GW - 49

GENERAL CORRESPONDENCE

YEAR(S):

1987

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/12/87	Lab No.	ICP-557	User Code	☐ 59400 ☐ 59300	☐ 53400 ☐ 59500	☐ 53300 ☐

COLLECTION DATE & TIME: yy 87 | mm 08 | dd 10 | hh 10 | mm 35

COLLECTED BY: Conrad/Guy

TO:

COLLECTION SITE DESCRIPTION: EPNG - Blanco - Bloomfield surface soil sample SE corner of unused SE pond

OWNER: EPNG Citizens Ditch

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
29 N+/ 1 W+/ 14+

ATTN: Conrad
PHONE: 827-2905

STATION/ WELL CODE:

LATITUDE, LONGITUDE: -

SAMPLING CONDITIONS:

☐ Bailed ☐ Pump ☐ Dipped ☐ Tap | Water Level: | Discharge: | Sample Type: Soil from dry pond

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Soil sampled at 3 inches
Hot HNO3 digestion

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE		AA VALUE	ELEMENT	ICAP VALUE		AA VALUE
Aluminum	9100			Silicon	270		
Barium	110			Silver	<5.		
Beryllium	<5.			Strontium	61.		
Boron	<5.			Tin	<5		
Cadmium	<5.	☐		Vanadium	10		
Calcium	3700			Zinc	130		
Chromium	280	☒	270	Arsenic		☐	
Cobalt	3.			Selenium		☐	
Copper	56.			Mercury		☐	
Iron	8600.					☐	
Lead	<5	☐				☐	
Magnesium	2000					☐	
Manganese	96.					☐	
Molybdenum	<5.					☐	
Nickel	<5.					☐	

LAB COMMENTS: Sent business in lab my Mgt. 9/18/87 9788 solids Digested
Reported on "dry weight" basis!

ICAP Analyst: JB

Reviewer: J. Ashby

Analysis Date: 8/31/87

Date Reviewed: 9/29/87

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/12/87	Lab No.	ICP-554	User Code	☐ 59400 ☐ 59300	☐ 53400 ☐ 59500	☐ 53300 ☐

COLLECTION DATE & TIME: yy 87 mm 08 dd 10 hh 10 mm 40

COLLECTION SITE DESCRIPTION: EPNG - Blanco - Bloomfield
Left auger sample - SE corner
Unlused SE pond

COLLECTED BY: Conrad / Dyp

RECEIVED
OCT 15 1987
GROUND WATER/HAZARDOUS WASTE BUREAU

TO:

OWNER: EPNG
Citizen Acted

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
29NA/1/1/4/1/4

ATTN: Conrad
PHONE: 827-2905

STATION/ WELL CODE:

LATITUDE, LONGITUDE: -

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge:	Sample Type: Auger from dry pit

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Auger'd down 2 ft - sampled
Hot HNO3 Extract - Total digest

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS ~~(MG/L)~~ (µg/g)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	~~240~~ 12000		Silicon	~~3.1~~ 160	
Barium	~~3.3~~ 170		Silver	~~<0.1~~ <5	
Beryllium	~~<0.1~~ <5		Strontium	~~0.8~~ 40	
Boron	~~0.2~~ 10		Tin	~~<0.1~~ <5	
Cadmium	~~<0.1~~ <5 ☐		Vanadium	~~0.3~~ 20	
Calcium	~~70.~~ 3600		Zinc	~~0.8~~ 40	
Chromium	~~0.8~~ 40 ☒	~~0.8~~ 40.	Arsenic		☐
Cobalt	~~0.14~~ 7.1		Selenium		☐
Copper	~~0.3~~ 20		Mercury		☐
Iron	~~250~~ 13000				☐
Lead	~~<0.1~~ <5 ☐				☐
Magnesium	~~60.~~ 3100				☐
Manganese	~~1.8~~ 92				☐
Molybdenum	~~<0.1~~ <5				☐
Nickel	~~<0.1~~ <5				☐

LAB COMMENTS: seal broken in lab on 8/19/87 by NMP 84.5% solids
Reported on "dry weight" basis.

ICAP Analyst: JB

Reviewer: Jim Ashby

Analysis Date: 8/31/87

Date Reviewed: 9/29/87

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106
Telephone: (505)841-2500

HEAVY METAL ANALYSIS FORM

Date Received	8/12/87	Lab No.	ICP-555	User Code	☐ 59400 ☐ 59300	☐ 53400 ☐ 59500	☐ 53300 ☐	

COLLECTION DATE & TIME: yy 87 mm 08 dd 10 hh 10 mm 54

COLLECTION SITE DESCRIPTION: EPNG - Blanco Bloomfield soil sample, S of SE corner of unused pond

COLLECTED BY: Conrad / Duy

TO: Conrad

OWNER: EPNG Curtis Bitch

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION: County: San Juan

Township, Range, Section, Tract: (10N06E24342) 24 N+/ W+/ 4+

ATTN: Conrad
PHONE: 827-2405

STATION/ WELL CODE:

LATITUDE, LONGITUDE:

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge:	Sample Type: Solid
pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho	

FIELD COMMENTS: sampled outside of unused pond - ? in dam
Hot HNO3 digest - total

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS ~~(MG/L)~~ (µg/g)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	~~290~~ 14000		Silicon	~~2.6~~ 120	
Barium	~~3.4~~ 160		Silver	~~<0.1~~ <5	
Beryllium	~~<0.1~~ <5.		Strontium	~~2.7~~ 130	
Boron	~~0.1~~ 5.		Tin	~~<0.1~~ <5	
Cadmium	~~<0.1~~ <5 ☐		Vanadium	0.3 10	
Calcium	~~170~~ 8000		Zinc	0.8 40	
Chromium	~~0.2~~ 10 ☒	~~0.1~~ 5.	Arsenic	☐	
Cobalt	~~0.15~~ 7.		Selenium	☐	
Copper	~~0.4~~ 20		Mercury	☐	
Iron	~~300~~ 14000			☐	
Lead	~~<0.1~~ <5 ☐			☐	
Magnesium	~~80.~~ 3800			☐	
Manganese	~~9.1~~ 330			☐	
Molybdenum	~~<0.1~~ <5			☐	
Nickel	~~0.2~~ 10			☐	

LAB COMMENTS: Seal broken in lab by MH on 8/18/87 Recalib = 96.5%
Reported on "dry wt." Basis Digested

ICAP Analyst: JB
Analysis Date: 8/31/87

Reviewer: Jim Ashby
Date Reviewed: 9/29/87

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/12/87	Lab No.	IM-556	User Code	☐ 59400 ☐ 59300	☐ 53400 ☐ 59500	☐ 53300 ☐

COLLECTION DATE & TIME: yy 87 mm 08 dd 10 hh 11 mm 05

COLLECTION SITE DESCRIPTION: EPNG - Blanco Bloomfield 2 ft auger sample - south & outside of SE unused pond

COLLECTED BY: Conrad / Dey

OWNER: EPNG Citizens Ditch

TO: Conrad

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
29 N 11 W 14

ATTN: Conrad
PHONE: 827-2901

STATION/ WELL CODE:

LATITUDE, LONGITUDE:

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped ☐ Pump ☐ Tap	Water Level:	Discharge: 2 feet auger sample	Sample Type:

pH(00400)	Conductivity (Uncorr.) µmho	Water Temp. (00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: augered down 2 ft - sampled - Hot HCl; digest - total

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS ~~(MG/L)~~ (ug/g)

ELEMENT	ICAP VALUE	AA VALUE
Aluminum	6500	
Barium	80.	
Beryllium	<4.	
Boron	7.	
Cadmium	<4.	☐
Calcium	8300	
Chromium	<4.	☒ ~~0.3c~~ 4.07A
Cobalt	3.6	
Copper	7.	
Iron	7200	
Lead	<4.	☐
Magnesium	1600	
Manganese	210	
Molybdenum	<4.	
Nickel	4.	

ELEMENT	ICAP VALUE	AA VALUE
Silicon	58.	
Silver	<4.	
Strontium	91.	
Tin	<4.	
Vanadium	4.	
Zinc	20	
Arsenic		☐
Selenium		☐
Mercury		☐

LAB COMMENTS: Seal broken in lab by Huff on 8/18/87. Reported on "as received" basis. DIGESTED 8/27/87 % Solids 96.0%

ICAP Analyst: JB
Analysis Date: 8/31/87

Reviewer: Jim Ashley
Date Reviewed: 2/11/88

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/12/87	Lab No. ICP-564	User Code	☐ 59400 ☐ 59300	☐ 53400 ☐ 59500	☐ 53300 ☐

COLLECTION DATE & TIME: yy 87 | mm 08 | dd 10 | hh 14 | mm 16

COLLECTION SITE DESCRIPTION: EPNG - Blanco Bloomfield Soil Background - 3" down

COLLECTED BY: Conrad / Dye

TO: Conrad

OWNER: EPNG Citizens Ditch

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
29N+ 11W+ 14

ATTN: Conrad
PHONE: 827-2905

STATION/ WELL CODE:

LATITUDE, LONGITUDE:

SAMPLING CONDITIONS:

☐ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water Level:	Discharge:	Sample Type:
pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Sampled @ E section (property) road at ditch ~ N & E of ditch that HNO3 - total digest Soil @ 3"

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS ~~(MG/L)~~ (µg/g)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	7200		Silicon	200	
Barium	76		Silver	<4.	
Beryllium	<4.		Strontium	47.	
Boron	<4.		Tin	<4.	
Cadmium	<4.	☐	Vanadium	7.	
Calcium	3000		Zinc	20	
Chromium	4. JJA	☒ ~~[illegible]~~ $Cr = 5.0$ by AA JJA	Arsenic		☐
Cobalt	3.6		Selenium		☐
Copper	10		Mercury		☐
Iron	8000				☐
Lead	<4.	☐			☐
Magnesium	2000				☐
Manganese	200				☐
Molybdenum	<4.				☐
Nickel	4.				☐

LAB COMMENTS: Seal broken in lab by [illegible] 8/18/87 DIGEST 8/27/87
Reported on "as received" basis. % Solid = 97.95

ICAP Analyst: JB
Analysis Date: 8/31/87

Reviewer: Jim Ashley
Date Reviewed: 2/11/88

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/17/87	Lab No.	ICP-565	User Code	☐ 59400 ☐ 53400 ☐ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 87 | mm 08 | dd 10 | hh 14 | mm 30

COLLECTED BY: Conrad / Dey

COLLECTION SITE DESCRIPTION: EPNG - Blanco Bloomfield 2ft auger (2ft) background E. prop line at ditch

TO: Conrad

OWNER: EPNG Citizens Ditch

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
NM | 9 | N/ | W | NW/ | 4

ATTN: Conrad
PHONE: 827-2907

STATION/ WELL CODE:

LATITUDE, LONGITUDE: -

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge: 2 foot auger	Sample Type: Cuttings

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Sampled 2 foot down auger ~~on~~ - background sample E property line at Citizens Ditch

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS ~~(MG/L)~~ (µg/g)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	5500		Silicon	180	
Barium	88.		Silver	<4.	
Beryllium	<4.		Strontium	69.	
Boron	<4.		Tin	4.	
Cadmium	<4. ☐		Vanadium	7.	
Calcium	7700		Zinc	10	
Chromium	4. ☒	~~6.30~~ 4.37A	Arsenic		☐
Cobalt	4.0		Selenium		☐
Copper	7.		Mercury		☐
Iron	6600				☐
Lead	<4. ☐				☐
Magnesium	1500				☐
Manganese	160				☐
Molybdenum	<4.				☐
Nickel	4.				☐

LAB COMMENTS: Seal broken in lab by MH 8/18/87 — 9/27/87 DIGEST
Reported on "as received" basis — %Solid = 95.8%

ICAP Analyst: JB

Analysis Date: 8/31/87

Reviewer: jfl Jim Ashby

Date Reviewed: 2/11/88

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

IC#1060

Date Received	Lab No.	User Code			
12/9/87	~~IC#1066~~	☐ 59400	☒ 53400	☐ 53300	
		☐ 59300	☐ 59500	☐	

COLLECTION DATE & TIME: yy 87 | mm 12 | dd 08 | hh 12 | mm 00

COLLECTED BY: CONRAD / RICHARDS

COLLECTION SITE DESCRIPTION: El Paso Natural Gas Bianco Plant - Bloomfield Gilsonite Bottles from ditch side

OWNER: G. Goebel

TO: Conrad RECEIVED FEB 1 8 1988

Superfund & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

ATTN: Conrad
PHONE: ~~(505)~~ 827-2905

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
2 9 N + 1 1 W + + 1 4

STATION/ WELL CODE:

LATITUDE, LONGITUDE: 3 6 4 3 3 0 1 0 7 5 2 - 3 0

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge:	Sample Type: Soil

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Hot HNO3 leach + ICAP

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (~~MG/L~~) ug/g

ELEMENT	ICAP VALUE		AA VALUE	ELEMENT	ICAP VALUE		AA VALUE
Aluminum	4900.			Silicon	9.		
Barium	30.			Silver	<5.		
Beryllium	<5.			Strontium	330.		
Boron	9.			Tin	<5.		
Cadmium	<5.	☐		Vanadium	5.		
Calcium	21700.			Zinc	10.		
Chromium	<5.	☒	3.4	Arsenic		☐	
Cobalt	<2.2			Selenium		☐	
Copper	<5			Mercury		☐	
Iron	4900.					☐	
Lead	<5.	☐				☐	
Magnesium	2000.					☐	
Manganese	170.					☐	
Molybdenum	<5.					☐	
Nickel	<5.					☐	

LAB COMMENTS: Digest
95.69% solids reported on "as received" basis.

ICAP Analyst: JB
Analysis Date: 1/27/88

Reviewer: Jim Ashley
Date Reviewed: 2/11/88

Albuquerque, NM 87106 ICP 1059 Telephone: (505)841-2500

Date Received	Lab No.	User Code				
12/9/87	ICP-4065	☐ 59400	☒ 53400	☐ 53300	☐ 59300	☐ 59500

COLLECTION DATE & TIME: yy 87 | mm 12 | dd 08 | hh 14 | mm 00

COLLECTED BY: CONRAD / RICHARDS

COLLECTION SITE DESCRIPTION: El Paso Natural Gas Bianco Plant - Blowdown Pond N side of ditch at Schone Place #2

OWNER: Schone

TO: RECEIVED FEB 18 1988

& HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

ATTN: Conrad
PHONE: 827 2905

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
2 9 N + 1 1 W + | + | | 4

STATION/ WELL CODE: | | | | | | | | | | |

LATITUDE, LONGITUDE: 3 6 4 3 3 0 1 0 7 5 2 - 3 0

SAMPLING CONDITIONS:

☐ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water Level:	Discharge:	Sample Type: Soil

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Hot HNO3 leach for ICAP

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (~~MG/L~~) ug/g

ELEMENT	ICAP VALUE		AA VALUE	ELEMENT	ICAP VALUE		AA VALUE
Aluminum	5600.			Silicon	40.		
Barium	130.			Silver	<5.		
Beryllium	<6.			Strontium	30.		
Boron	<5.			Tin	<5.		
Cadmium	<5.	☐		Vanadium	9.		
Calcium	3300.			Zinc	40.		
Chromium	5.	☒	5.1	Arsenic		☐	
Cobalt	5.0			Selenium		☐	
Copper	270.			Mercury		☐	
Iron	8300.					☐	
Lead	9.	☐				☐	
Magnesium	2300.					☐	
Manganese	120.					☐	
Molybdenum	<5.					☐	
Nickel	9.					☐	

LAB COMMENTS: Digest
74.14 % Solids reported on "as received" bases

ICAP Analyst: JB Reviewer: Jim Ashby

Analysis Date: 1/27/88 Date Reviewed: 2/11/88

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

ID 1061

Date Received	12/9/87	Lab No.	ICP-1067	User Code	☐ 59400 ☒ 53400 ☐ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 87 | mm 12 | dd 08 | hh 14 | mm 30

COLLECTED BY: CONRAD / RICHARDS

COLLECTION SITE DESCRIPTION: El Paso Natural Gas Bianco Plant - B10mm-Hilo Gilpin Ditch across from EPNG pumphouse

OWNER: #3

TO: RECEIVED FEB 18 1988

& HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

ATTN: Conrad
PHONE: 827-2905

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
2 9 N + 1 / W + | + | | 4

STATION/ WELL CODE: | | | | | | | | | | | |

LATITUDE, LONGITUDE: 3 6 4 3 3 7 0 1 0 7 5 2 - 3 0

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge:	Sample Type: Soil

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Hot HNO3 Leach + ICAP

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (~~MG/L~~) ug/g

ELEMENT	ICAP VALUE		AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	5800.			Silicon	453.	
Barium	150.			Silver	<5	
Beryllium	<5.			Strontium	30	
Boron	<5.			Tin	<5.	
Cadmium	<5.	☐		Vanadium	10.	
Calcium	3500.			Zinc	30.	
Chromium	5.	☒	5.3	Arsenic		☐
Cobalt	5.0			Selenium		☐
Copper	40.			Mercury		☐
Iron	8200.					☐
Lead	5.	☐				☐
Magnesium	2100.					☐
Manganese	140.					☐
Molybdenum	<5.					☐
Nickel	10.					☐

LAB COMMENTS: ~~Added 2.5 mL HNO3 to Lab Filter~~ ~~Digest #8~~
71.14 % solids reported on "as received" basis. Digest

ICAP Analyst: JB
Analysis Date: 1/27/88

Reviewer: Jim Ashby
Date Reviewed: 2/11/88

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

ICP 1058

Date Received	12/9/87	Lab No. ICP-1064	User Code	☐ 59400 ☐ 59300	☒ 53400 ☐ 59500	☐ 53300 ☐

COLLECTION DATE & TIME: yy 87 mm 12 dd 08 hh 14 mm 30

COLLECTED BY: CONRAD / RICHARDS

COLLECTION SITE DESCRIPTION: El Paso Natural Gas Blanco Plant - Bloomfield 50 yards E of ... N side # 4

OWNER:

TO:

RECEIVED FEB 18 1988

& HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

ATTN: Conrad
PHONE: 827-2905

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
29N 11W + 14

STATION/ WELL CODE:

LATITUDE, LONGITUDE: 364336 1075 7 - 30

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge:	Sample Type: SOIL

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Hot HNO_3 leach + ICAP

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS ~~(MG/L)~~ ug/g

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	9500.		Silicon	10.	
Barium	190.		Silver	<5.	
Beryllium	<5.		Strontium	52.	
Boron	<5.		Tin	<5.	
Cadmium	<5.	☐	Vanadium	10.	
Calcium	4800.		Zinc	40.	
Chromium	<5.	☒ 8.1	Arsenic		☐
Cobalt	7.1		Selenium		☐
Copper	20.		Mercury		☐
Iron	11900.				☐
Lead	10.	☐			☐
Magnesium	3200.				☐
Manganese	670.				☐
Molybdenum	<5.				☐
Nickel	10.				☐

LAB COMMENTS: Digest
75.36 % solids reported on "as received" basis.

ICAP Analyst: JB
Analysis Date: 1/27/88

Reviewer: J. Ashby
Date Reviewed: 2/11/88

Albuquerque, NM 87106 Telephone: (505)841-2500

ICP 1057

Date Received	12/9/87	Lab No. CP-1063	User Code	☐ 59400 ☐ 59300	☒ 53400 ☐ 59500	☐ 53300 ☐

COLLECTION DATE & TIME: yy 87 mm 12 dd 08 hh 15 mm 30

COLLECTED BY: CONRAD / RICHARDS

COLLECTION SITE DESCRIPTION
El Paso Natural Gas
Blanco Plant - Bloomfield
Cal.... Ditch sample
Background #5

OWNER:

TO: RECEIVED FEB 18 1988

& HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

ATTN: Conrad
PHONE: 827-2905

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
29N+11W+ + 14

STATION/ WELL CODE:

LATITUDE, LONGITUDE: 364330 1075 7 2 - 30

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge:	Sample Type: SOIL

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Hot HNO3 leach + ICAP

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (~~MG/L~~) ug/g

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	5200.		Silicon	20.	
Barium	130.		Silver	<5.	
Beryllium	<5.		Strontium	30.	
Boron	30.		Tin	<5.	
Cadmium	<5.	☐	Vanadium	9.	
Calcium	3600.		Zinc	20.	
Chromium	5.	☒ 4.4	Arsenic		☐
Cobalt	3.8		Selenium		☐
Copper	9.		Mercury		☐
Iron	6700.				☐
Lead	9.	☐			☐
Magnesium	1900.				☐
Manganese	120.				☐
Molybdenum	<5.				☐
Nickel	5.				☐

LAB COMMENTS: Seal intact & broken 12/9/87 JB Digest
80.22% solids. reported on "as received" basis.

