	Detection Limit mg/L	Method Reference
Calcium	542.	27.05	1.	EPA 200.7
Magnesium	175.	14.39	1.	EPA 200.7
Potassium	3.	0.08	1.	EPA 200.7
Sodium	136.	5.92	1.	EPA 200.7
Bicarbonate	428.	7.02	1.	EPA 310.1
Carbonate	0.	0.00	1.	EPA 310.1
Hydroxide	0.	0.00	1.	EPA 310.1
Chloride	214.	6.04	1.	EPA 325.2
Sulfate	1610.	33.52	1.	EPA 375.3
Major Cation Sum		47.43	N/A	Calc.
Major Anion Sum		46.57	N/A	Calc.
Cation/Anion Balance	% Difference =	0.91	N/A	Calc.

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

Reviewed by:

Mitch Swan
Supervisor--Water Operations

jml
Phone (409) 776-8945 FAX (409) 774-4705

Inter-Mountain Laboratories, Inc.
11183 SH 30 College Station, Texas 77845

Project #93090726

WATER QUALITY REPORT
TRACE METALS

CLIENT: NAVAJO REFINING COMPANY
PROJECT: N/A

Sample ID: R.O. Reject
Laboratory Number: W07819/G02316
Sample Matrix: Water
Report Date: 10/12/93
Date Sampled: 09/21/93
Date Received: 09/27/93

Analyte	Concentration	Units	Detection Limit	Method Reference
Total Aluminum	0.1	mg/L	0.1	EPA 200.7
Total Arsenic	ND	mg/L	0.005	EPA 206.3
Total Barium	0.05	mg/L	0.01	EPA 200.7
Total Beryllium	ND	mg/L	0.01	EPA 200.7
Total Boron	ND	mg/L	0.05	EPA 200.7
Total Cadmium	ND	mg/L	0.002	EPA 213.2
Total Chromium	ND	mg/L	0.02	EPA 200.7
Total Cobalt	ND	mg/L	0.02	EPA 200.7
Total Copper	ND	mg/L	0.01	EPA 200.7
Total Molybdenum	ND	mg/L	0.05	EPA 200.7
Total Nickel	ND	mg/L	0.01	EPA 200.7
Total Selenium	ND	mg/L	0.005	EPA 270.3
Total Silver	ND	mg/L	0.01	EPA 200.7
Total Vanadium	ND	mg/L	0.01	EPA 200.7
Total Uranium	ND	mg/L	0.2	EPA 200.7
Total Zinc	0.03	mg/L	0.01	EPA 200.7

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

Reviewed by:

Mitch Swan
Supervisor--Water Operations

Reviewed by:

Mitch Swan
Supervisor--Water Operations

Inter·Mountain Laboratories, Inc.
3304 Longmire
College Station, Texas 77845

QUALITY CONTROL REPORT - METHOD BLANK
VOLATILE AROMATIC HYDROCARBONS

Sample Number: MB0924V2
Sample Matrix: Water
Report Date: 09/24/93
Date Analyzed: 09/24/93

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Methyl tert-Butyl ether	ND	5.0
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
p,m-Xylene	ND	0.5
o-Xylene	ND	0.5

ND - Analyte not detected at stated detection limit

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	90%	70-115%

Reference: Method 5030A, Purge and Trap
Method 8020A, Aromatic Volatile Organics
SW-846, Test Methods for Evaluating Solid Waste, Final Update I, United States Environmental Protection Agency, July 1992.

Comments:

Mary Higginbotham
Analyst

Wendi M Rogers
Review

Inter Mountain Laboratories, Inc.
Phone (409) 776-8945 FAX (409) 774-4705
11183 SH 30 College Station, Texas 77845

Project #93090726

QUALITY CONTROL REPORT
REFERENCE STANDARD ANALYSIS

CLIENT: NAVAJO REFINING COMPANY
PROJECT: N/A

Analyte	Standard I.D.	Found	Known	Units	Method Reference
Total Aluminum	ICP 19	1.0	1.0	mg/L	EPA 200.7
Total Arsenic	SPEX	0.010	0.010	mg/L	EPA 206.3
Total Barium	ICP 19	0.99	1.00	mg/L	EPA 200.7
Total Beryllium	ICP 19	0.99	1.00	mg/L	EPA 200.7
Total Boron	ICP 7	1.03	1.00	mg/L	EPA 200.7
Total Cadmium	SPEX	0.004	0.004	mg/L	EPA 213.2
Total Chromium	ICP 19	1.10	1.00	mg/L	EPA 200.7
Total Cobalt	ICP 19	1.07	1.00	mg/L	EPA 200.7
Total Copper	ICP 19	1.03	1.00	mg/L	EPA 200.7
Total Molybdenum	ICP 19	1.09	1.00	mg/L	EPA 200.7
Total Nickel	ICP 19	1.09	1.00	mg/L	EPA 200.7
Total Selenium	SPEX	0.011	0.010	mg/L	EPA 270.3
Total Silver	ICP 7	1.06	1.00	mg/L	EPA 200.7
Total Vanadium	ICP 19	0.94	1.00	mg/L	EPA 200.7
Total Zinc	ICP 19	1.09	1.00	mg/L	EPA 200.7

Method 5030A, Purge and Trap

Reviewed by:

Mitch Swan
Supervisor--Water Operations

Analyst

Review

Ul-da

Inter- Mountain Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Navajo Refining Co.	Artesia NM

Sampler: (Signature)	Chain of Custody Tape No.
Daniel Moore	

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	BTEX 8020 MTBE	Metals	Major Cations/ Anions		Remarks
RA-2723	9/21/93	900	0693602315	Aqueous	2	X				
RO Reject	9/21/93	1400	0693602316	" "	2		+	+		Metals are Al, As, Be, Ba, B, Cd, Cr, Co, Cu, Se, Ag, V, Zn, U, and Mo
										Major Cations/Anions includes sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate and bicarbonate.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Daniel Moore	9/21/93	16:30	Barn J Flak	9/22/93	8:30
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by laboratory: (Signature)	Date	Time

Inter-Mountain Laboratories, Inc.

☐ 1633 Terra Avenue, Sheridan, Wyoming 82801, Telephone (307) 672-8945

☐ 1714 Phillips Circle, Gillette, Wyoming 82716, Telephone (307) 682-8945

☐ 2506 West Main Street, Farmington, NM 87401, Telephone (505) 326-4737

☐ 1160 Research Dr., Bozeman, Montana 59715, Telephone (406) 586-8450

☒ 11183 SH 30, College Station, TX 77845, Telephone (409) 776-8945

☐ 3304 Longmire Drive, College Station, TX 77845, Telephone (409) 774-4999

13963

TELEPHONE
(505) 748-3311

Navajo REFINING COMPANY

501 EAST MAIN STREET ◦ P.O. DRAWER 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

OIL CONSERVATION DIVISION
RECEIVED
'93 OCT 12 AM 9 49

October 8, 1993

Mr. Roger Anderson
Environmental Bureau
Oil Conservation Division
P.O. Box 2088
Santa Fe, N.M. 87502

Re: R.O. Reject Water

Dear Roger:

Enclosed please find the results of our quarterly sampling of the reverse osmosis reject water that is being discharged onto our farm and into Eagle Draw. Through September 30, 1993, we had discharged a total of 70,827,030 gallons. This is broken down as follows: 21,865,776 gallons discharged to Eagle Draw and 48,961,254 gallons discharged to our farm.

If you have any questions concerning this matter, please call me at 505-748-3311, extension 281.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

DGM/te

Encl.

jml
Inter-Mountain Laboratories, Inc.
Phone (409) 776-8945 FAX (409) 774-4705
11183 SH 30 College Station, Texas 77845

Project #93080598

WATER QUALITY REPORT
GENERAL CHEMISTRY

CLIENT: NAVAJO REFINING COMPANY
PROJECT: R.O. REJECT

Sample ID:	R.O. Reject	**Report Date:**	09/07/93
Laboratory Number:	W06456	**Date Sampled:**	08/11/93
Sample Matrix:	Water	**Date Received:**	08/12/93

Analyte	Concentration	Units	Detection Limit	Method Reference
pH (Lab)	7.0	s.u.	0.1	EPA 150.1
Conductivity (Lab)	3790.	umhos/cm	1.	EPA 120.1
Total Dissolved Solids (180 C)	3100.	mg/L	10.	EPA 160.1
Total Alkalinity (as CaCO3)	286.	mg/L	1.	EPA 310.1
Total Hardness (as CaCO3)	1960.	mg/L	1.	Calc.
Total Suspended Solids	4.	mg/L	4.	EPA 160.2
Nitrate as N	0.4	mg/L	0.1	EPA 352.1
Ammonia as N	ND	mg/L	0.1	EPA 350.1
Total Cyanide	ND	mg/L	0.01	EPA 335.3
Fluoride	2.3	mg/L	0.1	EPA 340.2
Total Residual Chlorine	0.2	mg/L	0.1	EPA 330.5
Biochemical Oxygen Demand	ND	mg/L	2.	EPA 405.1
Chemical Oxygen Demand	ND	mg/L	5.	EPA 410.2
Fecal Coliform	ND	mpn/100mL	2.	SM 9221 C.

Analyte	Concentration		Detection Limit	Method Reference
	mg/L	meq/L	mg/L	
Calcium	511.	25.50	1.	EPA 200.7
Magnesium	166.	13.65	1.	EPA 200.7
Potassium	7.	0.18	1.	EPA 200.7
Sodium	137.	5.96	1.	EPA 200.7
Bicarbonate	348.	5.70	1.	EPA 310.1
Carbonate	0.	0.00	1.	EPA 310.1
Hydroxide	0.	0.00	1.	EPA 310.1
Chloride	192.	5.42	1.	EPA 325.2
Sulfate	1570.	32.69	1.	EPA 375.3
Major Cation Sum		45.29	N/A	Calc.
Major Anion Sum		43.81	N/A	Calc.
Cation/Anion Balance	% Difference =	1.66	N/A	Calc.

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

Reviewed by:

Mitch Swan
Supervisor--Water Operations

ANALYTICAL SERVICES

Chain of Custody

Client Name/Address: Navajo Refining Co. 501 E. Main Artesia NM 88210

Send Report to: Darrell Moore

P.O. Number

Invoice to: Same as Above

Samplers (Signature): Darrell Moore

Project Number

Sta No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	Radium 226+228	BOD	F, Cl, SO4, pH*	Cyanide	TDS	TSS	NO3 as N	Fecal Coliform	Residual Cl	COD NH3 as N	Metals*	Remarks
1	8/11/93	9:57		X	RO Reject	1	X											
"	"	9:58		X	" "	2		X										
"	"	9:59		X	" "	1			X									*Major cations/anions
"	"	10:00		X	" "	1				X								includes sodium, potassium,
"	"	10:01		X	" "	1					X							calcium, magnesium, chloride,
"	"	10:02		X	" "	1						X						sulfate, carbonate and
"	"	10:03		X	" "	1							X					bicarbonate
"	"	10:04		X	" "	1								X				
"	"	10:05		X	" "	1									X			
"	"	10:06		X	" "	1										X		
"	"	10:07		X	" "	1											X	*Metals are Al, As, Be, Ba,
																		B, Cd, Cr, Co, Cu, Se, Ag,
																		V, Zn, U, and Mo

Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Darrell Moore	8/11/93 16:30	Lisa Mayfield 8/13/93 10:30	Lisa R. Mayfield	8/12/93	
Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Relinquished by (Signature)	Date / Time	Received for Laboratory by (Sig.)	Date / Time	Sample condition upon receipt:	
Method of Shipment: Fed-X				Cooler temperature upon receipt	

LAB 170 9206 (3 part)

jml Inter-Mountain Laboratories, Inc.
Phone (409) 776-8945 FAX (409) 774-4705
11183 SH 30 College Station, Texas 77845

Project #93080598

WATER QUALITY REPORT
TRACE METALS

CLIENT: NAVAJO REFINING COMPANY
PROJECT: R.O. REJECT

Sample ID: R.O. Reject
Laboratory Number: W06456
Sample Matrix: Water

Report Date: 09/07/93
Date Sampled: 08/11/93
Date Received: 08/12/93

Analyte	Concentration	Units	Detection Limit	Method Reference
Total Aluminum	ND	mg/L	0.1	EPA 200.7
Total Arsenic	ND	mg/L	0.005	EPA 206.3
Total Barium	0.04	mg/L	0.01	EPA 200.7
Total Beryllium	ND	mg/L	0.01	EPA 200.7
Total Boron	ND	mg/L	0.05	EPA 200.7
Total Cadmium	ND	mg/L	0.002	EPA 213.2
Total Chromium	ND	mg/L	0.02	EPA 200.7
Total Cobalt	ND	mg/L	0.02	EPA 200.7
Total Copper	ND	mg/L	0.01	EPA 200.7
Total Iron	ND	mg/L	0.05	EPA 200.7
Total Manganese	ND	mg/L	0.02	EPA 200.7
Total Lead	0.02	mg/L	0.01	EPA 200.7
Total Mercury	ND	mg/L	0.002	EPA 245.2
Total Molydenum	ND	mg/L	0.05	EPA 200.7
Total Nickel	0.01	mg/L	0.01	EPA 200.7
Total Selenium	ND	mg/L	0.005	EPA 270.3
Total Silver	ND	mg/L	0.01	EPA 200.7
Total Uranium	0.1	mg/L	0.1	EPA 200.7
Total Vanadium	0.01	mg/L	0.01	EPA 200.7
Total Zinc	0.04	mg/L	0.01	EPA 200.7
Radium 226	0.6 +\- 0.4	pCi/L	0.6	SW-846 9320
Radium 228	ND	pCi/L	1	SW-846 9320

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

Reviewed by:

Mitch Swan
Supervisor--Water Operations

Inter·Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

ORGANOCHLORINE PESTICIDES and PCBs

Client:	**NAVAJO REFINING CO.**		
Project Name:	Artesia, NM	Report Date:	09/21/93
Sample ID:	RO Reject	Date Sampled:	09/09/93
Laboratory ID:	0693G02288	Date Received:	09/10/93
Sample Matrix:	Water	Date Extracted:	09/14/93
Condition:	Cool, Intact	Date Analyzed:	09/15/93

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Aldrin	ND	0.05
alpha-BHC	ND	0.05
beta-BHC	ND	0.05
gamma-BHC	ND	0.05
delta-BHC	ND	0.05
Chlordane	ND	0.5
DDT	ND	0.05
Dieldrin	ND	0.05
Endosulfan I	ND	0.05
Endosulfan II	ND	0.05
Endosulfan Sulfate	ND	0.05
Endrin	ND	0.05
Endrin Aldehyde	ND	0.05
Heptachlor	ND	0.05
Heptachlor epoxide	ND	0.05
Toxaphene	ND	0.5
PCB-1016	ND	0.5
PCB-1221	ND	0.5
PCB-1232	ND	0.5
PCB-1242	ND	0.5
PCB-1248	ND	0.5
PCB-1254	ND	0.5
PCB-1260	ND	0.5

ND - Analyte not detected at stated detection limit

Reference: Method 608:Organochlorine Pesticides and PCBs
40 CFR, Part 136, Appendix A, November 1992.

Analyst

Review

Inter·Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

QUALITY CONTROL REPORT - METHOD BLANK
ORGANOCHLORINE PESTICIDES and PCBs

Client: **NAVAJO REFINING CO.**
Project Name: Artesia, NM
Sample ID: Method Blank
Laboratory ID: MB 660
Sample Matrix: Reagent Water

Report Date: 09/21/93
Date Extracted: 09/14/93
Date Analyzed: 09/15/93

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Aldrin	ND	0.01
alpha-BHC	ND	0.01
beta-BHC	ND	0.01
gamma-BHC	ND	0.01
delta-BHC	ND	0.01
Chlordane	ND	0.1
4,4'-DDD	ND	0.01
4,4'-DDE	ND	0.01
4,4'-DDT	ND	0.01
Dieldrin	ND	0.01
Endosulfan I	ND	0.01
Endosulfan II	ND	0.01
Endosulfan Sulfate	ND	0.01
Endrin	ND	0.01
Endrin Aldehyde	ND	0.01
Heptachlor	ND	0.01
Heptachlor epoxide	ND	0.01
Toxaphene	ND	0.1
Methoxychlor	ND	0.04
PCB-1016	ND	1.0
PCB-1221	ND	1.0
PCB-1232	ND	1.0
PCB-1242	ND	1.0
PCB-1248	ND	1.0
PCB-1254	ND	1.0
PCB-1260	ND	1.0

ND - Analyte not detected at stated detection limit

Reference: Method 608:Organochlorine Pesticides and PCBs
40 CFR, Part 136, Appendix A, November 1992.

Analyst

Review

Inter·Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

QUALITY CONTROL REPORT - MATRIX SPIKE

Method 8080 - ORGANOCHLORINE PESTICIDES & PCBs

Client: **NAVAJO REFINING CO.**
Project Name: Artesia, NM
Laboratory ID: DI SPK 659
Sample Matrix: Water

Report Date: 10/05/93
Date Extracted: 09/14/93
Date Analyzed: 09/15/93
and 09/23/93

Analyte	Spike added (ug/L)	Sample Result (ug/L)	Spike Result (ug/L)	Percent Recovery	Acceptance Limits, %
Lindane	2.00	ND	1.46	73%	19-140
Heptachlor	2.00	ND	1.49	75%	34-111
Heptachlor Epoxide	2.00	ND	1.63	82%	37-142
Endrin	2.00	ND	1.29	64%	30-147
Methoxychlor	20.0	ND	19.5	97%	NE
PCB - 1260	10.0	ND	6.0	60%	8-127

ND - Analyte not detected at established detection limit
NE - Not established

References: Method 608:Organochlorine Pesticides and PCBs
40 CFR, Part 136, Appendix A, November 1992.

Analyst

Review

Inter·Mountain Laboratories, Inc.
3304 Longmire
College Station, Texas 77845

VOLATILE ORGANIC COMPOUNDS

Client: **NAVAJO REFINING COMPANY**
Project Name: Artesia, NM
Sample ID: RO Reject
Laboratory ID: 0693G02287
Sample Matrix: Water
Condition: Cool, intact

Report Date: 09/30/93
Date Sampled: 09/09/93
Date Received: 09/10/93
Date Extracted: 09/14/93
Date Analyzed: 09/14/93

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acrolein	ND	25
Acrylonitrile	ND	50
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	5
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroform	ND	5
Chloromethane	ND	10
1,2-Dibromoethane	ND	5
Dichlorodifluoromethane	ND	5
1,1-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,2-Dichloroethane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
Methylene chloride	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	5
Vinyl chloride	ND	5
p,m-Xylenes	ND	5
o-Xylenes	ND	5

ND - Analyte not detected at stated limit of detection

3204 Longmire
College Station, Texas 77845

VOLATILE ORGANIC COMPOUNDS

ADDITIONAL DETECTED COMPOUNDS

Client: **NAVAJO REFINING COMPANY**
Project Name: Artesia, NM
Sample ID: RO Reject
Laboratory ID 0693G02287

Report Date: 09/30/93
Date Sampled: 09/09/93
Date Analyzed: 09/14/93

Tentative Identification	Retention Time (Minutes)	Concentration (ug/L)*
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
1,2-Dichloroethane-d4	101%	76 - 114%
Toluene-d8	94%	88 - 110%
Bromofluorobenzene	103%	86 - 115%

Reference: Method 624 - Purgeables, 40 Code of Federal Regulations, Part 136, Appendix A, November 1992. Capillary Column.

Comments:

Wendi M Rog
Analyst

Mary Higginbotham
Review

Inter·Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

VOLATILE ORGANIC COMPOUNDS

Client:	**NAVAJO REFINING COMPANY**		
Project Name:	Artesia, NM	Report Date:	09/30/93
Sample ID:	Trip Blank	Date Sampled:	NA
Laboratory ID:	0693G02286	Date Received:	09/10/93
Sample Matrix:	Water	Date Extracted:	09/14/93
Condition:	Cool, intact	Date Analyzed:	09/14/93

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acrolein	ND	25
Acrylonitrile	ND	50
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	5
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroform	ND	5
Chloromethane	ND	10
1,2-Dibromoethane	ND	5
Dichlorodifluoromethane	ND	5
1,1-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,2-Dichloroethane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
Methylene chloride	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	5
Vinyl chloride	ND	5
p,m-Xylenes	ND	5
o-Xylenes	ND	5

ND - Analyte not detected at stated limit of detection

1324 Langmire
College Station, Texas 77845

VOLATILE ORGANIC COMPOUNDS

ADDITIONAL DETECTED COMPOUNDS

Client: **NAVAJO REFINING COMPANY**
Project Name: Artesia, NM
Sample ID: Trip Blank
Laboratory ID 0693G02286

Report Date: 09/30/93
Date Sampled: NA
Date Analyzed: 09/14/93

Tentative Identification	Retention Time (Minutes)	Concentration (ug/L)*
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
1,2-Dichloroethane-d4	100%	76 - 114%
Toluene-d8	96%	88 - 110%
Bromofluorobenzene	103%	86 - 115%

Reference: Method 624 - Purgeables, 40 Code of Federal Regulations, Part 136, Appendix A, November 1992. Capillary Column.

Comments:

Wendy Mlay
Analyst

Mary Wigginbotham
Review

Inter·Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

QUALITY CONTROL REPORT - MATRIX SPIKE
VOLATILE ORGANIC COMPOUNDS

Client:	**NAVAJO REFINING COMPANY**		
Project Location:	Artesia, NM	Report Date:	09/30/93
Sample ID:	Matrix Spike	Date Sampled:	09/02/93
Laboratory ID:	3550 / 0693G02270	Date Received:	09/08/93
Sample Matrix:	Water	Date Extracted:	09/14/93
Condition:	Ambient, Intact	Date Analyzed:	09/14/93

Analyte	Spiked Sample Concentration	Sample Concentration	Spike Added	Percent Recovery	Acceptance Limits
1,1 - Dichloroethene	80	ND	100	80%	61 - 145%
Trichloroethene	99	ND	100	99%	71 - 120%
Benzene	168	63	100	104%	76 - 127%
Toluene	94	7	100	87%	76 - 125%
Chlorobenzene	98	ND	100	98%	75 - 130%

All units in ug/L
ND - Not detected

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
1,2 - Dichloroethane - d4	103%	70 - 121%
Toluene - d8	95%	81 - 117%
Bromofluorobenzene	103%	74 - 121%

References: Method 624 - Purgeables, 40 Code of Federal Regulations, Part 136, Appendix A, November 1992. Capillary Column.

