

GW - 60

**GENERAL
CORRESPONDENCE**

YEAR(S):

1997 - 1999



NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

May 7, 1997

CERTIFIED MAIL
RETURN RECEIPT NO. P-288-258-815

Mr. Robert Meyers
Williams Field Services, Inc. (WFS)
P.O. Box 58900, M.S. 2G1
Salt Lake City, Utah 84158-0900

RE: Septic System - Continued Use Approval
Discharge Plan GW-060, Milagro Gas Plant
San Juan County, New Mexico

Dear Mr. Meyers:

The OCD has received the letter "Class V Investigation Report, Discharge Plan GW-060, Milagro Gas Plan" dated April 7, 1997 from WFS. The letter was sent in response to the March 20, 1997 letter from OCD "Class V Investigation Report - Approval." Items #1 and #2 are hereby approved. Item #3 regarding the proper characterization and profiling of the lab waste has been referred to Mr. John M. Tymkowych, Program Manager, NMED-HRMB for a regulatory determination on the response given by WFS regarding the proper characterization of the lab waste. Mr. Tymkowych may be contacted by telephone at (505)-827-1558.

Note, OCD approval for the continued use of the septic system to receive domestic waste does not relieve WFS from liability should it be found that operation of the septic system has caused harm to groundwater or the environment. Further, OCD approval does not relieve WFS from responsibility to comply with other federal, state, and local rules/regulations that may apply.

If you have any questions please feel free to contact me at (505)-827-7156.

Sincerely,



Patricio W. Sanchez
Petroleum Engineering Specialist
Environmental Bureau - OCD

c: Mr. Denny Foust - Environmental Geologist OCD Aztec District Office.
Mr. John M. Tymkowych, Program Manager - NMED, HRMB

P 288 258 215

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail (See reverse)

Sent to WFS - Meyers	
Street & Number 6W-260	
Post Office, State, & ZIP Code Septic USG.	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

PS Form 3800, April 1995

April 7, 1997

Mr. Patricio W. Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87504

re: Class V Investigation Report
Discharge Plan GW-060, Milagro Gas Plant

RECEIVED

APR 11 1997

Environmental Bureau
Oil Conservation Division

Dear Mr. Sanchez,

Williams Field Services (WFS) is in receipt of your letter dated March 20, 1997 which comments on the report "The Subsurface Investigation of the Milagro Plant Septic Leach Field, San Juan Basin, New Mexico - January, 1997." This letter is in response to those comments.

Item #1 - Only "Domestic" waste will be discharged to the septic/leach system.

Response - WFS presently discharges, and will continue to discharge, only domestic wastes to the septic/leach system. The past practice of disposing laboratory chemical waste to this system has been discontinued.

Item #2 - The Septic tank will be emptied and cleaned by April 15, 1997.

Response - Cleaning of the septic tank is currently under way. The tank has been pumped out and steam-cleaned. A final pumpout will occur today or tomorrow.

Item #3 - The lab waste that is currently being stored onsite has not been properly characterized as outlined in 40 CFR Part 261. It appears that the sheet in Appendix C in the above mentioned report does not contain sufficient documentation. WFS will properly characterize the lab waste and submit those findings by April 15, 1997. The characterization must include a certification regarding the absence or presence of F, K, P or U listed wastes, as well as documentation regarding RIC and TCLP constituents.

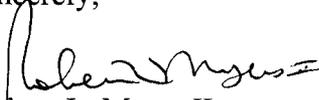
Response - WFS disagrees with the comment that the lab waste has not been properly characterized as outlined in 40 CFR Part 261. "Generator knowledge" is an acceptable characterization technique, provided that the waste stream is identified appropriately as per 40 CFR Part 268.7. Characterization of the waste stream is the responsibility of the generator, and of the disposal company in their acceptance of the waste stream. The chemical list included in Appendix C of the subsurface investigation report identifies the chemicals used in the laboratory and the approximate composition as found in the waste drums. This list is further described in the

attached document entitled "Chemical Disposal List." Additionally, upon receipt of the waste stream, the environmental waste company accepting these laboratory wastes performs an analysis on each drum received to assure their acceptability. A copy of the lab analyses from the most recent waste stream disposal is attached.

As we discussed, there is some confusion on the Waste Stream Profile form, Section C, provided by Laidlaw Environmental Services. The form does not differentiate between RCRA non-hazardous and RCRA exempt wastes; the form requests only if the waste stream is non-hazardous/exempt. In the future, we will circle one or the other (in this case, the laboratory waste is non-hazardous), and we have asked the environmental company to consider modifying their form in future revisions.

If you have any questions, please call me at (801) 584-6135.

Sincerely,



Robert L. Myers II
Environmental Specialist

enclosure

xc: Denny Foust, NMOCD District III Office
Gerry Brower, Milagro Plant

WILLIAMS FIELD SERVICE
MILAGRO PLANT

Chemical Disposal List

The following reagents are used during routine testing done at our laboratory facility. All of the reagents are consumed through chemical reactions and are not disposed of in a pure state. The acids and bases that are used, are chemically neutralized and all fall into the 5.0-11.3 pH range. However, after test are run DI Water is added to bring pH down to 10.0.