ICAP Analyst: JB Reviewer: Jim Ashley

Analysis Date: 1/27/88 Date Reviewed: 2/11/88

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (5[redacted]41-2555

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED: 8 12 87	LAB NO.: WC 3659	USER CODE ☐ 59300 ☐ 59600 ☐ OTHER:	
Collection DATE: 07 08 10	SITE INFORMATION ►	Sample location: EPNG – Blanco Bloomfield	
Collection TIME: 1110		Collection site description: Citizens Ditch closest point to and sampling	
Collected by — Person/Agency: Conrad / Dept			

SEND FINAL REPORT TO ►
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION (HED)
Crown Building, PO Box 968
Santa Fe, NM 87504-0968
Attn: _____

RECEIVED
OCT 13 1987
GROUND WATER/HAZARDOUS WASTE BUREAU

Station/well code: Citizens Ditch
Owner: EPNG-Citizens Ditch

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped ☐ Pump ☐ Tap	Water level	Discharge	Sample type: G-20
pH (00400)	Conductivity (Uncorrected) μmho	Water Temp. (00010) °C	Conductivity at 25°C (00094) μmho

Field comments: Sampled closest place to where cool gauge Sample taken

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1

☐ NF: Whole sample (Non-filtered) ☒ F: Filtered in field with 0.45 μmembrane filter ☐ A: 2 ml H_2SO_4/L added

☒ NA: No acid added ☐ Other-*specify:*

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μmho	
☐ Total non-filterable residue (suspended) (00530)	mg/l	
☐ Other:		
☐ Other:		
☐ Other:		

F, NA		Units	Date analyzed
☒ Calcium (00915)	34	mg/l	9/18
☒ Magnesium (00925)	7	mg/l	9/18
☒ Sodium (00930)	16.1	mg/l	8/31
☒ Potassium (00935)	1.17	mg/l	8/31
☒ Bicarbonate (00440)	96	mg/l	9/2
☒ Chloride (00940)	25	mg/l	9/1
☒ Sulfate (00945)	51.8	mg/l	9/1
☒ Total filterable residue (dissolved) (70300)	172	mg/l	9/17
☐ Other:			

NF, A-H_2SO_4		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l	
☐ Ammonia-N total (00610)	mg/l	
☐ Total Kjeldahl-N ( )	mg/l	
☐ Chemical oxygen demand (00340)	mg/l	
☐ Total organic carbon ( )	mg/l	
☐ Other:		
☐ Other:		

F, A-H_2SO_4		
☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ( )	mg/l	
☐ Other:		

Analyst	Date Reported	Reviewed by
	9 25 87	CD

Laboratory remarks: Sent in Lact, R Zierz 9/11/87, 5:55 pm

SLD 726 (12/84) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (5[redacted]841-2555

8v WP

GENERAL WATER CHEMISTRY a[redacted] NITROGEN ANALYSIS

DATE RECEIVED	LAB NO.	USER CODE
8/12/87	WC-3665	☐ 59300 ☐ 59600 ☐ OTHER:

Collection DATE: 87 08 10
Collection TIME: 1110
Collected by — Person/Agency: Conrad / Dezo

SITE INFORMATION ►
Sample location: EPNG — Blanco Bloomfield
Collection site description: Citizens Ditch closest point to soil sampling

SEND FINAL REPORT TO ►
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
Crown Building, PO Box 968
Santa Fe, NM 87504-0968
Attn:

RECEIVED AUG 27 1987 GROUND WATER/HAZARDOUS WASTE BUREAU

Station/well code: Citizen Ditch
Owner: EPNG - Citizens Ditch

SAMPLING CONDITIONS

☒ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water level	Discharge	Sample type H2O
pH (00400)	Conductivity (Uncorrected) µmho	Water Temp. (00010) °C	Conductivity at 25°C (00094) µmho

Field comments: Sampled closest place to where soil & auger samples taken

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted			
1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µmembrane filter	☒ A: 2 ml H_2SO_4/L added

☐ NA: No acid added ☐ Other-*specify*:

ANALYTICAL RESULTS from SAMPLES

NF, NA		Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)		µmho	
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☐ Other:			
☐ Other:			
☐ Other:			

F, NA		Units	Date analyzed
☐ Calcium (00915)		mg/l	
☐ Magnesium (00925)		mg/l	
☐ Sodium (00930)		mg/l	
☐ Potassium (00935)		mg/l	
☐ Bicarbonate (00440)		mg/l	
☐ Chloride (00940)		mg/l	
☐ Sulfate (00945)		mg/l	
☐ Total filterable residue (dissolved) (70300)		mg/l	
☐ Other:			

NF, A-H_2SO_4		Units	Date analyzed
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

F, A-H_2SO_4		Units	Date analyzed
☒ Nitrate-N +, Nitrate-N dissolved (00631)	<0.04	mg/l	8/13
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	8 20 87	[illegible]

remarks: Seals intact, P.I.CE 8/11/87 3:05pm

(…84) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/17/87	Lab No.	ICP-362	User Code	☐ 59400 ☐ 53400 ☐ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 87 | mm 08 | dd 10 | hh 11 | mm 10

COLLECTION SITE DESCRIPTION: E-PNG Blanco Bloomfield Citizens Ditch SE of Aztec Pool

COLLECTED BY: Conrad Berg

TO: Conrad

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

ATTN: Conrad
PHONE: 827-2907

OWNER: E-PNG Citizens Ditch

SITE LOCATION:
County:

Township, Range, Section, Tract: (10N06E24342)
29 N / W 24 N

STATION/ WELL CODE: C 1 T2N1S 01 T C

LATITUDE, LONGITUDE: ____ - ____

SAMPLING CONDITIONS:

☐ Bailed ☒ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge: ditch sample	Sample Type: H2O

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Citizen Ditch closest point to aztec and sample FILTERED

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☒ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	0.4		Silicon	4.9	
Barium	<0.1		Silver	<0.1	
Beryllium	<0.1		Strontium	0.3	
Boron	<0.1		Tin	<0.1	
Cadmium	<0.1	☒ <0.001	Vanadium	<0.1	
Calcium	30.		Zinc	<0.1	
Chromium	<0.1	☒ <0.005	Arsenic		☒ <0.005
Cobalt	<0.05		Selenium		☒ <0.005
Copper	<0.1		Mercury		☒ <0.0005
Iron	0.5				☐
Lead	<0.1	☒ <0.01			☐
Magnesium	6.8				☐
Manganese	<0.05				☐
Molybdenum	<0.1				☐
Nickel	<0.1				☐

RECEIVED DEC 04 1987 GROUND WATER/HAZARDOUS WASTE BUREAU

LAB COMMENTS: Seal broken by MF on 8/18/87 DIGEST

ICAP Analyst: JB
Analysis Date: 8/31/87

Reviewer: J. Ashley
Date Reviewed: 12/2/87

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/12/87	Lab No. ICP-560	User Code	☐ 59400 ☐ 59300	☐ 53400 ☐ 59500	☐ 53300 ☐

COLLECTION DATE & TIME: yy 87 mm 08 dd 10 hh 11 mm 10

COLLECTION SITE DESCRIPTION: EPNG Bloomfield-Blanco Citizens Ditch SE of [illegible] pond

COLLECTED BY: Conrad / Diego

TO: Conrad

OWNER: EPNG Citizens Ditch

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: ____

Township, Range, Section, Tract: (10N06E24342) 29 11 4 1 1 4 1 4 4

ATTN: Conrad
PHONE: 827-2901

STATION/ WELL CODE: C I T Z W S 0 I T C

LATITUDE, LONGITUDE: ____ - ____

SAMPLING CONDITIONS:

☐ Bailed ☒ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge: ditch sample	Sample Type: H2O

pH(00400)	Conductivity (Uncorr.)	Water Temp. (00010)	Conductivity at 25°C (00094)
	µmho	°C	µmho

FIELD COMMENTS: Citizens ditch closest point to surface [illegible] sample TOTAL NON FILTERED

SAMPLE FIELD TREATMENT
Check proper boxes:
☒ WPN: Water Preserved w/HNO_3 Non-Filtered
☐ WPF: Water Preserved w/HNO_3 Filtered

LAB ANALYSIS REQUESTED:
☒ ICAP Scan
Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	<0.1		Silicon	4.1	
Barium	<0.1		Silver	<0.1	
Beryllium	<0.1		Strontium	0.3	
Boron	<0.1		Tin	<0.1	
Cadmium	<0.1	☒ <0.001	Vanadium	<0.1	
Calcium	29.		Zinc	<0.1	
Chromium	<0.1	☒ <0.005	Arsenic		☒ <0.005
Cobalt	<0.05		Selenium		☒ <0.005
Copper	<0.1		Mercury		☒ <0.0005
Iron	0.1				☐
Lead	<0.1	☒ <0.01			☐
Magnesium	6.5				☐
Manganese	<0.05				☐
Molybdenum	<0.1				☐
Nickel	<0.1				☐

DEC 04 1987
GROUND WATER / HAZARDOUS WASTE BUREAU

LAB COMMENTS: Seal broken in lab by MJ 8/18/87 Digest

ICAP Analyst: JB
Analysis Date: 8/31/87

Reviewer: Jim Ashby
Date Reviewed: 12/2/87

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (5[illegible])841-2555

WP

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 8/12/87 LAB NO. WC-3666 USER CODE ☐ 59300 ☐ 59600 ☐ OTHER:

Collection DATE 870810
Collection TIME 1420
Collected by — Person/Agency Conrad / Berg

SITE INFORMATION ►
Sample location EPN6 – Blanco Bloomfield Citizens Ditch
Collection site description Background Citizens Ditch H2O sample

SEND FINAL REPORT TO ►
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
Crown Building, PO Box 968
Santa Fe, NM 87504-0968
Attn: Conrad

RECEIVED AUG 27 1987 GROUND WATER/HAZARDOUS WASTE BUREAU

Station/well code EPN6 – Citizens Ditch
Owner Background

SAMPLING CONDITIONS

☐ Bailed ☐ Pump ☒ Dipped ☐ Tap	Water level	Discharge	Sample type H2O
pH (00400)	Conductivity (Uncorrected) µmho	Water Temp. (00010) °C	Conductivity at 25°C (00094) µmho

Field comments Ditch sampled where E property line crosses Citizens Ditch

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted | ☐ NF: Whole sample (Non-filtered) | ☒ F: Filtered in field with 0.45 µmembrane filter | ☒ A: 2 ml H_2SO_4/L added

☐ NA: No acid added ☐ Other-*specify*:

ANALYTICAL RESULTS from SAMPLES

NF, NA		Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)		µmho	
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☐ Other:			
☐ Other:			
☐ Other:			

F, NA		Units	Date analyzed
☐ Calcium (00915)		mg/l	
☐ Magnesium (00925)		mg/l	
☐ Sodium (00930)		mg/l	
☐ Potassium (00935)		mg/l	
☐ Bicarbonate (00440)		mg/l	
☐ Chloride (00940)		mg/l	
☐ Sulfate (00945)		mg/l	
☐ Total filterable residue (dissolved) (70300)		mg/l	
☐ Other:			

NF, A-H_2SO_4		Units	
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

F, A-H_2SO_4		Units	
☒ Nitrate-N +, Nitrate-N dissolved (00631)	<0.04	mg/l	8/13
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	8/20/87	[illegible]

Laboratory remarks [illegible]

SLD 726 (12/84) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/12/87	Lab No.	ICP-566	User Code	☐ 59400 ☐ 53400 ☐ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 87 | mm 08 | dd 10 | hh 14 | mm 20

COLLECTED BY: Conrad / Ley

COLLECTION SITE DESCRIPTION: I-PNG Blanco Bloomfield Background Citizens Water Sample

TO:

OWNER: EPNG Citizens Water

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
2 9 A/V 04/04

ATTN: Conrad
PHONE: 827-2907

STATION/ WELL CODE: C I F 2 W1 0 1 F C W

LATITUDE, LONGITUDE: -

SAMPLING CONDITIONS:

☑ Bailed ☐ Pump ☐ Dipped ☐ Tap

Water Level:	Discharge: Citizens Water	Sample Type: PRC

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: At P. property line - where it crosses Citizens Water. FILTERED

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☑ WPF: Water Preserved w/HNO_3 Filtered	☑ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE
Aluminum	<0.1	
Barium	<0.1	
Beryllium	<0.1	
Boron	<0.1	
Cadmium	<0.1	☑ <0.001
Calcium	34.	
Chromium	<0.1	☑ <0.005
Cobalt	<0.05	
Copper	<0.1	
Iron	<0.1	
Lead	<0.1	☑ <0.01
Magnesium	7.7	
Manganese	<0.05	
Molybdenum	<0.1	
Nickel	<0.1	

ELEMENT	ICAP VALUE	AA VALUE
Silicon	5.1	
Silver	<0.1	
Strontium	0.3	
Tin	<0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		☑ <0.005
Selenium		☑ <0.005
Mercury		☑ <0.0005

RECEIVED
DEC 04 1987
GROUND WATER/HAZARDOUS WASTE BUREAU

LAB COMMENTS: Seal broken in lab by NMED 8/18/87

ICAP Analyst: JB
Analysis Date: 8/19/87

Reviewer: Jim Ashley
Date Reviewed: 12/2/87

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/12/87	Lab No.	ICP-567	User Code	☐ 59400 ☐ 53400 ☐ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 87 | mm 08 | dd 10 | hh 14 | mm 20

COLLECTED BY: Conrad Rep

COLLECTION SITE DESCRIPTION: FPNG - Blanco Bloomfield Bkgd Citizens Dutch Canyon

TO: Conrad

OWNER: FPNG Citizens Dutch

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
29 W/ W + + | | |

ATTN: Conrad
PHONE: 827-2905

STATION/ WELL CODE: C 1 T 2 N 1 0 1 T C A

LATITUDE, LONGITUDE: | | | | | | | | | | | - | | | |

SAMPLING CONDITIONS:

☐ Bailed ☒ Dipped ☐ Pump ☐ Tap	Water Level:	Discharge: Citizens Ditch	Sample Type: H2O

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Background sample taken at FPNG line @ Citizens Ditch

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☒ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	0.7		Silicon	4.9	
Barium	<0.1		Silver	<0.1	
Beryllium	<0.1		Strontium	0.3	
Boron	<0.1		Tin	<0.1	
Cadmium	<0.1	☒ <0.001	Vanadium	<0.1	
Calcium	29.		Zinc	<0.1	
Chromium	<0.1	☒ <0.005	Arsenic		☒ <0.005
Cobalt	<0.05		Selenium		☒ <0.005
Copper	<0.1		Mercury		☒ <0.0005
Iron	0.8				☐
Lead	<0.1	☒ <0.01			☐
Magnesium	6.7				☐
Manganese	<0.05				☐
Molybdenum	<0.1				☐
Nickel	<0.1				☐

RECEIVED
DEC 04 1987
GROUND WATER/HAZARDOUS WASTE BUREAU

LAB COMMENTS: Sample broken in lab by MM 8/18/87 DIGEST

ICAP Analyst: JB
Analysis Date: 8/31/87

Reviewer: Jim Ashby
Date Reviewed: 12/2/87

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

WNA

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 12 9 87	LAB NO. WC-5466	USER CODE ☒ 59300 ☐ 59600 ☐ OTHER:	
Collection DATE 87 12 08	SITE INFORM-ATION ►	Sample location El Paso Natural Gas - Blanco Plant Bloomfield, NM	
Collection TIME 1306		Collection site description George Doebel well	
Collected by — Person/Agency CONRAD/RICHARDS			

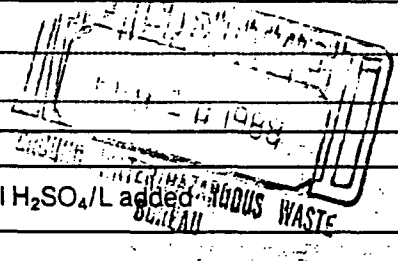
RECEIVED FEB 1 3 1988

SEND FINAL REPORT TO ►
HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
Crown Building, PO Box 968
Santa Fe, NM 87504-0968
Attn: CONRAD

Station/well code: See above
Owner:

SAMPLING CONDITIONS

☒ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water level 12.46 ft	Discharge	Sample type Water
pH (00400) 6.2	Conductivity (Uncorrected) 1500 µmho	Water Temp. (00010) 13.7 °C	Conductivity at 25°C (00094) µmho
Field comments			



SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted 1

☐ NF: Whole sample (Non-filtered) ☐ F: Filtered in field with 0.45 µmembrane filter ☐ A: 2 ml H_2SO_4/L added

☐ NA: No acid added ☐ Other-*specify:*

ANALYTICAL RESULTS from SAMPLES

NF, NA

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	µmho		☒ Calcium (00915) 264	mg/l	1/22
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925) 78	mg/l	1/22
☐ Other:			☒ Sodium (00930) 551	mg/l	1/28
☐ Other:			☒ Potassium (00935) 10.7	mg/l	2/3
☐ Other:			☒ Bicarbonate (00440) 19	mg/l	1/11
			☒ Chloride (00940) 6.1	mg/l	1/25
			☒ Sulfate (00945) 2033	mg/l	1/2<
			☒ Total filterable residue (dissolved) (70300) 3125	mg/l	1/10
			☐ Other:		

NF, A-H_2SO_4			F, A-H_2SO_4		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ( )	mg/l		☐ Total Kjeldahl-N ( )	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ( )	mg/l				
☐ Other:					
☐ Other:					

Analyst	Date Reported	Reviewed by
	2 5 88	CS

Laboratory remarks

SLD 726 (12/84) *DISTRIBUTION:* WHITE — EID, GW&HW Bureau CANARY — WS System PINK — EID Local Office GOLDENROD — SLD

Albuquerque, NM 87106 — Telephone: (505)841-2500

ICP 1064

Date Received	12/9/87	Lab No. ICP-1070	User Code	☐ 59400 ☒ 53400 ☐ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 87 | mm 12 | dd 08 | hh 13 | mm 06

COLLECTED BY: CONRAD / RICHARDS

COLLECTION SITE DESCRIPTION: El Paso Natural Gas Bianco Plant - B100m.Fmd

OWNER: Neo Barber well

TO:

RECEIVED FEB 18 1988

& HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
29N/1W+1/4+ + + 1/4

ATTN: Conrad
PHONE: 2905

STATION/ WELL CODE: 6C01-000CBEC

LATITUDE, LONGITUDE: 364331071521-3

SAMPLING CONDITIONS:

☒ Bailed ☐ Dipped ☐ Pump ☐ Tap	Water Level:	Discharge:	Sample Type: WATER

pH(00400)	Conductivity(Uncorr.)	Water Temp.(00010)	Conductivity at 25°C (00094)
6.2	1500 µmho	13.7 °C	µmho

FIELD COMMENTS:

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	<0.1		Silicon	0.2	
Barium	<0.1		Silver	<0.1	
Beryllium	<0.1		Strontium	3.6	
Boron	0.1		Tin	<0.1	
Cadmium	<0.1	☐	Vanadium	<0.1	
Calcium	240.		Zinc	0.8	
Chromium	<0.1	☒ 0.009	Arsenic		☐
Cobalt	<0.05		Selenium		☐
Copper	0.7		Mercury		☐
Iron	8.9				☐
Lead	<0.1	☐			☐
Magnesium	48.				☐
Manganese	0.80				☐
Molybdenum	<0.1				☐
Nickel	<0.1				☐

LAB COMMENTS: Digest

ICAP Analyst: JB
Analysis Date: 1/11/88

Reviewer: J. Ashley
Date Reviewed: 2/11/88

700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

WNN

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 12 9 87	LAB NO. WC[redacted]7	USER CODE ☒ 59300 ☐ 59600 ☐ OTHER:	
Collection DATE 87 12 08	SITE INFORMATION ►	Sample location: El Paso Natural GAS - Blanco Plant Bloom field, NM	
Collection TIME 1500		Collection site description: Cleves Heron Well	
Collected by — Person/Agency: CONRAD/RICHARDS			

RECEIVED FEB 16 1988

SEND FINAL REPORT TO ►
[redacted] HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
Crown Building, PO Box 968
Santa Fe, NM 87504-0968
Attn: CONRAD

Station/ well code:
Owner:

SAMPLING CONDITIONS

☐ Bailed ☒ Pump ☐ Dipped ☐ Tap	Water level	Discharge	Sample type: Water
pH (00400) 6.0	Conductivity (Uncorrected) 1340 µmho	Water Temp. (00010) 13.0 °C	Conductivity at 25°C (00094) µmho
Field comments			

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1

☐ **NF:** Whole sample (Non-filtered) ☐ **F:** Filtered in field with 0.45 µmembrane filter ☐ **A:** 2 ml H_2SO_4/L added

☒ **NA:** No acid added ☐ Other-*specify:*

ANALYTICAL RESULTS from SAMPLES

NF, NA

NF, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	µmho	
☐ Total non-filterable residue (suspended) (00530)	mg/l	
☐ Other:		
☐ Other:		
☐ Other:		

F, NA		Units	Date analyzed
☒ Calcium (00915)	392	mg/l	1/22
☒ Magnesium (00925)	34	mg/l	1/22
☒ Sodium (00930)	407	mg/l	1/28
☒ Potassium (00935)	3.57	mg/l	2/3
☒ Bicarbonate (00440)	314	mg/l	1/11
☒ Chloride (00940)	25	mg/l	2/4
☒ Sulfate (00945)	1647	mg/l	1/25
☒ Total filterable residue (dissolved) (70300)	2762	mg/l	1/14
☐ Other:			

NF, A-H_2SO_4

☐ Nitrate-N +, Nitrate-N total (00630)	mg/l	
☐ Ammonia-N total (00610)	mg/l	
☐ Total Kjeldahl-N ( )	mg/l	
☐ Chemical oxygen demand (00340)	mg/l	
☐ Total organic carbon ( )	mg/l	
☐ Other:		
☐ Other:		

F, A-H_2SO_4

☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ( )	mg/l	
☐ Other:		

Analyst	Date Reported	Reviewed by
	2 5 88	CS

Laboratory remarks

SLD 726 (12/84) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

Albuquerque, NM 87106 ICP 1063 Telephone: (505)841-2500

Date Received	12/9/87	Lab No. ICP 1069	User Code	☐ 59400 ☒ 53400 ☐ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 87 mm 12 dd 08 hh mm