Wendi M Rogers
Analyst

Mary Higginbotham
Review

Inter·Mountain Laboratories, Inc.
3304 Longmire
College Station, Texas 77845

QUALITY CONTROL REPORT - MATRIX DUPLICATE
VOLATILE ORGANIC COMPOUNDS

Client: **NAVAJO REFINING COMPANY**
Project Name: Artesia, NM
Sample ID: Matrix Duplicate
Laboratory ID: 0693G02291 DUP
Sample Matrix: Water
Condition: Cool, intact

Report Date: 09/30/93
Date Sampled: 09/08/93
Date Received: 09/10/93
Date Extracted: 09/14/93
Date Analyzed: 09/14/93

Analyte	Duplicate Conc. (mg/L)	Original Conc. (mg/L)	Percent Difference
Acetone	ND	ND	NA
Acrolein	ND	ND	NA
Acrylonitrile	ND	ND	NA
Benzene	14.5	14.9	3%
Bromodichloromethane	ND	ND	NA
Bromoform	ND	ND	NA
Bromomethane	ND	ND	NA
2-Butanone (MEK)	ND	ND	NA
Carbon disulfide	ND	ND	NA
Carbon tetrachloride	ND	ND	NA
Chlorobenzene	ND	ND	NA
Chloroethane	ND	ND	NA
2-Chloroethyl vinyl ether	ND	ND	NA
Chloroform	ND	ND	NA
Chloromethane	ND	ND	NA
Dibromochloromethane	ND	ND	NA
Dibromomethane	ND	ND	NA
Dichlorodifluoromethane	ND	ND	NA
1,1-Dichloroethane	ND	ND	NA
1,1-Dichloroethene	ND	ND	NA
trans-1,2-Dichloroethene	ND	ND	NA
1,2-Dichloroethane	ND	ND	NA
1,2-Dichloropropane	ND	ND	NA
cis-1,3-Dichloropropene	ND	ND	NA
trans-1,3-Dichloropropene	ND	ND	NA
Ethylbenzene	0.7	0.8	13%
Ethyl methacrylate	ND	ND	NA
Iodomethane	ND	ND	NA
2-Hexanone	ND	ND	NA
Methylene chloride	ND	ND	NA
4-Methyl-2-pentanone	ND	ND	NA
Styrene	ND	ND	NA
1,1,2,2-Tetrachloroethane	ND	ND	NA
Tetrachloroethene	ND	ND	NA
Toluene	14.9	15.4	3%
1,1,1-Trichloroethane	ND	ND	NA
1,1,2-Trichloroethane	ND	ND	NA
1,2,3-Trichloropropane	ND	ND	NA
Trichloroethene	ND	ND	NA
Trichlorofluoromethane	ND	ND	NA
Vinyl acetate	ND	ND	NA
Vinyl chloride	ND	ND	NA
Xylenes (total)	9.3	9.5	2%

ND - Analyte not detected at stated limit of detection

2304 Longmire
College Station, Texas 77845

VOLATILE ORGANIC COMPOUNDS

ADDITIONAL DETECTED COMPOUNDS

Client: **NAVAJO REFINING COMPANY**
Project Name: Artesia, NM
Sample ID: Matrix Duplicate
Laboratory ID 0693G02291 DUP

Report Date: 09/30/93
Date Sampled: 09/08/93
Date Analyzed: 09/14/93

Tentative Identification	Retention Time (Minutes)	Concentration (mg/L)*
1,1,2-Trichlorotricfluoroethane	3.88	15.5
Unknown hydrocarbon	8.23	3.2
Unknown hydrocarbon	10.99	3.6
Unknown hydrocarbon	13.40	1.3
Unknown hydrocarbon	15.92	0.7

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
1,2-Dichloroethane-d4	102%	76 - 114%
Toluene-d8	96%	88 - 110%
Bromofluorobenzene	101%	86 - 115%

Reference: Method 624 - Purgeables, 40 Code of Federal Regulations, Part 136, Appendix A, November 1992. Capillary Column.

Comments:

Wendy M Rog
Analyst

Mary Higginbotham
Review

Inter-Mountain Laboratories, Inc.
3304 Longmire
College Station, Texas 77845

QUALITY CONTROL REPORT - METHOD BLANK
VOLATILE ORGANIC COMPOUNDS

Client: **NAVAJO REFINING COMPANY**
Project Location: Artesia, NM
Sample ID: Method Blank
Laboratory ID: MB0914
Sample Matrix: Water
Condition: NA

Report Date: 09/30/93
Date Sampled: NA
Date Received: NA
Date Extracted: 09/14/93
Date Analyzed: 09/14/93

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acrolein	ND	25
Acrylonitrile	ND	50
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	5
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroform	ND	5
Chloromethane	ND	10
1,2-Dibromoethane	ND	5
Dichlorodifluoromethane	ND	5
1,1-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,2-Dichloroethane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
Methylene chloride	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	5
Vinyl chloride	ND	5
p,m-Xylenes	ND	5
o-Xylenes	ND	5

ND - Analyte not detected at stated limit of detection

3354 Longmire
College Station, Texas 77845

QUALITY CONTROL REPORT - METHOD BLANK

VOLATILE ORGANIC COMPOUNDS

ADDITIONAL DETECTED COMPOUNDS

Client: **NAVAJO REFINING COMPANY**
Project Name: Artesia, NM
Sample ID: Method Blank
Laboratory ID MB0914

Report Date: 09/30/93
Date Sampled: NA
Date Analyzed: 09/14/93

Tentative Identification	Retention Time (Minutes)	Concentration (ug/L) *
No compounds detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
1,2-Dichloroethane-d4	101%	76 - 114%
Toluene-d8	95%	88 - 110%
Bromofluorobenzene	103%	86 - 115%

Reference: Method 624 - Purgeables, 40 Code of Federal Regulations, Part 136, Appendix A, November 1992. Capillary Column.

Comments:

Wendi M Kay
Analyst

Mary Higginbotham
Review

Inter·Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

EPA Method 625
BASE / NEUTRALS and ACIDS

Client: **NAVAJO REFINING CO.**
Project Name: Artesia, NM
Sample ID: RO Reject
Laboratory ID: 0693G02288
Sample Matrix: Water
Condition: Cool, Intact

Report Date: 10/05/93
Date Sampled: 09/09/93
Date Received: 09/10/93
Date Extracted: 09/15/93
Date Analyzed: 09/16/93

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Anthracene	ND	10
Benzidine	ND	10
3,4-Benzofluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Bis (2-chloroethyl) ether	ND	10
Bis (2-chloroisopropyl) ether	ND	10
Bis (2-chloromethyl) ether	ND	10
Dibutyl phthalate	ND	10
1,2-Dichlorobenzene	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
Dichlorobenzidine	ND	10
2,4-Dichlorophenol	ND	10
Di-2-ethylhexyl phthalate	ND	10
Diethyl phthalate	ND	10
Dimethyl phthalate	ND	10
2,4-Dinitro-o-cresol	ND	10
Dinitrophenols	ND	10
2,4-Dinitrotoluene	ND	10
Diphenylhydrazine	ND	10
Fluoranthene	ND	10
Fluorene	ND	10
Hexachlorobenzene	ND	10
Hexachlorobutadiene	ND	10

Inter·Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

EPA Method 625
BASE / NEUTRALS and ACIDS (cont)

Client: **NAVAJO REFINING CO.**
Project Name: Artesia, NM
Sample ID: RO Reject
Laboratory ID: 0693G02288

Report Date: 10/05/93
Date Sampled: 09/09/93
Date Analyzed: 09/16/93

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Hexachlorocyclopentadiene	ND	10
Hexachloroethane	ND	10
Isophorone	ND	50
1-Methyl naphthalene	ND	10
2-Methyl naphthalene	ND	10
Naphthalene	ND	10
N-nitrosodibutylamine	ND	10
N-nitrosodiethylamine	ND	10
N-nitrosodimethylamine	ND	10
N-nitrosodiphenylamine	ND	10
N-nitrosopyrrolidine	ND	50
Nitrobenzene	ND	10
Pentachlorobenzene	ND	10
Pentachlorophenol	ND	10
Phenanthrene	ND	10
Phenol	ND	10
Pyrene	ND	10
1,2,4,5-Tetrachlorobenzene	ND	10
2,4,5-Trichlorophenol	ND	10
2,4,6-Trichlorophenol	ND	10

ND - Analyte not detected at stated limit of detection

Inter·Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

EPA Method 625

BASE / NEUTRALS and ACIDS

ADDITIONAL DETECTED COMPOUNDS

Client: **NAVAJO REFINING CO.**
Project Name: Artesia, NM
Sample ID: RO Reject
Sample Number: 0693G02288

Report Date: 10/05/93
Date Sampled: 09/09/93
Date Analyzed: 09/16/93

Tentative Identification	Retention Time (Minutes)	Concentration (ug/L)
Unknown hydrocarbon	9.25	16

Quality Control:

Surrogate	Percent Recovery	Water Acceptance Limits
2 - Fluorophenol	53%	21 - 110 %
Phenol - d6	61%	10 - 110 %
Nitrobenzene - d5	57%	35 - 114 %
2 - Fluorobiphenyl	58%	43 - 116 %
2,4,6 - Tribromophenol	63%	10 - 123 %
Terphenyl - d14	74%	33 - 141 %

References: Method 625: Base/Neutrals and Acids
Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, Code of Federal Regulations, Protection of Environment, 40 CFR 136, Appendix A, November 1992.

Comments:

L. Bruce Kopper
Analyst

Wendy Mkz
Review

Inter·Mountain Laboratories, Inc.
1304 Langmire
College Station, Texas 77845

QUALITY CONTROL REPORT - MATRIX SPIKE

EPA Method 625
BASE / NEUTRALS and ACIDS

Client: **NAVAJO REFINING CO.**
Project Name: Artesia, NM
Sample ID: Blank Spike
Laboratory ID: DI SPK 663
Sample Matrix: Reagent Water

Report Date: 10/05/93
Date Extracted: 09/15/93
Date Analyzed: 09/16/93

Analyte	Spike Conc. (ug/L)	Sample Conc. (ug/L)	Spike Added (ug/L)	Percent Recovery	QC Limits
Phenol	77	ND	100	77%	5 - 112%
2 - Chlorophenol	77	ND	100	77%	23 - 134%
1,4 - Dichlorobenzene	50	ND	100	50%	20 - 124%
n-Nitroso-di-propylamine	59	ND	100	59%	D - 230%
1,2,4 - Trichlorobenzene	52	ND	100	52%	44 - 142%
4-Chloro-3-methylphenol	87	ND	100	87%	22 - 147%
Acenaphthene	55	ND	100	55%	47 - 145%
4 - Nitrophenol	60	ND	100	60%	D - 132%
2,4 - Dinitrotoluene	102	ND	100	102%	39 - 139%
Pentachlorophenol	109	ND	100	109%	14 - 176%
Pyrene	64	ND	100	64%	52 - 115%

ND - Analyte not detected at stated limit of detection
D - Detection (result greater than 0)

Spike Recovery:

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
2 - Fluorophenol	54%	21 - 110 %
Phenol - d6	56%	10 - 110 %
Nitrobenzene - d5	57%	35 - 114 %
2 - Fluorobiphenyl	59%	43 - 116 %
2,4,6 - Tribromophenol	73%	10 - 123 %
Terphenyl - d14	67%	33 - 141 %

Reference: Method 625: Base/Neutrals and Acids
Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, Code of Federal Regulations, Protection of Environment, 40 CFR 136, Appendix A, November 1992.

Analyst

Review

Inter·Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

QUALITY CONTROL REPORT - METHOD BLANK

EPA Method 625

BASE / NEUTRALS and ACIDS

Client: **NAVAJO REFINING CO.**
Project Name: Artesia, NM
Sample ID: Method Blank
Laboratory ID: MB 664
Sample Matrix: Reagent Water

Report Date: 10/05/93
Date Extracted: 09/15/93
Date Analyzed: 09/16/93

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Anthracene	ND	10
Benzidine	ND	10
3,4-Benzofluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Bis (2-chloroethyl) ether	ND	10
Bis (2-chloroisopropyl) ether	ND	10
Bis (2-chloromethyl) ether	ND	10
Dibutyl phthalate	ND	10
1,2-Dichlorobenzene	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
Dichlorobenzidine	ND	10
2,4-Dichlorophenol	ND	10
Di-2-ethylhexyl phthalate	ND	10
Diethyl phthalate	ND	10
Dimethyl phthalate	ND	10
2,4-Dinitro-o-cresol	ND	10
Dinitrophenols	ND	10
2,4-Dinitrotoluene	ND	10
Diphenylhydrazine	ND	10
Fluoranthene	ND	10
Fluorene	ND	10
Hexachlorobenzene	ND	10
Hexachlorobutadiene	ND	10

Inter-Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

EPA Method 625
BASE / NEUTRALS and ACIDS (cont)

Client: **NAVAJO REFINING CO.**
Project Name: Artesia, NM
Sample ID: Method Blank
Laboratory ID: MB 664

Report Date: 10/05/93
Date Analyzed: 09/16/93

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Hexachlorocyclopentadiene	ND	10
Hexachloroethane	ND	10
Isophorone	ND	50
1-Methyl naphthalene	ND	10
2-Methyl naphthalene	ND	10
Naphthalene	ND	10
N-nitrosodibutylamine	ND	10
N-nitrosodiethylamine	ND	10
N-nitrosodimethylamine	ND	10
N-nitrosodiphenylamine	ND	10
N-nitrosopyrrolidine	ND	50
Nitrobenzene	ND	10
Pentachlorobenzene	ND	10
Pentachlorophenol	ND	10
Phenanthrene	ND	10
Phenol	ND	10
Pyrene	ND	10
1,2,4,5-Tetrachlorobenzene	ND	10
2,4,5-Trichlorophenol	ND	10
2,4,6-Trichlorophenol	ND	10

ND - Analyte not detected at stated limit of detection

3304 Longmire
College Station, Texas 77845

EPA Method 625

BASE / NEUTRALS and ACIDS

ADDITIONAL DETECTED COMPOUNDS

Client: **NAVAJO REFINING CO.**
Project Name: Artesia, NM
Sample ID: Method Blank
Sample Number: MB 664

Report Date: 10/05/93
Date Analyzed: 09/16/93

Tentative Identification	Retention Time (Minutes)	Concentration (ug/L)
No compounds detected at reportable levels.		

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
2 - Fluorophenol	56%	21 - 110%
Phenol - d6	62%	10 - 110%
Nitrobenzene - d5	60%	35 - 114 %
2 - Fluorobiphenyl	64%	43 - 116 %
2,4,6 - Tribromophenol	66%	10 - 123 %
Terphenyl - d14	77%	33 - 141 %

References: Method 625: Base/Neutrals and Acids
Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, Code of Federal Regulations, Protection of Environment, 40 CFR 136, Appendix A, November 1992.

Comments:

Analyst

Review

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OIL CONSERVATION DIVISION
'93 AUG 11 AM 8 11

Navajo REFINING COMPANY

501 EAST MAIN STREET • P.O. DRAWER 159

ARTESIA, NEW MEXICO 88211-0159

August 9, 1993

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Bi-Weekly R.O. Reject Testing

Dear Roger,

The test results of the first four R.O. reject water tests indicate that there is very little fluxation in the results. Since there is only minor differences and the cost of these tests is significant we would like to request the test frequency be changed to quarterly.

Please find attached, a schedule of tests, results and graphs for each substance tested for, to show the relative change. The May 18, 1993 test did not test for cations or anions but was the required quarterly test of the R.O. reject.

There are two tests in progress at this time and those results along with any additional tests that may be completed before the testing change is granted will be reported on a timely basis.

Should you have any questions concerning this matter, please contact Ron Loyd at 748-3311.

Sincerely,

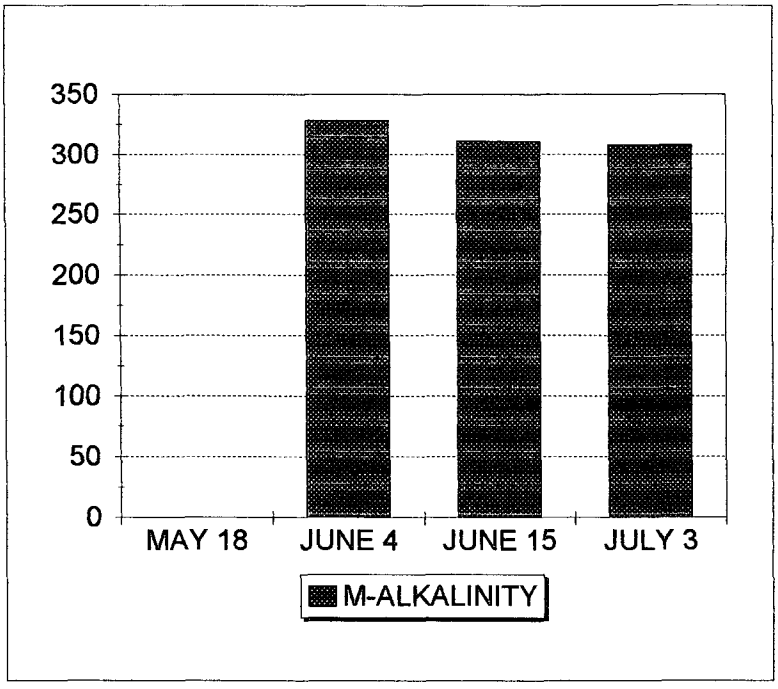
Virgil Langford
Vice President of Refining

VRL/te

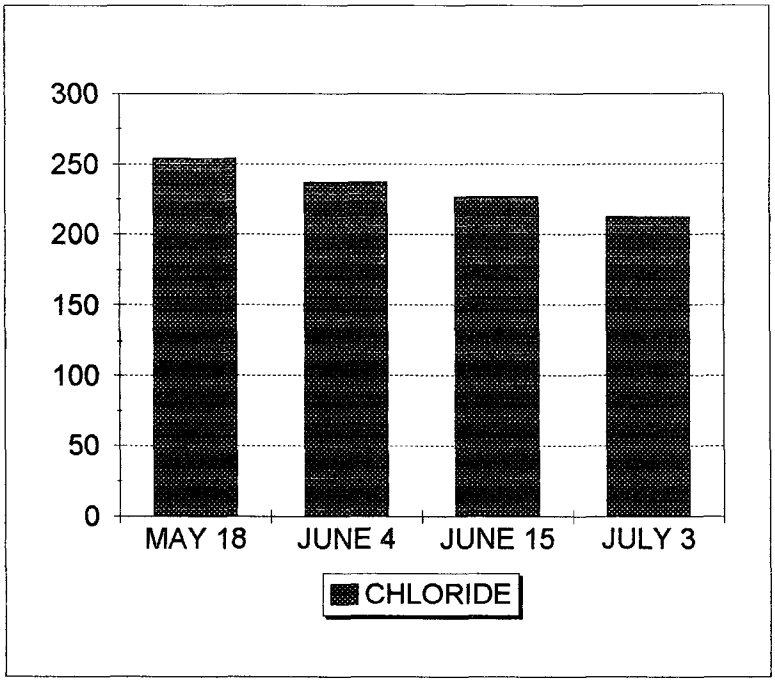
Encl.