<u>Chemical Name</u>	<u>Approximate Disposal Amount/Year</u>
*Acid Reagent	365 gms
*Amino Acid	365 gms
*Amino Acid F	182 gms
*Citric Acid	730 gms
*Ferrover Iron	547 gms
Gallic Acid	15 gms
Hardness Indicator	60 gms.
Hardness Buffer	55 gms
(1)Hydrochloric Acid .1N	3.0 L
Methanol	73 L
*Molybdate Powder	365 gms
*Molybdate Liquid	4.8 L
*Molybdate 3 Powder	180 gms
pH 7 buffer	7.8 L
pH 10 buffer	600 ml
(2)Potassium Hydroxide .2N	250 ml
(1)Sulfuric Acid 10N	5.0 L

- * Diluted 25:1 with boiler and/or deionized water.
 (1) Neutralized to pH of 5.0 before disposal.
 (2) Neutralized to pH 10.0 before disposal.

Date: 04/07/97

Lab Analysis

Page: 1

(QC)

Sample #: PXWFM-00002-1

Sample Date: 03/25/97

Cust Code: PXWFM

Analyst: MJ

Customer Name: WILLIAMS FIELD SERVICES

Pass: P [Pass]

Profile #: PXWFM-0001

Profile Routing(s): DK-OIL/WATER

Notes:

JMCD

Manifest #: PXWFM-00002

SWO: 29234

Description	Result	Profile Result
PROFILE LAYER RESULT		SINGLE
LAYERS	100	
APPEARANCE	BROWN	CLEAR/COLORLESS
PROFILE PHYSICAL STATE		
PRECIPITATED SOLIDS (%)		
SLUDGES		
FREE LIQUIDS (%)		100
WATER (%)		
PHYSICAL STATE	1	
SPECIFIC GRAVITY (g/cc)	1.100	
PROFILE pH RANGE		
pH (avg)	9	
SOLUBILITY	H2O	
PAINT FILTER	FAIL	
COMPATIBILITY	H2O	
CYANIDE	NEG	
LAB SULFIDE	NEG	
OXIDIZE	NEG	
BTU/lb.	NA	<5,000
TOTAL HALOGENS %	0.0311	
PROFILE FLASH POINT (F)		
FLASH POINT	>140	
METALS	-	
GC SCAN	-	
DISTILLATION	-	

Drum Number	Drum Routing	Sampled
970320-PXWFM-001	DK-OIL/WATER	Y

Date: 04/07/97

Lab Analysis

Page: 3

(QC)

Sample #: FXWFM-00002-2

Sample Date: 03/25/97

Cust Code: FXWFM

Analyst: MJ

Customer Name: WILLIAMS FIELD SERVICES

Pass: P [Pass]

Profile #: FXWFM-0001

Profile Routing(s): DK-OIL/WATER

Notes:

JMCD

Manifest #: FXWFM-00002

SWO: 29234

Description	Result	Profile Result
PROFILE LAYER RESULT		SINGLE
LAYERS	100	
APPEARANCE	LT. BROWN	CLEAR/COLORLESS
PROFILE PHYSICAL STATE		
PRECIPITATED SOLIDS (%)		
SLUDGES		
FREE LIQUIDS (%)		100
WATER (%)		
PHYSICAL STATE	2	
SPECIFIC GRAVITY (g/cc)	1.075	
PROFILE pH RANGE		
pH (avg)	9	
SOLUBILITY	H2O	
PAINT FILTER	FAIL	
COMPATIBILITY	H2O	
CYANIDE	NEG	
LAB SULFIDE	NEG	
OXIDIZE	NEG	
BTU/lb.	NA	<5,000
TOTAL HALOGENS %	0.0311	
PROFILE FLASH POINT (F)		
FLASH POINT	>140	
METALS	-	
GC SCAN	-	
DISTILLATION	-	

Drum Number	Drum Routing	Sampled
970320-FXWFM-002	DK-OIL/WATER	Y



**NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT**

P 288 258 790

March 20, 1997

**CERTIFIED MAIL
RETURN RECEIPT NO. P-288-258-790**

Mr. Robert Meyers
Williams Field Services, Inc. (WFS)
P.O. Box 58900, M.S. 2G1
Salt Lake City, Utah 84158-0900

**RE: Class V Investigation Report - Approval
Discharge Plan GW-060, Milagro Gas Plant
San Juan County, New Mexico**

Dear Mr. Meyers:

The OCD has received the "The Subsurface Investigation of the Milagro Plant Septic Leach Field San Juan Basin, New Mexico - January 1997" prepared by Philip Environmental, and submitted by WFS on February 25, 1997. Based upon the findings in the above mentioned report the OCD will allow WFS Milagro Plant GW-060 to continue to use the septic/leach system under the following conditions:

1. Only "Domestic" waste will be discharged to the septic/leach system.
2. The Septic tank will be emptied and cleaned by April 15, 1997.
3. The lab waste that is currently being stored onsite has not been properly characterized as outlined in 40 CFR Part 261. It appears that the sheet in Appendix C in the above mentioned report does not contain sufficient documentation. WFS will properly characterize the lab waste and submit those findings by April 15, 1997. The characterization must include a certification regarding the absence or presence of F,K,P, or U listed wastes, as well as documentation regarding RIC and TCLP constituents.