COLLECTED BY: CONRAD / RICHARDS

COLLECTION SITE DESCRIPTION: El Paso Natural Gas Bianco Plant - Bloomfield

OWNER: Chetz/Texm well

TO: RECEIVED FEB 18 1988

& HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
2 9 A i i U + + i 4

ATTN: Conrad
PHONE: 3905

STATION/ WELL CODE:

LATITUDE, LONGITUDE: 3 6 4 3 3 0 1 0 7 5 2 - 3 0

SAMPLING CONDITIONS:

☐ Bailed ☒ Pump ☐ Dipped ☐ Tap	Water Level:	Discharge:	Sample Type: WATER

pH(00400)	Conductivity(Uncorr.)	Water Temp.(00010)	Conductivity at 25°C (00094)
6.0	1340. µmho	13° °C	µmho

FIELD COMMENTS: Total metals

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☒ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	<0.1		Silicon	4.0	
Barium	<0.1		Silver	<0.1	
Beryllium	<0.1		Strontium	8.0	
Boron	0.3		Tin	<0.1	
Cadmium	<0.1 ☐		Vanadium	<0.1	
Calcium	390.		Zinc	<0.1	
Chromium	<0.1 ☒	0.009	Arsenic		☐
Cobalt	<0.05		Selenium		☐
Copper	<0.1		Mercury		☐
Iron	7.5				☐
Lead	<0.1 ☐				☐
Magnesium	44.				☐
Manganese	1.4				☐
Molybdenum	<0.1				☐
Nickel	<0.1				☐

LAB COMMENTS:

ICAP Analyst: JB
Analysis Date: 12/10/87

Reviewer: Jim Ashby
Date Reviewed: 2/11/88

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (5[illegible]41-2555

WRT

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED: 10/[illegible]/87 | LAB NO.: WC-3660 | USER CODE ☐ 59300 ☐ 59600 ☐ OTHER:

Collection DATE: 07/08/10 | Collection TIME:

SITE INFORMATION ►

Sample location: EPNG - Blanco Bloomfield - Citizens Gate

Collection site description: Blank - Deion Hed

Collected by — Person/Agency: Conrad/Dep

SEND FINAL REPORT TO ►
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION
Crown Building, PO Box 968
Santa Fe, NM 87504-0968
Attn: Conrad

RECEIVED
OCT 13 1987
GROUND WATER/HAZARDOUS WASTE BUREAU

Station/well code: Blank

Owner: EPNG

SAMPLING CONDITIONS

☐ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water level	Discharge	Sample type: HCl
pH (00400)	Conductivity (Uncorrected) µmho	Water Temp. (00010) °C	Conductivity at 25°C (00094) µmho

Field comments: Field filtered

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted

☒ NF: Whole sample (Non-filtered) ☒ F: Filtered in field with 0.45 µmembrane filter ☐ A: 2 ml H_2SO_4/L added

☐ NA: No acid added ☐ Other-*specify:*

ANALYTICAL RESULTS from SAMPLES

NF, NA		Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)		µmho	
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☐ Other:			
☐ Other:			
☐ Other:			

F, NA		Units	Date analyzed
☒ Calcium (00915)	20	mg/l	9/18
☒ Magnesium (00925)	7	mg/l	9/18
☒ Sodium (00930)	57.5	mg/l	8/31
☒ Potassium (00935)	0.59	mg/l	8/31
☒ Bicarbonate (00440)	134	mg/l	9/2
☒ Chloride (00940)	45	mg/l	9/1
☒ Sulfate (00945)	15.7	mg/l	9/1
☒ Total filterable residue (dissolved) (70300)	166	mg/l	9/25
☐ Other:			

NF, A-H_2SO_4			
☐ Nitrate-N + Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon		mg/l	
☐ Other:			
☐ Other:			

F, A-H_2SO_4			
☐ Nitrate-N +, Nitrate-N dissolved (00631)		mg/l	
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	9/29/87	

Laboratory remarks:

SLD 726 (12/84) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/12/87	Lab No.	FCP-558	User Code	☐ 59400 ☐ 59300	☐ 53400 ☐ 59500	☐ 53300 ☐

COLLECTION DATE & TIME: yy 87 mm 05 dd 10 hh mm

COLLECTED BY: Conrad

COLLECTION SITE DESCRIPTION: EPNG - Blanco Bloomfield Dehy. Hwy - Plant Effluent Pond

TO: Conrad

RECEIVED DEC 15 1987

OWNER: EPNG Cathodic Prot.

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
29N +01W 04+ 04+

ATTN: Conrad
PHONE: 827-2945

STATION/ WELL CODE:

LATITUDE, LONGITUDE: -

SAMPLING CONDITIONS:

☐ Bailed ☐ Pump ☐ Dipped ☐ Tap

Water Level:	Discharge:	Sample Type:
		Blank

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Field Blank

SAMPLE FIELD TREATMENT
Check proper boxes:

☐ WPN: Water Preserved w/HNO_3 Non-Filtered

☒ WPF: Water Preserved w/HNO_3 Filtered

LAB ANALYSIS REQUESTED:

☒ ICAP Scan
Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	<0.1		Silicon	7.3	
Barium	<0.1		Silver	<0.1	
Beryllium	<0.1		Strontium	0.1	
Boron	0.1		Tin	<0.1	
Cadmium	<0.1	☒ <0.001	Vanadium	<0.1	
Calcium	6.7		Zinc	<0.1	
Chromium	<0.1	☒ <0.005	Arsenic		☒ <0.005
Cobalt	<0.05		Selenium		☒ <0.005
Copper	<0.1		Mercury		☒ <0.0005
Iron	<0.1				☐
Lead	<0.1	☒ <0.01			☐
Magnesium	1.6				☐
Manganese	<0.05				☐
Molybdenum	<0.1				☐
Nickel	<0.1				☐

LAB COMMENTS: Sent between in lab by mgl 8/19/87

ICAP Analyst: JB

Analysis Date: 8/19/87

Reviewer: Jim Ashby

Date Reviewed: 12/8/87

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (5[illegible]841-2555

WP

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED [illegible] LAB NO. [illegible]

USER CODE ☐ 59300 ☐ 59600 ☐ OTHER:

Collection DATE 8/10/87
Collection TIME
Collected by — Person/Agency Conrad / Dye

SITE INFORM- ATION

Sample location CPNG - Blanco Bloomfield
Collection site description Blank - deion, Hcl

SEND FINAL REPORT TO ▶
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION
Crown Building, PO Box 968
Santa Fe, NM 87504-0968
Attn: Conrad

RECEIVED
AUG 27 1987
GROUND WATER/HAZARDOUS WASTE BUREAU

Station code Blank
Owner CPNG

SAMPLING CONDITIONS

☐ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water level	Discharge	Sample type Hcl
pH (00400)	Conductivity (Uncorrected) µmho	Water Temp. (00010) °C	Conductivity at 25°C (00094) µmho

Field comments: Field filtered + acidified w/ 1 Hcl

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted

☐ NF: Whole sample (Non-filtered) ☒ F: Filtered in field with 0.45 µmembrane filter ☒ A: 2 ml H_2SO_4/L added

☐ NA: No acid added ☐ Other-specify:

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	µmho	
☐ Total non-filterable residue (suspended) (00530)	mg/l	
☐ Other:		
☐ Other:		
☐ Other:		

F, NA	Units	Date analyzed
☐ Calcium (00915)	mg/l	
☐ Magnesium (00925)	mg/l	
☐ Sodium (00930)	mg/l	
☐ Potassium (00935)	mg/l	
☐ Bicarbonate (00440)	mg/l	
☐ Chloride (00940)	mg/l	
☐ Sulfate (00945)	mg/l	
☐ Total filterable residue (dissolved) (70300)	mg/l	
☐ Other:		

NF, A-H_2SO_4

☐ Nitrate-N + , Nitrate-N total (00630)	mg/l	
☐ Ammonia-N total (00610)	mg/l	
☐ Total Kjeldahl-N ( )	mg/l	
☐ Chemical oxygen demand (00340)	mg/l	
☐ Total organic carbon ( )	mg/l	
☐ Other:		
☐ Other:		

F, A-H_2SO_4

☒ Nitrate-N + , Nitrate-N dissolved (00631)	0.42	mg/l	8/13
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	8/20/87	

Laboratory remarks

SLD 726 (12/84) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

Albuquerque, NM 87106 Telephone: (505)841-2500

ICP 1062

Date Received	1/29/87	Lab No. ICP-1068	User Code	☐ 59400 ☒ 53400 ☐ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 87 mm 12 dd 08 hh — mm

COLLECTED BY: CONRAD / RICHARDS

COLLECTION SITE DESCRIPTION: El Paso Natural Gas Bianco Plant - Bloomfield - Field Blank

TO: Conrad RECEIVED FEB 18 1988

OWNER:

& HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
2 9 N + 1 1 4 + + 1 1 4

ATTN:
PHONE: 2905

STATION/ WELL CODE:

LATITUDE, LONGITUDE: 3 6 4 3 3 0 1 0 7 5 2 - 3 0

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge:	Sample Type: WATER

pH(00400)	Conductivity(Uncorr.) µmho	Water Temp.(00010) °C	Conductivity at 25°C (00094) µmho

FIELD COMMENTS: Field blank water blank

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☐ WPN: Water Preserved w/HNO_3 Non-Filtered	☒ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE		AA VALUE	ELEMENT	ICAP VALUE		AA VALUE
Aluminum	<0.1			Silicon	7.7		
Barium	<0.1			Silver	<0.1		
Beryllium	<0.1			Strontium	0.1		
Boron	<0.1			Tin	<0.1		
Cadmium	<0.1	☐		Vanadium	<0.1		
Calcium	6.3			Zinc	<0.1		
Chromium	<0.1	☒	<0.005	Arsenic		☐	
Cobalt	<0.05			Selenium		☐	
Copper	<0.1			Mercury		☐	
Iron	<0.1					☐	
Lead	<0.1	☐				☐	
Magnesium	2.2					☐	
Manganese	<0.05					☐	
Molybdenum	<0.1					☐	
Nickel	<0.1					☐	

LAB COMMENTS:

ICAP Analyst: JB Reviewer: Jim Ashby

Analysis Date: 12/10/87 Date Reviewed: 2/11/88

File Copy

INFORMATION IN SUPPORT OF APPENDIX C OF DISCHARGE PLAN GW-49

Materials Safety Data Sheets

El Paso Natural Gas Co.
Blanco Plant
San Juan County, N. M.

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085 DIAL COMM: 8*235-4085

MATERIALS INFORMATION SERVICES

No. 53

CHLORINE

Date July 1979

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: CHLORINE

OTHER DESIGNATIONS: Cl_2, CAS # 007 782 505

DESCRIPTION: A gas shipped in steel cylinders as a liquid under its own vapor pressure.

MANUFACTURER: Available from many suppliers.

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Chlorine *Current OSHA ceiling limit. ACGIH TLV (1978) is 1 ppm with a STEL of 3 ppm for up to 15 minutes exposure. NIOSH (1976) proposed a ceiling limit of 0.5 ppm (15 minute sampling time). (Controversy going on whether OSHA standard should include ceiling limit or not.)	> 99	8-hr TWA 1 ppm (C) or 3 mg/m^3 *

SECTION III. PHYSICAL DATA

Boiling point at 1 atm, deg C	-34	Density at 0° C: Gas at 1 atm, g/liter	3.214
Vapor pressure at 20 C, mm Hg	4800	Liquid at 3.65 atm, g/cc	1.47
Vapor density (Air=1)	2.49	Molecular weight	70.91
Water solubility at 20 C, 1 atm, g/l	7.3		

Appearance & Odor: A greenish-yellow gas or clear, amber-colored liquid with a suffocating, pungent, irritating odor. The odor recognition threshold (100% of test panel, unfatigued) is reported at 0.314 ppm. The odor is easily noticed at 1.9-3.5 ppm and has been reported as intolerable at 2.6-41 ppm, depending on the observer.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
Non-flammable				

Use extinguishing media that is appropriate for the surrounding fire. Use water spray to cool intact, fire-exposed containers (one ton tanks and cylinders will release chlorine when a fusible metal safety plug melts at 158-165F.) If possible, have specially trained personnel remove intact cylinders from fire area.

Chlorine will support the burning of most combustible materials, just as oxygen does. Flammable gases and vapors can form explosive mixtures with chlorine.

Firefighters must use self-contained breathing equipment, eye protection, and full protective clothing when fighting fires in which chlorine is involved.

SECTION V. REACTIVITY DATA

Chlorine is stable in steel containers at room temperature when dry. [Intense local heat (above 215°C) on steel walls can cause steel to ignite in chlorine.]

It is a powerful oxidizing agent which reacts violently with reducing agents and combustible materials. Materials such as acetylene, turpentine, other hydrocarbons, ammonia, hydrogen, ether, powdered metals, etc. must be kept away from chlorine.

It reacts with H_2S and H_2O forming HCl; it combines with CO and SO_2 to form phosgene and sulfuryl chloride (toxic and corrosive materials).

Wet chlorine (150 ppm water) corrosively attacks most common metals. Handling chlorine requires special materials technology.

NO. 53

SECTION VI. HEALTH HAZARD INFORMATION

TLV 1 ppm or 3 mg/m^3 (C)

Chlorine believed to damage the body by local corrosive effects only; no systemic effects. 5-8 ppm in air will be severely irritating to eyes, nose, and respiratory tract of most individuals in a few minutes (10 ppm intolerable for avg. person). Higher level exposures produce coughing, dyspnea, burns of the skin, conjunctivitis, pulmonary edema (may be delayed) and death, depending on concentration and time of exposure (35-51 ppm, lethal in an hour; a few deep breaths fatal at 1000 ppm). Reduced respiratory capacity (especially among smokers) and dental erosion can result from chronic low level exposure. Any contact with liquid chlorine causes burns, blistering and tissue destruction.

FIRST AID: Call physician IMMEDIATELY for any person overexposed to chlorine!

Eye Contact: Flush eyes with water for at least 15 minutes, holding eyelids open. If medical help is not readily available, continue flushing with water.

Skin Contact: (Treat for inhalation exposure first!) Remove contaminated clothing under a safety shower. Wash exposed skin areas thoroughly with water.

Inhalation: Remove to fresh air. Restore breathing when required. Have trained person administer oxygen until victim breathes easily on his own. Keep warm and at rest! In mild cases, give milk to relieve throat irritation.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Establish written emergency plans and special training of personnel where chlorine is used.

Notify safety personnel. Provide ventilation. Exclude from area all except specially trained, assigned personnel with approved self-contained breathing equipment and appropriate protective clothing. Find and stop leak. (Large uncontrollable leaks require environmental consideration and possible evacuation of surrounding area.)

Move leaking container to isolated area. Position to release gas not liquid.

When possible draw off chlorine to process or to disposal system.

DISPOSAL: Bubble through a large volume of 15% aqueous NaOH or other alkali. Suitably dispose of resulting solution. Follow Federal, State and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide general and local exhaust ventilation to meet TLV requirements. Provide suitable venting for low lying areas. Use enclosed, isolated processing and handling whenever possible. Full face-piece respirators must be available for non-routine and emergency use: canister gas mask below 5000 ppm in air and self-contained breathing equipment for other conditions.

Workers should be provided with chemical safety goggles and impervious gloves. Full protective clothing must be used when needed to prevent exposure to chlorine, liquid or gas. Daily change of work clothes and showering after work shift are recommended.

Eyewash stations and chemical safety showers must be available in areas of handling and storage of chlorine.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store chlorine containers in well-ventilated areas of low fire potential, away from incompatible materials (see Sec. V) and away from sources of heat and ignition. Protect containers from weather and physical damage; follow standard safety procedures for containers of compressed, corrosive gases. Provide special training to workers handling chlorine. Regularly inspect (and test) piping and containment used for chlorine service. Liquid levels should be less than 85% of tank or cylinder capacity.

Use preplacement and periodic medical exams: preclude from workplace exposure to chlorine those with cardiac, pulmonary or chronic respiratory problems.

Special Ref: "Chlorine and Hydrogen Chloride", Chapter 5, National Academy of Science, Washington, DC (1976).

DATA SOURCE(S) CODE: 2-12, 17, 19, 24, 26

APPROVALS: MIS, CRD

Industrial Hygiene and Safety

MEDICAL REVIEW: 12/79

MATERIAL SAFETY DATA SHEET

DATE August 17, 1987

8283-08-03-86-102

CALGON
SUBSIDIARY OF MERCK & CO., INC.

PRODUCT NAME CAT FLOC T

SECTION I

MANUFACTURER'S NAME	Calgon Corporation	EMERGENCY TELEPHONE NO.	(412) 777-8000
ADDRESS	P.O. Box 1346, Pittsburgh, PA 15230		
CHEMICAL NAME AND SYNONYMS	Cationic homopolymer	FORMULA	Multi-component Liquid

SECTION II HAZARDOUS INGREDIENTS

PRINCIPAL HAZARDOUS COMPONENT (S)	CAS #	% BY WEIGHT	ORAL LD_{50}	DERMAL LD_{50}	TLV (Units) ACGIH	OSHA	OTHER
Chemical Name / Common Name: This product would not be regarded to contain any hazardous ingredients according to OSHA Hazard Communication Standard (29 CFR 1910.1200).			•	•			
Chemical Name / Common Name							
Chemical Name / Common Name							
Chemical Name / Common Name							
Chemical Name / Common Name							

• See Section V - Effects of Overexposure - for toxicity data on the product

SECTION III PHYSICAL DATA

BOILING POINT (° F)	>212	SPECIFIC GRAVITY (H_2O=1)	1.033
VAPOR PRESSURE (mmHg.)	Similar to Water	PERCENT VOLATILE BY VOLUME (%)	80
VAPOR DENSITY (AIR=1)	Similar to Water	pH	3.0 - 4.0
SOLUBILITY IN WATER	Complete	OTHER	

APPEARANCE AND ODOR: Viscous clear, colorless to pale- yellow liquid with mild chemical odor

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON

SECTION IV FIRE AND EXPLOSION HAZARD DATA

ASH POINT (Method Used)	Not Flammable; Aqueous Solution
INGUISHING MEDIA	Product is not flammable.
CIAL FIRE FIGHTING PCEDURES	None
USUAL FIRE AND PLOSION HAZARDS	None

SECTION V HEALTH HAZARD DATA

EFFECT OF OVEREXPOSURE

A. ACUTE

1. INGESTION

The product is practically non toxic through ingestion.
The acute oral LD_{50} (rats) is 14.6 g/kg.

2. INHALATION

The product is a polymer solution with water used as the solvent system. It would not be considered hazardous by inhalation.

3. DERMAL EXPOSURE

a. TOXIC

The product is practically non toxic through dermal absorption.
The acute dermal LD_{50} (rabbits) is >20 g/kg (testing on a 40% solution of the polymer).

b. IRRITATION

The product would not be considered a primary skin irritant. The primary skin irritation index (rabbits) for a 40% solution of the polymer was found to be 1.0/8.

c. SENSITIZATION

Human Patch Testing on a higher molecular weight version of the polymer has shown that it is not a skin sensitizer.

A 40% solution of the polymer when instilled in rabbit eyes did not produce any ocular irritation during the 7-day observation period with the exception of one test eye in the no wash group at 24 hours which showed slight conjunctival effects.

B. SUBCHRONIC, CHRONIC, OTHER

A 13-week rat oral toxicity study was performed using dose levels of 5, 50 and 500 mg/kg (active ingredient). Animals in the 50 and 500 mg/kg groups showed slight weight gain and decreased food consumption. In the 500 mg/kg group, a deviation in the erythrocytes, total protein and globulin levels was observed. A twelve month study feeding 2 and 200 ppm of a higher molecular weight version of the polymer to rats and beagles in their drinking water showed no significant adverse effects. The polymer, when tested according to Ames assay, did not demonstrate genetic activity. The dose range employed for this test was 0.01 microliters per plate to 10 microliters per plate (with and without activation). A teratology study conducted on the product using rabbits showed no increase in malformations. The rabbits were dosed orally with the product during Day 6 through 18 of gestation. The dose levels used were 0.075, 2.5, and 25 mg/kg/day. A multi-genetic reproductive study conducted on the product showed that no increase in reproductive failure (throughout 2 generations) was observed at the dose levels tested (0.75, 2.5, and 25 mg/kg/day).

FIRST AID

A. EYE

Good First Aid should be followed in all cases of exposure.
In case of eye contact, flush with plenty of water for at least 15 minutes.
If irritation develops, call a physician.

B. SKIN

Not Applicable

C. INGESTION

Not Applicable

D. INHALATION

Not Applicable

STABILITY	UNSTABLE		TO AVOID: Unknown

INCOMPATABILITY (Materials to Avoid): Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of nitrogen

SECTION VII SPILL OR LEAK PROCEDURES

REPORTABLE QUANTITIES (RQ) IN LBS OF EPA HAZARDOUS SUBSTANCES IN PRODUCT

1. N/A
2.
3.

NOTIFY EPA OF PRODUCT SPILLS EQUAL TO OR EXCEEDING: N/A LBS.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Dispose of in accordance with local, state and federal regulations. Dike area to contain as much spilled material as possible. Remove any remaining material by absorbing on vermiculite or other suitable absorbing material and place in a sealed metal container for disposal. Hose spill area well since product can make floors slippery.

WASTE DISPOSAL METHOD: Dispose of in a landfill or incinerate in accordance with local, state, and federal regulations.