	MAY 18, '93	JUNE 4, '93	JUNE 15, '93	JULY 3, "93
M-ALKALINITY		328	311	308
P-ALKALINITY		0	0	0
CHLORIDE	254	237	227	212
FLORIDE	2.2	1.8	1.6	1.7
SULFATE	1640	1520	1650	1660
BICARBONATE	NT	328	311	376
CARBONATE	NT	0	0	0
pH	7.12	6.88	6.8	NT
ALUMINUM	0.1	0.14	0.1	0.1
ARSENIC	0.005	0.005	0.005	0.005
BARIUM	0.06	0.06	0.06	0.06
BERYLLIUM	0.005	0.005	0.005	0.005
BORON	0.08	0.09	0.1	0.07
CADMIUM	0.005	0.005	0.005	0.005
CALCIUM	NT	442	448	413
MAGNESIUM	NT	143	146	148
CHROMIUM	0.01	0.01	0.01	0.01
COBALT	0.01	0.01	0.01	0.01
COPPER	0.03	0.01	0.02	0.04
IRON	NT	0.05	NT	NT
MOLYBENDUM	0.2	0.1	0.16	0.12
POTASSIUM	NT	3.4	3.9	3
SELENIUM	0.005	0.005	0.005	0.005
SILVER	0.01	0.01	0.01	0.01
SODIUM	NT	125	134	123
VANADIUM	0.01	0.01	0.01	0.01
ZINK	0.02	0.01	0.02	0.02
URANIUM	0.005	0.005	0.005	0.006

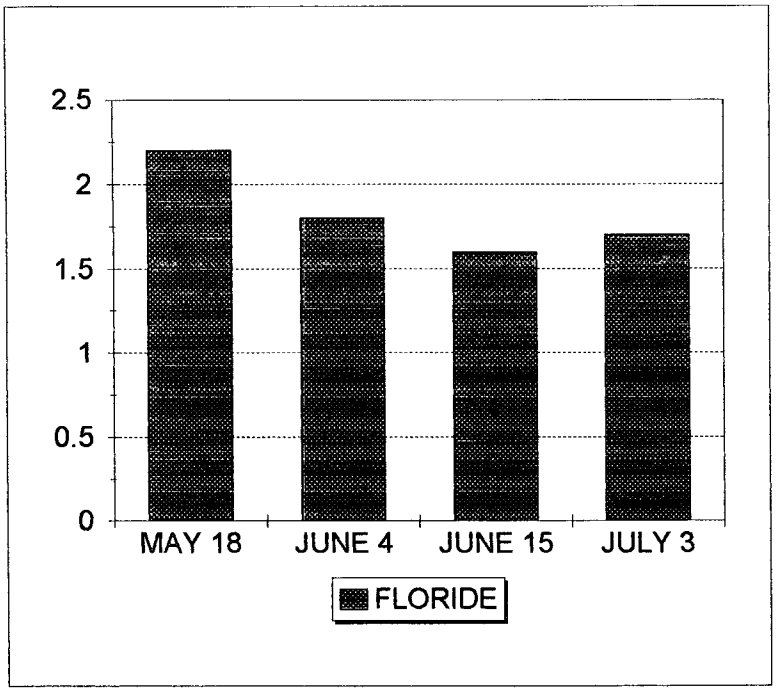
	MAY 18	JUNE 4	JUNE 15	JULY 3
M-ALKALINITY		328	311	308



	MAY 18	JUNE 4	JUNE 15	JULY 3
CHLORIDE	254	237	227	212



	MAY 18	JUNE 4	JUNE 15	JULY 3
FLORIDE	2.2	1.8	1.6	1.7



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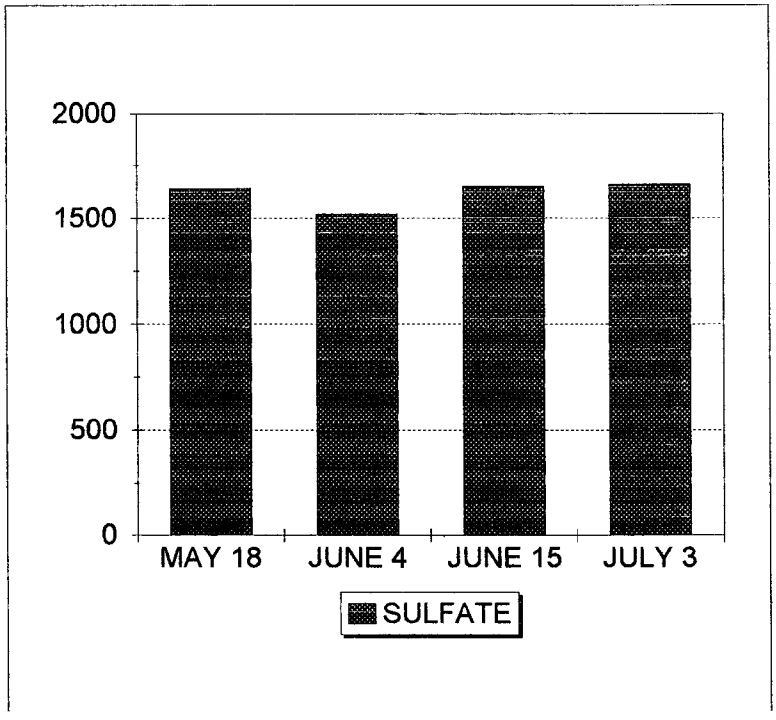
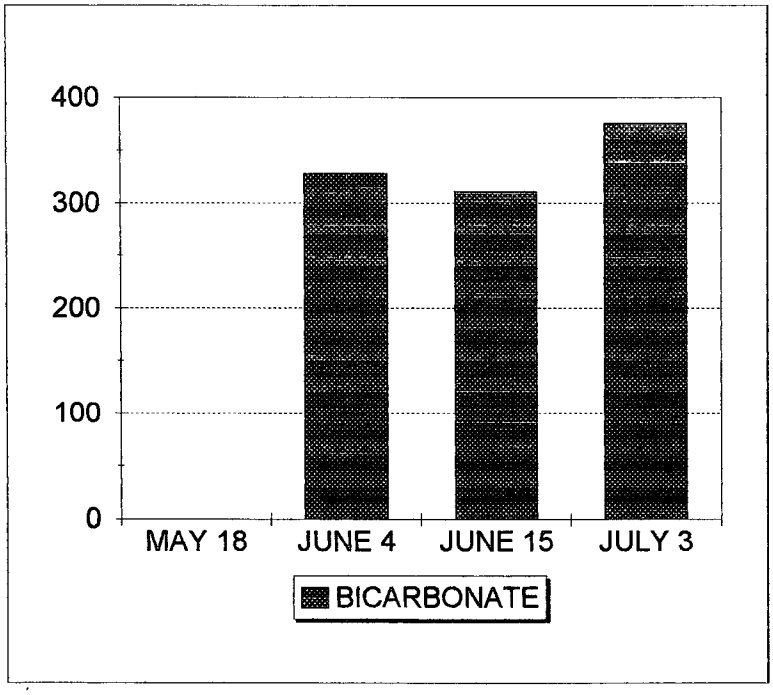
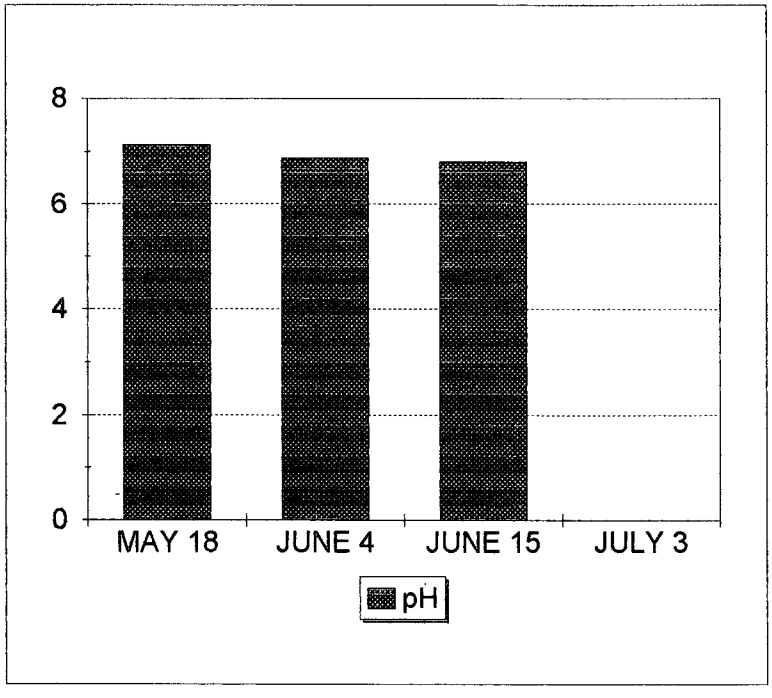
SULFATE	1640	1520	1650	1660



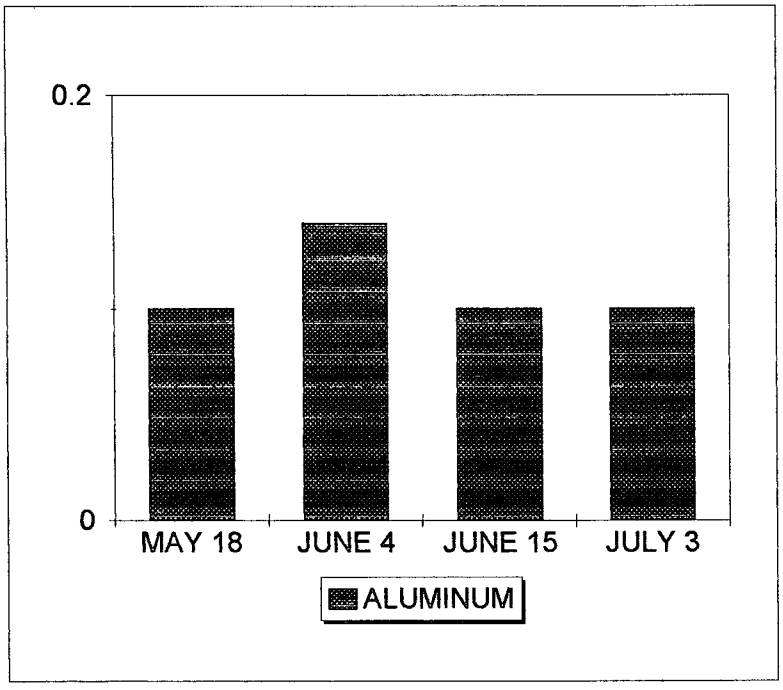
	MAY 18	JUNE 4	JUNE 15	JULY 3
BICARBONATE		328	311	376



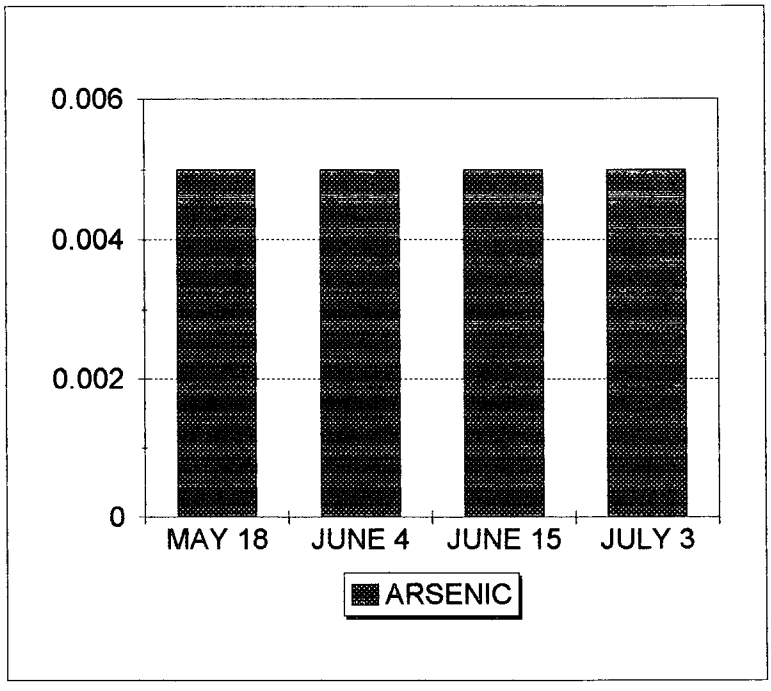
	MAY 18	JUNE 4	JUNE 15	JULY 3
pH	7.12	6.88	6.8	



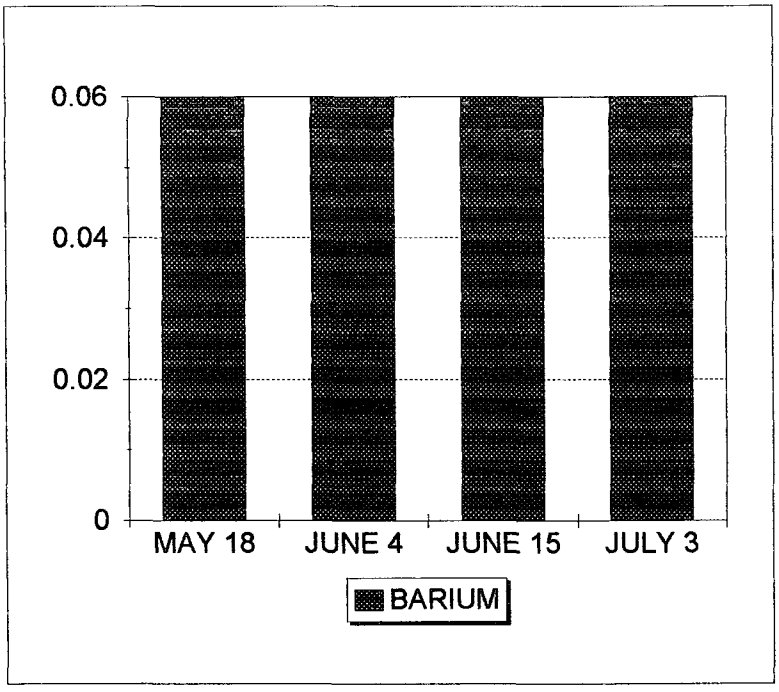
	MAY 18	JUNE 4	JUNE 15	JULY 3
ALUMINUM	0.1	0.14	0.1	0.1



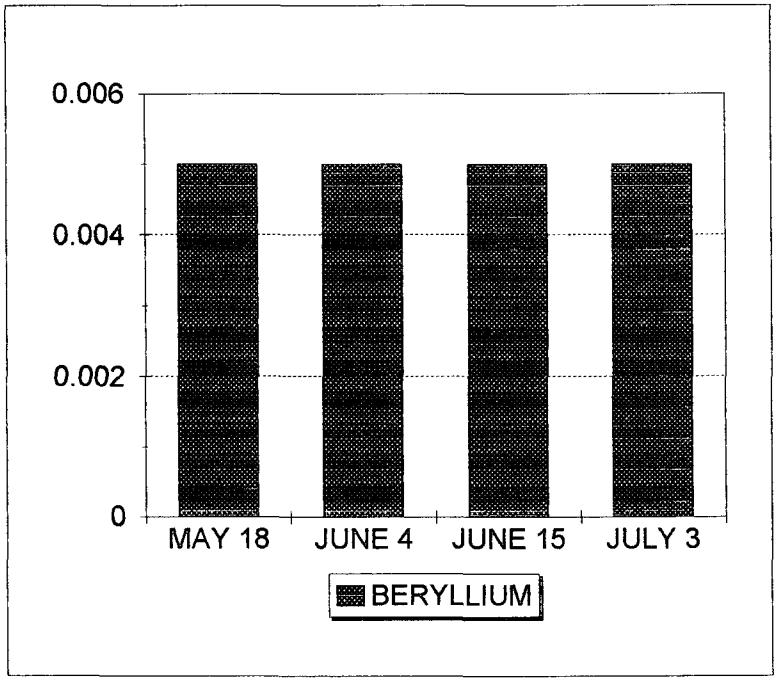
	MAY 18	JUNE 4	JUNE 15	JULY 3
ARSENIC	0.005	0.005	0.005	0.005



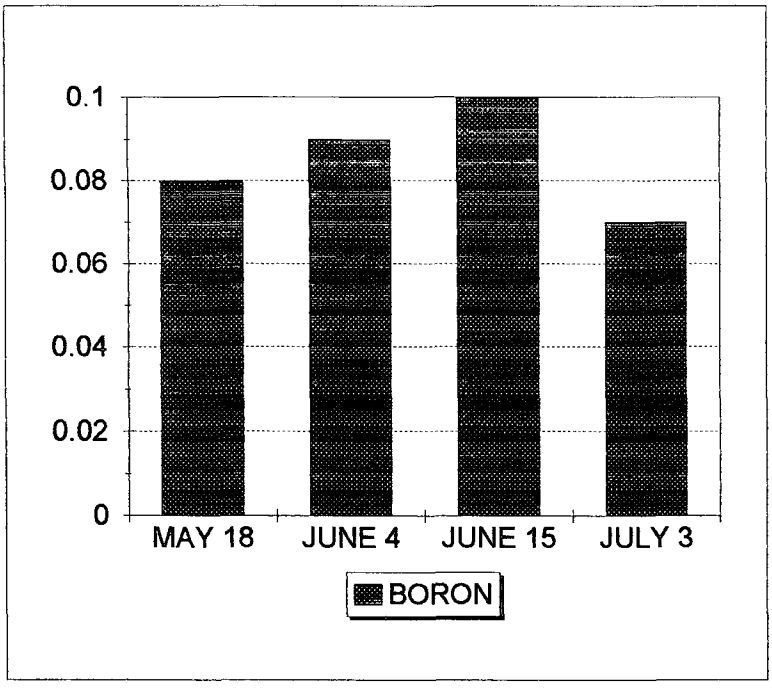
	MAY 18	JUNE 4	JUNE 15	JULY 3
BARIUM	0.06	0.06	0.06	0.06



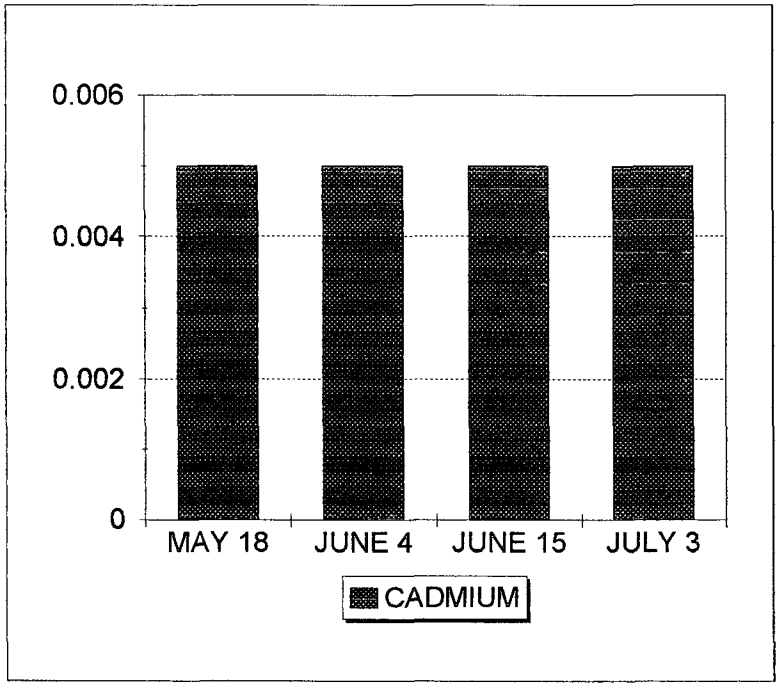
	MAY 18	JUNE 4	JUNE 15	JULY 3
BERYLLIUM	0.005	0.005	0.005	0.005



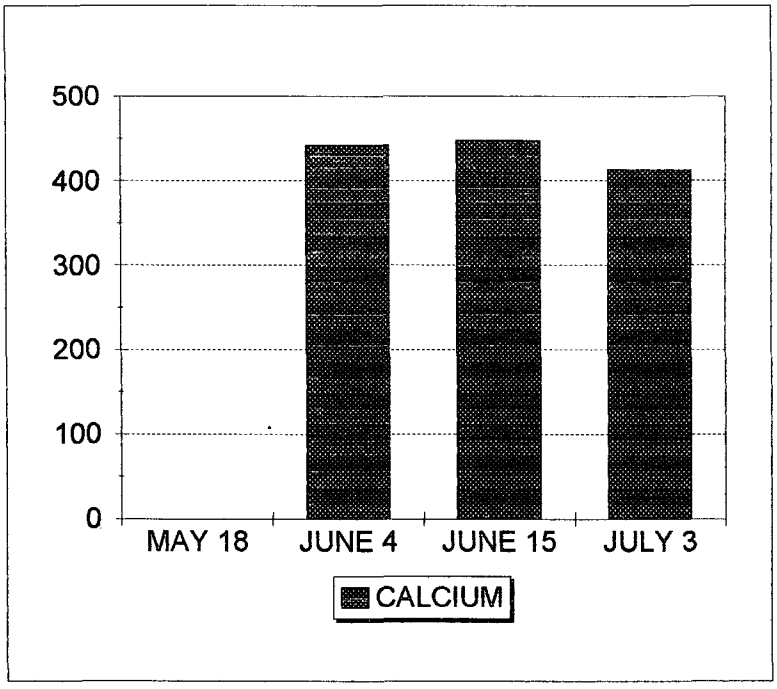
	MAY 18	JUNE 4	JUNE 15	JULY 3
BORON	0.08	0.09	0.1	0.07



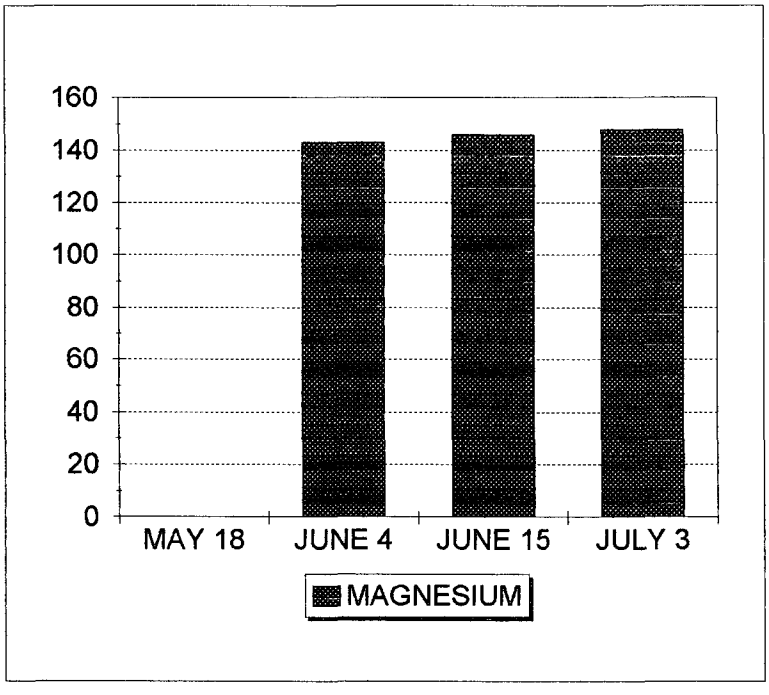
	MAY 18	JUNE 4	JUNE 15	JULY 3
CADMIUM	0.005	0.005	0.005	0.005



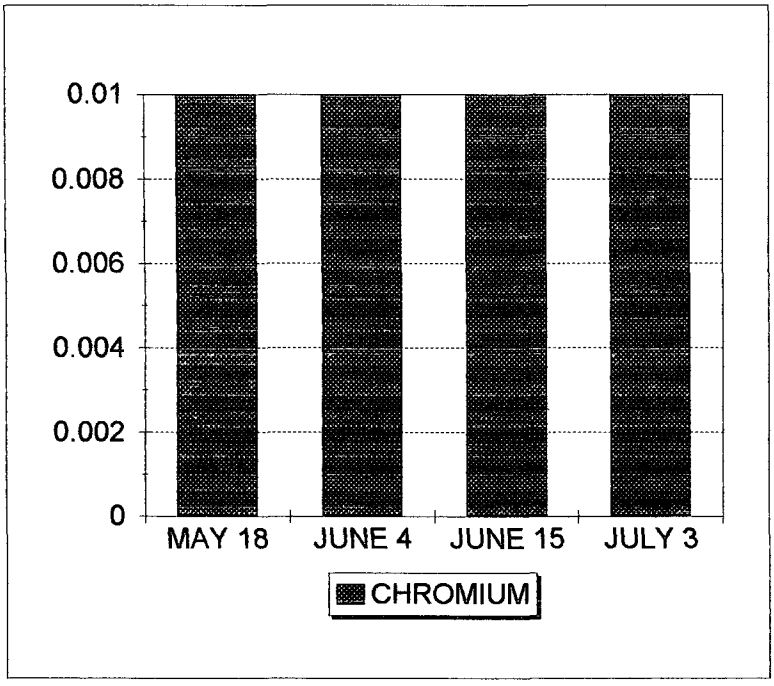
	MAY 18	JUNE 4	JUNE 15	JULY 3
CALCIUM		442	448	413