Note: If the lab waste is non-hazardous OCD will have regulatory authority, if the lab waste is hazardous WFS will comply with RCRA Subtitle C requirements.

Sincerely,

Patricio W. Sanchez
Petroleum Engineering Specialist
Environmental Bureau - OCD
(505)-827-7156

c: Mr. Denny Foust, New Mexico Oil Conservation Division Aztec Office.

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail (See reverse)

Sent to <i>Mr. Meyers - WFS</i>	
Street & Number <i>Milagro - Class V.</i>	
Post Office, State, & ZIP Code	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

PS Form 3800, April 1995

MEMORANDUM OF MEETING OR CONVERSATION

Telephone

Personal

Time 1:50 PM

Date 3-20-97

Originating Party

Other Parties

Pat Sanchez - OCD

Bobby Meyers - WFS

Subject

Milagro Plant Gw-60, Class V Investigation.
- Requirements in order to continue use as a
a domestic septic/leach system.

Discussion

(1) Since the wastewater in the Tank exceeds
WKEC Level of 5ppb for phenols, at 11 ppb
the OCD will require that the "wastewater" be cleaned
from the septic. Note: Since the septic itself tested
as Non-Hazardous the waste can be disposed of at an OCD
approved facility.

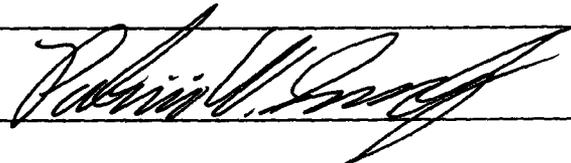
(2) The paper work does not seem correct
for the disposal of the Lab waste as
"Non-Hazardous/Exempt" as stated in the report
and the sheet in appendix C. (Waste needs to be profiled
No such documentation.)

Conclusions or Agreements

Told Mr. Meyers that a letter would come from OCD
outlining the above.

Distribution (File) Denny Foust

Signed



P.O. Box 58900 Salt Lake City, Utah 84158-0900

February 25, 1997

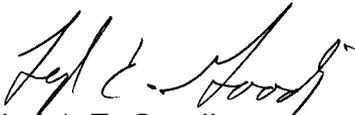
Mr. Pat Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505

RE: Milagro Plant Septic Leach Field Report: GW-60

Dear Mr. Sanchez:

Enclosed, please find two copies of the report for the Milagro Plant septic leach field investigation. If you have any questions or require additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,



Leigh E. Gooding
Sr. Environmental Specialist

cc: Denny Foust, NMOCD District III Office

RECEIVED

MAR 3 1997

Environmental Bureau
Oil Conservation Division

See Report

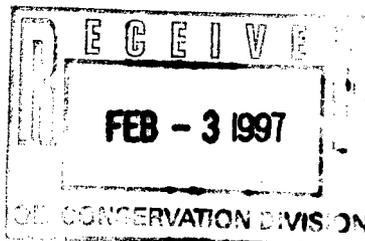
prepared by Philip Enotra
for WFS dated

January 1997, Project 17309

P.O. Box 58900 Salt Lake City, Utah 84158-0900

January 30, 1997

Mr. Patricio Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87504



RE: Milagro Plant Wastewater GW-60

Dear Mr. Sanchez:

Enclosed, please find the analytical results of wastewater generated at Williams Field Services Company's Milagro Plant located in Bloomfield, New Mexico. The process generating the waste is the rinse out of process vessels with a caustic solution which is then neutralized. The chemicals used in the process are sodium hydroxide/caustic soda, hydrochloric acid, trisodium phosphate, and sodium metasilicate. The MSDS' are enclosed for your review.

WFS requests approval to dispose of approximately 2,000 gallons of this non-hazardous waste streams at Sunco's Class I disposal well. If you have any questions or require additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,

A handwritten signature in cursive script that reads "Leigh E. Gooding".

Leigh E. Gooding

enclosure

cc: Hal Stone, Sunco
Denny Foust. NMOCD

RECEIVED

FEB - 3 1997

Environmental Bureau
Oil Conservation Division

2-3-97

Called Ms. Gooding

And let her know
that this would be
handled by the C-138
process. JWG

Client: Williams Field Service
Project: Milagro Plant
Sample ID: Train 5 Amine Wash
Laboratory ID: 0397W00094
Sample Matrix: Water
Condition: Cool/Intact

2505 W. Main Street
Farmington, New Mexico 87401

Date Reported: 01/28/97
Date Sampled: 01/21/97
Time Sampled: 1:30 PM
Date Received: 01/21/97

Parameter	Analytical Result	Units	Units
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Lab pH (Corrosivity)	10.3	S.U.	
Flash Point (Ignitability)	>140	°F	
Reactivity			
Total Cyanide	0.01	mg/L	
Sulfide	321	mg/L	

Trace Metals (Total)

Arsenic	<0.005	mg/L	
Barium	0.01	mg/L	
Cadmium	<0.001	mg/L	
Chromium	0.16	mg/L	
Lead	0.006	mg/L	
Mercury	<0.001	mg/L	
Selenium	<0.005	mg/L	
Silver	<0.01	mg/L	

Reference: U.S. EPA. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 18th ed., 1992.