SECTION VIII HANDLING/STORAGE

PROTECTIVE GLOVES: Not Required		EYE PROTECTION: Not Required	
OTHER PROTECTIVE CLOTHING: Not Required			
RESPIRATORY PROTECTION: Not Required			
VENTILATION: Normal	LOCAL EXHAUST: Not Required	OTHER: None	
	MECHANICAL (General): Not Required		

STORAGE & HANDLING

Wash thoroughly after handling.

Keep container closed.

Exercise caution in the storage and handling of all chemical substances.

OTHER PRECAUTIONS: None

N/A = Not Applicable

PREPARED BY: Janet Mostowy 7/16/87 102

Mallinckrodt

CUPRIC SULFATE

Material Safety Data Sheet

Mallinckrodt Inc.
Science Products Division
P.O. Box M
Paris, Kentucky 40361

Emergency Telephone Number
314-982-5000

Effective Date: 08-05-85

PRODUCT IDENTIFICATION:

Synonyms: Copper (II) Sulfate Pentahydrate (1:1:5); blue vitriol; Sulfuric acid copper (2+) salt (1:1), Pentahydrate

Formula CAS No.: 7758-99-8 (Hydrated)
TSCA CAS No.: 7758-98-7 (Anhydrous)

Molecular Weight: 249.68

Hazardous Ingredients:
Not applicable.

Chemical Formula: $CuSO_4$ $5H_2O$

PRECAUTIONARY MEASURES

WARNING! HARMFUL IF SWALLOWED. CAUSES IRRITATION.

Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.

EMERGENCY/FIRST AID

If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes.
In all cases call a physician.

SEE SECTION 5.

DOT Hazard Class: ORM-E

Physical Data SECTION 1

Appearance: Transparent blue triclinic crystals or crystalline granules or power.

Odor: Odorless.

Solubility: 24.3g/100g H20 @ 30°C (86°F)

Boiling Point: > 400°C (752°F) decomposes

Melting Point: Loses water @ 110°C (230°F)

Specific Gravity: 2.28

Vapor Density (Air=1): No information found.

Vapor Pressure (mm Hg): No information found.

Evaporation Rate: (water=1): slowly efflorescent.

Fire and Explosion Information SECTION 2

Fire: Not considered to be a fire hazard.

Explosion: Not considered to be an explosion hazard. Sealed container may rupture during fire conditions from pressure water vapor release.

Fire Extinguishing Media: Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. When heated above 110°C (230°F) material will melt. Avoid using a direct water stream on molten material as it may causes splattering.

Reactivity Data SECTION 3

Stability: Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products: When heated to decomposition cupric oxide and sulfur oxide may form.

Hazardous Polymerization: Will not occur.

Incompatibilities: At temperatures greater than 250°C (482°F) the anhydrous salt will ignite hydroxylamine. Solutions are acidic and can react with magnesium evolve flammable hydrogen gas.

Leak/Spill Disposal Information SECTION 4

Ventilate area of leak or spill. Clean-up personnel require protective clothing and respiratory protection from dust.

Spills: Pick up and place in a suitable container for reclamation or disposal in a method that does not generate dust.

Disposal: Whatever cannot be saved for reclamation may be disposed in an RCRA approved hazardous waste facility.

Reportable Quantity (RQ) (CWA/CERCLA) : 10 lbs. Anhydrous

Ensure compliance with local, state and federal regulations.

Health Hazard Information — SECTION 5

A. Exposure/Health Effects

Inhalation: May cause irritation to the upper respiratory tract; symptoms may include coughing, sore throat, and shortness of breath. May also cause symptoms similar to the common cold; including chills and stuffiness of the head.

Ingestion: Toxic! May cause burning pain in the mouth, esophagus, and stomach. Hemorrhagic gastritis, nausea, vomiting, abdominal pain, metallic taste, and diarrhea may occur. If vomiting does not occur immediately systemic copper poisoning may occur. Symptoms may include capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous excitation followed by depression, jaundice, convulsions, paralysis and coma. Death may occur from shock or renal failure.

Skin Contact: May cause irritation and itching.

Eye Contact: Dust may cause irritation. Contact may cause conjunctivitis, ulceration, or clouding of the cornea.

Chronic Exposure: Prolonged or repeated skin exposure may cause dermatitis. Prolonged or repeated exposure to dusts of copper salts may cause discoloration of the skin or hair, ulceration and perforation of the nasal septum, runny nose, metallic taste, and atrophic changes and irritation of the mucous membranes.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders or impaired liver, kidney, or pulmonary function or pre-existing Wilson's disease may be more susceptible to the effects of this material.

B. FIRST AID

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, induce vomiting immediately by giving two glasses of water, or milk if available and sticking finger down throat. Call a physician immediately. Never give anything by mouth to an unconscious person.

Skin Exposure: Remove any contaminated clothing. Wash skin with plenty of water for at least 15 minutes. If irritation develops, get medical attention.

Eye Exposure: Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

C. TOXICITY DATA (RTECS, 1982)

Oral rat LD50: 300 mg/kg. Mutation references cited.

Occupational Control Measures — SECTION 6

Airborne Exposure Limits: OSHA Permissible Exposure Limit (PEL):
1mg(Cu)/m³ TWA (TWA)
ACGIH Threshold Limit Value (TLV):
1mg(Cd)/m³ (TWA)
2mg(Cu)/m³ (STEL).

Ventilation System: A system of local exhaust is recommended to keep employee exposures below the Airborne Exposure Li Local exhaust ventilation is generally preferred because it can control the emissions of the dust vapor at its source, preventing dispersion of it the general work area. Please refer to the ACGI document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators (NIOSH Approved): If the TLV is exceeded, a dust/mist respirator wi chemical goggles may be worn, in general, up to times the TLV. Consult respirator supplier for limitations. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn

Skin Protection: Wear protective gloves and clean body-covering clothing.

Eye Protection: Use chemical safety goggles. Contact lenses sho not be worn when working with this material.

Maintain eye wash fountain and quick-drench facili in work area.

Storage and Special Information — SECTION 7

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Solutions are corrosive to mild steel.

MATERIAL SAFETY DATA SHEET

UNICHEM INTERNATIONAL

Date Prepared 05/15/87

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name ALPHA 512

Chemical Description Proprietary Microbiocide Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Potassium Dimethyldithiocarbamate CAS# 128-03-0	None Established
Methanol CAS# 000-067-561	200 ppm (Skin) 8 Hour TWA or 260 mg/m^3

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	150°F (Initial)	Freezing Point	-35°F
Specific Gravity (H_2O=1)	1.0 g/ml	Solubility in Water	Complete

Appearance and Odor Brown Clear Liquid; Alcoholic - Sulfur Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 69°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards Methanol is a moderate explosion hazard and a dangerous fire hazard when exposed to heat, sparks, or flames and can react vigorously with oxidizing agents.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract. Harmful or fatal if swallowed. Symptoms of overexposure to liquid or vapor include dizziness, visual impairment, nausea, and narcosis.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Induce vomiting, if conscious. Give patient water or milk.

VI. REACTIVITY DATA

Stability		Conditions to Avoid
	Stable X	None
	Unstable	

Incompatibility (Materials to Avoid) Stongly Acidic Materials, Oxidizers

Hazardous Decomposition of Products Oxides of Carbon, Nitrogen, and Sulfur Carbon Disulfide, Dimethylamine

Hazardous Polymerization		Conditions to Avoid
	May Occur	
	Will Not Occur x	None

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill. This material is toxic to fish.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceeds TLV for this product or its ingredients.

Ventilation				
	Local Exhaust	As needed to prevent accumulation of	Special	None
	Mechanical (General)	vapors above TLV	Other	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatable materials. Keep containers close when not in use.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

MATERIAL SAFETY DATA SHEET

UNICHEM INTERNATIONAL

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name ALPHA 570

Chemical Description
Proprietary Biocide Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Alkyl Dimethyl Benzylammonium Chloride	Not Established
Alkyl Dimethyl Ethylammonium Bromide	Not Established
Tributyltin Neodecanoate	Not Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	208°F	Freezing Point	32°F
Specific Gravity (H_2O=1)	0.998 g/ml	Solubility in Water	Complete

Appearance and Odor Light Straw Color, Slight Musty Odor; Liquid

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Acute Oral LD_{50}: 0.88 g/kg (Male rats) 1.08 g/kg (Female Rats
Acute Dermal LD_{50}: Greater than 2 g/Kg for male and female ra

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk. See note to physician below. (Section IX - Other Precautions)

VI. REACTIVITY DATA

Stability	Stable X	**Conditions to Avoid**	None
	Unstable		

Incompatibility (Materials to Avoid) Highly Alkaline Materials, Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization	May Occur	**Conditions to Avoid**	None
	Will Not Occur X		

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill. This product is toxic to fish. Keep out of lakes, streams, and ponds.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation	**Local Exhaust**	As needed to prevent accumulation of	**Special**	None
	Mechanical (General)	vapors above TLV	**Other**	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest. TO PHYSICIAN: Probably mucosal damage may contraindictable the use of gastric lavage. Measures against circulation shock, respiratory depression, and convulsion may be needed.

MATERIAL SAFETY DATA SHEET

UNICHEM INTERNATIONAL

Date Prepared 6-8-88

Supersedes Previous Sheet Dated None

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name ALPHA 581

Chemical Description Proprietary Microbiocide Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
2-(Thiocyanomethylthio)benzothiazole CAS#21564-17-0	not established
Methylene bis(thiocyanate) CAS#6317-18-6	not established
Aromatic Solvent	100 ppm

ALPHA 581 is toxic by inhalation and ingestion. ALPHA 581 is corrosive to eyes and skin and is a sensitizer. Neither this product or it's ingredients are listed in any of OSHA Standard Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	>212°F	Freezing Point	10°F
Specific Gravity (H_2O=1)	0.96 g/ml	Solubility in Water	dispersible

Appearance and Odor Amber clear liquid; slight aromatic odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 158°F (TCC)

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards NONE

V. HEALTH HAZARD DATA

Threshold Limit Value NOT DETERMINED

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract. Sensitizer. Toxic by ingestion.

Emergency and First Aid Procedures EYES: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. SKIN: Flush area with water. Wash with soap and remove contaminated clothing. INHALATION: Remove to fresh air. Apply artificial respiration if necessary. INGESTION: Call a physician. Do not induce vomiting. Dilute with water or milk. See Note to Physician. (Section IX-Other Precautions).

VI. REACTIVITY DATA

Stability			Conditions to Avoid
	Stable	X	None
	Unstable		

Incompatibility (Materials to Avoid) Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization			Conditions to Avoid
	May Occur		None
	Will Not Occur	X	

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill. This product is toxic to fish. Keep out of lakes, streams, and ponds.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation				
	Local Exhaust	As needed to prevent accumulation of	Special	None
	Mechanical (General)	vapors above TLV	Other	None

Protective Gloves Rubber **Eye Protection** Safety glasses, goggles, and/or face shield.

Other Protective Equipment Overalls, rubber boots, eyewash stations, safety showers. Body-protective clothing is strongly recommended. Respiratory equipment.

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid breathing of vapors or contact with skin. Do not ingest. To Physician: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulation shock, respiratory depression and convulsion may be needed.

MATERIAL SAFETY DATA SHEET

UNICHEM INTERNATIONAL

Date Prepared 05/22/86

Supersedes Previous Sheet Dated 10/31/85

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name UNICHEM 1300

Chemical Description

Proprietary Scale and Corrosion Inhibitor Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Potassium Hydroxide CAS# 1310-58-3	2 mg/m³
Proprietary Corrosion Inhibitor	10 mg/m³
Proprietary Corrosion/Scale Inhibitors	Not Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	0°F
Specific Gravity (H_2O=1)	1.3 g/ml	Solubility in Water	Complete

Appearance and Odor Amber, Clear Liquid; Slight Sweet Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

ability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability	Stable X	**Conditions to Avoid**	None
	Unstable		

Incompatibility (Materials to Avoid) Strongly acidic materials, oxidizers.

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization	May Occur	**Conditions to Avoid**	
	Will Not Occur X		None

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation	**Local Exhaust**	As needed to prevent accumulation of vapors above TLV	**Special**	None
	Mechanical (General)		**Other**	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

MATERIAL SAFETY DATA SHEET

UNICHEM INTERNATIONAL

Date Prepared 05/22/86

Supersedes Previous Sheet Dated 02/26/85

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name UNICHEM 1700

Chemical Description Proprietary Scale Inhibitor and Dispersant

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Scale/Corrosion Inhibitor (Acid, Corrosive)	None Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	-10°F
Specific Gravity (H_2O=1)	1.1 g/ml	Solubility in Water	Complete

Appearance and Odor Water White Clear; Slight Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability		Conditions to Avoid
	Stable X	None
	Unstable	

Incompatibility (Materials to Avoid) Highly Alkaline Materials, Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization		Conditions to Avoid
	May Occur	None
	Will Not Occur X	

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation				
	Local Exhaust	As needed to prevent accumulation of vapors above TLV	Special	None
	Mechanical (General)		Other	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 03/22/86

Supersedes Previous Sheet Dated 03/03/81

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name UNICHEM 1000 (also known as Unichem Biosphere Dispersant)

Chemical Description Properitary Dispersant

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Isopropyl Alcohol	400 ppm

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	180°F (IPA)	Freezing Point	-20°F
Specific Gravity (H_2O=1)	0.852	Solubility in Water	Soluble

Appearance and Odor Tan to Brown Liquid; Slight Ammonia Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 60°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or oxidizing agents.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Prolonged skin contact will cause dryness and irritation. Ingestion may cause catharsis. Inhalation of mist may cause respiratory irritation. Eye contact will cause irritation.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability	Stable X	**Conditions to Avoid**	None
	Unstable		

Incompatibility (Materials to Avoid) Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization	May Occur	**Conditions to Avoid**	
	Will Not Occur X		None

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation	**Local Exhaust**	As needed to prevent accumulation of vapors above TLV	**Special**	None
	Mechanical (General)		**Other**	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

MATERIAL SAFETY DATA SHEET

UNICHEM INTERNATIONAL

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name DE-OILING SURFACTANT (DOS)

Chemical Description Proprietary Surfactant in an Aqueous Solution

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Isopropanol CAS# 67-63-0	400 ppm

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	180°F (Initial)	Freezing Point	17°F
Specific Gravity (H_2O=1)	0.97 g/ml	Solubility in Water	Complete

Appearance and Odor Light Yellow Clear Liquid; Slight Alcoholic Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 94°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards None

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Prolonged skin contact will cause dryness and irritation. Ingestion may cause catharsis. Inhalation of mist may cause respiratory irritation. Eye contact will cause irritation.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability		Conditions to Avoid
	Stable X	None
	Unstable	

Incompatibility (Materials to Avoid) Oxidizers, Alkalis

Hazardous Decomposition of Products Oxides of Carbon, Nitrogen, Sulfur, and Ammonia. Contact with strong caustics may liberate amine fumes.

Hazardous Polymerization		Conditions to Avoid
	May Occur	
	Will Not Occur X	None

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation				
	Local Exhaust	As needed to prevent accumulation of vapors above TLV	Special	None
	Mechanical (General)		Other	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

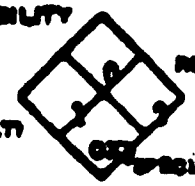
IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

Clin

EMERGENCY PHONE (203) 356-2345
Clin Corporation, 120 Long Ridge Road
Stamford, Conn. 06904



MATERIAL SAFETY DATA

SECTION I – IDENTIFICATION

CHEMICAL NAME & SYNONYMS		
Calcium Hypochlorite 65% (HTH)		
CHEMICAL FAMILY: Hypochlorite	FORMULA: $Ca(OCl)_2$	TRADE NAME: HTH® Dry Chlorinator Granular
DESCRIPTION: White free flowing granular solid with chlorinous odor		CAS NO.: 7778-54-3

SECTION II – NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Do not get in eyes, on skin or on clothing. Do not take internally. Avoid breathing dust. Protect against physical damage. Store in a cool, dry, well ventilated place away from combustible materials. Drums may rupture if exposed to heat.

CORROSIVE ACTION ON MATERIALS (Metals, Plastic, Rubber, Etc.)

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes	Goggles	Local exhaust ventilation required where exposure to dust might occur.
Gloves	Rubber, neoprene or PVC	
Other	Coveralls and impervious boots	

SECTION III – HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX. %	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD	OSHA CLASSIFICATION	FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER
Not Applicable	Class 3 oxidizer			

EXTINGUISHING MEDIA
Not combustible but may ignite combustible materials or organic matter upon contact. Flood with water to keep fire-exposed containers cool.

SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES
Use NIOSH/MSHA approved self-contained breathing apparatus where this material is involved in a fire. Fires can erupt and spread rapidly.

SECTION V – HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
None established.

SYMPTOMS OF OVER EXPOSURE
Corrosion of all tissue contacted.

EMERGENCY FIRST-AID PROCEDURES

SKIN	Flush with water for 15 minutes, call a physician.
EYES	Flush with water for 15 minutes, call a physician.
INGESTION	Give dead soaked in milk, followed by large amounts of water. If person is conscious and vomiting, place face down with head lower than hips. Get immediate medical attention.
INHALATION	Remove victim to fresh air, call a physician.

Chemical HTH® Dry Chlorinator Granular CAS No. 7778-54-3

CHEMICAL NAME HTH® Dry Chlorinator Granular

SECTION VI – TOXICOLOGY (Product)

ACUTE ORAL LD 50	850 mg/kg (rat)	CARCINOGENIC	Not known to be carcinogenic
		MUTAGENIC	Negative dominant lethal mutagen test
ACUTE DERMAL LD 50	>5 g/kg (rabbit)	EYE IRRITATION	Corrosive
		PRIMARY SKIN IRRITATION	Corrosive
ACUTE INHALATION LC 50	<20 mg/liter and >2 mg/liter of inspired air for 1 hour (rat)		

PRINCIPAL ROUTES OF ABSORPTION

Oral

EFFECTS OF ACUTE EXPOSURE

Corrosion of all tissue contacted

EFFECTS OF CHRONIC EXPOSURE

None known other than those secondary to acute effects

SECTION VII – SPILL OR LEAKAGE PROCEDURES (Control Procedures)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Wear NIOSH/MSHA respirator approved for dust and chloride. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Wear goggles, coveralls and rubber, neoprene or PVC gloves and boots. Clean up in a manner to minimize contamination with organic material. Do not return material to original container. Place in a fresh container and isolate outside or in a well ventilated area. Do not seal the container. Flush any residual material with large quantities of water. Wash all contaminated clothing before reuse. In the event of a large spill use the emergency telephone number shown on the front of this sheet.

WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII – REACTIVITY DATA

STABLE	UNSTABLE X AT ___ °C 350 °F	HAZARDOUS POLYMERIZATION	MAY OCCUR
			WILL NOT OCCUR X

CONDITIONS TO AVOID: When heated to 350°F it decomposes rapidly with evolution of oxygen and heat.

INCOMPATABILITY (Materials To Avoid): Solvents, acids, pool chemicals (isocyanurates), organic materials. Do not mix with anything but water.

HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine

DECOMPOSES at

SECTION IX – PHYSICAL DATA

MELTING POINT 177°C	VAPOR PRESSURE	VOLATILES
BOILING POINT	SOLUBILITY IN WATER 21% @ 21°C	EVAPORATION RATE
SPECIFIC GRAVITY (H_2O = 1)	pH 1% aq soln 10.5-11.5	VAPOR DENSITY (Air = 1)
Density, Loose 0.8 g/ml (50 lbs/cu. ft)		

INFORMATION FURNISHED BY: C. J. Michaels DATE: July 22, 1980 (Rev. No. 2 Sept. 23, 1982)

Department of Environmental Hygiene and Toxicology

Olin CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

EMERGENCY PHONE (203) 356 - 2345

MATERIAL SAFETY DATA SHEET

UNICHEM INTERNATIONAL

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERHIB 530

Chemical Description Proprietary Boiler Water Scale and Corrosion Inhibitor

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Chelant	5 mg/m³
Potassium Hydroxide CAS# 1310-58-3 (Corrosive)	2 mg/m³

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	10°F
Specific Gravity (H_2O=1)	1.3 g/ml	Solubility in Water	Complete

Appearance and Odor Light Brown Liquid; No Significant Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability	Stable X	**Conditions to Avoid**	None
	Unstable		

Incompatibility (Materials to Avoid) Strongly acidic materials, oxidizers.

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization	May Occur	**Conditions to Avoid**	None
	Will Not Occur X		

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation	**Local Exhaust**	As needed to prevent accumulation of vapors above TLV	**Special**	None
	Mechanical (General)		**Other**	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

MATERIAL SAFETY DATA SHEET

UNICHEM INTERNATIONAL

Date Prepared 03/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERMIS 450

Chemical Description Proprietary Neutralizing Amine

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Neutralizing Amine	10 ppm

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	16°F
Specific Gravity (H_2O=1)	0.948	Solubility in Water	Soluble

Appearance and Odor Water White Clear Liquid; Amine Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 140°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability	Stable X	**Conditions to Avoid**	None
	Unstable		

Incompatibility (Materials to Avoid) Strongly acidic materials, oxidizers.