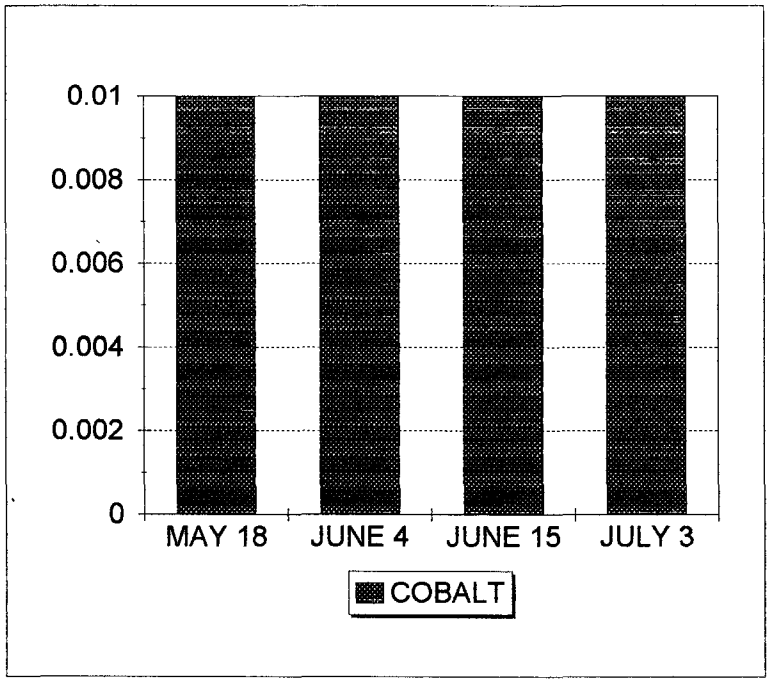
	MAY 18	JUNE 4	JUNE 15	JULY 3
MAGNESIUM		143	146	148



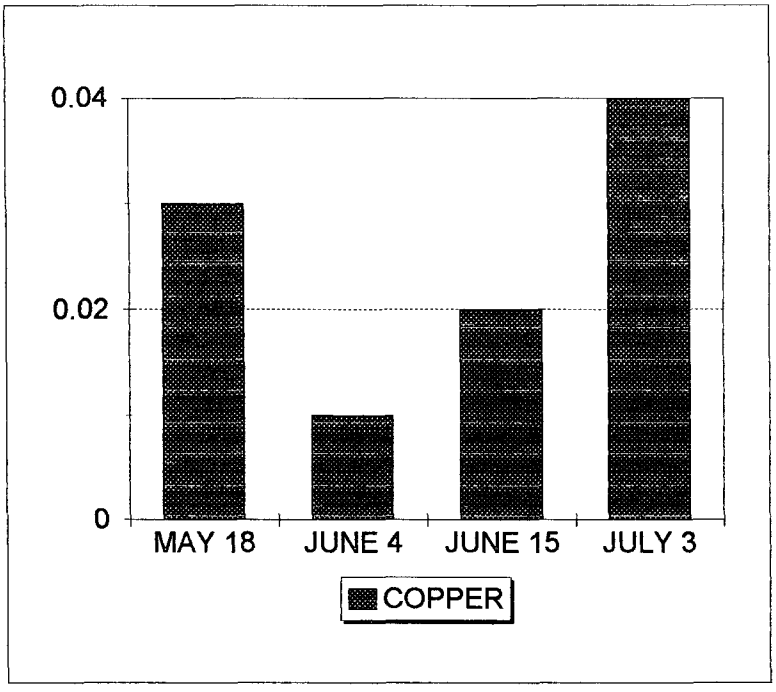
	MAY 18	JUNE 4	JUNE 15	JULY 3
CHROMIUM	0.01	0.01	0.01	0.01



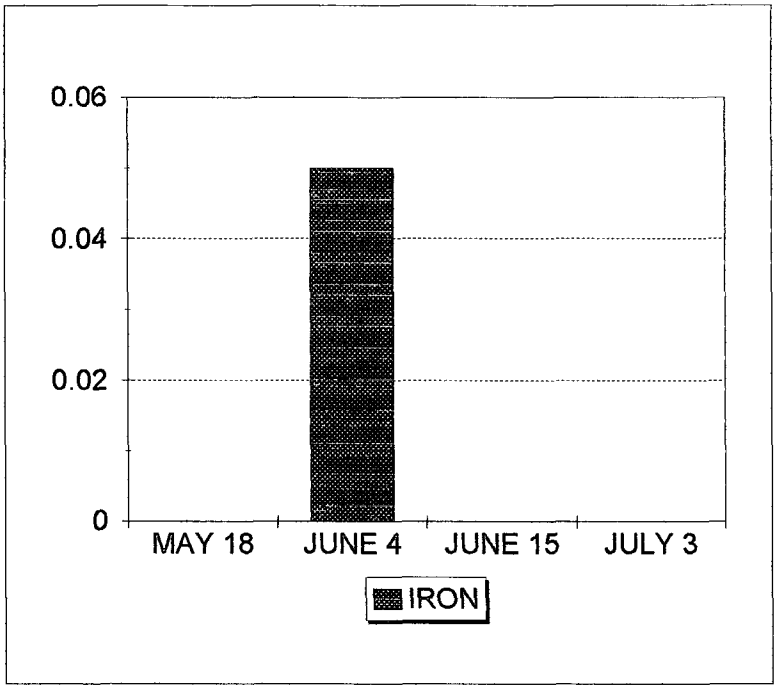
	MAY 18	JUNE 4	JUNE 15	JULY 3
COBALT	0.01	0.01	0.01	0.01



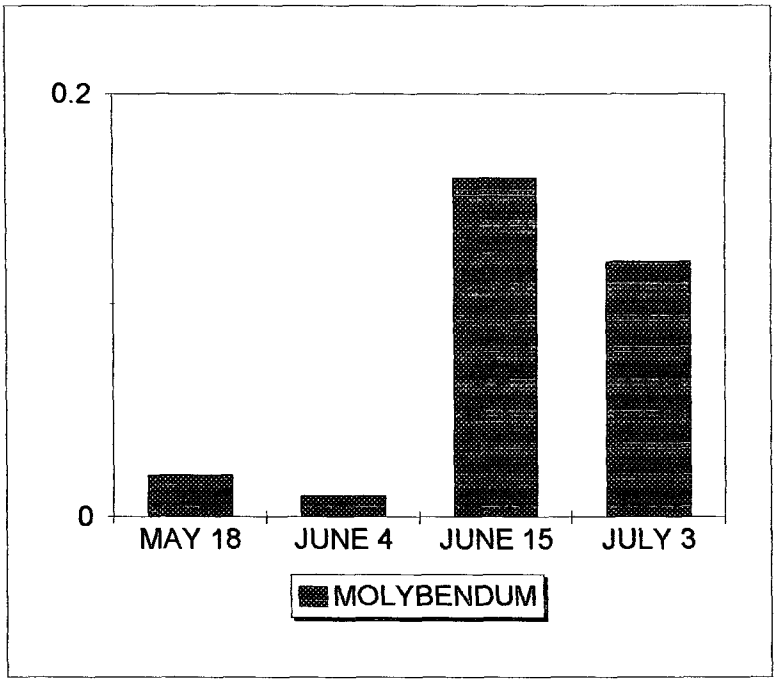
	MAY 18	JUNE 4	JUNE 15	JULY 3
COPPER	0.03	0.01	0.02	0.04



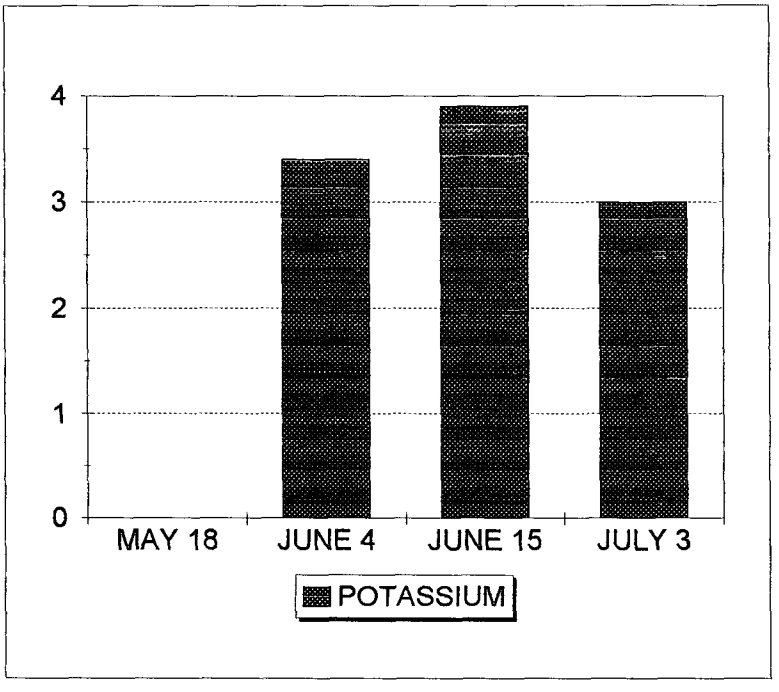
	MAY 18	JUNE 4	JUNE 15	JULY 3
IRON		0.05		



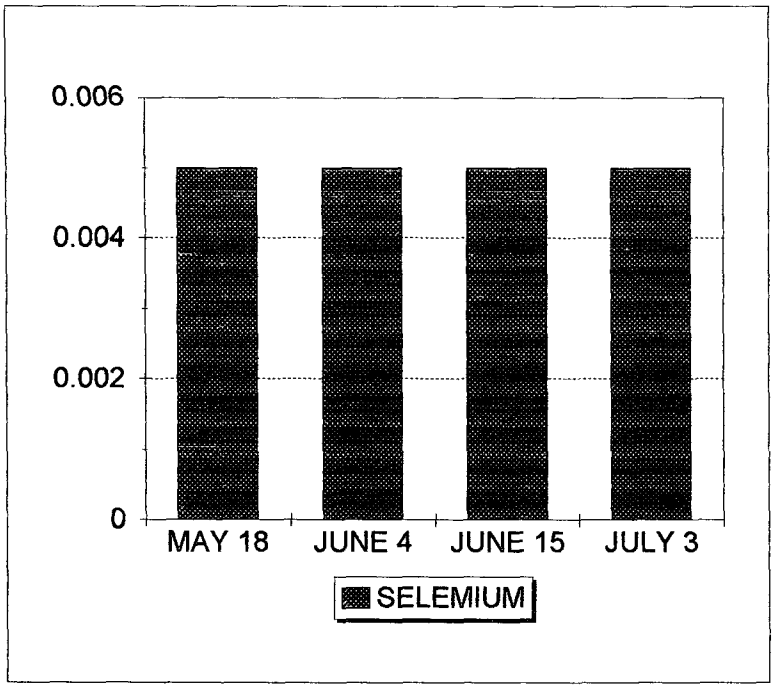
	MAY 18	JUNE 4	JUNE 15	JULY 3
MOLYBENDUM	0.02	0.01	0.16	0.12



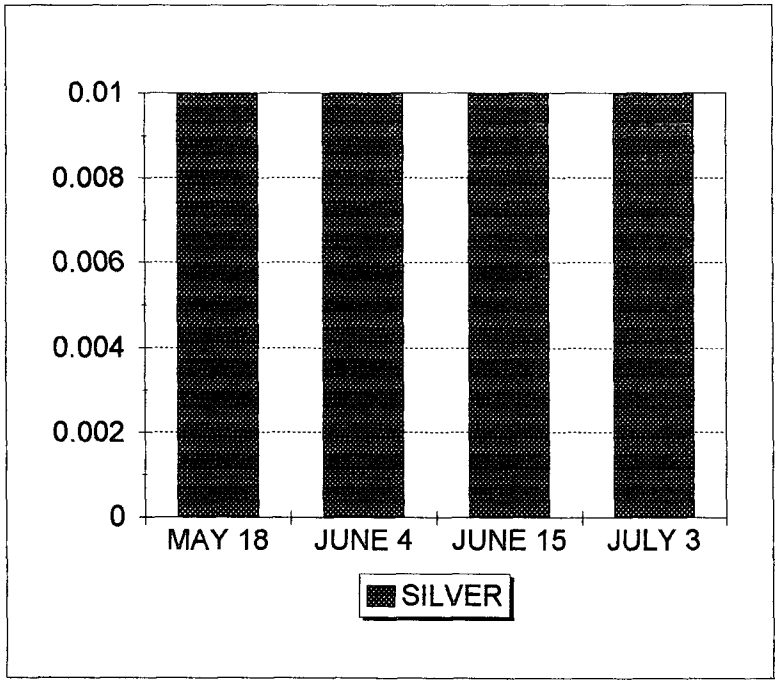
	MAY 18	JUNE 4	JUNE 15	JULY 3
POTASSIUM		3.4	3.9	3



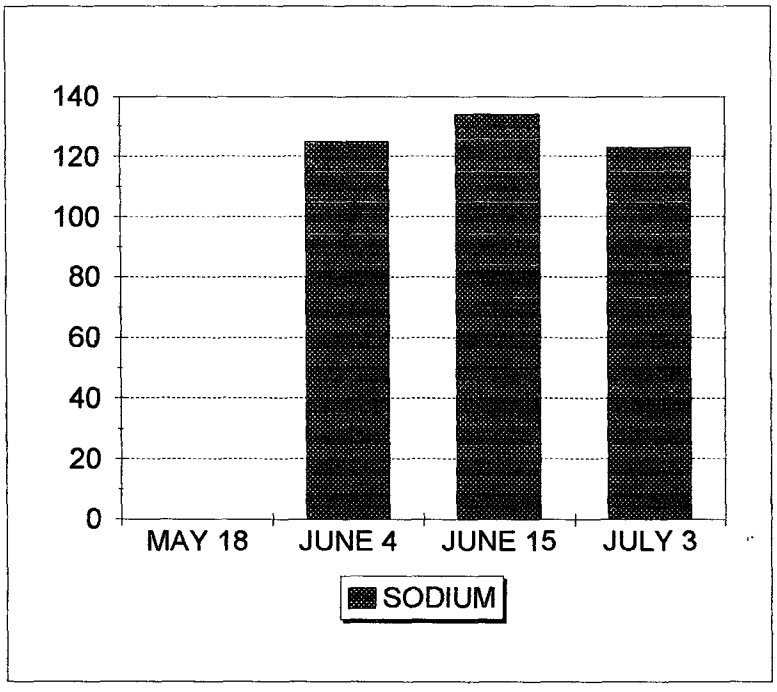
	MAY 18	JUNE 4	JUNE 15	JULY 3
SELEMIUM	0.005	0.005	0.005	0.005



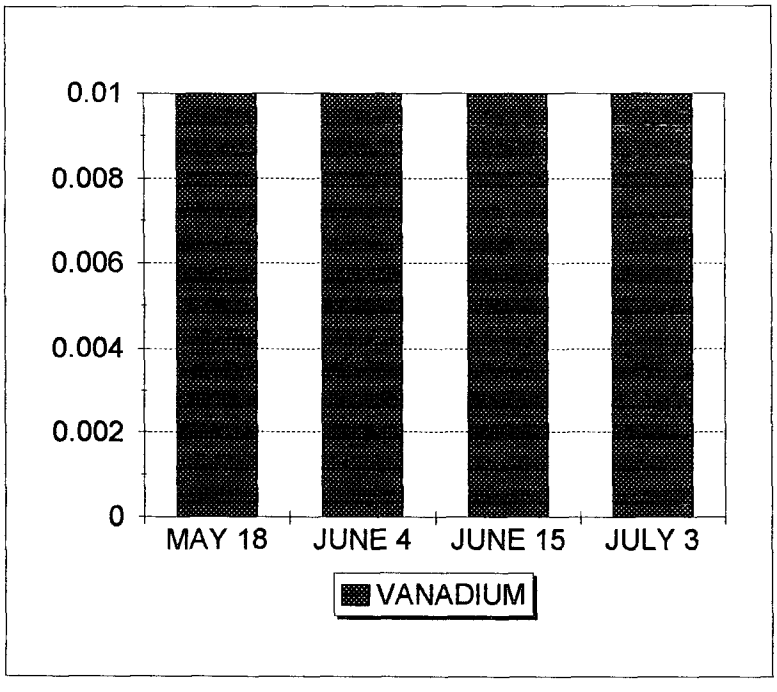
	MAY 18	JUNE 4	JUNE 15	JULY 3
SILVER	0.01	0.01	0.01	0.01



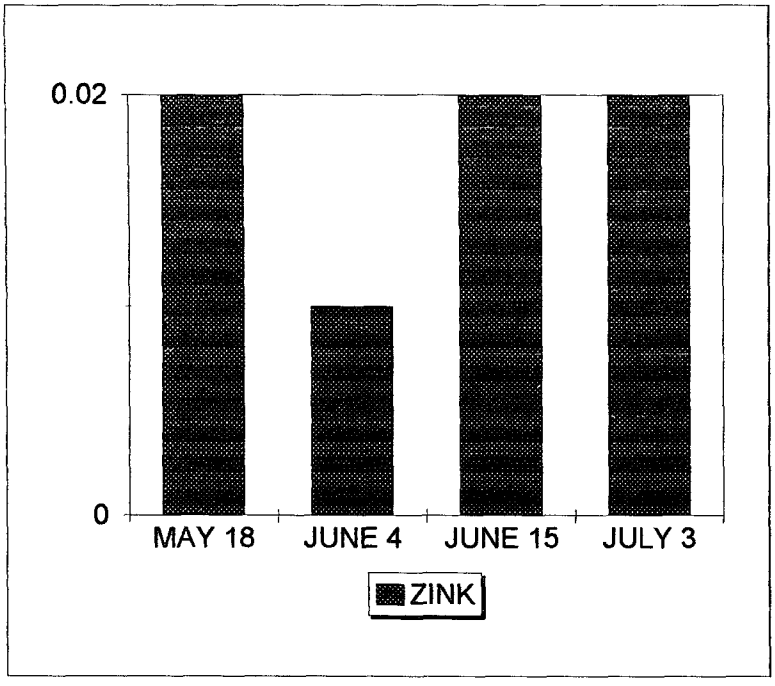
	MAY 18	JUNE 4	JUNE 15	JULY 3
SODIUM		125	134	123



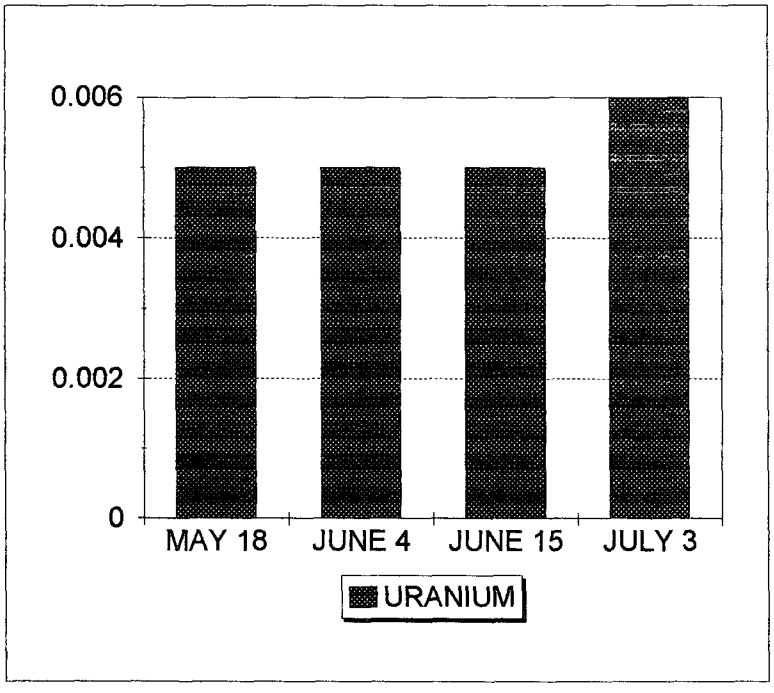
	MAY 18	JUNE 4	JUNE 15	JULY 3
VANADIUM	0.01	0.01	0.01	0.01



	MAY 18	JUNE 4	JUNE 15	JULY 3
ZINK	0.02	0.01	0.02	0.02



	MAY 18	JUNE 4	JUNE 15	JULY 3
URANIUM	0.005	0.005	0.005	0.006



TELEPHONE
(505) 748-3311

Navajo
REFINING COMPANY
501 EAST MAIN STREET • P.O. DRAWER 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

OIL CONSERVATION DIVISION
RECEIVED
93 AUG 5 AM 9 56

August 2, 1993

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, N.M. 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our July 2, 1993 sampling of the reverse osmosis reject water that is being put on our farm. If there are any questions, please call me at (505) 748-3311.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

DGM/te

Encl.