Comments:

Reported by: LM

Reviewed by: DB

Effective Date:5-25-94	Rev. No.: B	Page(s):4	Doc. No.: COC-MSD40
CHEM ONE CORPORATION HOUSTON, TEXAS 77041-5308 PHONE: 713-896-9966 FAX: 713-896-7540			
Title: Material Safety Data Sheet SODIUM METASILICATE, ANHYDROUS		Prepared by: Clare Welker Approved by: Clare Welker	

MATERIAL SAFETY DATA SHEET

SODIUM METASILICATE, ANHYDROUS

EMERGENCY CONTACT: CHEMTREC 1-800-424-9300 NOTE: EMERGENCY TELEPHONE NUMBERS ARE TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS. ALL NON-EMERGENCY QUESTIONS SHOULD BE DIRECTED TO CUSTOMER SERVICE.

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: SODIUM METASILICATE, ANHYDROUS
COMMON SYNONYMS: SILICIC ACID DISODIUM SALT; SMSA, SPECIAL 25; METSO BEADS 2048; ANHYDROUS METASILICATE
CHEMICAL FAMILY: SILICON COMPOUNDS
FORMULA: Na2SiO3
FORMULA WT.: 284.20
CAS NO.: 6834-92-0
NIOSH/RTECS NO.: VV9275000

PRECAUTIONARY LABELING

HEALTH - 1 SLIGHT
FLAMMABILITY - 0 NONE
REACTIVITY - 0 NONE
CONTACT - 2 MODERATE

LABORATORY PROTECTIVE EQUIPMENT: GOGGLES; LAB COAT

U.S. PRECAUTIONARY LABELING: WARNING; CAUSES IRRITATION. AVOID CONTACT WITH EYES, SKIN, CLOTHING. AVOID BREATHING DUST. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING.

INTERNATIONAL LABELING: AVOID CONTACT WITH EYES. AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF WATER. KEEP CONTAINER TIGHTLY CLOSED.

SECTION II - COMPONENTS

<u>COMPONENT</u>	<u>CAS NO.</u>	<u>WEIGHT %</u>	<u>OSHA/PEL</u>	<u>ACGIH/TLV</u>
SODIUM METASILICATE, ANHYDROUS	6834-92-0	90-100	N/E	N/E

SECTION III - PHYSICAL DATA

BOILING POINT: N/A
MELTING POINT: N/A
SPECIFIC GRAVITY: N/A (H₂O = 1)
SOLUBILITY(H₂O): APPRECIABLE (> 10%)
PH: N/A
ODOR THRESHOLD (P.P.M.): N/A
COEFFICIENT WATER/OIL DISTRIBUTION: N/A
APPEARANCE & ODOR: WHITE PLATELETS. ODORLESS.

VAPOR PRESSURE (MMHG): N/A
VAPOR DENSITY (AIR = 1): N/A
EVAPORATION RATE: N/A
% VOLATILES BY VOLUME: 0 (21 C)
PHYSICAL STATE: SOLID

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP): N/A
AUTOIGNITION TEMPERATURE: N/A
FLAMMABLE LIMITS: UPPER - N/A LOWER - N/A
FIRE EXTINGUISHING MEDIA: USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE-FIGHTING PROCEDURES: NONE IDENTIFIED.

UNUSUAL FIRE & EXPLOSION HAZARDS: NONE IDENTIFIED.

TOXIC GASES PRODUCED: NONE IDENTIFIED

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: NONE IDENTIFIED.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: NONE IDENTIFIED.

SODMETS: PAGE 1 OF 3

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE (TLV/TWA): NOT ESTABLISHED
SHORT-TERM EXPOSURE LIMIT (STEL): NOT ESTABLISHED
PERMISSIBLE EXPOSURE LIMIT (PEL): NOT ESTABLISHED

TOXICITY OF COMPONENTS:

ORAL RAT LD₅₀ FOR SODIUM META-SILICATE, NONAHYDRATE 1153 MG/KG

ORAL MOUSE LD₅₀ FOR SODIUM META-SILICATE, NONAHYDRATE 770
MG/KG

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

CARCINOGENICITY: NONE IDENTIFIED.

REPRODUCTIVE EFFECTS: NONE IDENTIFIED.

EFFECTS OF OVEREXPOSURE:

INHALATION: IRRITATION OF UPPER RESPIRATORY TRACT

SKIN CONTACT: SEVERE IRRITATION OR BURNS

EYE CONTACT: SEVERE IRRITATION OR BURNS

SKIN ABSORPTION: NONE IDENTIFIED

INGESTION: NAUSEA, VOMITING, GASTROINTESTINAL IRRITATION, BURNS TO

MOUTH AND THROAT
CHRONIC EFFECTS: NONE IDENTIFIED

TARGET ORGANS: SKIN, EYES

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE IDENTIFIED

PRIMARY ROUTES OF ENTRY: EYE CONTACT, SKIN CONTACT, INHALATION, INGESTION

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. IF SWALLOWED, DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE WATER, MILK, OR MILK OF MAGNESIA.