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization	May Occur	**Conditions to Avoid**	
	Will Not Occur X	None	

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation	Local Exhaust	As needed to prevent accumulation of vapors above TLV	**Special**	None
	Mechanical (General)		**Other**	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 09/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERMIB 341

Chemical Description Proprietary Boiler Water Oxygen Scavenger

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Oxygen Scavenger	1 ppm (ACGIH)

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	13°F
Specific Gravity (H_2O=1)	1.2 g/ml	Solubility in Water	Complete

Appearance and Odor Water White Clear Liquid; Slight Musty Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability	Stable X	**Conditions to Avoid**	None
	Unstable		

Incompatibility (Materials to Avoid) Highly Alkaline Materials, Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Sulfur

Hazardous Polymerization	May Occur	**Conditions to Avoid**	None
	Will Not Occur X		

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilatio Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation	**Local Exhaust**	As needed to prevent accumulation of	**Special**	None
	Mechanical (General)	vapors above TLV	**Other**	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 03/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERBIB 340

Chemical Description Proprietary Boiler Water Oxygen Scavenger

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Oxygen Scavenger	1 ppm (ACGIH)

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	13°F
Specific Gravity (H_2O=1)	1.2 g/ml	Solubility in Water	Complete

Appearance and Odor Water White Clear Liquid; Slight Musty Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability		Conditions to Avoid
	Stable X	None
	Unstable	

Incompatibility (Materials to Avoid) Highly Alkaline Materials, Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Sulfur

Hazardous Polymerization		Conditions to Avoid
	May Occur	None
	Will Not Occur X	

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation				
	Local Exhaust	As needed to prevent accumulation of vapors above TLV	Special	None
	Mechanical (General)		Other	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y.

MATERIALS INFORMATION SERVICES

NO. 3

SODIUM HYDROXIDE

Revision A

Date September 1977

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: SODIUM HYDROXIDE
OTHER DESIGNATIONS: Caustic Soda, Soda Lye, NaOH, GE Material D4B4, ASTM D456,
DESCRIPTION: This material is an anhydrous solid (flake, pellet, etc.) CAS# 001 310 732
MANUFACTURER: Available from many suppliers.

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Typical content:		
Sodium Hydroxide ($NaOH$)	96	Ceiling Limit 2 mg/m^3
Impurities:		
Sodium Carbonate (Na_2CO_3)	0.5-2.5	
Sodium Chloride ($NaCl$)	0.01-2.1	
Sodium Sulfate (Na_2SO_4)	0.02-0.1	
Potassium, Calcium and Magnesium	0.1	
Silicon Dioxide (SiO_2)	0.03	
Other metals (total)	0.01	

SECTION III. PHYSICAL DATA

Boiling point, 1 atm, deg C --- 1388
Specific gravity (20/4 C) ----- 2.13
Volatiles ---------- non-volatile at room temperature
Melting point, deg C ---------- 318

Vapor pressure, mm Hg @ 1000 C ---- 42
@ 1200 C ---- 232
Viscosity at 350 C, cps ---------- 4.0
Water solubility, %, @ 0 C ------ 29.6
@ 100 C ----- 77.5

Appearance & odor: White or off-white, hygroscopic solid; no odor.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
None - not combustible	N/A	N/A	N/A	N/A

Although it is not combustible, it can be hazardous if present in a fire area. The following should be known for fire fighting: (1) It can melt and flow when heated (m.p. 318 C). (2) Hot or molten material can react violently with water (splattering). (3) Can react with certain metals, such as aluminum, to generate flammable hydrogen gas. (See also Reactivity Data, Section V)

SECTION V. REACTIVITY DATA

It is a stable material under normal conditions of storage. No self-polymerization. No hazardous decomposition products. Slowly it can pick up moisture from the air and react with carbon dioxide from the air to form sodium carbonate.

Sodium hydroxide can react violently with strong acids and with many organic chemicals, expecially with nitrocarbons and chlorocarbons. (Will react with trichloroethylene to form spontaneously flammable dichloroacetylene.) It generates much heat when it dissolves in water.

Avoid contact with leather and wool and with aluminum, tin, zinc, and alloys which contain these metals.

NO. 3

SECTION VI. HEALTH HAZARD INFORMATION

TLV (Ceiling Value) 2 mg/m^3

Sodium hydroxide is a strong alkali and is dangerous when improperly handled. It can be destructive to all human tissue it contacts, producing severe burns. Eye contact can produce severe or permanent injury. Dust or mist inhalation can injure the entire respiratory tract.

FIRST AID

Eye contact - Wash eyes immediately with plenty of running water for no less than 15 minutes, including under the eyelids and all surfaces. Speed in rinsing out the eyes with water after contact is extremely important if permanent injury is to be avoided. Contact physician as soon as possible.

Ingestion - Immediately dilute chemical by drinking large amounts of water or milk, then neutralize with dilute vinegar or fruit juice. Vomiting may occur spontaneously, but do not induce it. Contact a physician promptly.

Inhalation - Remove from exposure to mist or dust and get prompt medical help.

Skin contact - Wash contact area promptly with large quantities of water. (Dilute acetic acid, vinegar, can be used to neutralize.) Remove contaminated clothing under the shower. Prolong washing in serious cases until medical help arrives - even for an hour or longer. Physician should see all cases other than minor exposures to small areas of skin.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

When solid sodium hydroxide is spilled in a dry condition, it can be promptly shoveled up for recovery or disposal. (CAUTION! Avoid dusting. Avoid contact with the skin.) Control the disposal of the waste solid. (Delay in clean up may allow absorption of moisture from the atmosphere and may increase the difficulties of clean up.) Flush contaminated surfaces with water and neutralize with dilute acid, preferably acetic acid, to remove final traces. (Sodium bicarbonate may also be used to partially neutralize.) Finally, rinse with water.

Disposal of waste is greatly dependent on local conditions and requirements. Pre-emergency plans should be made to meet legal and technical requirements. Waste caustic should never be deliberately discharged directly into sewers or surface waters. (First, convert to neutral salts and dilute well with water.)

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide adequate ventilation to meet TLV requirements, especially where dusting or misting conditions can exist. Use filter-type respirator for mist and dust protection where needed.

Use chemical safety goggles! A plastic face shield can also be used.

Use rubber gloves, rubber apron or protective clothing, rubber boots where needed to prevent contact with sodium hydroxide, especially when solutions are prepared.

Eye wash fountains and safety showers must be immediately available!

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Workers should not be permitted to handle this material without proper training or to work with it without protective equipment.

Store in well-sealed containers. Avoid handling conditions that may lead to spills and leaks, or to formation of mist or dust.

Wherever this material is stored, unloaded, handled or used abundant water (preferably running water) should be available for emergency use.

Drains for storage or use areas for this material should have retention basins for pH adjustment and dilution of spills and flushings before discharge.

This material is classified as a CORROSIVE by the Department of Transportation.

The pellet form is probably the safest solid form for handling and dispensing.

APPROVALS: MIS, CRD J. M. Hyden

Industrial Hygiene and Safety Dyer

MEDICAL REVIEW:

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05-22-86

Supersedes Previous Sheet Dated 11-12-85

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name UNICHEM 5310 Formerly known as HIB 440

Chemical Description Proprietary Corrosion Inhibitor

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Isopropanol (CAS#67-63-0)	400 ppm

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F initial	Freezing Point	9°F
Specific Gravity (H_2O=1)	0.95 g/ml	Solubility in Water	Soluble

Appearance and Odor Amber to Brown liquid; No Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 81°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or oxidizing agents.

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

Product UNICHEM 9910

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Prolonged skin contact will cause dryness and irritation. Ingestion may cause catharsis. Inhalation of mist may cause respiratory irritation. Eye contact will cause irritation.

Emergency and First Aid Procedures EYES: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. SKIN: Flush area with water. Wash with soap and remove contaminated clothing. INHALATION: Remove to fresh air. Apply artifical respiration if necessary. INGESTION: Call a physician. Do not induce vomiting. Dilute wit water or milk.

VI. REACTIVITY DATA

Stability		Conditions to Avoid
	Stable X	None
	Unstable	

Incompatibility (Materials to Avoid) Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization		Conditions to Avoid
	May Occur	None
	Will Not Occur X	

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation				
	Local Exhaust	As needed to prevent accumulation of	Special	None
	Mechanical (General)	vapors above TLV	Other	None

Protective Gloves Rubber **Eye Protection** Safety glasses, goggles, and/or face shield

Other Protective Equipment Overalls, rubber boots, eyewash stations, safety showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 5-22-86

Supersedes Previous Sheet Dated Undated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERHIB 435

Chemical Description Proprietary Neutralizing Amine

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Neutralizing Amine	10 ppm

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	-38°F
Specific Gravity (H_2O=1)	0.960	Solubility in Water	Soluble

Appearance and Odor Brown Liquid, Ammonia Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) >200°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

 Product BOILERNID 435

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability		Conditions to Avoid
Stable	X	None
Unstable		

Incompatibility (Materials to Avoid) Strongly acidic materials, oxidizers.

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization		Conditions to Avoid
May Occur		
Will Not Occur	X	None

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation				
Local Exhaust	As needed to prevent accumulation of	Special	None
Mechanical (General)	vapors above TLV	Other	None

Protective Gloves Rubber

Eye Protection Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated [illegible]-ire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085 DIAL COMM 8*235-4085

MATERIALS · INFORMATION · SERVICES

NO. 9

SULFURIC ACID, CONCENTRATED

REVISION B

Date October 1980

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: SULFURIC ACID, CONCENTRATED
OTHER DESIGNATIONS: Oil of Vitriol, Hydrogen Sulfate, H_2SO_4, GE Material D4A2, CAS #007 664 939
DESCRIPTION: Material consists of about 93-98% H_2SO_4 with water and traces of impurities.
MANUFACTURER: Available from many suppliers.

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Hydrogen Sulfate (H_2SO_4) Water	93-98 Balance*	TLV 1 mg/m^3 for sulfuric acid† Human, mist inhal. TCLo 3 mg/m^3, 24 wk (Toxic Mouth Effects) Rat, Oral LD_{50} 2140 mg/kg

*Material is obtained by the reaction of SO_3 and water. Can contain low impurity levels, such as 0.02% max of iron as Fe. Properties vary with H_2SO_4 content.

†Current OSHA standard and ACGIH (1980) TLV. NIOSH has a 10-hr-TWA, 40 hr work week, of 1 mg/m^3.

SECTION III. PHYSICAL DATA

	93.19% H_2SO_4	98.33% H_2SO_4	100% H_2SO_4
Boiling point, 1 atm, deg C	ca 281	ca 338	ca 330 (dc)
Specific gravity (60/60 F)	1.8354	1.84	1.84
Deg. Baume	66	--	--
Volatiles, % at 340 C	ca 100	ca 100	ca 100
Melting point, deg C	ca -34	ca 3	10.4
Vapor press, mm Hg @ 100 F	<1	--	--

Water solubility: Completely miscible.
Appearance & Odor: Clear, colorless, hygroscopic oily liquid with no odor.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
None - nonflammable	N/A	N/A	N/A	N/A

Even though sulfuric acid is nonflammable, it is hazardous when present in a fire area. Small fires may be smothered with suitable dry chemical. Cool exterior of storage tanks of H_2SO_4 with water to avoid rupture if exposed to fire. Do not add water or other liquid to the acid! The acid, especially when diluted with water, can react with metals to liberate flammable hydrogen gas.
Sulfuric acid mists and vapors from a fire area are corrosive. (See Sect. V.)
Firefighters to wear self-contained breathing equipment and full protective clothing.

SECTION V. REACTIVITY DATA

Sulfuric acid is stable under normal conditions of use and storage. It does not undergo hazardous polymerization.
It is a strong mineral acid reacting with bases and metals. The concentrated acid is a strong oxidizing agent and can cause ignition of combustible materials on contact. The concentrated aid is also a dehydrating agent, picking up moisture readily from the air or other materials.
Reacts exothermically with water. (Acid should always be added slowly to water. Water added to acid can cause boiling and uncontrolled splashing of the acid.)
Sulfur oxides can result from decomposition and from oxidizing reactions of sulfuric acid.

NO. 9

SECTION VI. HEALTH HAZARD INFORMATION

TLV 1 mg/m^3

Concentrated sulfuric acid is a strong mineral acid, an oxidizing agent, and a dehydrating agent that is rapidly damaging to all human tissue with which it comes in contact. Ingestion may cause severe injury or death. Eye contact gives severe or permanent injury. Inhalation of mists can damage both the upper respiratory tract and the lungs.

FIRST AID:

Eye Contact: Immediately flush eyes with plenty of running water for at least 15 minutes (including under the eyelids). Speed in diluting and rinsing out acid with water is extremely important if permananet eye damage is to be avoided. Obtain medical help as soon as possible.

Skin Contact: Immediately flush affected areas with water, removing contaminated clothing under the safety shower. Continue washing with water and get medical attention.

Inhalation: Remove to fresh air. Restore breathing. Call a physician immediately.

Ingestion: Dilute acid immediately with large amounts of milk or water, then give milk of magnesia to neutralize. Do not induce vomiting; if it occurs spontaneously, continue to administer fluid. Obtain medical attention as soon as possible.

Maintain observation of patient for possible delayed onset of pulmonary edema.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Prevent contact with the acid. Provide adequate ventilation to control workplace concentrations. Minor leaks or spills can be diluted with plenty of water and neutralized with soda ash or lime. If water is not available, cover contaminated area with sand, ashes, or gravel and neutralize with soda ash or lime.

Major spills must be handled by a predetermined plan. Contact supplier for assistance in this planning and to meet local requirements and disposing of large amounts.

DISPOSAL: Follow Federal, State, and Local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide general ventilation to meet current TLV requirements in the workplace. Where mists are up to 50 mg/m^3, a high efficiency particulate respirator with full facepiece is warranted; a Type C supplied air respirator with full facepiece operated in pressure demand mode is used to 100 mg/m^3. Avoid eye contact by use of chemical safety goggles or face shield where splashing may occur. Imperious protective clothing, such as rubber gloves, aprons, boots, and suits are recommended to avoid body contact with this acid.

Eyewash fountain and safety showers with deluge type heads should be readily available where this material is handled or stored.

Comprehensive preplacement and annual medical examinations with emphasis on dental erosion, cardiopulmonary system, and mucous membrane irritation and cough.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Sulfuric acid in carboys or drums should be stored in clean ventilated storage areas having acid resistant floors with good drainage. Keep out of direct sunlight, do not store above 32 C. Storage facilities to be separate from metallic powders, chromates, chlorates, nitrates, carbides, oxidizables, etc. Soda ash, sand or lime should be kept in general storage or work areas for emergency use. Protect containers against physical damage. Glass bottles need extra protection. Sulfuric acid is highly corrosive to most metals especially below 77% H_2SO_4. Avoid breathing mist or vapors. Avoid contact with skin or eyes. Do not ingest. Do not add water to concentrated acid. Do not smoke. Use nonsparking tools and vapor-proof type electrical fixtures.

DATA SOURCE(S) CODE: 2-12,19,20,24,26,31, 37-39

APPROVALS: MIS CRD J.M. Nielsen

Industrial Hygiene and Safety 10-14-80

MEDICAL REVIEW: Oct. 26, 1980

GENERAL ELECTRIC

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name KETONE BN

Chemical Description Proprietary Corrosion Inhibitor Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Sodium Nitrite (Oxidizer)	None Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	22°F
Specific Gravity (H_2O=1)	1.16 g/ml	Solubility in Water	Complete

Appearance and Odor Light Yellow to Water White Clear Liquid; Slight Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

Product KETONE BN

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Prolonged skin contact will cause dryness and irritation. Ingestion may cause catharsis. Inhalation of mist may cause respiratory irritation. Eye contact will cause irritation.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability	Stable x	**Conditions to Avoid**	None
	Unstable		

Incompatibility (Materials to Avoid) Acids, Reducing Agents

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization	May Occur	**Conditions to Avoid**	None
	Will Not Occur x		

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation	Local Exhaust	As needed to prevent accumulation of vapors above TLV	**Special**	None
	Mechanical (General)		**Other**	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

MOBIL MATERIAL SAFETY DATA BULLETIN

MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPT.
150 EAST 42ND STREET
NEW YORK, N.Y. 10017 (USA)

********** PRODUCT IDENTIFICATION **********

MOBIL SHC 797 OIL

SUPPLIER:
MOBIL OIL CORP.

CHEMICAL NAMES AND SYNONYMS:
PET. HYDROCARBONS AND ADDITIVES

USE OR DESCRIPTION:
STEAM TURBINE OIL

HEALTH EMERGENCY TELEPHONE:
(212)883-4411

TRANSPORT EMERGENCY TELEPHONE:
(800)424-9300(CHEMTREC)

OTHER DESIGNATION:
(TRN 600114)

********** TYPICAL CHEMICAL AND PHYSICAL PROPERTIES **********

APPEARANCE: ASTM D.5 LIQUID	VISCOSITY: AT 100 F, SUS 160.0	AT 40 C, CS 30.0
ODOR: MILD	VISCOSITY: AT 210 F, SUS 44.0	AT 100 C, CS 5.3
RELATIVE DENSITY: 15/4 C 0.>5°	SOLUBILITY IN WATER: NEGLIGIBLE	PH: NA
MELTING POINT: F(C) NA	POUR POINT: F(C) 20(-7)	
BOILING POINT: F(C) >600(316)	FLASH POINT: F(C) (METHOD) 410(210) (ASTM D-92)	
VAPOR PRESSURE:MM HG 20C < .1		

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

********** INGREDIENTS **********

	WT PCT (APPROX)	TLV(TWA):	MG/M3	PPM
HAZARDOUS INGREDIENTS: NONE				
NON-HAZARDOUS INGREDIENTS:				
REFINED MINERAL OILS	> 95			
ADDITIVES AND/OR OTHER INGREDS.	< 5			

NOTE: TLVS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OF SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

********** FIRE AND EXPLOSION HAZARD DATA **********

FLASH POINT: F(C) (METHOD) FLAMMABLE LIMITS: LEL UEL
410(210) (ASTM D-92) .6 7.0

EXTINGUISHING MEDIA:
CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.

SPECIAL FIRE FIGHTING PROCEDURES:
FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
NONE

********** HEALTH HAZARD DATA **********

THRESHOLD LIMIT VALUE: (IF ESTABLISHED)

EFFECTS OF OVEREXPOSURE:
SLIGHT SKIN IRRITATION.

********** EMERGENCY AND FIRST AID PROCEDURES **********

EYE CONTACT:
FLUSH WITH WATER.

SKIN CONTACT:
WASH CONTACT AREAS WITH SOAP AND WATER.

INHALATION:
NOT EXPECTED TO BE A PROBLEM.

INGESTION:
NOT EXPECTED TO BE A PROBLEM WHEN INGESTED. IF UNCOMFORTABLE SEEK MEDICAL ASSISTANCE.

********** REACTIVITY DATA **********

STABILITY: (THERMAL, LIGHT, ETC.) CONDITIONS TO AVOID:
STABLE EXTREME HEAT

INCOMPATIBILITY: (MATERIALS TO AVOID)
STRONG OXIDIZERS

HAZARDOUS DECOMPOSITION PRODUCTS:
CARBON MONOXIDE.

HAZARDOUS POLYMERIZATION: CONDITIONS TO AVOID:
WILL NOT OCCUR

********** SPILL OR LEAK PROCEDURE **********

ENVIRONMENTAL IMPACT:
REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:
ABSORB ON FIRE RETARDENT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

WASTE MANAGEMENT:
DISPOSE OF WASTE BY SUPERVISED INCINERATION IN COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS.

********** SPECIAL PROTECTION INFORMATION **********

EYE PROTECTION:
NO SPECIAL EQUIPMENT REQUIRED.

SKIN PROTECTION:
NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.

RESPIRATORY PROTECTION:
NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

VENTILATION:
NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

OTHER:

********** SPECIAL PRECAUTIONS **********

HANDLING: NO SPECIAL PRECAUTIONS REQUIRED.

TOXICOLOGICAL DATA

ACUTE

ORAL TOXICITY: (RATS)
NONTOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY: (RABBITS)
NONTOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY: (RATS)
NOT APPLICABLE ---HARMFUL CONCENTRATIONS OF MISTS AND/OR VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY CUSTOMARY OR REASONABLY FORESEEABLE HANDLING, USE, OR MISUSE OF THIS PRODUCT.
EYE IRRITATION: (RABBITS)
EXPECTED TO BE NON-IRRITATING. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION: (RABBITS)
MAY CAUSE SLIGHT IRRITATION ON PROLONGED OR REPEATED CONTACT. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

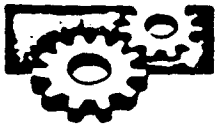
SUBACUTE AND MUTAGENICITY (SUMMARY)

CHRONIC OR SPECIALIZED (SUMMARY)

OTHER DATA

ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPT.
MANAGER OF PRODUCT SAFETY INFORMATION, PHONE: 609-737-5596

SHELL TURBO® Oils



Premium-quality turbine and general-purpose rust- and oxidation-inhibited circulating oils.

SHELL TURBO® Oils provide excellent lubrication of precision turbines in industrial and marine service. These oils are also suitable for general plant lubrication and in circulating, hydraulic and gear systems requiring rust- and oxidation-inhibited oils without extreme pressure or anti-wear properties.

SHELL TURBO Oils have achieved a long record of reliable performance because of these features:

- **Good water separation and low foaming properties**—Particularly important to minimize rusting and prevent cavitation in critical areas such as sleeve bearings.
- **Noncorrosive. Protect equipment against rust**—SHELL TURBO Oils inhibit corrosion of bearing housings and governor mechanisms, help increase machine life. These oils help prevent rust, even when salt water is present.
- **Resist oxidation over a long service life**—SHELL TURBO Oils resist thickening and sludging, minimize deposits that could cause malfunction of governor mechanisms and reduce efficiency of oil coolers.