BETZ Analytical Services

Navajo Refining Company
501 East Main Street
P.O. Drawer 159
Artesia, New Mexico 88210

Date Submitted: 7/3/93
Date Reported: 7/28/93

Attn: Darrell Moore

Sample Description: Reverse Osmosis Reject Laboratory ID: D0703531
Date Sampled: 7/2/93

TEST	VALUE	UNITS	METHOD	ANALYZED
M-Alkalinity, as CaCO3	308	mg/L	EPA 310.1	
P-Alkalinity, as CaCO3	0.0	mg/L	EPA 310.1	
Chloride, as Cl	212	mg/L	EPA 9251	
Fluoride, total	1.7	mg/L	EPA 340.2	
Sulfate, as SO4	1660	mg/L	EPA 9038	
Bicarbonate, alk as CaC03	376	mg/L	Calculation	
Carbonate, alk as CaC03	0.0	mg/L	Calculation	
Aluminum, total	< 0.1	mg/L	EPA 6010	
Arsenic, total	< 0.005	mg/L	EPA 7060	
Barium, total	0.06	mg/L	EPA 6010	
Beryllium, total	< 0.005	mg/L	EPA 6010	
Boron, total	0.07	mg/L	EPA 6010	
Cadmium, total	< 0.005	mg/L	EPA 6010	
Calcium, total	413	mg/L	EPA 6010	
Magnesium, total	148	mg/L	EPA 6010	
Chromium, total	0.01	mg/L	EPA 6010	
Cobalt, total	< 0.01	mg/L	EPA 6010	
Copper, total	0.04	mg/L	EPA 6010	
Molybdenum,total	0.12	mg/L	EPA 6010	
Potassium, total	3.0	mg/L	EPA 6010	
Selenium, total	< 0.005	mg/L	EPA 7740	
Silver, total	< 0.01	mg/L	EPA 6010	
Sodium, total	123	mg/L	EPA 6010	
Vanadium, total	< 0.01	mg/L	EPA 6010	
Zinc, total	0.02	mg/L	EPA 6010	
*Uranium, total	0.006	mg/L	EPA 908	

* = Analysis subcontracted

BETZ ANALYTICAL SERVICES

Chain of Custody

P.O. Box 4300 • 9669 Grogans Mill Road • The Woodlands, TX 77380 • 713-367-6201 • Fax 713-367-3189

Client Name/Address: Navajo Refining Co. 501 E. Main. Artesia NM 88210

Send Report to: Darrell Moore

P.O. Number:

Invoice to: — Same As Above —

Samplers (Signature): Darrell Moore

Project Number:

Sta No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	Metals *	F, Cl, SO4 *M-PAK*	TPH	Remarks
1	7/2/93	10:00		X	Reverse Osmosis Reject	2	X	X		*Metals are Al, As, Be, Ba, B, Cd, Cr, Co, Cu, Se, Ag, V, Zn, U & Mo
										*Major Cations/Anions - includes sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate and bicarbonate.
2	7/2/93	9:30		X	Alky Cooling Tower				X	

Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Darrell Moore	7/2/93 16:30				

Relinquished by (Signature)	Date / Time	Received for Laboratory by (Sig.)	Date / Time	Sample condition upon receipt:
		M Sturlock	7/3/93 10:15	

Method of Shipment: Fed-X SAT

Cooler temperature upon receipt 19°C gel bag not frozen

LAB 170 9206 (3 part)

TELEPHONE
(505) 748-3311

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-3987 ENGR
(505) 746-4438 P / L

NAVAJO REFINING COMPANY

501 EAST MAIN STREET ◦ P.O. DRAWER 159

ARTESIA, NEW MEXICO 88211-0159

OIL CONSERV... ON DIVISION
RECEIVED
JUL 9 93

July 12, 1993

Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, NM 87504-2088

Re: Reverse Osmosis Reject Sampling

Dear Roger,

Enclosed are the results from our May 17, 1993 and June 15, 1993 sampling of the reverse osmosis reject water that is being put on our farm. If there are any questions, please call me at (505)748-3311.

Regards,

Darrell Moore

Darrell Moore
Environmental Specialist

DGM/rh

enclosure

BETZ Analytical Services

Navajo Refining Company
501 East Main Street
P.O. Drawer 159
Artesia, New Mexico 88210

Date Submitted: 5/18/93
Date Reported: 7/2/93
Partial Reported: 5/27/93

Attn: Darrell Moore

Sample Description: R/O Reject
Date Sampled: 5/17/93

Laboratory ID: D0518508

TEST	VALUE	UNITS	METHOD
Chloride, as Cl	254	mg/L	EPA 325.2
Cyanide, total	< 0.01	mg/L	EPA 335.3
Fluoride, total	2.2	mg/L	EPA 340.2
Sulfate, at S04	1640	mg/L	EPA 375.4
Aluminum, total	< 0.1	mg/L	EPA 200.7
Arsenic, total	< 0.005	mg/L	EPA 206.2
Barium, total	0.06	mg/L	EPA 200.7
Beryllium, total	< 0.005	mg/L	EPA 200.7
Boron, total	0.08	mg/L	EPA 200.7
Cadmium, total	< 0.005	mg/L	EPA 200.7
Chromium, total	0.01	mg/L	EPA 200.7
Cobalt, total	< 0.01	mg/L	EPA 200.7
Copper, total	0.03	mg/L	EPA 200.7
Molybendum, total	0.20	mg/L	EPA 200.7
Selenium, total	< 0.005	mg/L	EPA 270.2
Silver, total	< 0.01	mg/L	EPA 200.7
Vanadium, total	< 0.01	mg/L	EPA 200.7
Zinc, total	0.02	mg/L	EPA 200.7
Ammonia, as N	0.4	mg/L	EPA 350.2
Chemical Oxygen Demand	< 30	mg/L	EPA 410.4
pH, total	7.12	pH	EPA 150.1
Total Suspended Solids	< 2	mg/L	EPA 160.2
Total Dissolved Solids	3160	mg/L	EPA 160.1
Fecal Coliform	< 1	MPN/100ml	SM 908 16th Ed
Biochemical Oxygen Demand	< 1	mg/L	SM 507 16th Ed
*Radium 226	1.6+/-0.3**	pcI/L	EPA 903.1
*Radium 228	-0.1+/-0.5**	pcI/L	EPA 904.0
*Uranium	< 0.005	mg/L	EPA 908.1
Nitrate, as N	0.48	mg/L	EPA 353.2

*Analysis subcontracted
**Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96.

BETZ ANALYTICAL SERVICES

Chain of Custody

P.O. Box 4300 • 9669 Grogans Mill Road • The Woodlands, TX 77380 • 713-367-6201 • Fax 713-367-3189

Client Name/Address: Navajo Refining Co. 501 E. Main Artesia NM

Send Report to: Darrell Moore

P.O. Number:

Invoice to: Darrell Moore As Above

Samplers (Signature): Darrell Moore

Project Number:

Sta No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	Metals Al, As, Ba, Be, B, Cd, Cr, Co, Cu, Se, Ag, V, Zn, U, Mo	Radium 226 & 228	NO3 as N	Residual Cl ★	Cyanide	BOD	TSS	Fecal Coliform	FCF, SO4, pH	TDS	COD NH3 as N	Remarks
1	5/17/93	15:00		X	R/O Reject	1	X											
2	"	"		X	" "	1		X										7 day Turnaround
3	"	"		X	" "	1			X									
4	"	"		X	" "	1				X								
5	"	"		X	" "	1					X							
6	"	"		X	" "	2						X						
7	"	"		X	" "	1							X					
8	"	"		X	" "	1								X				
9	"	"		X	" "	1									X			
10	"	"		X	" "	1										X		
11	"	"		X	" "	1											X	

★ Do Not Analyze per Darrell Moore 5-18-93 [illegible]

Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Darrell Moore	5/17/93 15:00				
Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Relinquished by (Signature)	Date / Time	Received for Laboratory by (Sig.)	Date / Time	Sample condition upon receipt:	
		Kathi Davis	5-18-93 9:30	70 Cooler temperature upon receipt	

Method of Shipment: Fed-X

Sample Description: RO Reject
Date Sampled: 6/15/93

Laboratory ID: D0616572

TEST	VALUE	UNITS	METHOD
M-Alkalinity, as CaC03	311	mg/L	SM 403 16th Ed
P-Alkalinity, as CaC03	0	mg/L	SM 403 16th Ed
Chloride, as Cl	227	mg/L	EPA 325.2
Fluoride, total	1.6	mg/L	EPA 340.2
Sulfate, at S04	1650	mg/L	EPA 375.4
Bicarbonate, alk as CaC03	311	mg/L	EPA 310.1
Carbonate, alk as CaC03	0	mg/L	EPA 310.1
Aluminum, total	< 0.1	mg/L	EPA 200.7
Arsenic, total	< 0.005	mg/L	EPA 206.2
Barium, total	0.06	mg/L	EPA 200.7
Beryllium, total	< 0.005	mg/L	EPA 200.7
Boron, total	0.10	mg/L	EPA 200.7
Cadmium, total	< 0.005	mg/L	EPA 200.7
Calcium, total	448	mg/L	EPA 200.7
Chromium, total	< 0.01	mg/L	EPA 200.7
Magnesium, total	146	mg/L	EPA 200.7
Cobalt, total	< 0.01	mg/L	EPA 200.7
Copper, total	0.02	mg/L	EPA 200.7
Molybendum, total	0.16	mg/L	EPA 200.7
Potassium, total	3.9	mg/L	EPA 200.7
Silver, total	< 0.01	mg/L	EPA 200.7
Sodium, total	134	mg/L	EPA 200.7
Vanadium, total	0.01	mg/L	EPA 200.7
Zinc, total	0.02	mg/L	EPA 200.7
pH, total	6.80	pH units	EPA 150.1
Selenium, total	< 0.005	mg/L	EPA 270.2
Uranium, total	< 0.005	mg/L	EPA 908.0

BETZ ANALYTICAL SERVICES

Chain of Custody

P.O. Box 4300 • 9669 Grogans Mill Road • The Woodlands, TX 77380 • 713-367-6201 • Fax 713-367-3189

Client Name/Address: Navajo Refining Co. 501 E. Main Artesia NM 88210

Send Report to: Darrell Moore

P.O. Number

Invoice to: Same -

Samplers (Signature): Darrell Moore

Project Number

Sta No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	VOA(2) 8240	Metals	F, Cl, SO4 *				Remarks
1	6/15/93	13:30		X	TEL-4	3	X	X					Need these ASAP
2	6/15/93	13:50		X	TEL-3	3	X	X					
3	6/15/93	14:10		X	TEL-2	3	X	X					
4	6/15/93	14:30		X	TEL-1	3	X	X					
5 *	6/15/93	14:45		X	RO Reject	2		X*	X				* Major Cations/Anions - includes sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate, and bicarbonate.
													* Metals on RO Reject are Al, As, Be, Ba, B, Cd, Cr, Co, Cu, Se, Ag, V Zn, U, & Mo.

Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Darrell Moore	6/15/93 16:30				
Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Relinquished by (Signature)	Date / Time	Received for Laboratory by (Sig.)	Date / Time	Sample condition upon receipt:	
		M Saurbach	6/16/93 10 am		

Method of Shipment: Fed-X

Cooler temperature upon receipt 10°

TELEPHONE
(505) 748-3311

Navajo REFINING COMPANY

501 EAST MAIN STREET ◦ P.O. DRAWER 159

ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

OIL CONSERVATION DIVISION
RECEIVED
'93 JUL 8 AM 8 4

July 06, 1993

Roger Anderson
Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, NM 87504-2088

Re: Reverse Osmosis Reject Sampling At Navajo Refinery

Dear Roger,

Enclosed are the results from our June 3, 1993 sampling of the reverse osmosis reject water that is going onto our farm. The sampling included major cations/anions and heavy metals. If you have any questions, please contact me at (505)748-3311.

Sincerely,

Darrell Moore

Darrell Moore
Environmental Specialist

DGM/rh

enclosures

RECEIVED
JUL 06 1993

BETZ
Analytical Services

NAVAJO REFINING CO.

Analytical Services
P.O. Box 4300
9669 Grogans Mill Road
The Woodlands, TX 77380
713 367 6201
713 367 3189 Fax

Navajo Refining Company
501 East Main Street
P.O. Drawer 159
Artesia, New Mexico 88210

June 29, 1993

Attn: Darrell Moore

Dear Mr. Moore:

Attached are the analytical results for your samples identified as as D0604510 through D0604512, which were sampled on June 2 and 3, 1993.

We at Betz appreciate the opportunity to serve you with quality analytical testing. If you have any questions about the results, please do not hesitate to contact me.

Idelis Z. Williams
Project Manager
Betz Laboratories
(713) 367-6201
FAX (713) 367-3189

IZW:jlh
cc: K. Tooker

BETZ Analytical Services

Navajo Refining Company
501 East Main Street
P.O. Drawer 159
Artesia, New Mexico 88210

Date Submitted: 6/4/93
Date Reported: 6/29/93

Attn: Darrell Moore

Sample Description: Reverse Osmosis Reject Laboratory ID: D0604510
Date Sampled: 6/3/93

TEST	VALUE	UNITS	METHOD	ANALYZED
M-Alkalinity, as CaCO3	328	mg/L	EPA 310.1	6/15/93
P-Alkalinity, as CaCO3	0	mg/L	EPA 310.1	6/15/93
Chloride, as Cl	237	mg/L	EPA 325.2	6/19/93
Fluoride, total	1.8	mg/L	EPA 340.2	6/17/93
Sulfate, as SO4	1520	mg/L	EPA 375.4	6/8/93
Bicarbonate, alk as CaC03	328	mg/L	EPA 310.1	6/15/93
Carbonate, alk as CaC03	0	mg/L	EPA 310.1	6/15/93
pH, total	6.88	pH	EPA 150.1	6/4/93
Aluminum, total	0.14	mg/L	EPA 200.7	6/15/93
Arsenic, total	< 0.005	mg/L	EPA 206.2	6/11/93
Barium, total	0.06	mg/L	EPA 200.7	6/15/93
Beryllium, total	< 0.005	mg/L	EPA 200.7	6/15/93
Boron, total	0.09	mg/L	EPA 200.7	6/15/93
Cadmium, total	< 0.005	mg/L	EPA 200.7	6/15/93
Calcium, total	442	mg/L	EPA 200.7	6/15/93
Magnesium, total	143	mg/L	EPA 200.7	6/15/93
Chromium, total	< 0.01	mg/L	EPA 200.7	6/15/93
Cobalt, total	< 0.01	mg/L	EPA 200.7	6/15/93
Copper, total	< 0.01	mg/L	EPA 200.7	6/15/93
Iron, total	< 0.05	mg/L	EPA 239.2	6/15/93
Molybendum, total	< 0.1	mg/L	EPA 200.7	6/15/93
Potassium, total	3.4	mg/L	EPA 200.7	6/15/93
Selenium, total	< 0.005	mg/L	EPA 270.2	6/9/93
Silver, total	< 0.01	mg/L	EPA 200.7	6/15/93
Sodium, total	125	mg/L	EPA 200.7	6/15/93
Vanadium, total	< 0.01	mg/L	EPA 200.7	6/15/93
Zinc, total	< 0.01	mg/L	EPA 200.7	6/15/93
*Uranium, total	< 0.005	mg/L	EPA 908.1	6/14/93

* Analysis subcontraced

BETZ ANALYTICAL SERVICES

Chain of Custody

P.O. Box 4300 • 9669 Grogans Mill Road • The Woodlands, TX 77380 • 713-367-6201 • Fax 713-367-3189

Client Name/Address: Navajo Refining Co. 501 E. Main Artesia NM 88210

Send Report to: Darrell Moore

P.O. Number

Invoice to: Same

Samplers (Signature): Darrell Moore

Project Number

Sta No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	Metals *	F, Cl, SO4 *	TCLP(No Pest/Herbs)				Remarks
1	6/3/93	9:00		X	Reverse Osmosis Reject	2	X	X					Metals are Al, As, Be, Ba, B, Cd, Cr, Co, Cu, Se, Ag, V, Zn, U, Mo. *Major cations/anions - includes sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate and bicarbonate.
2	6/2/93	14:00		X	Centrifuge 437 TK	1			X				

Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Darrell Moore	6/3/93 16:30				

Relinquished by (Signature)	Date / Time	Received for Laboratory by (Sig.)	Date / Time	Sample condition upon receipt:
		M Saurlock	6/4/93 9:45 am	

Method of Shipment: Fed-X

Cooler temperature upon receipt 2°

TELEPHONE
(505) 748-3311

Navajo REFINING COMPANY
501 EAST MAIN STREET ◦ P.O. DRAWER 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

OIL CONSERVATION DIVISION
RECEIVED
'93 JUN 10 AM 8 45

June 08, 1993

Roger Anderson
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

Re: OCD Discharge Permit - GW28
NPDES - Permit Applied For NM0030074

Dear Mr. Anderson,

Enclosed please find the first quarter sample analysis of the Reverse Osmosis Reject water discharged pursuant to the above mentioned permits or applications.

Navajo respectfully requests that OCD review the Fluoride standard of 1600 ug/l in Navajo permit. Due to the fact that flouride in the ground water in the discharge area tests above that level and therefore the local concentration should become the maximum.

Please contact the undersigned at (505)748-3311 ext. 281 if you have any questions reguarding these test results.

Sincerely,

Darrell Moore

Darrell G. Moore
Environmental Specialist

DGM/rh

enclosures

imL Inter-Mountain Laboratories, Inc.
Phone (409) 776-8945 FAX (409) 774-4705 11183 SH 30 College Station, Texas 77845

WATER QUALITY REPORT
GENERAL CHEMISTRY

CLIENT: K.W. BROWN ENVIRONMENTAL SERVICES
PROJECT: NAVAJO - #622092005

Sample ID:	TMD-GW-WELL #45	**Report Date:**	12/31/92
Laboratory Number:	C922354/15667	**Date Sampled:**	11/14/92
Sample Matrix:	WATER	**Date Received:**	11/17/92
Preservative:	COOL		
Condition:	INTACT		

Analyte	Concentration	Units	Detection Limit	Method Reference
pH	7.1	s.u.	0.1	SW-846 9040
Conductivity	5050.	umhos/cm	1.	SW-846 9050
Calcium	477.	mg/L	1.	EPA 215.2
Magnesium	228.	mg/L	0.1	SW-846 6010
Potassium	11.	mg/L	0.1	SW-846 6010
Sodium	372.	mg/L	1.	SW-846 6010
Total Alkalinity	330.	mg/L	1.	EPA 310.1
Chloride	671.	mg/L	1.	SW-846 9251
Sulfate	1780.	mg/L	1.	EPA 375.3
Fluoride	2.5	mg/L	0.1	EPA 340.2
Total Dissolved Solids	3740.	mg/L	10.	EPA 160.1

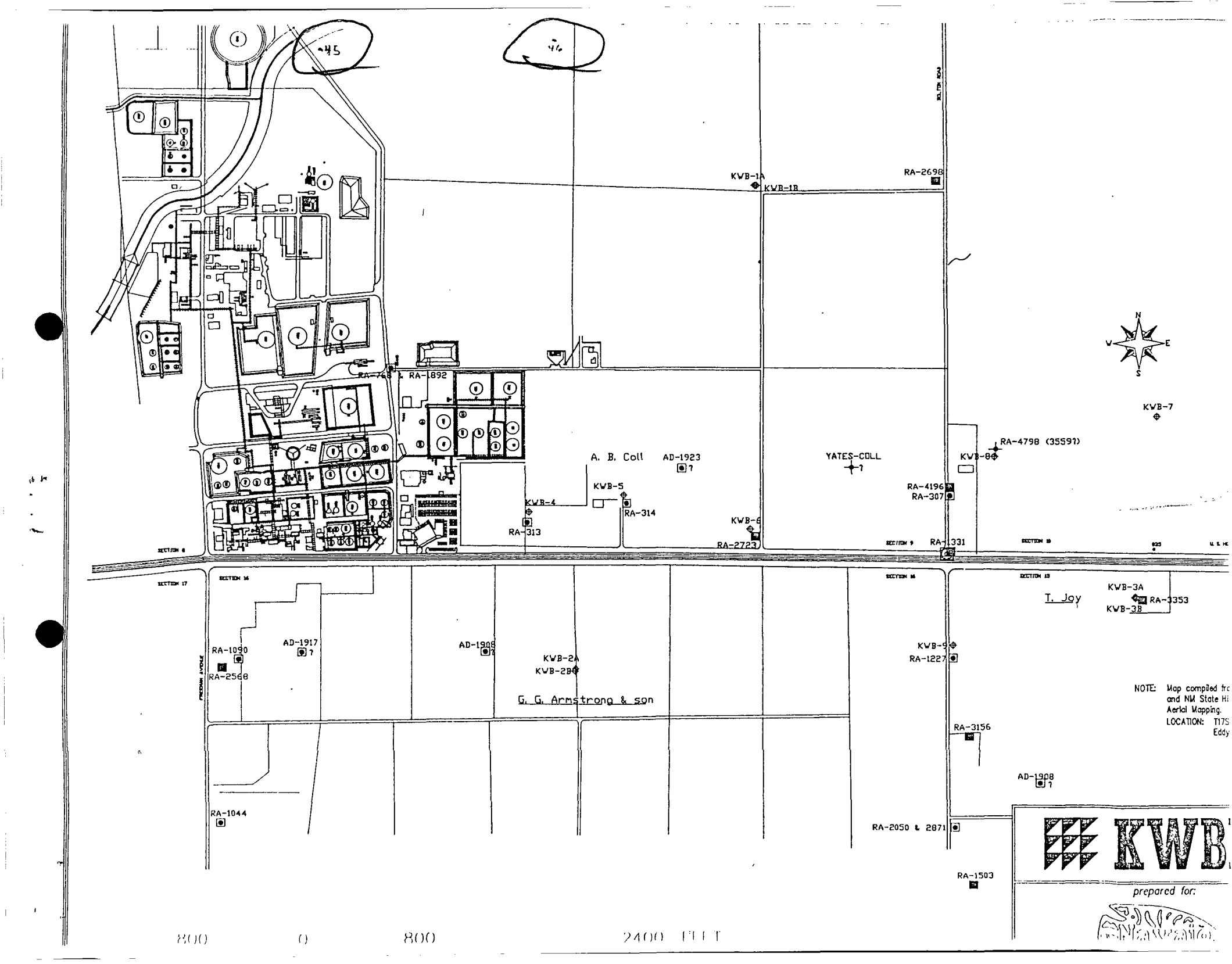
ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

REFERENCE: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," United States Environmental Protection Agency, November, 1986.

EPA - "Methods for Chemical Analysis of Water and Wastes," US EPA, EPA 600/4-79-020, Revised March 1983.