INHALATION: IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.

SKIN CONTACT: IN CASE OF CONTACT, FLUSH SKIN WITH WATER.

EYE CONTACT: IN CASE OF EYE CONTACT, IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: YES CHRONIC: YES FLAMMABILITY: NO PRESSURE: NO REACTIVITY: NO

EXTREMELY HAZARDOUS SUBSTANCE: NO

CERCLA HAZARDOUS SUBSTANCE: NO

SARA 313 TOXIC CHEMICALS: NO

TSCA INVENTORY: YES

SECTION VI - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NONE DOCUMENTED

INCOMPATIBLES: FLUORINE

DECOMPOSITION PRODUCTS: NONE IDENTIFIED

SECTION VII - SPILL & DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. WITH CLEAN SHOVEL, CAREFULLY PLACE MATERIAL INTO CLEAN, DRY CONTAINER AND COVER; REMOVE FROM AREA. FLUSH SPILL AREA WITH WATER.

DISPOSAL PROCEDURE: DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION VIII - INDUSTRIAL PROTECTIVE EQUIPMENT

VENTILATION: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.

RESPIRATORY PROTECTION: NONE REQUIRED WHERE ADEQUATE VENTILATION CONDITIONS EXIST. IF AIRBORNE CONCENTRATION IS HIGH, USE AN APPROPRIATE RESPIRATOR OR DUST MASK.

EYE/SKIN PROTECTION: SAFETY GOGGLES, UNIFORM, PROPER GLOVES ARE RECOMMENDED.

SECTION IX - STORAGE AND HANDLING PRECAUTIONS

STORAGE REQUIREMENTS: KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE AREA.

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: CHEMICALS, N.O.I. (SODIUM METASILICATE, NOT REGULATED)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: CHEMICALS, N.O.S. (NON-REGULATED)

MARINE POLLUTANTS: NO

U.S. CUSTOMS HARMONIZATION NUMBER: 2839110000

DISCLAIMER:

WE BELIEVE THE TRANSPORTATION DATA AND REFERENCES CONTAINED HEREIN TO BE FACTUAL AND THE OPINION OF QUALIFIED EXPERTS. THE DATA IS MEANT AS A GUIDE TO THE OVERALL CLASSIFICATION OF THE PRODUCT AND IS NOT PACKAGE SIZE SPECIFIC, NOR SHOULD IT BE TAKEN AS A WARRANTY OR REPRESENTATION FOR WHICH THE COMPANY ASSUMES LEGAL RESPONSIBILITY. THE INFORMATION IS OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION. ANY USE OF THE INFORMATION MUST BE DETERMINED BY THE USER TO BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS. SEE SHIPPER REQUIREMENTS 49CFR 171.3 AND EMPLOYEE TRAINING 49CFR 173.1. THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET WAS PREPARED FROM INFORMATION RETRIEVED ON THE CHEMICAL INFORMATION SYSTEM AS PROVIDED BY CIS, INC. AND MEETS THE REQUIREMENTS OF THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ACT AND REGULATIONS PROMULGATED THEREUNDER (29 CFR 1910.1200 ET. SEQ.) AND THE CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. THIS DOCUMENT IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PERSON TRAINED IN, OR SUPERVISED BY A PERSON TRAINED IN, CHEMICAL HANDLING. THE USER IS RESPONSIBLE FOR DETERMINING THE PRECAUTIONS AND DANGERS OF THIS CHEMICAL FOR HIS OR HER PARTICULAR APPLICATION, DEPENDING ON USAGE. PROTECTIVE CLOTHING INCLUDING EYE AND FACE GUARDS AND RESPIRATORS MUST BE USED TO AVOID CONTACT WITH MATERIAL OR BREATHING CHEMICAL VAPORS/FUMES. EXPOSURE TO THIS PRODUCT MAY HAVE SERIOUS ADVERSE HEALTH EFFECTS. THIS CHEMICAL MAY INTERACT WITH OTHER SUBSTANCES. SINCE THE POTENTIAL USES ARE SO VARIED, SUPPLIER CANNOT WARN OF ALL OF THE POTENTIAL DANGERS OF USE OR INTERACTION WITH OTHER CHEMICALS OR MATERIALS. SUPPLIER DISCLAIMS ANY WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE. THE USER SHOULD RECOGNIZE THAT THIS PRODUCT CAN CAUSE SEVERE INJURY AND EVEN DEATH, ESPECIALLY IF IMPROPERLY HANDLED OR THE KNOWN DANGERS OF USE ARE NOT HEEDDED. READ ALL PRECAUTIONARY INFORMATION. AS NEW DOCUMENTED GENERAL SAFETY INFORMATION BECOMES AVAILABLE, SUPPLIER WILL PERIODICALLY REVISE THIS MATERIAL SAFETY DATA SHEET. NOTE: CHEMTREC, CANUTEC, AND NATIONAL RESPONSE CENTER EMERGENCY TELEPHONE NUMBERS ARE TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS. ALL NON-EMERGENCY QUESTIONS SHOULD BE DIRECTED TO CUSTOMER SERVICE.