Where to buy SHELL TURBO Oils

Your Shell Jobber is the person to see for supplies of SHELL TURBO Oils. He's listed in the Yellow Pages under "Oils—Lubricating." Call him today. He'll be glad to give you information about other premium-quality Shell lubricants, too.

Shell Oil Company
Manager, Commercial Communications
One Shell Plaza
Houston, Texas 77002

*SHELL TURBO is a trademark and is used as such in this writing.

Typical properties of SHELL TURBO Oils:

	ASTM Test Method	SHELL TURBO Oil Grades								
		32	46	68	78[1]	100	150	220	320	460
Gravity, °API	D 1298	31	30	29	30	29	27	28	27	26
Color	D 1500	1.0	1.0	1.0	0.5	1.0	2.0	4.0	5.0	6.0
Pour point, °F	D 97	15	0	0	10	0	0	10	10	10
Flash point, C.O.C., °F	D 92	400	425	460	460	480	475	480	520	530
Viscosity, cSt at 40°C	D 445	30.1	44.0	63.0	75.0	97.0	147	210	305	420
Viscosity, cSt at 100°C	D 445	5.05	6.5	8.2	9.2	10.7	14	18	23	28
Viscosity index	D 2270	92	95	95	95	94	93	93	93	93
Neutralization No., TAN-C	D 974	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Cu corrosion, 3 hr. at 212°F	D 130	1	1	1	1	1	1	1	1	1
Rust test	D 665B	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Interfacial tension, 77°F, dynes/cm	D 971	20	20	20	—	23	25	—	—	—
Emulsion test, minutes	D 1401	6	9	10	17	10	15	17	17	30
Turbine oil stability test, hours	D 943	2,000+	2,000+	2,000+	—	2,000+	—	—	—	—
Turbine oil stability test, MIL TOST, sludge, mg		14	15	18	20	20	—	—	—	—

[1]Approved under MIL-L-17331G and Amendment 1.

Highlights

MATERIAL SAFETY DATA SHEET

MAR 22 19[illegible]

SAN JUAN SAFETY

Shell

67002 REV 1-83

MSDS NUMBER ▶ 65,000-2

SECTION I	NAME
PRODUCT ▶	Shell 6:42 Gas Engine Oil 40
CHEMICAL/ SYNONYMS ▶	Lubricating Oil
CHEMICAL FAMILY ▶	Hydrocarbon
SHELL CODE ▶ 67209	CAS NUMBER ▶ Mixture

24 HOUR EMERGENCY ASSISTANCE

SHELL 713-473-8461
CHEMTREC 800-424-9300

HAZARD RATING
LEAST 0 ▶ SLIGHT 1 ▶ MODERATE 2 ▶ HIGH 3 ▶ EXTREME 4

HEALTH
FIRE
REACTIVITY

SECTION II — INGREDIENTS

COMPOSITION	%	TOXICITY DATA
Shell 6:42 Gas Engine Oil 40	100	Not Determined
Petroleum Hydrocarbons	96	Oral LD_{50}, rat >5g/kg. Dermal LD_{50}, rabbit >2g/kg.
Polyalkenyl Succinimide	2	
Detergent Inhibitor containing Ba, S, Ca	2	
Organic Zinc Dithiophosphate	<0.5	

*Values are estimates based upon tests using similar oils.

SECTION III — HEALTH INFORMATION

Lubricating oils are generally considered to be of a low order of acute toxicity to humans and experimental animals.

Exposure to vapors or mist of this product may cause pulmonary irritation, dizziness and nausea. Prolonged or repeated contact may cause various skin disorders such as dermatitis, folliculitis or oil acne.

The petroleum hydrocarbons in this product are a complex mixture of paraffinic, naphthenic and aromatic hydrocarbons. As in other petroleum oils, the aromatics contain polycyclic compounds of various concentrations and structures. Some of these polycyclics may be those which have been shown to induce cancer in animals under laboratory conditions. Epidemiologic studies on other petroleum products containing polycyclic aromatics suggested the possibility of skin cancer induction in man after prolonged and repeated contact. Inhalation of mists arising from oils containing these materials may also present a cancer hazard.

This specific product has not been tested in long-term, chronic exposure tests. Therefore, the presence of polycyclic aromatic hydrocarbons requires that handling procedures and safety precautions in this MSDS be followed to minimize employees' exposure.

SECTION IV — OCCUPATIONAL EXPOSURE LIMITS

Oil Mist, Mineral:
ACGIH-TLV/TWA = 5 mg/m³; ACGIH-TLV/STEL = 10 mg/m³

SECTION V — EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Flush with water for 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT: Remove contaminated clothing and wipe excess off. Wash with soap and water or a waterless hand cleaner followed by soap and water. Do not reuse clothing until thoroughly cleaned. If irritation persists, get medical attention.

INHALATION: Remove victim to fresh air and provide oxygen if breathing is difficult. Get medical attention.

INGESTION: Do not induce vomiting. In general, no treatment is necessary unless large quantities of product are ingested. However, get medical advice.

NOTE TO THE PHYSICIAN: In general, emesis induction is unnecessary in high viscosity, low volatility products, i.e. most oils and greases.

SECTION VI — PHYSICAL DATA

BOILING POINT (°F) ▶ N. A.	MELTING POINT (°F) ▶ N. A.	VAPOR PRESSURE (mmHg) ▶ N. A.
SPECIFIC GRAVITY (H_2O=1) ▶ 0.90	% VOLATILE BY VOLUME ▶ N. A.	VAPOR DENSITY (AIR=1) ▶ N. A.
SOLUBILITY IN WATER ▶ Insoluble	EVAPORATION RATE (BUTYL ACETATE=1) ▶ N. A.	N.A. = Not Available

APPEARANCE AND ODOR

Light brown oil. Slight odor.

SECTION VII — FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD USED	FLAMMABLE LIMITS - VOLUME IN AIR ▶ LOWER	UPPER
COC F 390	N. A.	N. A.

EXTINGUISHING MEDIA

Use water fog, foam, dry chemical or CO_2. Do not use a direct stream of water. Product will float and can be reignited on surface of water.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Do not enter confined fire space without proper protective equipment including a NIOSH approved self-contained breathing apparatus. Cool fire-exposed containers with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS

None unusual

MATERIAL SAFETY DATA SHEET

Shell

MSDS NUMBER ▶ 65.000-2

SECTION VIII — REACTIVITY

STABILITY ▶ ☐ UNSTABLE ☒ STABLE

HAZARDOUS POLYMERIZATION ▶ ☐ MAY OCCUR ☒ WILL NOT OCCUR

CONDITIONS AND MATERIALS TO AVOID

Avoid heat, open flames, oxidizing materials and mist formation.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, sulfur oxides, phosphorus oxides and unidentified organic materials may be formed during combustion.

SECTION IX — EMPLOYEE PROTECTION

RESPIRATORY PROTECTION

If exposure may or does exceed occupational exposure limits (Sec.IV.) use a NIOSH-approved respirator to prevent overexposure. In accord with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors and particulates.

PROTECTIVE CLOTHING

Wear gloves and other protective clothing as required to minimize skin contact. Wear safety glasses or goggles to avoid eye contact.

ADDITIONAL PROTECTIVE MEASURES

--

SECTION X — ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES

May burn although not readily ignitable. Use cautious judgment when cleaning up large spills.

Large spills: Wear respirator and protective clothing as appropriate. Shut off source of leak if safe to do so. Dike and contain. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand or other suitable material; dispose of properly.
Small spills: take up with an absorbent material and dispose of properly.

WASTE DISPOSAL

Place in an appropriate disposal facility in compliance with local regulations.

ENVIRONMENTAL HAZARDS

This product is an "oil" under the Clean Water Act. KEEP OUT OF

MATERIAL SAFETY DATA SHEET

Shell

MSDS NUMBER ▶ 65.000-2

SECTION XI SPECIAL PRECAUTIONS

Minimize skin contact. Wash with soap and water before eating, drinking, smoking or using toilet facilities. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles, including shoes, that cannot be decontaminated.

SECTION XII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION

☐ FLAMMABLE LIQUID	☐ COMBUSTIBLE LIQUID	☐ OXIDIZING MATERIAL	☐ NON-FLAMMABLE GAS
☐ FLAMMABLE SOLID	☐ POISON CLASS A	☐ CORROSIVE MATERIAL	☒ NOT HAZARDOUS BY D.O.T. REGULATIONS
☐ FLAMMABLE GAS	☐ POISON CLASS B	☐ IRRITATING MATERIAL	☐ OTHER-Specify below

PROPER SHIPPING NAME

None

REQUIREMENTS

Bill of Lading Commodity Description: Petroleum Lubricating Oil

SECTION XIII SUPPLEMENTARY HEALTH/REGULATORY INFORMATION

- Clean Water Act (CWA)

This product is classified as an oil under Section 311 of the Clean Water Act. Spills entering (a) surface waters or (b) any watercourses or sewers entering/leading to surface waters that cause a sheen MUST be reported to the National Response Center, 800-424-8802.

- Resource Conservation and Recovery Act (RCRA)

As produced, this material is a product and not a waste. If discarded or intended to be discarded as is, it exhibits the characteristic of EP toxicity as defined in RCRA (40 CFR 261.24) based upon its barium content. The EPA hazardous waste number is D005.

BE SAFE

READ OUR PRODUCT SAFETY INFORMATION AND PASS IT ON

PRODUCT LIABILITY LAW REQUIRES IT!

John P. Lepori

Manager

SHELL OIL COMPANY
PRODUCT SAFETY AND COMPLIANCE
P.O. BOX 4320
HOUSTON, TEXAS 77210
(713) 241-4819

DATE PREPARED

Tribol

MATERIAL SAFETY DATA SHEET

Section I

Product Name Or Number (as it appears on label)	Emergency Telephone No.
Tribol 890 (Light, Medium, Heavy)	213-679-0271
Address (Number, Street, City, State, and Zip Code)	**Manufacturer's D-U-N-S No.**
4801 West 147th St., Hawthorne, California 90250	07-964-5248

Hazardous Material Description, Proper Shipping Name, Hazard Class, Hazard ID No. (49 CRF 172.101)

Not Restricted

Additional Hazard Classes (as applicable)

Not Restricted

Chemical Family	Formula
Synthetic Hydrocarbon plus Additives	Mixture

Section II — Hazardous Ingredients/Identity Information

Hazardous Components	OSHA PEL	ACGIH TLV	Other Limits Recommended	%
TO THE BEST OF OUR KNOWLEDGE, THIS PRODUCT CONTAINS NO HAZARDOUS INGREDIENTS, AS DEFINED BY 29 CFR 1910.1200.				

Section III — Physical/Chemical Characteristics

Boiling Point	Not Determined	**Specific Gravity (H_2O = 1)** Typ. @ 60°F	0.97
Vapor Pressure (mm Hg.)	Nil		
Vapor Density (AIR = 1)	Nil	**Evaporation Rate (Butyl Acetate = 1)**	Nil

Appearance and Odor

Clear Amber Liquid - Petroleum Odor

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
> 445°F ASTM D-92	Not Determined		

Extinguishing Media

CO_2, Foam, Dry Chemical

Special Fire Fighting Procedures

A self-contained breathing apparatus is recommended for use by firefighters.

Unusual Fire and Explosion Hazards

Treat as a Petroleum Fire

Section V — Reactivity Data

Stability: Stable

Hazardous Polymerization: Will Not Occur

Incompatibility (Materials to Avoid)
Oxidizing Agents

Thermal Decomposition Products
Burning may produce oxides of carbon

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? XX Skin? Ingestion?

Health Hazards (Acute and Chronic)
Repeated and prolonged contact may cause a mild skin irritation & transient eye irritation

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Signs and Symptoms of Exposure
Mild skin irritation

Medical Conditions Generally Aggravated by Exposure: None known

Emergency and First Aid Procedures
Eyes - Flush with water for 15 minutes
Skin - Wash with soap and water
Ingestion - DO NOT induce vomiting - call a physician

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken In Case Material is Released or Spilled
Dike spill - transfer to an impervious container
Use oil absorbent for residue

Waste Disposal Method
Reclaim, incinerate or transport to a licensed disposal facility per applicable regulations. Avoid landfilling of liquids. Reclaim where possible.

Precautions to Be Taken in Handling and Storing
Do not handle or store near heat, sparks, or flames. Keep container closed when not in use.

Other Precautions
Avoid heating to decomposition.

Section VIII — Control Measures

Respiratory Protection (Specify Type)
If misting occurs, use NIOSH approved respirator for oil mist

Ventilation — Local Exhaust: Recommended if product is sprayed; Special: N/A

Mechanical (General)
General ventilation adequate for normal use

Protective Gloves: Chemical resistant

Eye Protection: Safety glasses with side shields

Other Protective Clothing or Equipment
Long sleeve shirts

Work/Hygienic Practices
Wash thoroughly after use and before eating, drinking or smoking.

"THE INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IS ACCURATE TO THE BEST OF SELLER'S KNOWLEDGE. HOWEVER, SELLER MAKES NO WARRANTY WHATSOEVER, EXPRESSED, IMPLIED, OR OF MECHANTABILITY REGARDING THE ACCURACY OF SUCH DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SELLER ASSUMES NO RESPONSIBILITY FOR INJURY TO BUYER OR TO THIRD PERSONS OR FOR ANY DAMAGE TO ANY PROPERTY AND BUYER ASSUMES ALL SUCH RISKS."

Stephen Czajkowski — Name (print)

Environmental Chemist — Title

Stephen Czajkowski — Signature

April 15, 1987 — Date

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED: 10/26/82

I. PRODUCT IDENTIFICATION

MOBIL PEGASUS 490

SUPPLIER:
MOBIL OIL CORP.

HEALTH EMERGENCY TELEPHONE:
(212) 883-4411

CHEMICAL NAMES AND SYNONYMS:
PET. HYDROCARBONS AND ADDITIVES

TRANSPORT EMERGENCY TELEPHONE:
(800) 424-9300 (CHEMTREC)

USE OR DESCRIPTION:
GAS ENGINE OIL

II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES

APPEARANCE: ASTM 4.0 LIQUID ODOR: MILD PH: NA
VISCOSITY AT 100 F, SUS: 670.0 AT 40 C, CS: 128.0
VISCOSITY AT 210 F, SUS: 72.0 AT 100 C, CS: 13.6
FLASH POINT F(C): >480(249) (ASTM D-92)
MELTING POINT F(C): NA POUR POINT F(C): 10(-12)
BOILING POINT F(C): > 600(316)
RELATIVE DENSITY, 15/4 C: 0.879 SOLUBILITY IN WATER: NEGLIGIBLE
VAPOR PRESSURE-MM HG 20C: < .1

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

III. INGREDIENTS

	WT PCT (APPROX)	EXPOSURE LIMITS MG/M3	PPM	SOURCES (AND NOTES)
HAZARDOUS INGREDIENTS:				
NONE				
OTHER INGREDIENTS:				
REFINED MINERAL OILS	>95			
ADDITIVES AND/OR OTHER INGREDS.	< 5			

KEY TO SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, O=OSHA

NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

IV. HEALTH HAZARD DATA

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---

EFFECTS OF OVEREXPOSURE: NOT EXPECTED TO BE A PROBLEM.

V. EMERGENCY AND FIRST AID PROCEDURES

--- FOR PRIMARY ROUTES OF ENTRY ---

EYE CONTACT: FLUSH WITH WATER.
SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER.
INHALATION: NOT EXPECTED TO BE A PROBLEM.
INGESTION: NOT EXPECTED TO BE A PROBLEM. HOWEVER, IF GREATER THAN 1/2 LITER(PINT) INGESTED, IMMEDIATELY GIVE 1 TO 2 GLASSES OF WATER AND CALL A PHYSICIAN, HOSPITAL EMERGENCY ROOM OR POISON CONTROL CENTER FOR ASSISTANCE. DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

********** VI. FIRE AND EXPLOSION HAZARD DATA **********
FLASH POINT F(C): > 480(249) (ASTM D-92)
FLAMMABLE LIMITS. LEL: .6 UEL: 7.0
EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.
SPECIAL FIRE FIGHTING PROCEDURES: FOR FIRES IN ENCLOSED AREAS, FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE
NFPA HAZARD ID: HEALTH: 0, FLAMMABILITY: 1, REACTIVITY: 0

********** VII. REACTIVITY DATA **********
STABILITY (THERMAL, LIGHT, ETC.): STABLE
CONDITIONS TO AVOID: EXTREME HEAT
INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS
HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

********** VIII. SPILL OR LEAK PROCEDURE **********
ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.
WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED, CONTROLLED BURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION. SUCH BURNING MAY BE LIMITED PURSUANT TO THE RESOURCE CONSERVATION AND RECOVERY ACT. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

********** IX. SPECIAL PROTECTION INFORMATION **********
EYE PROTECTION: NO SPECIAL EQUIPMENT REQUIRED.
SKIN PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.
RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.
VENTILATION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

********** X. SPECIAL PRECAUTIONS **********
NO SPECIAL PRECAUTIONS REQUIRED.

********** XI. TOXICOLOGICAL DATA **********

---ACUTE---

ORAL TOXICITY (RATS): LD50: > 5 G/KG 0/10 RATS DIED AT THIS DOSAGE LEVEL. SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG 0/10 RABBITS DIED AT THIS DOSAGE LEVEL. SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY (RATS): NOT APPLICABLE ---HARMFUL CONCENTRATIONS OF MISTS AND/OR VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY CUSTOMARY OR REASONABLY FORESEEABLE HANDLING, USE, OR MISUSE OF THIS PRODUCT.

EYE IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. EYE IRRITATION SCORES: 0 AT 24 HOURS, 0 AT 48 HOURS, 0 AT 72 HOURS---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. PRIMARY IRRITATION SCORE: 0/8---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

---CHRONIC OR SPECIALIZED (SUMMARY)---

THE BASE OILS IN THIS PRODUCT ARE SEVERELY SOLVENT REFINED AND/OR SEVERELY HYDROTREATED. TWO YEAR MOUSE SKIN PAINTING STUDIES OF SIMILAR OILS SHOWED NO EVIDENCE OF CARCINOGENIC EFFECTS. SEVERELY SOLVENT REFINED AND SEVERELY HYDROTREATED MINERAL BASE OILS HAVE BEEN TESTED AT MOBIL ENVIRONMENTAL AND HEALTH SCIENCES LABORATORY BY DERMAL APPLICATION TO RATS 5 DAYS/WEEK FOR 90 DAYS AT DOSES SIGNIFICANTLY HIGHER THAN THOSE EXPECTED DURING NORMAL INDUSTRIAL EXPOSURE. EXTENSIVE EVALUATIONS INCLUDING MICROSCOPIC EXAMINATION OF INTERNAL ORGANS AND CLINICAL CHEMISTRY OF BODY FLUIDS, SHOWED NO ADVERSE EFFECTS.

********** XII. REGULATORY INFORMATION **********

TSCA INVENTORY STATUS: ALL COMPONENTS REGISTERED.

D.O.T. SHIPPING NAME: NOT APPLICABLE

D.O.T. HAZARD CLASS: NOT APPLICABLE

US OSHA HAZARD COMMUNICATION STANDARD: PRODUCT ASSESSED IN ACCORDANCE WITH OSHA CFR 1910.1200 AND DETERMINED NOT TO BE HAZARDOUS.

RCRA INFORMATION: THE UNUSED PRODUCT, IN OUR OPINION, IS NOT SPECIFICALLY LISTED BY THE EPA AS A HAZARDOUS WASTE (40 CFR, PART 261D); DOES NOT EXHIBIT THE HAZARDOUS CHARACTERISTICS OF IGNITABILITY, CORROSIVITY, OR REACTIVITY, AND IS NOT FORMULATED WITH THE METALS CITED IN THE EP TOXICITY TEST. HOWEVER, USED PRODUCT MAY BE REGULATED.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
ZINC (ELEMENTAL ANALYSIS) (0.018 PCT)	7440-66-6	15

--- KEY TO LIST CITATIONS ---

1 = OSHA Z, 2 = ACGIH, 3 = IARC, 4 = NTP, 5 = NCI,
6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325M, 9 = DOT HMT, 10 = CA RTK,
11 = IL RTK, 12 = MA RTK, 13 = MN RTK, 14 = NJ RTK, 15 = NI 293,
16 = FL RTK, 17 = PA RTK.

--- NTP, IARC, AND OSHA INCLUDE CARCINOGENIC LISTINGS ---

****

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

****

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

********** APPENDIX **********

FOR MOBIL USE ONLY: (FILL NO: RN612DA201) MHC: 1* 1* NA 0* 0* PPEC: US82-090 APPROVE REVISED: 10/26/82

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

MATERIALS INFORMATION SERVICES

No. 1257

VARSOL 1

Date May 1982

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: VARSOL 1
DESCRIPTION: Petroleum solvent or mineral spirits.
OTHER DESIGNATIONS: GE Material D5B8, ASTM D235, ASTM D484, Type 1
MANUFACTURER: Exxon Co.
P.O. Box 2180
Houston, Texas Tel: (713) 656-3424

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Mixture of petroleum hydrocarbons	100	8-hr TWA 100 ppm*
Typical Composition: Vol % Aromatics (C_8 and higher) 18 Olefins 1 Saturates 81 Sulfur content 1 ppm		Rat, Oral LD_{50} >5 g/kg
*ACGIH(1982) TLV for Stoddard Solvent. Animal studies by Exxon Corp. medical research has shown that male rats exposed to similar vapors at 100 ppm had kidney damage. Additional studies are being conducted to validate these findings and to determine if a revised TLV should be recommended.		Rabbit, Dermal LD_{50} >2 g/kg

SECTION III. PHYSICAL DATA

Boiling range, 1 atm, deg C ----	155-205	Specific gravity, 15.6/15.6C --	ca 0.79
Vapor pressure, 25C, mmHg ------	<10	Evaporation rate (nBuAc=1) ----	<0.1
Vapor density (Air=1) ----------	ca 4.8	Volatiles, % ----------	100
Solubility in water ----------	Negligible	Molecular weight (avg) --------	ca 140

Appearance & odor: Water-white liquid; mineral spirits odor (no long-lasting odor after evaporation).