Reviewed by:

Mitch Swan
Supervisor–Water Operations


KWB-1A
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RA-2698
RA-768 & RA-1892
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AD-1923
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KWB-5
KWB-4
RA-314
RA-313
KWB-6
RA-2723
YATES-COLL
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KWB-7
KWB-8
RA-4798 (35591)
RA-4196
RA-307
RA-331
T. Joy
KWB-3A
RA-3353
KWB-3B
RA-1090
RA-2568
AD-1917
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AD-1908
KWB-2A
KWB-2B
G. G. Armstrong & son
KWB-9
RA-1227
RA-3156
AD-1908
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RA-1044
RA-2050 & 2871
RA-1503
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NOTE: Map compiled fro
and NM State Hi
Aerial Mapping.
LOCATION: T17S
Eddy
KWB
prepared for:
800 0 800 2400 FEET

Inter-Mountain Laboratories, Inc.
3304 Longmire
College Station, Texas 77845

EPA Method 8240
VOLATILE ORGANIC COMPOUNDS

Client: **K.W. BROWN ENVIRONMENTAL SERVICES, INC.**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: NEP-GW-Well #46
Laboratory ID: C922359
Sample Matrix: Water
Condition: Cool, intact

Report Date: 12/23/92
Date Sampled: 11/15/92
Date Received: 11/17/92
Date Extracted: 11/28/92
Date Analyzed: 11/28/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acetone	ND	10
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	5
2-Butanone (MEK)	ND	10
Carbon disulfide	ND	5
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroethane	ND	10
2-Chloroethyl vinyl ether	ND	50
Chloroform	ND	5
Chloromethane	ND	10
Dibromochloromethane	ND	5
1,1-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,2-Dichloroethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
2-Hexanone	ND	5
Methylene chloride	ND	5
4-Methyl-2-pentanone	ND	5
Styrene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Vinyl acetate	ND	5
Vinyl chloride	ND	5
Xylenes (total)	ND	5

ND - Analyte not detected at stated limit of detection

Inter-Mountain Laboratories, Inc.
3304 Longmire
College Station, Texas 77845

EPA Method 8240

VOLATILE ORGANIC COMPOUNDS

ADDITIONAL DETECTED COMPOUNDS

Client: **K.W. BROWN ENVIRONMENTAL SERVICES, INC.**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: NEP-GW-Well #46
Laboratory ID C922359

Report Date: 12/23/92
Date Sampled: 11/15/92
Date Analyzed: 11/28/92

Tentative Identification	Retention Time (Minutes)	Concentration (ug/L)
Unknown hydrocarbon	16.21	5*
Unknown hydrocarbon	17.06	24*
Unknown hydrocarbon	18.34	6*
Unknown hydrocarbon	18.62	23*
Unknown hydrocarbon	19.46	10*
Unknown hydrocarbon	19.71	25*
Unknown hydrocarbon	20.24	22*
Unknown hydrocarbon	21.29	18*

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Water Acceptance Limits
1,2-Dichloroethane-d4	83%	76 - 114%
Toluene-d8	101%	88 - 110%
Bromofluorobenzene	97%	86 - 115%

Reference:

Method 8240: Gas Chromatography / Mass Spectrometry for Volatile Organics
Test Methods for Evaluating Solid Wastes, SW - 846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter·Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

EPA Method 8270
SEMIVOLATILE ORGANIC COMPOUNDS

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: NEP - GW - Well #46
Laboratory ID: C922359
Sample Matrix: Water
Condition: Cool, Intact

Report Date: 01/08/93
Date Sampled: 11/15/92
Date Received: 11/17/92
Date Extracted: 11/22/92
Date Analyzed: 12/01/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acenaphthene	ND	10
Acenaphthylene	ND	10
Anthracene	ND	10
Benzo(a)anthracene	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Benzo(g,h,i)perylene	ND	10
Benzo(a)pyrene	ND	10
Benzoic acid	ND	10
Benzyl alcohol	ND	10
bis(2-Chloroethoxy)methane	ND	10
bis(2-Chloroethyl)ether	ND	10
bis(2-Chloroisopropyl)ether	ND	10
bis(2-Ethylhexyl)phthalate	ND	25
4-Bromophenyl phenyl ether	ND	10
Butyl benzyl phthalate	ND	10
p - Chloroaniline	ND	10
p - Chloro - m - cresol	ND	10
2 - Chloronaphthalene	ND	10
2 - Chlorophenol	ND	10
4-Chlorophenyl phenyl ether	ND	10
Chrysene	ND	10
o - Cresol / 2 - Methylphenol	ND	10
p - Cresol / 4 - Methylphenol	ND	10
Di - n - butylphthalate	ND	25
Dibenz(a,h)anthracene	ND	10
Dibenzofuran	ND	10
o - Dichlorobenzene	ND	10
m - Dichlorobenzene	ND	10
p - Dichlorobenzene	ND	10
3,3' - Dichlorobenzidine	ND	10
2,4 - Dichlorophenol	ND	10
Diethyl phthalate	ND	10
2,4 - Dimethylphenol	ND	10
Dimethyl phthalate	ND	25

Inter·Mountain Laboratories, Inc.
3304 Longmire
College Station, Texas 77845

EPA Method 8270
SEMIVOLATILE ORGANIC COMPOUNDS (cont)

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: NEP - GW - Well #46
Laboratory ID: C922359

Report Date: 01/08/93
Date Sampled: 11/15/92
Date Analyzed: 12/01/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
4,6 - Dinitro - o - cresol	ND	25
2,4 - Dinitrophenol	ND	10
2,4 - Dinitrotoluene	ND	10
2,6 - Dinitrotoluene	ND	25
Di - n - octyl phthalate	ND	10
Fluoranthene	ND	10
Fluorene	ND	10
Hexachlorobenzene	ND	25
Hexachlorocyclopentadiene	ND	10
Hexachloroethane	ND	10
Hexachlorobutadiene	ND	10
Ideno(1,2,3-cd)pyrene	ND	10
Isophorone	ND	10
2 - Methylnaphthalene	ND	10
Naphthalene	ND	10
o - Nitroaniline	ND	10
m - Nitroaniline	ND	10
p - Nitroaniline	ND	10
Nitrobenzene	ND	10
o - Nitrophenol	ND	10
p - Nitrophenol	ND	10
n - Nitrosodimethylamine	ND	10
n - Nitrosodiphenylamine	ND	10
n-Nitroso-di-n-propylamine	ND	10
Pentachlorophenol	ND	25
Phenanthrene	ND	10
Phenol	ND	10
Pyrene	ND	10
1,2,4 - Trichlorobenzene	ND	10
2,4,5 - Trichlorophenol	ND	10
2,4,6 - Trichlorophenol	ND	10

ND - Analyte not detected at stated limit of detection

Inter-Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

EPA Method 8270
SEMIVOLATILE HYDROCARBONS
ADDITIONAL DETECTED COMPOUNDS

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: NEP - GW - Well #46
Laboratory ID: C922359

Report Date: 01/08/93
Date Sampled: 11/15/92
Date Analyzed: 12/01/92

Tentative Identification	Retention Time (Minutes)	Concentration* (ug/L)
Hydrocarbon Envelope	10 - 32	

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
2 - Fluorophenol	41%	21 - 100%
Phenol - d5	34%	10 - 110%
Nitrobenzene - d5	80%	35 - 114%
2 - Fluorobiphenyl	85%	43 - 116%
2,4,6 - Tribromophenol	73%	10 - 123%
Terphenyl - d14	96%	33 - 141%

References: Method 3510: Separatory Funnel Liquid - Liquid Extraction
Method 8270: Gas Chromatography / Mass Spectrometry for Semivolatile Organics
Test Methods for Evaluating Solid Wastes, SW - 846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

imL
Inter Mountain Laboratories, Inc.
Phone (409) 776-8945 FAX (409) 774-4705
11183 SH 30 College Station, Texas 77845

WATER QUALITY REPORT
TRACE METALS

CLIENT: K.W. BROWN ENVIRONMENTAL SERVICES
PROJECT: NAVAJO - #622092005

Sample ID:	NEP-GW-WELL #46	**Report Date:**	12/31/92
Laboratory Number:	C922359/15671	**Date Sampled:**	11/15/92
Sample Matrix:	WATER	**Date Received:**	11/17/92
Preservative:	HNO3, COOL	**Date Extracted:**	11/19/92
Condition:	INTACT		

Analyte	Concentration	Units	Detection Limit	Method Reference
Total Arsenic	0.010	mg/L	0.005	7061
Dissolved Arsenic	ND	mg/L	0.005	7061
Total Chromium	0.20	mg/L	0.02	7191
Dissolved Chromium	ND	mg/L	0.02	7191
Total Lead	ND	mg/L	0.02	7421
Dissolved Lead	ND	mg/L	0.02	7421
Total Nickel	0.12	mg/L	0.01	7520
Dissolved Nickel	0.09	mg/L	0.01	7520

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

REFERENCE: Analysis performed according to SW-846 "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," United States Environmental Protection Agency, November, 1986.

Reviewed by:

Mitch Swan
Supervisor--Water Operations

imL
Phone (409) 776-8945 FAX (409) 774-4705

Inter-Mountain Laboratories, Inc.
11183 SH 30 College Station, Texas 77845

WATER QUALITY REPORT
GENERAL CHEMISTRY

CLIENT: K.W. BROWN ENVIRONMENTAL SERVICES
PROJECT: NAVAJO - #622092005

Sample ID:	NEP-GW-WELL #46	**Report Date:**	12/31/92
Laboratory Number:	C922359/15671	**Date Sampled:**	11/15/92
Sample Matrix:	WATER	**Date Received:**	11/17/92
Preservative:	COOL		
Condition:	INTACT		

Analyte	Concentration	Units	Detection Limit	Method Reference
pH	6.9	s.u.	0.1	SW-846 9040
Conductivity	5890.	umhos/cm	1.	SW-846 9050
Calcium	495.	mg/L	1.	EPA 215.2
Magnesium	341.	mg/L	0.1	SW-846 6010
Potassium	4.6	mg/L	0.1	SW-846 6010
Sodium	471.	mg/L	1.	SW-846 6010
Total Alkalinity	375.	mg/L	1.	EPA 310.1
Chloride	636.	mg/L	1.	SW-846 9251
Sulfate	2580.	mg/L	1.	EPA 375.3
Fluoride	2.9	mg/L	0.1	EPA 340.2
Total Dissolved Solids	5210.	mg/L	10.	EPA 160.1

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

REFERENCE: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," United States Environmental Protection Agency, November, 1986.

EPA - "Methods for Chemical Analysis of Water and Wastes," US EPA, EPA 600/4-79-020, Revised March 1983.

Reviewed by:

Mitch Swan
Supervisor–Water Operations

Inter Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

EPA Method 8240
VOLATILE ORGANIC COMPOUNDS

Client: **K.W. BROWN ENVIRONMENTAL SERVICES, INC.**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: TMD-GW-Well #45
Laboratory ID: C922354
Sample Matrix: Water
Condition: Cool, intact

Report Date: 12/23/92
Date Sampled: 11/14/92
Date Received: 11/17/92
Date Extracted: 11/27/92
Date Analyzed: 11/27/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acetone	ND	10
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	5
2-Butanone (MEK)	ND	10
Carbon disulfide	34	5
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroethane	ND	10
2-Chloroethyl vinyl ether	ND	50
Chloroform	ND	5
Chloromethane	ND	10
Dibromochloromethane	ND	5
1,1-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
trans-1.2-Dichloroethene	ND	5
1,2-Dichloroethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1.3-Dichloropropene	ND	5
Ethylbenzene	ND	5
2-Hexanone	ND	5
Methylene chloride	13	5
4-Methyl-2-pentanone	ND	5
Styrene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Vinyl acetate	ND	5
Vinyl chloride	ND	5
Xylenes (total)	13	5

ND - Analyte not detected at stated limit of detection

Inter Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

EPA Method 8240

VOLATILE ORGANIC COMPOUNDS

ADDITIONAL DETECTED COMPOUNDS

Client: **K.W. BROWN ENVIRONMENTAL SERVICES, INC.**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: TMD-GW-Well #45
Laboratory ID C922354

Report Date: 12/23/92
Date Sampled: 11/14/92
Date Analyzed: 11/27/92

Tentative Identification	Retention Time (Minutes)	Concentration (ug/L)
Unknown hydrocarbon	14.63	5*
Unknown hydrocarbon	17.04	5*
Unknown hydrocarbon	17.97	146*
Unknown hydrocarbon	19.69	11*
Unknown hydrocarbon	20.21	11*

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Water Acceptance Limits
1,2-Dichloroethane-d4	88%	76 - 114%
Toluene-d8	102%	88 - 110%
Bromofluorobenzene	98%	86 - 115%

Reference:

Method 8240: Gas Chromatography / Mass Spectrometry for Volatile Organics
Test Methods for Evaluating Solid Wastes, SW - 846, United States Environmental Protection Agency, September 1986.

Comments: Methylene chloride is a common laboratory contaminant. Analytical results should not be considered reliable unless the sample results exceed five times the reporting limit or ten times the blank concentration.

Analyst

Review

Inter-Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

EPA Method 8270
SEMIVOLATILE ORGANIC COMPOUNDS

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: TMD - GW - Well #45
Laboratory ID: C922354
Sample Matrix: Water
Condition: Cool, Intact

Report Date: 01/08/93
Date Sampled: 11/14/92
Date Received: 11/17/92
Date Extracted: 11/21/92
Date Analyzed: 12/01/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acenaphthene	ND	10
Acenaphthylene	ND	10
Anthracene	ND	10
Benzo(a)anthracene	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Benzo(g,h,i)perylene	ND	10
Benzo(a)pyrene	ND	10
Benzoic acid	ND	10
Benzyl alcohol	ND	10
bis(2-Chloroethoxy)methane	ND	10
bis(2-Chloroethyl)ether	ND	10
bis(2-Chloroisopropyl)ether	ND	10
bis(2-Ethylhexyl)phthalate	ND	25
4-Bromophenyl phenyl ether	ND	10
Butyl benzyl phthalate	ND	10
p - Chloroaniline	ND	10
p - Chloro - m - cresol	ND	10
2 - Chloronaphthalene	ND	10
2 - Chlorophenol	ND	10
4-Chlorophenyl phenyl ether	ND	10
Chrysene	ND	10
o - Cresol / 2 - Methylphenol	ND	10
p - Cresol / 4 - Methylphenol	ND	10
Di - n - butylphthalate	ND	25
Dibenz(a,h)anthracene	ND	10
Dibenzofuran	ND	10
o - Dichlorobenzene	ND	10
m - Dichlorobenzene	ND	10
p - Dichlorobenzene	ND	10
3,3' - Dichlorobenzidine	ND	10
2,4 - Dichlorophenol	ND	10
Diethyl phthalate	ND	10
2,4 - Dimethylphenol	ND	10
Dimethyl phthalate	ND	25

Inter-Mountain Laboratories, Inc.

3304 Longmire
College Station, Texas 77845

EPA Method 8270
SEMIVOLATILE ORGANIC COMPOUNDS (cont)

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: TMD - GW - Well #45
Laboratory ID: C922354

Report Date: 01/08/93
Date Sampled: 11/14/92
Date Analyzed: 12/01/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
4,6 - Dinitro - o - cresol	ND	25
2,4 - Dinitrophenol	ND	10
2,4 - Dinitrotoluene	ND	10
2,6 - Dinitrotoluene	ND	25
Di - n - octyl phthalate	ND	10
Fluoranthene	ND	10
Fluorene	ND	10
Hexachlorobenzene	ND	25
Hexachlorocyclopentadiene	ND	10
Hexachloroethane	ND	10
Hexachlorobutadiene	ND	10
Ideno(1,2,3-cd)pyrene	ND	10
Isophorone	ND	10
2 - Methylnaphthalene	ND	10
Naphthalene	ND	10
o - Nitroaniline	ND	10
m - Nitroaniline	ND	10
p - Nitroaniline	ND	10
Nitrobenzene	ND	10
o - Nitrophenol	ND	10
p - Nitrophenol	ND	10
n - Nitrosodimethylamine	ND	10
n - Nitrosodiphenylamine	ND	10
n-Nitroso-di-n-propylamine	ND	10
Pentachlorophenol	ND	25
Phenanthrene	ND	10
Phenol	ND	10
Pyrene	ND	10
1,2,4 - Trichlorobenzene	ND	10
2,4,5 - Trichlorophenol	ND	10
2,4,6 - Trichlorophenol	ND	10

ND - Analyte not detected at stated limit of detection

Inter-Mountain Laboratories, Inc.
3304 Longmire
College Station, Texas 77845

EPA Method 8270
SEMIVOLATILE HYDROCARBONS
ADDITIONAL DETECTED COMPOUNDS

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: TMD - GW - Well #45
Laboratory ID: C922354

Report Date: 01/08/93
Date Sampled: 11/14/92
Date Analyzed: 12/01/92

Tentative Identification	Retention Time (Minutes)	Concentration* (ug/L)
Unknown Hydrocarbon	8.74	40
Unknown Hydrocarbon	9.65	10
Unknown Hydrocarbon	17.81	20
Unknown Hydrocarbon	22.48	30
Unknown Hydrocarbon	23.33	30
Hydrocarbon Envelope	10 - 32	

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
2 - Fluorophenol	68%	21 - 100%
Phenol - d5	76%	10 - 110%
Nitrobenzene - d5	77%	35 - 114%
2 - Fluorobiphenyl	81%	43 - 116%
2,4,6 - Tribromophenol	85%	10 - 123%
Terphenyl - d14	91%	33 - 141%

References: Method 3510: Separatory Funnel Liquid - Liquid Extraction
Method 8270: Gas Chromatography / Mass Spectrometry for Semivolatile Organics
Test Methods for Evaluating Solid Wastes, SW - 846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

imL Inter-Mountain Laboratories, Inc.
Phone (409) 776-8945 FAX (409) 774-4705 11183 SH 30 College Station, Texas 77845

WATER QUALITY REPORT
TRACE METALS

CLIENT: K.W. BROWN ENVIRONMENTAL SERVICES
PROJECT: NAVAJO - #622092005

Sample ID:	TMD-GW-WELL #45	**Report Date:**	12/31/92
Laboratory Number:	C922354/15667	**Date Sampled:**	11/14/92
Sample Matrix:	WATER	**Date Received:**	11/17/92
Preservative:	HNO3, COOL	**Date Extracted:**	11/19/92
Condition:	INTACT		

Analyte	Concentration	Units	Detection Limit	Method Reference
Total Arsenic	0.009	mg/L	0.005	7061
Dissolved Arsenic	0.008	mg/L	0.005	7061
Total Chromium	0.03	mg/L	0.02	7191
Dissolved Chromium	ND	mg/L	0.02	7191
Total Lead	0.05	mg/L	0.02	7421
Dissolved Lead	ND	mg/L	0.02	7421
Total Nickel	0.10	mg/L	0.01	7520
Dissolved Nickel	0.09	mg/L	0.01	7520

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

REFERENCE: Analysis performed according to SW-846 "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," United States Environmental Protection Agency, November, 1986.

Reviewed by:

Mitch Swan
Supervisor--Water Operations

BETZ Analytical Services

Navajo Refining Company
501 East Main Street
P.O. Drawer 159
Artesia, New Mexico 88210

Date Submitted: 5/18/93
Date Reported:
Partial Reported: 5/27/93

Attn: Darrell Moore

Sample Description: R/O Reject
Date Sampled: 5/17/93

Laboratory ID: D0518508

TEST	VALUE	UNITS	METHOD
Chloride, as Cl	254	mg/L	EPA 325.2
Cyanide, total	< 0.01	mg/L	EPA 335.3
Fluoride, total	2.2	mg/L	EPA 340.2
Sulfate, at S04	1640	mg/L	EPA 375.4
Aluminum, total	< 0.1	mg/L	EPA 200.7
Arsenic, total	< 0.005	mg/L	EPA 206.2
Barium, total	0.06	mg/L	EPA 200.7
Beryllium, total	< 0.005	mg/L	EPA 200.7
Boron, total	0.08	mg/L	EPA 200.7
Cadmium, total	< 0.005	mg/L	EPA 200.7
Chromium, total	0.01	mg/L	EPA 200.7
Cobalt, total	< 0.01	mg/L	EPA 200.7
Copper, total	0.03	mg/L	EPA 200.7
Molybendum, total	0.20	mg/L	EPA 200.7
Selenium, total	< 0.005	mg/L	EPA 270.2
Silver, total	< 0.01	mg/L	EPA 200.7
Vanadium, total	< 0.01	mg/L	EPA 200.7
Zinc, total	0.02	mg/L	EPA 200.7
Ammonia, as N	0.4	mg/L	EPA 350.2
Chemical Oxygen Demand	< 30	mg/L	EPA 410.4
pH, total	7.12	pH	EPA 150.1
Total Suspended Solids	< 2	mg/L	EPA 160.2
Total Dissolved Solids	3160	mg/L	EPA 160.1
Fecal Coliform	< 1	MPN/100ml	SM 908 16th Ed
Biochemical Oxygen Demand	< 1	mg/L	SM 507 16th Ed
*Radium 226	x	pcI/L	EPA
*Radium 228	x	pcI/L	EPA
*Uranium	x	mg/L	EPA
Nitrate, as N	0.48	mg/L	EPA 353.2

* = Analysis subcontracted
x = Results will follow shortly

BLEDSOE ANALYTICAL SERVICES

Chain of Custody

P.O. Box 4300 • 9669 Grogans Mill Road • The Woodlands, TX 77380 • 713-367-6201 • Fax 713-367-3189

Client Name/Address: Navajo Refining Co. 501 E. Main Artesia NM

Send Report to: Darrell Moore

P.O. Number

Invoice to: Darrell Moore As Above

Samplers (Signature): Darrell Moore

Project Number

Sta No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	Metals (Ag, As, Ba, Cd, Cr, Pb, Hg, Se)	Radium 226 & 228	NO3 as N	Residual Cl	Cyanide	BOD	TSS	Fecal Coliform	F.Cl, Sol. pH	TDS	COD NH3 as N	Remarks
1	5/17/93	15:00		X	R/O Reject	1	X											1 1
2	"	"		X	" "	1		X										7 day Turnaround
3	"	"		X	" "	1			X									
4	"	"		X	" "	1				X								
5	"	"		X	" "	1					X							
6	"	"		X	" "	2						X						
7	"	"		X	" "	1				X			X					
8	"	"		X	" "	1								X				
9	"	"		X	" "	1									X			
10	"	"		X	" "	1										X		
11	"	"		X	" "	1											X	

Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Darrell Moore	5/17/93 15:00				
Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Relinquished by (Signature)	Date / Time	Received for Laboratory by (Sig.)	Date / Time	Sample condition upon receipt:	
		Kathi Davis	5-18-93 9:30	70	
Method of Shipment: Fed-X				Cooler temperature upon receipt	

LAB 170 9206 (3 part)

BETZ Analytical Services

Navajo Refining Company
501 East Main Street
P.O. Drawer 159
Artesia, New Mexico 88210

Date Submitted: 5/21/93
Date Reported: 6/2/93

Attn: Darrell Moore

Sample Description: RO Reject
Date Sampled: 5/20/93

Laboratory ID: D0521500

TEST	VALUE	UNITS	METHOD
Phenols, total	< 0.01	mg/L	EPA 420.2

Sample Description: RO Reject
Date Sampled: 5/20/93
Date Extracted: 5/24/93

Laboratory ID: D0521500
Date Analyzed: 5/26/93
Analyst: JR

ACID EXTRACTABLE ORGANICS (EPA 625)

Compound	ug/L
4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND *
2-Methyl-4,6-dinitrophenol	ND *
2-Nitrophenol	ND
4-Nitrophenol	ND *
Pentachlorophenol	ND *
Phenol	ND
2,4,6-Trichlorophenol	ND

Limit of Practical Quantitation is 10 ug/L, unless otherwise noted in brackets.
* = 5 times limit of detection

Surrogate Recovery:		Recovery Limits:
2-Fluorophenol	39 %	21-100 %
Phenol-d5	40 %	10- 94 %
2,4,6-Tribromophenol	114 %	10-123 %

Sample Description: RO Reject
Date Sampled: 5/20/93
Date Extracted: 5/24/93

Laboratory ID: D0521500
Date Analyzed: 5/26/93
Analyst: JR

BASE NEUTRAL EXTRACTABLE ORGANICS (EPA 625)

Compound	ug/L
Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(ghi)perylene	ND
Benzyl butyl phthalate	ND
Bis(2-chloroethyl)ether	ND
Bis(2-chloroethoxy)methane	ND
Bis(2-ethylhexyl)phthalate	ND
Bis(2-chloroisopropyl)ether	ND
4-Bromophenyl phenyl ether	ND
2-Chloronaphthalene	ND
4-Chlorophenyl phenyl ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-butyl phthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND *

BASE/NEUTRAL EXTRACTABLE ORGANICS (EPA 625)
Laboratory ID: D0521500 (Continued)

Compound	ug/L
Diethyl phthalate	ND
Dimethyl phthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-octyl phthalate	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

Limit of Practical Quantitation is 10 ug/L, unless otherwise noted in brackets.
* = 2 times limit of detection

				Recovery Limits	
Surrogate Recovery:	Nitrobenzene-d5	60	%	35 - 114	%
	2-Fluorobiphenyl	72	%	43 - 116	%
	Terphenyl-d14	94	%	33 - 141	%

BETZ Analytical Services

Sample Description: RO Reject
Date Sampled: 5/20/93
Analyst: RW

Laboratory ID: D0521500
Date Analyzed: 5/27/93 21:22

VOLATILE ORGANICS (EPA 624)

Compound	ug/L
Benzene	ND
Bromodichloromethane	ND
Methyl bromide (Bromoform)	ND
Bromomethane	ND [10]
Carbon tetrachloride	ND
Chlorobenzene	ND
Chloroethane	ND [10]
2-Chloroethylvinyl ether	ND [10]
Chloroform	ND
Methyl chloride(Chloromethane)	ND [10]
Dibromochloromethane	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane	ND
1,1-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Ethylbenzene	ND
Methylene chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachloroethene	ND
Toluene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl chloride	ND [10]

Limit of Practical Quantitation is 5 ug/L, unless otherwise noted in brackets.