HARCROS CHEMICALS INC
KANSAS CITY, KANSAS

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: PHOS SODA TRI CRY FINE 50# DATE: 03/02/94 PAGE 01
PRODUCT CODE: 16-01128-01

CAS # 007601-54-9

FORMULA: $\text{Na}(3)\text{PO}(4)\cdot 12\text{H}(2)\text{O}\cdot 1/4\text{NaOH}$

CHEMICAL FAMILY: Phosphates

CHEMICAL NAME AND SYNONYMS: Trisodium Phosphate Crystals;
Trisodium Phosphate Dodecahydrate;
TSP Crystals; Trisodium
Orthophosphate

SUPPLIERS NAME: Harcros Chemicals Inc
5200 Speaker Rd
Kansas City Ks 66106

SUPPLIERS PHONE NUMBER: 913-321-3131

TRANSPORTATION EMERGENCY PHONE NUMBER: 1-800-424-9300

S.A.R.A. INFORMATION

HAZARDS: Fire:No Pressure:No Reactivity:No Acute: Yes Chronic:No
PHYSICAL DATA: Mixture:No Pure:Yes Solid:Yes Liquid:No Gas:No

SECTION I Hazardous Ingredients

Ingredient	Percent	TLV
Trisodium Phosphate Crystals (CAS # 7601-54-9)	100	PEL 15mg/m(3) Total Dust 5mg/m(3) Respirable fraction OSHA TLV 10mg/m(3) Total Dust ACGIH

SECTION II Health Hazards

Threshold Limit Value: See Section I

Potential Effects of Exposure (listed by primary routes of entry)

Eyes: Can cause eye burns.

Skin:
Strong irritant; chemical burns possible.

Inhalation:
Small amounts of dust very irritating.
Large exposure can cause tissue burns.

Ingestion:
Slightly toxic due to high pH.
Ingestion may injure mouth, throat and gastrointestinal tract.
LD(50) (Rat): 6.5g/kg.

First aid:

Eyes:
Immediately flush with water for 15 minutes while holding
eyelids open.
Get medical attention.

Skin:
Flush with water while removing contaminated clothing and shoes.
Follow by washing with soap and water.
Do not reuse clothing or shoes until cleaned.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: PHOS SODA TRI CRYST FINE 50# DATE: 03/02/94 PAGE 02
PRODUCT CODE: 16-01128-01

SECTION II Health Hazards CONTINUED
If irritation persists, get medical attention.

Inhalation;
Remove victim to fresh air and provide oxygen if breathing is difficult.
Give artificial respiration if not breathing.
Get medical attention.

Ingestion;
DO NOT induce vomiting.
Immediately give large quantities of water.
If vomiting does occur, keep head below hips to prevent aspiration and give fluids again.
Never give anything by mouth to an unconscious person.
Call a physician or the nearest Poison Control Center.

Other Information:

Notes to Physician:

Strongly alkaline, may remove sebaceous oils leaving skin unprotected and may cause chemical burns.
Accessible exposed tissues should be flushed thoroughly with water, and any corneal burns warrant consultation of an ophthalmologist.

Ingestion may result in nausea, vomiting, and burns, especially of the esophagus.
Attempts to neutralize ingested material with acids may cause excess heat and gas production which can increase the risk of perforation.
Dilution may do likewise, but when the dry material is ingested, adherence of particles to the esophageal mucosa may assure perforation so that immediate drinking of cold water or milk is advised.

CARCINOGENICITY: Not known to be carcinogenic

MUTAGENICITY: Not known to be mutagenic

PRINCIPLE ROUTES OF ABSORPTION: Inhalation, dermal contact, eye contact, ingestion.

SECTION III Special Protection Information

Respiratory Protection:
Use NIOSH approved equipment suitable for nuisance dust when airborne exposure is excessive.
Consult respirator manufacturer to determine appropriate type equipment for given application.

Ventilation Required:
Provide ventilation to minimize exposure.
Local exhaust ventilation preferred.

Protective Clothing:

Eyes:
Wear chemical safety goggles to prevent eye contact.

CONTINUED ON PAGE 03

HARCROS CHEMICALS INC
KANSAS CITY, KANSAS

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: PHOS SODA TRI CRYF FINE 50# DATE: 03/02/94 PAGE 03
PRODUCT CODE: 16-01128-01

SECTION III Special Protection Information CONTINUED

Skin:

Wear appropriate impervious gloves and protective clothing to prevent skin contact.
Launder contaminated clothing and clean protective equipment before reuse.

Additional Protective Measures:

Safety shower, eye bath and washing facilities should be available.

SECTION IV Fire & Explosion Hazard Data

Flash Point (Method): Non-flammable

Flammable Limits (% Volume in Air):

Upper: N/A

Lower: N/A

Extinguishing Media:

As appropriate for the surrounding fire.

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards:

Material in aqueous solution is corrosive to aluminum, galvanized iron and zinc and may generate flammable hydrogen gas as a result of this reaction.

SECTION V Physical Data

Boiling Point: Over 1000 deg. C

Melting Point: 75 deg. C. (Decomposes), loses 12H(2)O @ 100 deg. C.