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
ca 42C (108F) TCC	254C (ASTM D2155)	% by Volume @ 25C	0.9	6.0

Extinguishing Media: Dry chemical, carbon dioxide, foam, water spray or fog. Water spray can be used to keep fire-exposed containers cool to avoid pressure rupture.
This material is an OSHA Class II Combustible Liquid. It is a dangerous fire hazard if heated or sprayed in air.
Firefighters should wear self-contained breathing apparatus for fighting fires in enclosed areas.

SECTION V. REACTIVITY DATA

This is a stable material in closed containers at room temperature under normal storage and handling conditions. It does not polymerize.
Incompatible with strong oxidizing agents such as chlorine, conc. oxygen, calcium hypochlorite, nitric acid, etc.
Thermal-oxidative degradation may produce carbon monoxide and partially oxidized hydrocarbons.

No. 1257

SECTION VI. HEALTH HAZARD INFORMATION

TLV 100 ppm (See Sect II)

Varsol, like all petroleum distillates, is a central nervous system depressent. Symptoms of overexposure to high vapor conc. range from headache and dizziness to possible convulsions and unconsciousness.

Eye contact with the liquid may cause conjunctivitis. Prolonged or repeated skin contact causes a defatting effect, resulting in irritation, drying, cracking and dermatitis.

FIRST AID:

Eye Contact: Flush thoroughly with running water for 15 min. including under eyelids. Get medical help if irritation persists.

Skin Contact: Remove contaminated clothing. Wash affected area with soap and water. Get medical help if large area contacted or if irritation persists.

Inhalation: Remove to fresh air. Restore and/or support breathing as required. (Administer oxygen if breathing difficult). Contact physician for further treatment, observation and support.

Ingestion: Do not induce vomiting. Contact physician immediately. Aspiration hazard. Give a few ounces of USP mineral oil to drink.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel of leaks or spills. Remove sources of heat or ignition. Provide explosion-proof ventilation. Clean-up personnel need protection against inhalation and skin contact. Contain spill and recover free liquid if possible. Use absorbent (sand, earth, sawdust, etc) to clean up residue. Do not discharge into sewers or surface waters. (Notify authorities if product enters, or may enter, sewer or waterway.)

DISPOSAL: Waste material may be burned in an approved incinerator.
Follow Federal, State, and Local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide adequate general and local exhaust ventilation to meet TLV requirements. Local exhaust hoods should have at least 60 fpm face velocity. Use explosion-proof electrical equipment and services. Have air-supplied or self-contained respiratory apparatus available for nonroutine or emergency use or when working in a confined or enclosed area. (Canister respirator may be suitable for short time usage.)

Wear impermeable gloves and additional protective clothing to prevent prolonged or repeated skin contact. Use safety goggles and/or faceshield for eye protection where splashing is possible. An eyewash station is desirable where splashing is probable. A safety shower may be desirable where large amounts are used.

Launder contaminated clothing before reuse. thoroughly dry contaminated shoes before reuse.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in closed containers in a cool, well-ventilated area away from sources of heat, flame, ignition and strong oxidizing agents. Protect containers from physical damage. Keep containers closed when not in use. Use safety cans for small amounts.

Handling and storage conditions must be suitable for OSHA Class II Combustible liquid.

Bond and ground containers for transfers to avoid static sparks.

Avoid inhalation of vapors. Avoid prolonged or repeated contact with skin. Prevent eye contact with liquid. Prohibit smoking or flame in use areas. Ventilate area where used. Electrical services to meet code.

DOT Classification: COMBUSTIBLE LIQUID

DATA SOURCE(S) CODE: 1,2, MSDS #334

APPROVALS: MIS J. M. Nielsen
CRD

Industrial Hygiene and Safety 5-12-82

MEDICAL REVIEW: 19 May 1982

GENERAL ELECTRIC

DISCOVERY CHEMICALS, INC.

MATERIAL SAFETY DATA SHEET

Emergency Phone 504 389-9945

PRODUCT IDENTIFICATION:

TRADE NAME:	Activated Alumina
CHEMICAL FAMILY:	Aluminum Oxide
CHEMICAL FORMULA:	Al_2O_3
CAS NO.:	1344-28-1

SUMMARY OF HAZARDS:

Mild irritant to the eyes and respiratory system.

CHEMICAL AND PHYSICAL PROPERTIES:

APPEARANCE/ODOR:	White crystalline/no odor.
MELTING POINT:	>3000°F
SOLUBILITY IN WATER:	Insoluble.

FIRE AND EXPLOSION HAZARDS:

FLASH POINT (METHOD):	Nonflammable.
EXTINGUISHING MEDIA:	None required.

HAZARDOUS THERMAL DECOMPOSITION PRODUCTS:
None

SPECIAL FIRE FIGHTING PROCEDURES:
None

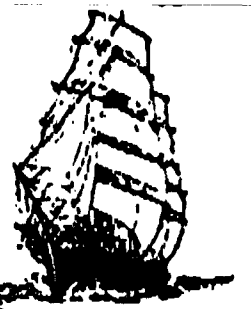
UNUSUAL FIRE AND EXPLOSION HAZARDS:
None

REACTIVITY DATA:

STABILITY:	Stable.
CONDITIONS TO AVOID:	None
MATERIALS TO AVOID:	None
HAZARDOUS POLYMERIZATION:	Will not occur.

Discovery CHEMICALS, INC.

MATERIAL SAFETY DATA SHEET



3502 RIVERVIEW · Mailing Address · P. O. BOX 977 · PORT ALLEN, LA. 70767-0977 · Phone (504) 389-9945

SECTION 1. Product Identification:

TRADE NAME:	Activated Alumina
CHEMICAL FAMILY:	Aluminum Oxide
CHEMICAL FORMULA:	Al_2O_3
CAS NO.:	1344-28-1
MANUFACTURER:	Discovery Chemicals, Inc.
EMERGENCY PHONE NUMBER:	504-389-9945

SECTION 11. Ingredients:

		Exposure Limits
Al_2O_3	9.00 - 95.00%	ACGIH - TLV
Na_2O	0.30 - 2.0%	10 mg/m³ Total Dust
S_iO_2	0.02 - 0.04%	5 mg/m³ Respirable dust
H_2	5.00 - 7.00%	

SECTION 111. Physical Data:

APPEARANCE/ODOR:	White crystalline powder, spheres or granules/no odor.
MELTING POINT:	>3000°F
SOLUBILITY IN WATER:	Insoluble.

SECTION IV. Fire and Explosion Hazards:

FLASH POINT (METHOD):	Nonflammable
EXTINGUISHING MEDIA:	None required
HAZARDOUS THERMAL DECOMPOSITION PRODUCTS:	None
SPECIAL FIRE FIGHTING PROCEDURES:	None
UNUSUAL FIRE & EXPLOSION HAZARDS:	None

SECTION V. Reactivity Data:

STABILITY:	Stable
CONDITIONS TO AVOID:	None
MATERIALS TO AVOID:	None
HAZARDOUS POLYMERIZATION:	Will not occur

SECTION VI. Health Hazards:

INHALATION:	If exposed to excessive amounts, remove to fresh air.
EYE CONTACT:	Begin immediate eye irrigation with cool water for at least 15 minutes with the eyelids held open by gently separating them with the fingers.
SKIN CONTACT:	No hazard under normal circumstances.
INGESTION:	No hazard under normal circumstances.

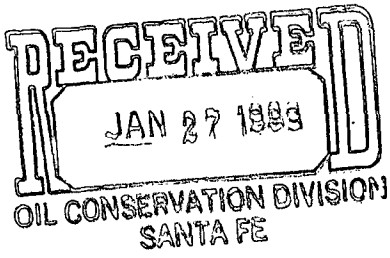
SECTION VII. Safe Handling & Use

SPILLS OR LEAKS:	Shovel material into container for disposal.
DISPOSAL METHODS:	This product is not by EPA's definition a hazardous substance. It may be disposed of in a landfill in compliance with any applicable local, state and federal regulation.
STORAGE REQUIREMENTS:	Store in a dry place away from moisture.

File Copy

INFORMATION IN SUPPORT OF SECTION 3.1.14 OF DISCHARGE PLAN GW-49

Compressor "D" Building Well



El Paso Natural Gas Co.
Blanco Plant
San Juan County, N.M.

PRELIMINARY ASSESSMENT
OBSERVED SUBSURFACE SEEPAGE
AND CONTAMINATION
EPNG BLANCO D COMPRESSOR STATION
FOUNDATION EXCAVATION
NEAR BLANCO, NEW MEXICO

FOR

ELPASO NATURAL GAS COMPANY

EL PASO, TEXAS

PREPARED BY

MCBRIDE-RATCLIFF AND ASSOCIATES, INC.

HOUSTON, TEXAS

McBride-Ratcliff and Associates, Inc.
Geotechnical Consultants
7220 Langtry Houston, Texas 77040 713-460-3766

January 7, 1988
MRA File No. 88-003

Mr. John Bridges
El Paso Natural Gas Company
P. O. Box 1492
El Paso, Texas 79978

RE: Preliminary Assessment
Observed Subsurface Seepage and Contamination
EPNG Blanco D Compressor Station Foundation Excavation
Near Blanco, New Mexico

Dear Mr. Bridges:

Introduction

We are pleased to provide this preliminary assessment of the subsurface seepage and contamination observed in the Blanco D Compressor Station foundation excavation.

We conducted the geotechnical investigation for the D Compressor Plant in September and October 1987; the results of the investigation were described in our report dated November 18, 1987. As shown on Figure 1, nine test borings were drilled in the D Plant area. The test borings ranged in depth from 17 to 37 ft and were logged in the field by one of our staff geologists. The logs of the test borings are presented in Appendix A. Free water was observed at various depths during test drilling and after 24 hours as shown in the following:

Summary of Free Water Observations

Boring Number & Depth (ft)	Date Drilled	Depth to Free Water While Drilling (ft)	Depth to Free Water After 24 hrs (ft)
CB-1 - 22.5	9/14/87	None	14.4
CB-2 - 21.5	9/14/87	None	14.4
CB-3 - 17.5	9/15/87	None	Dry
CB-4 - 20.0	9/15/87	None	Wet & caved at 18 ft
CB-5 - 26.5	9/15/87	17.0	20.1
CB-6 - 27.0	9/15/87	23.0	17.8
CB-9 - 37	10/3/87	26.0	Dry & caved at 14.0 ft
CB-10 - 34	10/3/87	None	26.4
CB-11 - 30	10/3/87	17.0	Caved & dry at 18 ft (1hr)

During December 10 through December 18, 1987 our geologist observed the excavation for the mat foundation for the D Compressor Plant. Our geologist logged the subsurface conditions exposed in the foundation excavation, excavated a backhoe test pit at the MCC Building Area, and drilled and logged five Nx core borings in the D plant foundation excavation area. The locations of the backhoe test pit and core borings are shown on Figure 1. The logs of the five Nx core borings and the MCC test pit are shown in Appendix A.

Observed Contamination

On December 12, 1987 our geologist noted a seepage zone along a portion of the west edge of the D Plant excavation and in a

portion of the excavation area. The seepage at the west edge of the foundation area occured at about El. 90.6 ft. The seepage contained contamination with an oily appearance; samples were obtained and subjected to analytical testing by EPNG. The approximate limits of the excavation and seepage zone are indicated on Figure 1. The seepage zone was approximately 50 ft in length and about 5 to 15 ft in width. The sandstone materials encountered at about El. 94.0 in the foundation area were removed to expose the surface of the claystone and the seepage zone. All materials were excavated to competent claystone. The surface elevations of the competent claystone beneath the seepage zone are shown on Figure 2.

A test pit was excavated in the area immediately adjacent to the seepage exposed at the west edge of the excavation to observe the underlying materials. The test pit extended from El 94 down to Elevation 87.1 and was approximately 8 by 3.5 ft in plan dimensions. The materials exposed in the excavation were logged by our field geologist; the log of the seepage test pit is shown in Appendix A. The seepage occured at the contact between a sandstone layer and the underlying claystone.

We obtained approximate measurements of seepage quantities into the test excavation for a period of 3 days. Seepage quantities decreased rapidly from the initial levels, and the approximate percentage of contaminants was also visibly decreasing. The seepage observations are described below.

Date	Approximate Seepage Rate
12/15 - 12/16	2.54 ft^3/hr
12/16 - 12/17	1.4 ft^3/hr
12/17 - 12/18	.89 ft^3/hr

Remedial Actions

As soon as potential contamination was reported to El Paso personnel, remedial actions were initiated. The actions included sampling of contamination and analytical testing and, on December 14, 1987, the removal of an existing laboratory tank from the location shown on Figure 1. This tank was punctured at one end and is believed to be the source of the observed contamination. The tank excavation extended to about Elevation 96; the excavation was backfilled with clean soil after tank removal. The seepage zone was also excavated and removed from the "D" plant foundation area. The excavation will be backfilled with lean concrete up to foundation level.

We assisted in developing plans for a collector/interceptor drain to be installed at the location of the observed seepage at the west side of the foundation excavation. This collector/ interceptor will be located adjacent to the building excavation area and an existing 12 inch blow down line. We understand that the blowdown line trench extends down to about Elevation 93 in the vicinity of the observed seepage. Because the blowdown line is above the seepage zone it is unlikely that seepage has flowed along the blowdown line.

Hydrogeological Conditions

The site is situated within the west-central portion of the San Juan Basin which extends across the Colorado-New Mexico Border east of the Four Corners area.

During the Tertiary period this basin was filled by Paleocene and Eocene sediments of continental origin derived from the Southern Rocky Mountains. The formations that outcrop within the basin are of Eocene age; these sediments were laid down as channel fill and stream floodplain deposits. The Eocene sequence begins with the Wasatch formation and the formations of the Nacimiento Group.

The plant site is situated on an outcrop of the Nacimiento Group which consists of two distinct stratums. The upper stratum includes thick beds of sandy and silty clays, claystones and shales with sand, sandstone and siltstone interbeds. The lower substratum consists of a slightly weathered to unweathered sandstone.

The test borings drilled in September and October of 1987 encountered free water at widely varying elevations. We judge that the free water reflects isolated seepage rather than a true groundwater level. The zones of isolated seepage were further indicated during foundation excavation for the "D" Plant when isolated contaminated seepage was observed at one location. The seepage zone shown on Figure 1 is located at the contact between a sandstone lens and an underlying claystone. The sandstond lens varies in thickness, lateral extent and elevation. As a result the contact with the underlying claystone also varies in elevation in the excavation area. Based on the excavation (Figure 2) performed to remove the seepage zone it appears that the limits of the seepage do not extend much beyond the east of the "D" plant excavation. The low point of the seepage zone seems to be at El. 90.6 of the west edge of the "D" plant and we believe that contaminated seepage has flowed to the east from the tank which has recently been removed.

Remedial Investigation

Completed remedial actions include source removal, removal of the seepage area and affected materials from the "D" Plant excavation, monitoring and collection of seepage from the contaminated zone and a future installation of a interceptor/drain-collector at the zone of observed seepage.

During the "D" plant foundation excavation, contamination was noted in a zone (Figure 1) that is believed to have moved in a

west to east direction across a portion of the excavation site. Entry of contaminants into the excavation was not noted at any point other than along the west wall at the seepage test excavation. The vertical extent of contamination is confined by overlying hard sandstones and underlying claystones as indicated by previous test borings, Nx core borings and the test pit excavated at the seepage point.

We suggest that additional subsurface exploration (test pits) be conducted to the east and west of the observed seepage area to determine if additional shallow and confined areas of contamination migration exist and their limits. If additional contamination is encountered remedial measures can be designed to provide containment-recovery, probably using shallow interceptor and drainage trenches. The intercepted contaminated materials can then be recovered and disposed of at approved facilities. Suggested locations for the test pits are shown on Figure 1, the test pits locations should be adjusted in the field to determine the limits of the seepage/contamination.

We are looking forward to providing additional information and assisting you in the remedial investigation.

Yours very truly,

McBRIDE-RATCLIFF AND ASSOCIATES, INC.

Arthur J. Stephens, P.E.