Surrogate Recovery:		Recovery Limits
1,2-Dichloroethane-d4	94 %	84-113 %
Toluene-d8	98 %	82-117 %
Bromofluorobenzene	99 %	91-109 %

BETZ Analytical Services

CLIENT : NAVAJO
CLIENT SAMPLE ID: RO REJECT
BETZ SAMPLE ID : 0521-500
SAMPLE MATRIX : WATER
METHOD : EPA 608 (extracted 3520)
SAMPLE AMOUNT : 1000 ml
FINAL EXTD VOL : 10 ml
DILUTION FACTOR : 1
DATE EXTRACTED : 05/24/93 ANALYST : AF
DATE ANALYZED : 05/26/93 12:39
REPORT DATE : 05/26/93 VERIFIED : [signature]

PESTICIDE/PCB QUANTITATION REPORT

PESTICIDE/PCB	QUANTITATION LIMIT (ug/L)	AMOUNT FOUND (ug/L)
a-BHC	0.05	ND
b-BHC	0.05	ND
g-BHC(Lindane)	0.05	ND
d-BHC	0.05	ND
HEPTACHLOR	0.05	0.02 J
ALDRIN	0.05	ND
HEPTACHLOR EPOXIDE	0.05	ND
ENDOSULFAN I	0.05	ND
4,4'-DDE	0.10	ND
DIELDRIN	0.10	ND
ENDRIN	0.10	ND
ENDOSULFAN II	0.10	ND
4,4'-DDD	0.10	ND
ENDOSULFAN SULFATE	0.10	ND
4,4'-DDT	0.10	ND
ENDRIN KETONE	0.10	ND
ENDRIN ALDEHYDE	0.10	ND
METHOXYCHLOR	0.50	ND
a-CHLORDANE	0.50	ND
g-CHLORDANE	0.50	ND
TOXAPHENE	1.00	ND
AROCLOR 1016	0.50	ND
AROCLOR 1221	0.50	ND
AROCLOR 1232	0.50	ND
AROCLOR 1242	0.50	ND
AROCLOR 1248	0.50	ND
AROCLOR 1254	1.00	ND
AROCLOR 1260	1.00	ND

SURROGATE RECOVERY: (TCMX) 107 % limit(20-150)
(DCBP) 100 % limit(20-150)

FLAG DEFINITIONS:
ND -- NOT DETECTED ABOVE QUANTITATION LIMIT
B -- COMPOUND FOUND IN BLANK
J -- ESTIMATED VALUE (BELOW QUANTITATION LIMIT)
D -- SURROGATE OR MATRIX SPIKE DILUTED OUT SAMPLE RUN AT SECONDARY DILUTION
I -- SURROGATE NOT QUANTIFIABLE DUE TO MATRIX INTERFERENCE

BETZ ANALYTICAL SERVICES

Chain of Custody

P.O. Box 4300 • 9669 Grogans Mill Road • The Woodlands, TX 77380 • 713-367-6201 • Fax 713-367-3189

Client Name/Address: Navajo Refining Co. 501 E. Main Artesia NM

Send Report to: Darrell Moore

P.O. Number

Invoice to: Darrell Moore (Above)

Samplers (Signature): Darrell Moore

Project Number

Sta No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	VOA 624	Phenol	BNA 625	Pest/PCB 608			Remarks
1	5/20/93	14:00		X	RO Reject water	2	X						7 day Turnaround
2	5/20/93	14:00		X	" " "	1		X					
3	5/20/93	14:00		X	" " "	2			X				
4	5/20/93	14:00		X	" " "	2				X			

Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Darrell Moore	5/20/93 16:30				
Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Relinquished by (Signature)	Date / Time	Received for Laboratory by (Sig.)	Date / Time	Sample condition upon receipt:	
		Katie Davis	5-21-93 9:30	5°	

Method of Shipment: Fed-X

Cooler temperature upon receipt

LAB 170 9206 (3 part)

TELEPHONE
(505) 748-3311

Navajo REFINING COMPANY
501 EAST MAIN STREET ◦ P.O. DRAWER 159
ARTESIA, NEW MEXICO 88211-0159

EASYLINK
62905278
FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

RECEIVED
JUN 22 1993
OIL CONSERVATION DIV.
SANTA FE

June 08, 1993

Roger Anderson
Environmental Bureau
Oil Conservation Division
P.O. Box 26110
Santa Fe, NM 87502

Re: Water Quality Control Commission (WQCC)
Regulation 3-105

Dear Mr. Anderson:

As you are aware the Oil Conservation Division (OCD) has issued Discharge Plan GW-28 with modification to allow R.O. Reject water to be discharged into Eagle Creek. Navajo Refining Co. (Navajo) plans to retain and comply with all aspects of that permit for purposes of discharge into Eagle Creek. In maintaining compliance with GW-28 all WQCC Regulations concerning water contaminants are being met either in terms of absolute standards as contained in WQCC Regulations or in terms of standards allowed by regulation through existing conditions.

Due to the fact that Navajo is in compliance with the WQCC Regulations and will continue to test and report discharge contaminants pursuant to Discharge Plan GW-28. The use of the water for irrigated agriculture allows that use to be exempt from Sections 3-104 and 3-106 of the WQCC Regulations. Section 3-104 would, except for the exemption, require a discharge plan modification. Section 3-106 would, except for the exemption, require approval of the director of a discharge plan or modification. The WQCC Regulations require Navajo's R.O. Reject water to meet the criteria of the regulations for purposes of irrigation but do not require a discharge plan or approval because of the use of the water.

The first test results of the R.O. Reject water indicate that Navajo is in compliance with the WQCC regulations for discharges onto or below the surface of the ground. Continued monitoring under GW-28 will allow OCD to monitor the quality of the irrigation water when used for that purpose or when discharged directly into Eagle Creek.

To be specific, Navajo is not claiming an exemption from regulation by WQCC or OCD authority. Navajo does claim that WQCC Regulation Section 3-105 does apply to the R.O. Reject water in terms of the discharge plan and approval requirements. Based upon this claim Navajo plans to use the R.O. Reject water discharge for irrigation purposes without applying for a modification of Discharge Plan GW-28.

In order to facilitate verification of compliance with the WQCC Regulations, Navajo is enclosing ground water tests of the farm irrigation area showing contaminant levels of the local ground water.

If you find Navajo's interpretation of the WQCC Regulation to be in error please advise the undersigned as soon as possible and direct Navajo in the requirements as interpreted by OCD. Absent notice from you to the contrary Navajo plans to continue irrigation of agricultural land upon expiration of the current emergency discharge permit.

Sincerely,

Ron S. Loyd
Regulatory Compliance Auditor

RSL/rh

enclosures

BETZ Analytical Services

Sample Description: RO Reject
Date Sampled: 5/20/93
Date Extracted: 5/24/93

Laboratory ID: D0521500
Date Analyzed: 5/26/93
Analyst: JR

BASE NEUTRAL EXTRACTABLE ORGANICS (EPA 625)

Compound	ug/L
Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(ghi)perylene	ND
Benzyl butyl phthalate	ND
Bis(2-chloroethyl)ether	ND
Bis(2-chloroethoxy)methane	ND
Bis(2-ethylhexyl)phthalate	ND
Bis(2-chloroisopropyl)ether	ND
4-Bromophenyl phenyl ether	ND
2-Chloronaphthalene	ND
4-Chlorophenyl phenyl ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-butyl phthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND *

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WATER QUALITY REPORT
GENERAL CHEMISTRY

CLIENT: K.W. BROWN ENVIRONMENTAL SERVICES
PROJECT: NAVAJO - #622092005

Sample ID:	TMD-GW-WELL #45	**Report Date:**	12/31/92
Laboratory Number:	C922354/15667	**Date Sampled:**	11/14/92
Sample Matrix:	WATER	**Date Received:**	11/17/92
Preservative:	COOL		
Condition:	INTACT		

Analyte	Concentration	Units	Detection Limit	Method Reference
pH	7.1	s.u.	0.1	SW-846 9040
Conductivity	5050.	umhos/cm	1.	SW-846 9050
Calcium	477.	mg/L	1.	EPA 215.2
Magnesium	228.	mg/L	0.1	SW-846 6010
Potassium	11.	mg/L	0.1	SW-846 6010
Sodium	372.	mg/L	1.	SW-846 6010
Total Alkalinity	330.	mg/L	1.	EPA 310.1
Chloride	671.	mg/L	1.	SW-846 9251
Sulfate	1780.	mg/L	1.	EPA 375.3
Fluoride	2.5	mg/L	0.1	EPA 340.2
Total Dissolved Solids	3740.	mg/L	10.	EPA 160.1

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

REFERENCE: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," United States Environmental Protection Agency, November, 1986.

EPA - "Methods for Chemical Analysis of Water and Wastes," US EPA, EPA 600/4-79-020, Revised March 1983.

Reviewed by:

Mitch Swan
Supervisor–Water Operations

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WATER QUALITY REPORT
TRACE METALS

CLIENT: K.W. BROWN ENVIRONMENTAL SERVICES
PROJECT: NAVAJO - #622092005

Sample ID:	TMD-GW-WELL #45	**Report Date:**	12/31/92
Laboratory Number:	C922354/15667	**Date Sampled:**	11/14/92
Sample Matrix:	WATER	**Date Received:**	11/17/92
Preservative:	HNO3, COOL	**Date Extracted:**	11/19/92
Condition:	INTACT		

Analyte	Concentration	Units	Detection Limit	Method Reference
Total Arsenic	0.009	mg/L	0.005	7061
Dissolved Arsenic	0.008	mg/L	0.005	7061
Total Chromium	0.03	mg/L	0.02	7191
Dissolved Chromium	ND	mg/L	0.02	7191
Total Lead	0.05	mg/L	0.02	7421
Dissolved Lead	ND	mg/L	0.02	7421
Total Nickel	0.10	mg/L	0.01	7520
Dissolved Nickel	0.09	mg/L	0.01	7520

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

REFERENCE: Analysis performed according to SW-846 "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," United States Environmental Protection Agency, November, 1986.

Reviewed by:

Mitch Swan
Supervisor--Water Operations

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EPA Method 8270
SEMIVOLATILE HYDROCARBONS
ADDITIONAL DETECTED COMPOUNDS

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: TMD - GW - Well #45
Laboratory ID: C922354

Report Date: 01/08/93
Date Sampled: 11/14/92
Date Analyzed: 12/01/92

Tentative Identification	Retention Time (Minutes)	Concentration* (ug/L)
Unknown Hydrocarbon	8.74	40
Unknown Hydrocarbon	9.65	10
Unknown Hydrocarbon	17.81	20
Unknown Hydrocarbon	22.48	30
Unknown Hydrocarbon	23.33	30
Hydrocarbon Envelope	10 - 32	

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
2 - Fluorophenol	68%	21 - 100%
Phenol - d5	76%	10 - 110%
Nitrobenzene - d5	77%	35 - 114%
2 - Fluorobiphenyl	81%	43 - 116%
2,4,6 - Tribromophenol	85%	10 - 123%
Terphenyl - d14	91%	33 - 141%

References: Method 3510: Separatory Funnel Liquid - Liquid Extraction
Method 8270: Gas Chromatography / Mass Spectrometry for Semivolatile Organics
Test Methods for Evaluating Solid Wastes, SW - 846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

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EPA Method 8270
SEMIVOLATILE ORGANIC COMPOUNDS (cont)

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: TMD - GW - Well #45
Laboratory ID: C922354

Report Date: 01/08/93
Date Sampled: 11/14/92
Date Analyzed: 12/01/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
4,6 - Dinitro - o - cresol	ND	25
2,4 - Dinitrophenol	ND	10
2,4 - Dinitrotoluene	ND	10
2,6 - Dinitrotoluene	ND	25
Di - n - octyl phthalate	ND	10
Fluoranthene	ND	10
Fluorene	ND	10
Hexachlorobenzene	ND	25
Hexachlorocyclopentadiene	ND	10
Hexachloroethane	ND	10
Hexachlorobutadiene	ND	10
Ideno(1,2,3-cd)pyrene	ND	10
Isophorone	ND	10
2 - Methylnaphthalene	ND	10
Naphthalene	ND	10
o - Nitroaniline	ND	10
m - Nitroaniline	ND	10
p - Nitroaniline	ND	10
Nitrobenzene	ND	10
o - Nitrophenol	ND	10
p - Nitrophenol	ND	10
n - Nitrosodimethylamine	ND	10
n - Nitrosodiphenylamine	ND	10
n-Nitroso-di-n-propylamine	ND	10
Pentachlorophenol	ND	25
Phenanthrene	ND	10
Phenol	ND	10
Pyrene	ND	10
1,2,4 - Trichlorobenzene	ND	10
2,4,5 - Trichlorophenol	ND	10
2,4,6 - Trichlorophenol	ND	10

ND - Analyte not detected at stated limit of detection

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EPA Method 8270
SEMIVOLATILE ORGANIC COMPOUNDS

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: TMD - GW - Well #45
Laboratory ID: C922354
Sample Matrix: Water
Condition: Cool, Intact

Report Date: 01/08/93
Date Sampled: 11/14/92
Date Received: 11/17/92
Date Extracted: 11/21/92
Date Analyzed: 12/01/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acenaphthene	ND	10
Acenaphthylene	ND	10
Anthracene	ND	10
Benzo(a)anthracene	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Benzo(g,h,i)perylene	ND	10
Benzo(a)pyrene	ND	10
Benzoic acid	ND	10
Benzyl alcohol	ND	10
bis(2-Chloroethoxy)methane	ND	10
bis(2-Chloroethyl)ether	ND	10
bis(2-Chloroisopropyl)ether	ND	10
bis(2-Ethylhexyl)phthalate	ND	25
4-Bromophenyl phenyl ether	ND	10
Butyl benzyl phthalate	ND	10
p - Chloroaniline	ND	10
p - Chloro - m - cresol	ND	10
2 - Chloronaphthalene	ND	10
2 - Chlorophenol	ND	10
4-Chlorophenyl phenyl ether	ND	10
Chrysene	ND	10
o - Cresol / 2 - Methylphenol	ND	10
p - Cresol / 4 - Methylphenol	ND	10
Di - n - butylphthalate	ND	25
Dibenz(a,h)anthracene	ND	10
Dibenzofuran	ND	10
o - Dichlorobenzene	ND	10
m - Dichlorobenzene	ND	10
p - Dichlorobenzene	ND	10
3,3' - Dichlorobenzidine	ND	10
2,4 - Dichlorophenol	ND	10
Diethyl phthalate	ND	10
2,4 - Dimethylphenol	ND	10
Dimethyl phthalate	ND	25

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EPA Method 8240

VOLATILE ORGANIC COMPOUNDS

ADDITIONAL DETECTED COMPOUNDS

Client: **K.W. BROWN ENVIRONMENTAL SERVICES, INC.**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: TMD-GW-Well #45
Laboratory ID C922354

Report Date: 12/23/92
Date Sampled: 11/14/92
Date Analyzed: 11/27/92

Tentative Identification	Retention Time (Minutes)	Concentration (ug/L)
Unknown hydrocarbon	14.63	5*
Unknown hydrocarbon	17.04	5*
Unknown hydrocarbon	17.97	146*
Unknown hydrocarbon	19.69	11*
Unknown hydrocarbon	20.21	11*

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Water Acceptance Limits
1,2-Dichloroethane-d4	88%	76 - 114%
Toluene-d8	102%	88 - 110%
Bromofluorobenzene	98%	86 - 115%

Reference:

Method 8240: Gas Chromatography / Mass Spectrometry for Volatile Organics
Test Methods for Evaluating Solid Wastes, SW - 846, United States Environmental *Protection Agency, September 1986.*

Comments: Methylene chloride is a common laboratory contaminant. Analytical results should not be considered reliable unless the sample results exceed five times the reporting limit or ten times the blank concentration.

Analyst

Review

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EPA Method 8240
VOLATILE ORGANIC COMPOUNDS

Client: K.W. BROWN ENVIRONMENTAL SERVICES, INC.
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: TMD-GW-Well #45
Laboratory ID: C922354
Sample Matrix: Water
Condition: Cool, intact

Report Date: 12/23/92
Date Sampled: 11/14/92
Date Received: 11/17/92
Date Extracted: 11/27/92
Date Analyzed: 11/27/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acetone	ND	10
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	5
2-Butanone (MEK)	ND	10
Carbon disulfide	34	5
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroethane	ND	10
2-Chloroethyl vinyl ether	ND	50
Chloroform	ND	5
Chloromethane	ND	10
Dibromochloromethane	ND	5
1,1-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,2-Dichloroethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
2-Hexanone	ND	5
Methylene chloride	13	5
4-Methyl-2-pentanone	ND	5
Styrene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Vinyl acetate	ND	5
Vinyl chloride	ND	5
Xylenes (total)	13	5

ND - Analyte not detected at stated limit of detection

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WATER QUALITY REPORT
GENERAL CHEMISTRY

CLIENT: K.W. BROWN ENVIRONMENTAL SERVICES
PROJECT: NAVAJO - #622092005

Sample ID:	NEP-GW-WELL #46	**Report Date:**	12/31/92
Laboratory Number:	C922359/15671	**Date Sampled:**	11/15/92
Sample Matrix:	WATER	**Date Received:**	11/17/92
Preservative:	COOL		
Condition:	INTACT		

Analyte	Concentration	Units	Detection Limit	Method Reference
pH	6.9	s.u.	0.1	SW-846 9040
Conductivity	5890.	umhos/cm	1.	SW-846 9050
Calcium	495.	mg/L	1.	EPA 215.2
Magnesium	341.	mg/L	0.1	SW-846 6010
Potassium	4.6	mg/L	0.1	SW-846 6010
Sodium	471.	mg/L	1.	SW-846 6010
Total Alkalinity	375.	mg/L	1.	EPA 310.1
Chloride	636.	mg/L	1.	SW-846 9251
Sulfate	2580.	mg/L	1.	EPA 375.3
Fluoride	2.9	mg/L	0.1	EPA 340.2
Total Dissolved Solids	5210.	mg/L	10.	EPA 160.1

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

REFERENCE: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," United States Environmental Protection Agency, November, 1986.

EPA - "Methods for Chemical Analysis of Water and Wastes," US EPA, EPA 600/4-79-020, Revised March 1983.

Reviewed by:

Mitch Swan
Supervisor–Water Operations

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WATER QUALITY REPORT
TRACE METALS

CLIENT: K.W. BROWN ENVIRONMENTAL SERVICES
PROJECT: NAVAJO - #622092005

Sample ID:	NEP-GW-WELL #46	**Report Date:**	12/31/92
Laboratory Number:	C922359/15671	**Date Sampled:**	11/15/92
Sample Matrix:	WATER	**Date Received:**	11/17/92
Preservative:	HNO3, COOL	**Date Extracted:**	11/19/92
Condition:	INTACT		

Analyte	Concentration	Units	Detection Limit	Method Reference
Total Arsenic	0.010	mg/L	0.005	7061
Dissolved Arsenic	ND	mg/L	0.005	7061
Total Chromium	0.20	mg/L	0.02	7191
Dissolved Chromium	ND	mg/L	0.02	7191
Total Lead	ND	mg/L	0.02	7421
Dissolved Lead	ND	mg/L	0.02	7421
Total Nickel	0.12	mg/L	0.01	7520
Dissolved Nickel	0.09	mg/L	0.01	7520

ND - Parameter not detected at stated detection limit.
Detection limits are derived from practical quantitation levels.

REFERENCE: Analysis performed according to SW-846 "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," United States Environmental Protection Agency, November, 1986.

Reviewed by:

Mitch Swan
Supervisor--Water Operations

Inter-Mountain Laboratories, Inc.