Specific Gravity (H(2)O=1): 1.62 @ 68 deg. F.

Bulk Density: lbs/cu.ft.

Powder - 61-65

Granular - 58-64

Vapor Pressure (MM HG.): Non-volatile

Vapor Density (AIR=1): Non-volatile

Evaporation Rate (___=1): Non-volatile

Solubility in Water: 11.6g/100g at 77 deg. F

Percent Volatile by Volume: Non-volatile

pH: 1% solution at 77 deg. F-12.0

CONTINUED ON PAGE 04

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: PHOS SODA TRI CRYF FINE 50# DATE: 03/02/94 PAGE 04
PRODUCT CODE: 16-01128-01

SECTION V Physical Data

CONTINUED

Appearance and Odor:

White, crystalline, free-flowing granules or powder; odorless.

SECTION VI Reactivity Data

Stability: Stable

Incompatibility:

Because of high pH, may attack aluminum, galvanized iron & zinc. In contact with certain food products or their residues which contain reducing sugars may react to form carbon monoxide. Proper tank entry and occupancy procedures should be observed.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

SECTION VII Spill and Leak Procedures

Steps to be taken if material is released or spilled:

Sweep, scoop or vacuum up all spilled material, contaminated soil and other contaminated material and place in containers. If possible, complete cleanup on a dry basis. After all practical dry cleanup has been done, residual contamination can be flushed with plenty of water.

Waste Disposal Method:

Dispose of non-salvageable material in a disposal facility in accordance with all local, state and federal regulations.

Sodium phosphate, tribasic, as currently defined, is a hazardous substance in the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund) and in the current federal regulations 40 CFR, Part 116 (Section 311, Clean Water Act) with a reportable quantity of 5,000 pounds when released to the environment. Since federal, state and local laws may vary, consult your attorney or appropriate regulatory officials for information relating to spill reporting.

SECTION VIII D.O.T. Shipping Information

Proper Shipping Name: NONE

Hazard Class: NONE

ID Number: NONE

Label Requirements: NONE

Reportable Quantity: NONE

Other Information:

CONTINUED ON PAGE 05

HARCROS CHEMICALS INC
KANSAS CITY, KANSAS

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: PHOS SODA TRI CRYF FINE 50# DATE: 03/02/94 PAGE 05
PRODUCT CODE: 16-01128-01

SECTION IX Additional Information

This information may be of importance to you:

Minimize skin contact.
Wash with soap and water before eating, drinking, smoking or
using toilet facilities.

Food Grade: FDA-GRAS list, permitted in foods-1979;
USDA-Permitted in meat.

Material is hygroscopic, tending to cake in storage, keep
container closed and stored in a cool dry location.

HAZARD HMIS RATING:

Health-2
Flammability-0
Reactivity-0
Special Protection-X

***** E N D O F R E P O R T *****

NAME: GENE TURNER

DATE ISSUED: 10/28/1985
DATE REVISED: 10/22/1987

< = LESS THAN
> = MORE THAN

N/A = NOT APPLICABLE
N/D = NOT DETERMINED
N/E = NOT ESTABLISHED

UNK = UNKNOWN

The information provided in this Material Safety Data Sheet has
been obtained from sources believed to be reliable.
Harcros Chemicals Inc provides no warranties, either expressed
or implied and assumes no responsibility for the accuracy or completeness
of the data contained herein. This information is offered for your infor-
mation, consideration and investigation. You should satisfy yourself that
you have all current data relevant to your particular use.
Harcros Chemicals Inc knows of no medical condition, other than those
noted on this material safety data sheet, which are generally
recognized as being aggravated by exposure to this product.



Occidental Chemical Corporation

Manufactures • Packager • Distributor
OF FIELD CHEMICALS

6001 West Loop
Middletown, Texas 77001

MATERIAL SAFETY DATA SHEET

MSDS NUMBER : M32413

MSDS DATE : 12-30-93

PRODUCT NAME : ~~SODIUM HYDROXIDE~~ ANHYDROUS (ALL GRADES)
(For specific products - see Section XI)

24 HOUR EMERGENCY PHONE: 1-800-733-3665 OR 716-278-7021

I. PRODUCT IDENTIFICATION

HMIS HAZARD RATINGS

HEALTH HAZARD 3 FIRE HAZARD 0 REACTIVITY 2
Based on the National Paint & Coatings Association HMIS rating system

SARA/TITLE III HAZARD CATEGORIES (See Section X)

Immediate (ACUTE) Health: YES Reactive Hazard: YES
Delayed (Chronic) Health: NO Sudden Release of Pressure: NO
Fire Hazard: NO

MANUFACTURER'S : Occidental Chemical Corporation Telephone
NAME AND : Customer Service, Occidental Tower, (1-800-752-5151)
ADDRESS : P O Box 809050, Dallas, Texas 75380

CHEMICAL NAME: Sodium hydroxide CAS NUMBER: 1310-73-2

SYNONYMS/Common Names: Sodium Hydroxide-Dry

CHEMICAL FORMULA: NaOH

PRODUCT USE: Metal Finishing; Industrial Cleaners; Drum Cleaners;
Petroleum Industry; Chemical Processing