Vice President

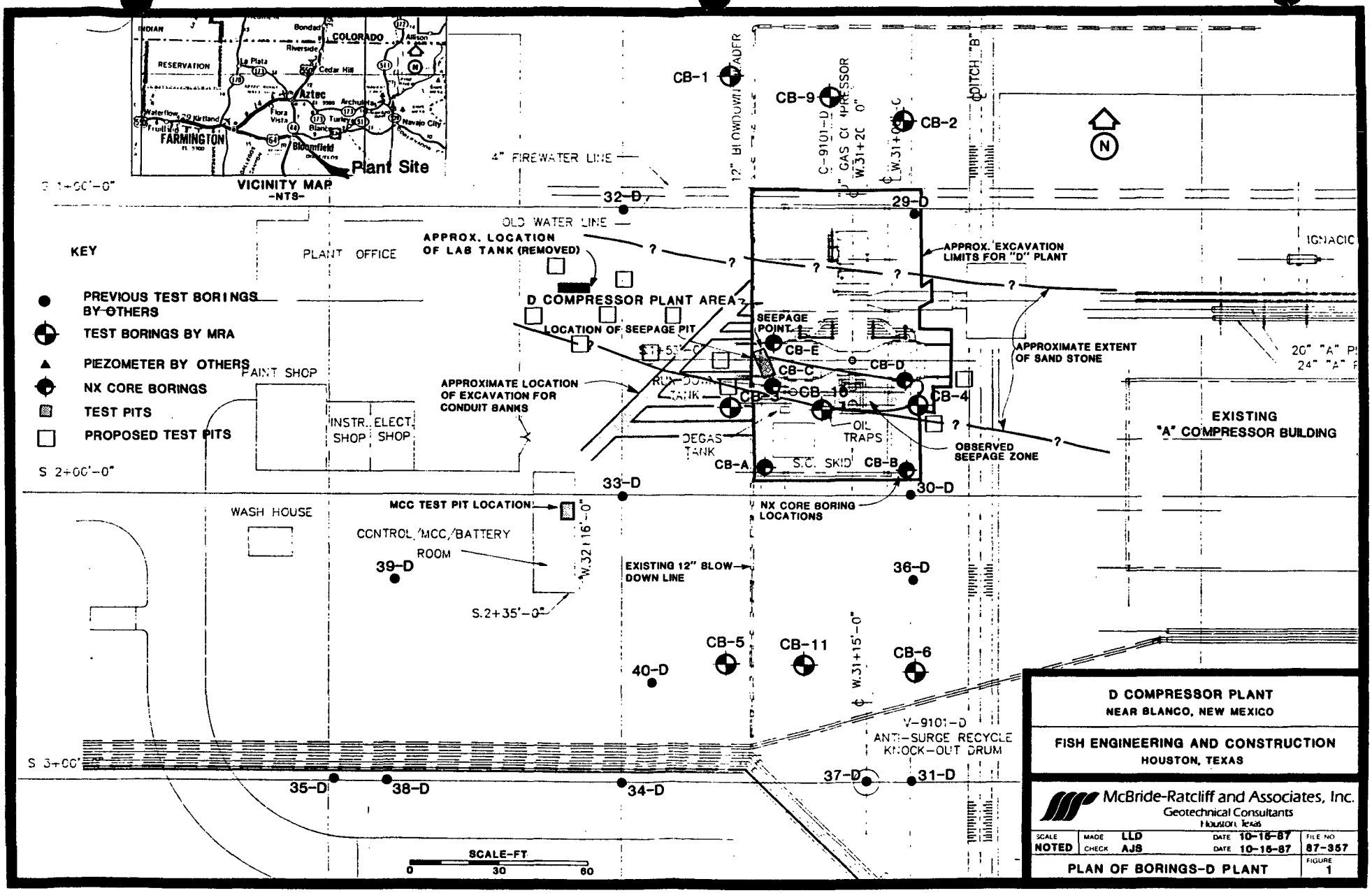
AJS/ssm/Bridges12/29

4 Copies Submitted

Attachments: Figure 1 - Boring Location Plan

Figure 2 - Excavation of Seepage Area

Appendix A - Test Boring, Core Boring, and Test Pit Logs



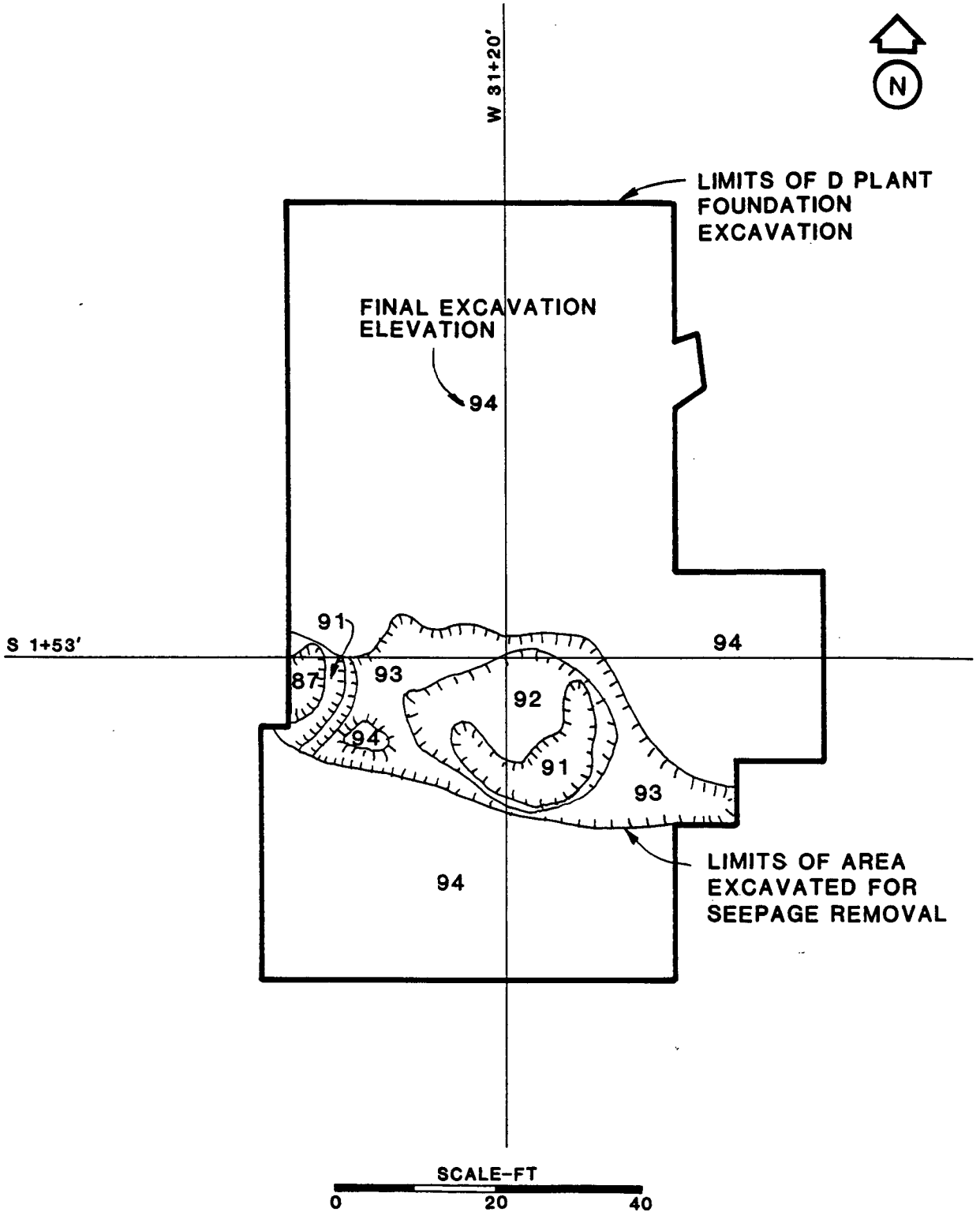
D COMPRESSOR PLANT
NEAR BLANCO, NEW MEXICO

FISH ENGINEERING AND CONSTRUCTION
HOUSTON, TEXAS

McBride-Ratcliff and Associates, Inc.
Geotechnical Consultants
Houston, Texas

SCALE	MADE	DATE	FILE NO
NOTED	LLD	10-16-87	87-357
	CHECK AJS	DATE 10-16-87	FIGURE 1

PLAN OF BORINGS-D PLANT



EXCAVATION TO REMOVE SEEPAGE ZONE

FILE NO. 87-483
FIGURE 2

McBride-Ratcliff and Associates, Inc.

APPENDIX A

LOG OF BORING

PROJECT: Gas Compression Plant
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-1
FILE NO. 87-357
DATE 9-14-87

DRY AUGERED 0 TO 22.5 FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT 14.4 FT. AFTER 24 hours

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain - %	ATTERBERG LIMITS Liquid LL	Plastic PL	Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
												Medium tan SANDY CLAY (CL) w/gypsum seams, sand pockets & seams
			1.0	15	111			35	20	15	61	-hard & light gray @ 3'
			4.0	12	99						62	
	5			13	116							Gray SILTY CLAYSTONE w/sandstone seams
				12								
	10			12								-tan & gray @ 13'
	15											
				9	123							
	20			11	126							
				8	126							Tan SANDSTONE hardness 3, slightly weathered
	25											Bottom @ 22.5', Refusal

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Gas Compression Plant
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-2
FILE NO. 87-357
DATE 9-14-87

DRY AUGERED 0 TO 21.5 FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT 14.4 FT. AFTER 24 hours

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain %	ATTERBERG LIMITS Liquid LL	Plastic PL	Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
			N=12	23				64	25	39	75	Very stiff brown CLAY (CH) w/gypsum seams
	5		4.5	15	110	3.09	14				50	Brown & gray SANDY CLAY (CL) w/gypsum seams
				15				41	23	18	92	
				15	119	3.93	6.9				66	
				14	135							-hard & light gray @ 8'
			50/5"	11							94	Gray & tan CLAYSTONE
	10											
				14								
	15											
				7	128							
				8	132							
	20											-tan sandstone @ 21' slightly calcareous
				7	125							
												Bottom @ 21.5', Refusal
	25											

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Gas Compression Plant
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-3
FILE NO. 87-357
DATE 9-15-87

DRY AUGERED 0 TO 17.5 FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.
DRY
~~WATER~~ AT 16.0 FT. AFTER 24 hours

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain - %	ATTERBERG LIMITS Liquid LL	ATTERBERG LIMITS Plastic PL	ATTERBERG LIMITS Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
			0.5	13	110	1.34	51	31	22	9	33	Soft tan CLAYEY SAND (SC)
	5		N=38	15			53	26	27		93	Hard tan CLAY (CH)
			N=48	18			53	26	27		91	
	10		50/5"	10							92	Tan & light gray CLAYSTONE hardness 3, w/gypsum seams
				8	129	10.6	4.4					
	15			8	126							
	20											Bottom @ 17.5', Refusal
	25											

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Gas Compression Plant
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-4
FILE NO. 87-357
DATE 9-15-87

DRY AUGERED 0 TO 20 FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT ** FT. AFTER 24 hours
**wet & caved @ 18'

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain %	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
			2.0	15	106						45	Stiff tan SILTY CLAY (CL) w/sandstone seams
				9				27	21	6		Tan SANDSTONE highly weathered
	5		N=47	8								Hard light gray CLAY (CH)
			N=30	17				54	25	29	97	
	10		50/5"					59	26	33	93	Gray & tan CLAYSTONE w/clay seams
	15		50/2"									Light gray & tan SILTSTONE hardness 3
				10	105		36.2	2.1				
	20											Bottom @ 20', Refusal
	25											

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Gas Compression Plant
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-5
FILE NO. 87-357
DATE 9-15-87

DRY AUGERED 0 TO 26.5 FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT 17.0 FT. DEPTH.

WATER AT 20.1 FT. AFTER 24 hours

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain, %	ATTERBERG LIMITS Liquid LL	Plastic PL	Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
			3.5	16	94			41	17	24	42	Tan CLAYEY SAND (SC) w/clay pockets
			2.25	19	105	1.69	14	45	18	27	75	Very stiff tan SANDY CLAY (CL) w/gypsum seams
	5		N=18	15		*						Firm gray CLAYEY SAND (SC)
			N=51	14				46	25	21	87	Hard tan SILTY CLAY (CL) w/gypsum seams
	10		50/4"	13								Tan slightly SANDY CLAYSTONE -w/sandstone seams @ 12.5'
	15		50/4"	8				70	33	37	94	Hard tan CLAY (CH) w/gypsum seams & siltstone interbeds
				36	81	1.24	5.6	93	32	61	97	-6" soft claybed @ 17' -alternateing claystone seams @ 17.5'
	20											
	25			8	104*							-brown @ 24'
												Light gray SANDSTONE hardness 3, gypsum seams
	30											Bottom @ 26.5', Refusal
						*	CHEMICAL TESTS					

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Gas Compression Plant
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-6
FILE NO. 87-357
DATE 9-15-87

DRY AUGERED 0 TO 27 FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT 23 FT. DEPTH.

WATER AT 17.8 FT. AFTER 24 hours

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain %	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
			0.5	17	104							Soft gray CLAY (CH) w/sand filled fissures & pockets
			1.5	22	93	*		42	24	18	67	Soft tan SANDY CLAY (CL) w/ferrous nodules & gypsum seams
	5		N=21	22								Very stiff tan CLAY (CH) w/gypsum seams
			74/9"	15				51	25	26	92	-hard @ 7'
	10		72/9"	10				55	25	30	86	Hard tan CLAYSTONE w/gypsum seams
	15		50/3"	8							55	w/slickensides
	20		50/4"	24				90	37	53	89	-soft @ 23'-25', saturated
				20								
	25			8	131							Light gray SANDSTONE hardness 3
												Bottom @ 27', Refusal
	30											

* Consolidation Test

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Gas Compression Plant
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-9
FILE NO. 87-357
DATE 10-3-87

DRY AUGERED 0 TO 19 FEET
WASH BORED 19 TO 37 FEET

FREE WATER ENCOUNTERED YES NO

AT 26.0 FT. DEPTH.

WATER AT Dry FT. AFTER 24 hours
**Caved @ 14'

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain %	ATTERBERG LIMITS: Liquid LL	ATTERBERG LIMITS: Plastic PL	ATTERBERG LIMITS: Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
			1.25									Stiff tan SANDY CLAY (CL) w/gypsum & claystone seams -hard @ 3'
	5		4.25									
			50/8"									
			50/4"									Light gray SANDY CLAYSTONE hardness 2 massive bedded w/gypsum crystals
	10											
			N=84									
	15											
			50/5"									
	20		R=85% RQD= 25%									Light gray & tan SILTY SHALE hardness 3, thin bedded w/sandstone seams
	25		R=33% RQD= 30%									Gray CLAYSTONE hardness 2, thin bedded -6" lignite bed @ 29' -sandstone seams @ 31'
	30											
			R=75% RQD= 65%									
	35											Light gray SANDSTONE hardness 5 w/gypsum seams
												Bottom @ 37'
	40											

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Gas Compression Plant
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-10
FILE NO. 87-357
DATE 10-2-87

DRY AUGERED 0 TO 9 FEET
WASH BORED 9 TO 34 FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT 26.4 FT. AFTER 24 hours

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain %	ATTERBERG LIMITS: Liquid LL	ATTERBERG LIMITS: Plastic PL	ATTERBERG LIMITS: Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
			3.0									Very stiff tan SANDY CLAY (CL) w/clayey sand interbeds
	5		50/6"									Hard tan SILTY CLAY (CL) w/siltstone & sand stone interbeds
			50/4"									Tan SANDSTONE hardness 2, moderately weathered
	10		R=30% RQD=0									Light gray CLAYSTONE hardness 2 w/sandstone seams -tan @ 11.5'
			R=100% RQD= 35%									
	15		R=90%									Tan & light gray SILTSTONE hardness 3 w/gypsum crystals, micaeous -1" sandstone bed @ 18'
	20		RQD= 15%									Black LIGNITE hardness 2, massive bedded
			R=100% RQD= 5%									Gray CLAY (CH) w/lignite seams
	25											Dark gray CLAYSTONE hardness 3 w/sandstone & lignite seams
	30		R=100% RQD= 85%									Light gray & white SANDSTONE hardness 5, massive bedded w/gypsum seams
	35											Bottom @ 34'
	40											

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Gas Compression Plant
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-11
FILE NO. 87-357
DATE 10-3-87

DRY AUGERED 0 TO 30 FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT 17.0 FT. DEPTH.

WATER AT ** FT. AFTER 1 hour
**Caved & dry @ 18'

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain %	ATTERBERG LIMITS Liquid LL	Plastic PL	Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
												Hard tan SANDY CLAY (CL) w/gypsum crystals & sand partings
	5		50/9"									
			50/6"									
	10		N=70									Tan CLAYSTONE w/gypsum crystals
			50/4"									w/gypsum & sandstone seams
	15											w/sandstone seams
			N=47									
	20		N=50									Dark gray CLAY (CH) w/slickensides & gypsum crystals
			50/5"									
	25		R=100% RQD= 100%									Tan & light gray SANDSTONE hardness 5, massive bedded, slightly weathered gypsum seams
	30											Bottom @ 30'

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Blanco "D" Plant Foundation Excavation
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-A
FILE NO. 87-483
DATE 12-14-87
Elev. 93.93'

DRY AUGERED TO FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT FT. AFTER

FIELD DATA			LABORATORY DATA								
SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain %	ATTERBERG LIMITS Liquid LL	ATTERBERG LIMITS Plastic PL	ATTERBERG LIMITS Plasticity Index PI	Minus No. 200 Sieve - %
			4.5+								

DESCRIPTION OF STRATUM

Gray CLAYSTONE
w/gypsum seams

FRACTURED

NX Core Data - 0.5 to 5.5 ft.

Recovery = 67%
RQD = 35%
Time = 35 minutes
Coring with = Air
Bit Type = Carbide Tip

Bottom @ 5.5'

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Blanco "D" Plant Foundation Excavation
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-B
FILE NO. 87-483
DATE 12-14-87

Elev. 93.93'

DRY AUGERED TO FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT FT. AFTER

SOIL SYMBOL	FIELD DATA: DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	LABORATORY DATA: Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain - %	ATTERBERG LIMITS: Liquid LL	Plastic PL	Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
	1											Gray CLAYSTONE w/gypsum seams
	2											FRACTURED
	3											NX Core Data - 0.5 to 5.5 ft.
	4											Recovery = 100%
	5											RDQ = 50%
	6											Time = 40 minutes
												Coring with = Air
												Bit Type = Carbide Tip
												Bottom @ 5.5'

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Blanco "D" Plant Foundation Excavation
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-C
FILE NO. 87-483
DATE 12-14-87

Elev. 93.93'

DRY AUGERED TO FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT FT. AFTER

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain - %	ATTERBERG LIMITS Liquid LL	Plastic PL	Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
												Gray CLAYSTONE
	1											Lost air circulation in fractured zone.
	2											NX Core Data - 0.5 to 5.5 ft.
	3											Recovery = 66% RDQ = 50% Time = 36 minutes Coring with = Air Bit Type = Carbide Tip
	4											
	5											
	6											Bottom @ 5.5'

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Blanco "D" Plant Foundation Excavation
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-D
FILE NO. 87-483
DATE 12-14-87

Elev. 93.93 ft.

DRY AUGERED TO FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT FT. AFTER

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain - %	ATTERBERG LIMITS Liquid LL	Plastic PL	Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
												Gray & tan SANDSTONE
	1											
	2											Gray & tan SANDY CLAYSTONE
	3											Gray CLAYSTONE weathered & fractured -less weathered & harder @ 3.5 ft. NX Core Data - 0.5 to 5.5 ft. Recovery = 80% RDQ = 60% Time = 46 minutes Coring with = Air Bit Type = Carbide Tip
	4											
	5											
	6											Bottom @ 5.5'

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Blanco "D" Plant Foundation Excavation
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. CB-E
FILE NO. 87-483
DATE 12-14-87

Elev. 93.93 ft.

DRY AUGERED TO FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT FT. AFTER

SOIL SYMBOL	FIELD DATA: DEPTH (feet)	FIELD DATA: SAMPLES	FIELD DATA: Penetration Resistance (N) or TSF	LABORATORY DATA: Moisture Content %	LABORATORY DATA: Dry Density, PCF	LABORATORY DATA: Compressive Strength TSF	LABORATORY DATA: Failure Strain, %	ATTERBERG LIMITS: Liquid LL	ATTERBERG LIMITS: Plastic PL	ATTERBERG LIMITS: Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
	1											Tan SANDSTONE
	2											NX Core Data - 0.5 to 5.5 ft. Recovery = 100% RDQ = 90% Time = 42 minutes Coring with = Air Bit Type = Carbide Tip
	3											
	4											
	5											Light gray CLAYSTONE
	6											Bottom @ 5.5'

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Blanco "D" Plant - Seepage Pit
Farmington, New Mexico

CLIENT: Fish Engineering & Constructors, Inc.
Houston, Texas

BORING NO. Seepage Pit
FILE NO. 87-483
DATE 12-14-87
Elev. 93.93 ft.

DRY AUGERED TO FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT FT. AFTER

SOIL SYMBOL	DEPTH (feet)	SAMPLES	Penetration Resistance (N) or TSF	Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain - %	ATTERBERG LIMITS Liquid LL	Plastic PL	Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
	1											Light tan SANDSTONE
	2											
	3											Seepage at elev. 90.6 ft.
	4											Gray CLAYSTONE
	5											
	6											
	7											Bottom @ 7'
												Backhoe test pit

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

LOG OF BORING

PROJECT: Blanco "D" Plant - MCC Area
Farmington, New Mexico

CLIENT: Fish Engineering & Constuctors, Inc.
Houston, Texas

MCC
BORING NO. Test Pit
FILE NO. 87-483
DATE 12-18-87

Elev. 99.92 ft.

DRY AUGERED TO FEET
WASH BORED TO FEET

FREE WATER ENCOUNTERED YES NO

AT FT. DEPTH.

WATER AT FT. AFTER

SOIL SYMBOL	FIELD DATA: DEPTH (feet)	FIELD DATA: SAMPLES	FIELD DATA: Penetration Resistance (N) or TSF	LABORATORY DATA: Moisture Content %	Dry Density, PCF	Compressive Strength TSF	Failure Strain %	ATTERBERG LIMITS: Liquid LL	ATTERBERG LIMITS: Plastic PL	ATTERBERG LIMITS: Plasticity Index PI	Minus No. 200 Sieve - %	DESCRIPTION OF STRATUM
	1											Tan SANDY CLAY (CL) stiff, moist
	2											
	3											Light gray SANDY CLAY (CL) stiff, wet
	4											
	5											
	6		2.5									
												Gray & tan CLAYSTONE
	7		4.5									
												Bottom @ 7'
												Excavated with backhoe

* SLICKENSIDED FAILURE
( ) CONFINING PRESSURE, PSI
G.S. GRAIN SIZE

PENETRATION RESISTANCE
(N) - STANDARD PENETRATION RESISTANCE (SPT)
TSF - POCKET PENETROMETER OR TORVANE ESTIMATED UNCONFINED COMPRESSIVE STRENGTH, TONS PER SQ. FOOT

SYMBOLS AND TERMS USED ON BORING LOGS

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL GRADED GRAVELS, GRAVEL SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS, GRAVEL SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL SAND-CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND SILT MIXTURES
				SC	CLAYEY SANDS, SAND SILT MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS — LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
UNCLASSIFIED FILL MATERIALS					ARTIFICIALLY DEPOSITED EARTH AND/OR OTHER UNCLASSIFIED MATERIALS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOIL CLASSIFICATION CHART

SAMPLE TYPES

INDICATES DEPTH OF DRIVEN SAMPLE (SHELBY AND D/M TYPE)

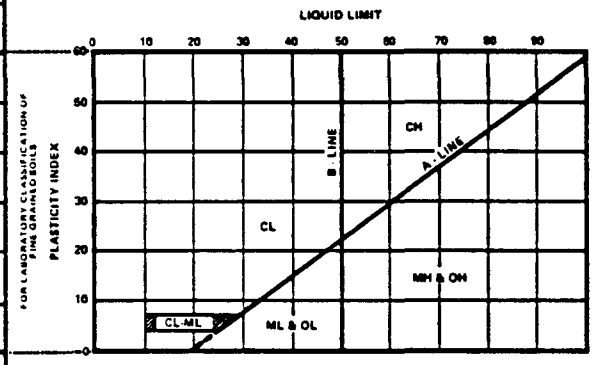
INDICATES DEPTH OF STANDARD PENETRATION TEST

INDICATES DEPTH OF CME CORE SAMPLE

INDICATES DEPTH OF NX CORE SAMPLE

KEY TO SAMPLES

(SHOWN IN SAMPLES COLUMN)



PLASTICITY CHART

UNIFIED SOIL CLASSIFICATION SYSTEM

RELATIVE DENSITY OF COHESIONLESS SOILS

COARSE GRAINED SOILS (major portion retained on No. 200 sieve): includes (1) clean gravels and sands, and (2) silty or clayey gravels and sands. Conditions rated according to standard penetration test (SPT) as performed in the field.

Descriptive Term	Blows Per Foot*
Very Loose	0 - 4
Loose	5 - 10
Firm	11 - 30
Dense	31 - 50
Very Dense	over 50

*140 pound weight having a free fall of 30 inches.

CONSISTENCY OF COHESIVE SOILS

FINE GRAINED SOILS (major portion passing No. 200 sieve): Includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength as indicated by penetrometer readings or by unconfined compression tests.

Descriptive Term	Unconfined Compressive Strength Ton/Sq. Ft.
Very Soft	Less than 0.25
Soft	0.25 to 0.50
Medium	0.50 to 1.00
Stiff	1.00 to 2.00
Very Stiff	2.00 to 4.00
Hard	4.00 and higher

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of weakness or cracks in the soil. The consistency ratings of such soils are based on penetrometer readings.

TERMS CHARACTERIZING SOIL STRUCTURE

Slickensided	— having inclined planes of weakness that are slick and glossy in appearance.
Fissured	— containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated	— composed of thin layers of varying color and texture.
Interbedded	— composed of alternate layers of different soil types.
Calcareous	— containing appreciable quantities of calcium carbonate.
Well graded	— having wide range in grain sizes and substantial amounts of all intermediate particle sizes.
Poorly graded	— predominantly of one grain size, or having a range of sizes with some intermediate size missing.