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EPA Method 8270
SEMIVOLATILE HYDROCARBONS
ADDITIONAL DETECTED COMPOUNDS

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: NEP - GW - Well #46
Laboratory ID: C922359

Report Date: 01/08/93
Date Sampled: 11/15/92
Date Analyzed: 12/01/92

Tentative Identification	Retention Time (Minutes)	Concentration* (ug/L)
Hydrocarbon Envelope	10 - 32	

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
2 - Fluorophenol	41%	21 - 100%
Phenol - d5	34%	10 - 110%
Nitrobenzene - d5	80%	35 - 114%
2 - Fluorobiphenyl	85%	43 - 116%
2,4,6 - Tribromophenol	73%	10 - 123%
Terphenyl - d14	96%	33 - 141%

References: Method 3510: Separatory Funnel Liquid - Liquid Extraction
Method 8270: Gas Chromatography / Mass Spectrometry for Semivolatile Organics
Test Methods for Evaluating Solid Wastes, SW - 846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

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EPA Method 8270
SEMIVOLATILE ORGANIC COMPOUNDS (cont)

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: NEP - GW - Well #46
Laboratory ID: C922359

Report Date: 01/08/93
Date Sampled: 11/15/92
Date Analyzed: 12/01/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
4,6 - Dinitro - o - cresol	ND	25
2,4 - Dinitrophenol	ND	10
2,4 - Dinitrotoluene	ND	10
2,6 - Dinitrotoluene	ND	25
Di - n - octyl phthalate	ND	10
Fluoranthene	ND	10
Fluorene	ND	10
Hexachlorobenzene	ND	25
Hexachlorocyclopentadiene	ND	10
Hexachloroethane	ND	10
Hexachlorobutadiene	ND	10
Ideno(1,2,3-cd)pyrene	ND	10
Isophorone	ND	10
2 - Methylnaphthalene	ND	10
Naphthalene	ND	10
o - Nitroaniline	ND	10
m - Nitroaniline	ND	10
p - Nitroaniline	ND	10
Nitrobenzene	ND	10
o - Nitrophenol	ND	10
p - Nitrophenol	ND	10
n - Nitrosodimethylamine	ND	10
n - Nitrosodiphenylamine	ND	10
n-Nitroso-di-n-propylamine	ND	10
Pentachlorophenol	ND	25
Phenanthrene	ND	10
Phenol	ND	10
Pyrene	ND	10
1,2,4 - Trichlorobenzene	ND	10
2,4,5 - Trichlorophenol	ND	10
2,4,6 - Trichlorophenol	ND	10

ND - Analyte not detected at stated limit of detection

Inter-Mountain Laboratories, Inc.

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EPA Method 8270
SEMIVOLATILE ORGANIC COMPOUNDS

Client: **K. W. BROWN ENVIRONMENTAL SERVICES**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: NEP - GW - Well #46
Laboratory ID: C922359
Sample Matrix: Water
Condition: Cool, Intact

Report Date: 01/08/93
Date Sampled: 11/15/92
Date Received: 11/17/92
Date Extracted: 11/22/92
Date Analyzed: 12/01/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acenaphthene	ND	10
Acenaphthylene	ND	10
Anthracene	ND	10
Benzo(a)anthracene	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Benzo(g,h,i)perylene	ND	10
Benzo(a)pyrene	ND	10
Benzoic acid	ND	10
Benzyl alcohol	ND	10
bis(2-Chloroethoxy)methane	ND	10
bis(2-Chloroethyl)ether	ND	10
bis(2-Chloroisopropyl)ether	ND	10
bis(2-Ethylhexyl)phthalate	ND	25
4-Bromophenyl phenyl ether	ND	10
Butyl benzyl phthalate	ND	10
p - Chloroaniline	ND	10
p - Chloro - m - cresol	ND	10
2 - Chloronaphthalene	ND	10
2 - Chlorophenol	ND	10
4-Chlorophenyl phenyl ether	ND	10
Chrysene	ND	10
o - Cresol / 2 - Methylphenol	ND	10
p - Cresol / 4 - Methylphenol	ND	10
Di - n - butylphthalate	ND	25
Dibenz(a,h)anthracene	ND	10
Dibenzofuran	ND	10
o - Dichlorobenzene	ND	10
m - Dichlorobenzene	ND	10
p - Dichlorobenzene	ND	10
3,3' - Dichlorobenzidine	ND	10
2,4 - Dichlorophenol	ND	10
Diethyl phthalate	ND	10
2,4 - Dimethylphenol	ND	10
Dimethyl phthalate	ND	25

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EPA Method 8240

VOLATILE ORGANIC COMPOUNDS

ADDITIONAL DETECTED COMPOUNDS

Client: **K.W. BROWN ENVIRONMENTAL SERVICES, INC.**
Project Name: Navajo Refinery
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: NEP-GW-Well #46
Laboratory ID C922359

Report Date: 12/23/92
Date Sampled: 11/15/92
Date Analyzed: 11/28/92

Tentative Identification	Retention Time (Minutes)	Concentration (ug/L)
Unknown hydrocarbon	16.21	5*
Unknown hydrocarbon	17.06	24*
Unknown hydrocarbon	18.34	6*
Unknown hydrocarbon	18.62	23*
Unknown hydrocarbon	19.46	10*
Unknown hydrocarbon	19.71	25*
Unknown hydrocarbon	20.24	22*
Unknown hydrocarbon	21.29	18*

* - Concentration calculated using assumed Relative Response Factor = 1

Quality Control:

Surrogate	Percent Recovery	Water Acceptance Limits
1,2-Dichloroethane-d4	83%	76 - 114%
Toluene-d8	101%	88 - 110%
Bromofluorobenzene	97%	86 - 115%

Reference:

Method 8240: Gas Chromatography / Mass Spectrometry for Volatile Organics
Test Methods for Evaluating Solid Wastes, SW - 846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.
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EPA Method 8240
VOLATILE ORGANIC COMPOUNDS

Client: **K.W. BROWN ENVIRONMENTAL SERVICES, INC.**
Project Name: *Navajo Refinery*
Project Location: Artesia, NM
Project Number: 622092005
Sample ID: NEP-GW-Well #46
Laboratory ID: C922359
Sample Matrix: Water
Condition: Cool, intact

Report Date: 12/23/92
Date Sampled: 11/15/92
Date Received: 11/17/92
Date Extracted: 11/28/92
Date Analyzed: 11/28/92

Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Acetone	ND	10
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	5
2-Butanone (MEK)	ND	10
Carbon disulfide	ND	5
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroethane	ND	10
2-Chloroethyl vinyl ether	ND	50
Chloroform	ND	5
Chloromethane	ND	10
Dibromochloromethane	ND	5
1,1-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,2-Dichloroethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
2-Hexanone	ND	5
Methylene chloride	ND	5
4-Methyl-2-pentanone	ND	5
Styrene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Vinyl acetate	ND	5
Vinyl chloride	ND	5
Xylenes (total)	ND	5

ND - Analyte not detected at stated limit of detection

BETZ Analytical Services

Navajo Refining Company
501 East Main Street
P.O. Drawer 159
Artesia, New Mexico 88210

Date Submitted: 5/18/93
Date Reported:
Partial Reported: 5/27/93

Attn: Darrell Moore

Sample Description: R/O Reject
Date Sampled: 5/17/93

Laboratory ID: D0518508

TEST	VALUE	UNITS	METHOD
Chloride, as Cl	254	mg/L	EPA 325.2
Cyanide, total	< 0.01	mg/L	EPA 335.3
Fluoride, total	2.2	mg/L	EPA 340.2
Sulfate, at S04	1640	mg/L	EPA 375.4
Aluminum, total	< 0.1	mg/L	EPA 200.7
Arsenic, total	< 0.005	mg/L	EPA 206.2
Barium, total	0.06	mg/L	EPA 200.7
Beryllium, total	< 0.005	mg/L	EPA 200.7
Boron, total	0.08	mg/L	EPA 200.7
Cadmium, total	< 0.005	mg/L	EPA 200.7
Chromium, total	0.01	mg/L	EPA 200.7
Cobalt, total	< 0.01	mg/L	EPA 200.7
Copper, total	0.03	mg/L	EPA 200.7
Molybendum, total	0.20	mg/L	EPA 200.7
Selenium, total	< 0.005	mg/L	EPA 270.2
Silver, total	< 0.01	mg/L	EPA 200.7
Vanadium, total	< 0.01	mg/L	EPA 200.7
Zinc, total	0.02	mg/L	EPA 200.7
Ammonia, as N	0.4	mg/L	EPA 350.2
Chemical Oxygen Demand	< 30	mg/L	EPA 410.4
pH, total	7.12	pH	EPA 150.1
Total Suspended Solids	< 2	mg/L	EPA 160.2
Total Dissolved Solids	3160	mg/L	EPA 160.1
Fecal Coliform	< 1	MPN/100ml	SM 908 16th Ed
Biochemical Oxygen Demand	< 1	mg/L	SM 507 16th Ed
*Radium 226	x	pcI/L	EPA
*Radium 228	x	pcI/L	EPA
*Uranium	x	mg/L	EPA
Nitrate, as N	0.48	mg/L	EPA 353.2

* = Analysis subcontracted
x = Results will follow shortly

ANALYTICAL SERVICES

Chain of Custody

P.O. Box 4300 • 9669 Grogans Mill Road • The Woodlands, TX 77380 • 713-367-6201 • Fax 713-367-3189

Client Name/Address: Navajo Refining Co. 501 E. Main Artesia NM

Send Report to: Darrell Moore

P.O. Number

Invoice to: Darrell Moore As Above

Samplers (Signature): Darrell Moore

Project Number

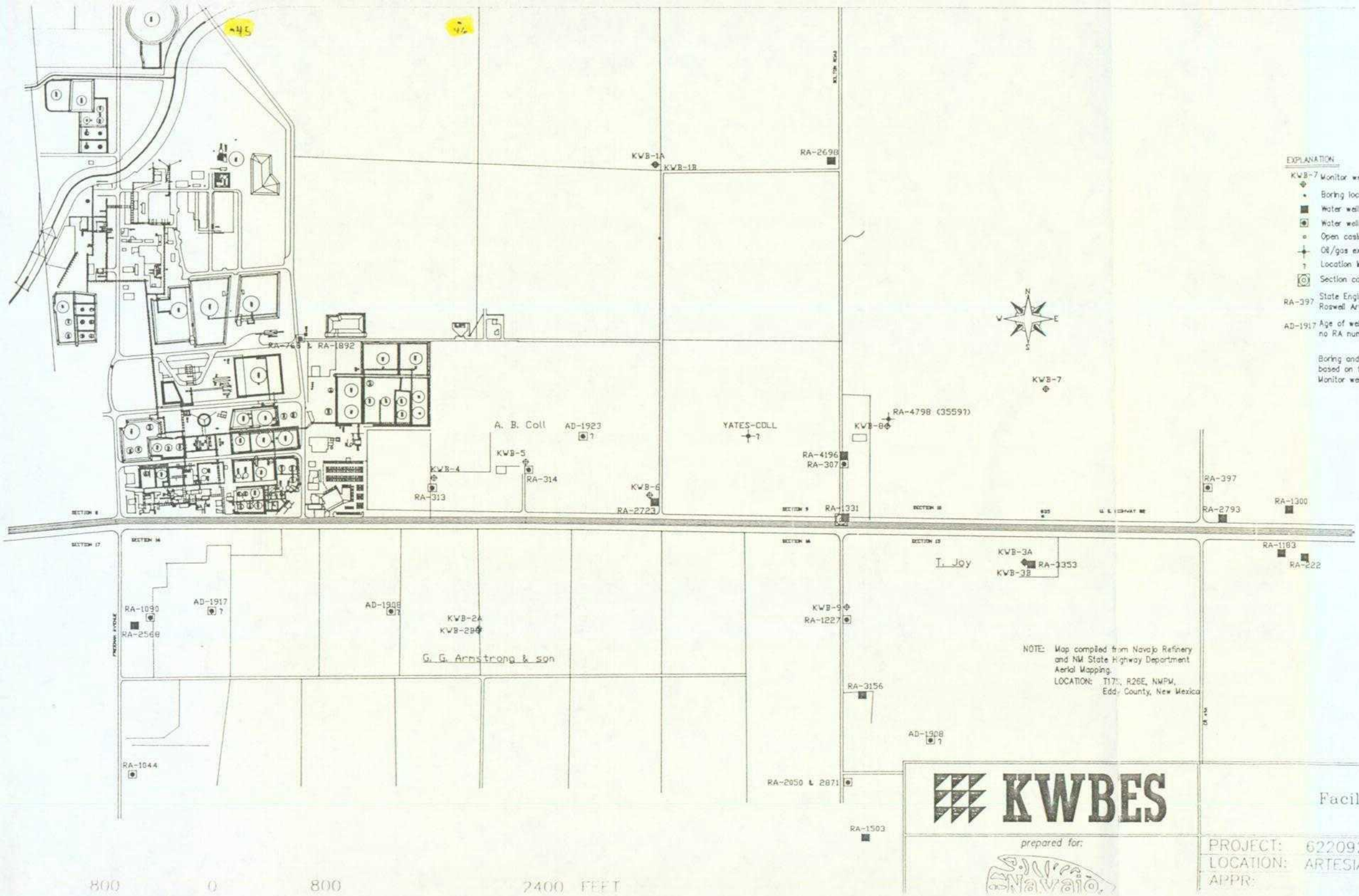
Sta No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	Metals (Ag, As, Ba, Cd, Cr, Pb, Hg, Se)	Radium 226 & 228	NO3 as N	Residual Cl	Cyanide	BOD	TSS	Fecal Coliform	FCl, SO4, pH	TDS	COD, NH3 as N	Remarks
1	5/17/93	15:00		X	D/O Reject	1	X											1 1
2	"	"		X	" "	1		X										7 day Turnaround
3	"	"		X	" "	1			X									
4	"	"		X	" "	1				X								
5	"	"		X	" "	1					X							
6	"	"		X	" "	2						X						
7	"	"		X	" "	1				1			X					
8	"	"		X	" "	1								X	1			
9	"	"		X	" "	1									X			
10	"	"		X	" "	1										X		
11	"	"		X	" "	1											X	

Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Darrell Moore	5/17/93 15:00				
Relinquished by (Signature)	Date / Time	Received by (Signature)	Relinquished by (Signature)	Date / Time	Received by (Signature)
Relinquished by (Signature)	Date / Time	Received for Laboratory by (Sig.)	Date / Time	Sample condition upon receipt:	
		Kathi Davis	5-18-93 9:30	70	

Method of Shipment: Fed-X

Cooler temperature upon receipt

LAB 170 9206 (3 part)


KWB-1A
KWB-1B
RA-2698
RA-768 & RA-1892
A. B. Coll
AD-1923
KWB-5
KWB-4
RA-314
RA-313
KWB-6
RA-2723
YATES-COLL
KWB-8
RA-4798 (35591)
RA-4196
RA-307
KWB-7
RA-1331
RA-397
RA-2793
RA-1300
RA-1183
RA-222
KWB-3A
KWB-3B
RA-1353
T. Joy
KWB-9
RA-1227
AD-1917
RA-1090
RA-2568
AD-1908
KWB-2A
KWB-2B
G. G. Armstrong & son
RA-3156
AD-1908
RA-1044
RA-2050 & 2871
RA-1503
N
W
E
S
EXPLANATION
KWB-7 Monitor well
Boring location
Water well – shallow va
Water well – deep, arte
Open casing – no Infor
Oil/gas exploration well
Location in 1/4 1/4 sec
Section corner
RA-397 State Engineer Office we
Roswell Artesian Basin
AD-1917 Age of well, record on f
no RA number assigned
Boring and water well lo
based on field observatio
Monitor well locations su
NOTE: Map compiled from Navajo Refinery and NM State Highway Department Aerial Mapping.
LOCATION: T17S, R26E, NMPM, Eddy County, New Mexico
KWBES
prepared for:
Navajo
Facility ba
PROJECT: 622092001-
LOCATION: ARTESIA, NEW
APPR:
800 0 800 2400 FEET

BETZ Analytical Services

Navajo Refining Company
501 East Main Street
P.O. Drawer 159
Artesia, New Mexico 88210

Date Submitted: 5/21/93
Date Reported: 6/2/93

Attn: Darrell Moore

Sample Description: RO Reject
Date Sampled: 5/20/93

Laboratory ID: D0521500

TEST	VALUE	UNITS	METHOD
Phenols, total	< 0.01	mg/L	EPA 420.2

Sample Description: RO Reject
Date Sampled: 5/20/93
Date Extracted: 5/24/93

Laboratory ID: D0521500
Date Analyzed: 5/26/93
Analyst: JR

ACID EXTRACTABLE ORGANICS (EPA 625)

Compound	ug/L
4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND *
2-Methyl-4,6-dinitrophenol	ND *
2-Nitrophenol	ND
4-Nitrophenol	ND *
Pentachlorophenol	ND *
Phenol	ND
2,4,6-Trichlorophenol	ND

Limit of Practical Quantitation is 10 ug/L, unless otherwise noted in brackets.
* = 5 times limit of detection

Surrogate Recovery:		Recovery Limits:
2-Fluorophenol	39 %	21-100 %
Phenol-d5	40 %	10- 94 %
2,4,6-Tribromophenol	114 %	10-123 %

BASE/NEUTRAL EXTRACTABLE ORGANICS (EPA 625)
Laboratory ID: D0521500 (Continued)

Compound	ug/L
Diethyl phthalate	ND
Dimethyl phthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-octyl phthalate	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

Limit of Practical Quantitation is 10 ug/L, unless otherwise noted in brackets.
* = 2 times limit of detection

				Recovery Limits	
Surrogate Recovery:	Nitrobenzene-d5	60	%	35 - 114	%
	2-Fluorobiphenyl	72	%	43 - 116	%
	Terphenyl-d14	94	%	33 - 141	%

BETZ Analytical Services

Sample Description: RO Reject
Date Sampled: 5/20/93
Analyst: RW

Laboratory ID: D0521500
Date Analyzed: 5/27/93 21:22

VOLATILE ORGANICS (EPA 624)

Compound	ug/L
Benzene	ND
Bromodichloromethane	ND
Methyl bromide (Bromoform)	ND
Bromomethane	ND [10]
Carbon tetrachloride	ND
Chlorobenzene	ND
Chloroethane	ND [10]
2-Chloroethylvinyl ether	ND [10]
Chloroform	ND
Methyl chloride(Chloromethane)	ND [10]
Dibromochloromethane	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane	ND
1,1-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Ethylbenzene	ND
Methylene chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachloroethene	ND
Toluene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl chloride	ND [10]

Limit of Practical Quantitation is 5 ug/L, unless otherwise noted in brackets.

Surrogate Recovery:		Recovery Limits
1,2-Dichloroethane-d4	94 %	84-113 %
Toluene-d8	98 %	82-117 %
Bromofluorobenzene	99 %	91-109 %

BETZ Analytical Services

CLIENT : NAVAJO
CLIENT SAMPLE ID: RO REJECT
BETZ SAMPLE ID : 0521-500
SAMPLE MATRIX : WATER
METHOD : EPA 608 (extracted 3520)
SAMPLE AMOUNT : 1000 ml
FINAL EXTD VOL : 10 ml
DILUTION FACTOR : 1
DATE EXTRACTED : 05/24/93 ANALYST : AF
DATE ANALYZED : 05/26/93 12:39
REPORT DATE : 05/26/93 VERIFIED : [signature]

PESTICIDE/PCB QUANTITATION REPORT

PESTICIDE/PCB	QUANTITATION LIMIT (ug/L)	AMOUNT FOUND (ug/L)
a-BHC	0.05	ND
b-BHC	0.05	ND
g-BHC(Lindane)	0.05	ND
d-BHC	0.05	ND
HEPTACHLOR	0.05	0.02 J
ALDRIN	0.05	ND
HEPTACHLOR EPOXIDE	0.05	ND
ENDOSULFAN I	0.05	ND
4,4'-DDE	0.10	ND
DIELDRIN	0.10	ND
ENDRIN	0.10	ND
ENDOSULFAN II	0.10	ND
4,4'-DDD	0.10	ND
ENDOSULFAN SULFATE	0.10	ND
4,4'-DDT	0.10	ND
ENDRIN KETONE	0.10	ND
ENDRIN ALDEHYDE	0.10	ND
METHOXYCHLOR	0.50	ND
a-CHLORDANE	0.50	ND
g-CHLORDANE	0.50	ND
TOXAPHENE	1.00	ND
AROCLOR 1016	0.50	ND
AROCLOR 1221	0.50	ND
AROCLOR 1232	0.50	ND
AROCLOR 1242	0.50	ND
AROCLOR 1248	0.50	ND
AROCLOR 1254	1.00	ND
AROCLOR 1260	1.00	ND

SURROGATE RECOVERY: (TCMX) 107 % limit(20-150)
(DCBP) 100 % limit(20-150)

FLAG DEFINITIONS:
ND -- NOT DETECTED ABOVE QUANTITATION LIMIT
B -- COMPOUND FOUND IN BLANK
J -- ESTIMATED VALUE (BELOW QUANTITATION LIMIT)
D -- SURROGATE OR MATRIX SPIKE DILUTED OUT SAMPLE RUN AT SECONDARY DILUTION
I -- SURROGATE NOT QUANTIFIABLE DUE TO MATRIX INTERFERENCE

ANALYTICAL SERVICES

Chain of Custody

P.O. Box 4300 • 9669 Grogans Mill Road • The Woodlands, TX 77380 • 713-367-6201 • Fax 713-367-3189

Client Name/Address: Navajo Refining Co. 501 E. Main Artesia NM

Send Report to: Darrell Moore

P.O. Number

Invoice to: Darrell Moore (Above)

Samplers *(Signature)*: Darrell Moore

Project Number

Sta No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	VOA 624	Phenol	BNA 625	Pest/PNB 608			Remarks
1	5/20/93	14:00		X	KD Project Water	2	X						7 day Turnaround
2	5/20/93	14:00		X	" " "	1		X					
3	5/20/93	14:00		X	" " "	2			X				
4	5/20/93	14:00		X	" " "	2				X			

Relinquished by *(Signature)*	Date / Time	Received by *(Signature)*	Relinquished by *(Signature)*	Date / Time	Received by *(Signature)*
Darrell Moore	5/20/93 16:30				
Relinquished by *(Signature)*	Date / Time	Received by *(Signature)*	Relinquished by *(Signature)*	Date / Time	Received by *(Signature)*
Relinquished by *(Signature)*	Date / Time	Received for Laboratory by *(Sig.)*	Date / Time	Sample condition upon receipt:	
		Kathi Davis	5 21 93 9:30	5°	

Method of Shipment: Fed-X

Cooler temperature upon receipt

LAB 170 9206 (3 part)