DOT PROPER SHIPPING NAME: Sodium Hydroxide, solid

DOT HAZARD CLASS: 8

DOT I.D. NUMBER: UN1823

DOT PACKAGING GROUP: II

DOT HAZARDOUS SUBSTANCE: RQ 1000 lbs. (Sodium Hydroxide)

DOT MARINE POLLUTANT: NA

ADDITIONAL DESCRIPTION REQUIREMENT: NA

CAS : Chemical Abstract Service Number EB : See relevant information found or not available
PEL : OSHA Permissible Exposure Limit CERP : Corporate Exposure Limit
TLV : ACGIH Threshold Limit Value A : See Chronic Effects Information NA : Not applicable

IMPORTANT: The information presented herein, while not guaranteed, was prepared by competent personnel and is true and accurate to the best of our knowledge. NO WARRANTY, OR GUARANTY, EXPRESS OR IMPLIED IS MADE REGARDING PERFORMANCE, STABILITY, OR OTHERWISE. This information is not to be construed as all-inclusive as to the manner and conditions of use, handling and storage. Other factors may involve other or additional safety or performance considerations. While our technical personnel may be available to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as a recommendation to infringe any existing patents or violate any Federal, State or local laws.

I. PRODUCT IDENTIFICATION (Continued)

TDG SHIPPING NAME: Sodium Hydroxide, Solid
TDG PRIMARY CLASS: 8
TDG SUBSIDIARY CLASS(ES): (9.2)
TDG PRODUCT I.D. NUMBER: UN1823
TDG PACKING GROUP: II
RL FOR DIVISION 9.2: 50 Kg. (Sodium Hydroxide)

II. HEALTH HAZARD INFORMATION

EMERGENCY AND FIRST AID PROCEDURES

EYES:

OBJECT IS TO FLUSH MATERIAL OUT IMMEDIATELY THEN GET MEDICAL ATTENTION. IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN:

IMMEDIATELY wash contaminated areas with plenty of water for at least 15 minutes. Remove contaminated clothing and footwear and wash clothing before reuse. Discard footwear which cannot be decontaminated. GET MEDICAL ATTENTION IMMEDIATELY.

INHALATION:

Remove to fresh air. If breathing is difficult, have trained person administer oxygen. If respiration stops, give mouth-to-mouth resuscitation. GET MEDICAL ATTENTION.

INGESTION:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. GET MEDICAL ATTENTION IMMEDIATELY.

ROUTES OF EXPOSURE

INHALATION:

Breathing of dust, mist, or spray may cause damage to the upper respiratory tract and the lung tissue which could produce chemical pneumonia depending upon severity of exposure.

SKIN:

Contact produces severe burns and destroys tissues. Irritation may be delayed.

EYE CONTACT:

Causes severe burns that result in damage to the eyes and possibly blindness.

INGESTION:

Causes severe burns to mucous membranes of the mouth, throat, esophagus

II. HEALTH HAZARD INFORMATION (Continued)

EFFECTS OF OVEREXPOSURE

ACUTE:

Corrosive to all body tissues by all routes of exposure. The effect of local dermal exposure may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness.

CHRONIC:

No known chronic effects.

TOXICOLOGY DATA:

Caustic soda is a corrosive material.

Sodium Hydroxide:

Acute Dermal LD50 (rabbit) 1350 mg/kg

Human Dermal Exposure

Regardless of concentration, the severity of damage and extent of its irreversibility increases with length of contact time. Prolonged contact with sodium hydroxide solutions of $\geq 1\%$ can cause a high degree of tissue destruction. The latent period, following skin contact during which no sensation of irritation occurs, varies from several hours for 0.4 - 4% solutions to 3 minutes with concentrations of 25% or greater.

SYNERGISTIC MATERIALS:

None known.

III. IMPORTANT COMPONENTS

CAS NUMBER / NAME

1310732 Sodium hydroxide (Na(OH))

EXPOSURE LIMITS

PEL: 2 mg/m3, Ceiling
TLV: 2 mg/m3, Ceiling

PERCENTAGE

VOL ND
WT 97-98.20

COMMON NAMES:

CAUSTIC SODA

Listed On(List Legend Below):

13 18 21

7647145 Sodium chloride (NaCl)

EXPOSURE LIMITS

PEL: None established
TLV: None established

PERCENTAGE

VOL ND
WT 0-1.20

COMMON NAMES:

SALT

Listed On(List Legend Below):

23

497198 Carbonic acid disodium salt

EXPOSURE LIMITS

PEL: Not Established
TLV: Not Established

PERCENTAGE

VOL ND
WT 0.40-1

COMMON NAMES:

SODA ASH
SODIUM CARBONATE

Listed On(List Legend Below):

23

All components of this product that are required to be on the TSCA Inventory are listed on the inventory.

Not listed as carcinogen - IARC, NTP, OSHA

LIST LEGEND

13 PA ENVIRONMENTAL HAZ SUBSTANCE
21 NJ SPECIAL HEALTH HAZ SUB

18 NY HAZARDOUS SUBSTANCES
23 NJ REQUIREMENT- 1% OR GREATER

IV. FIRE AND EXPLOSION DATA

FLASH POINT: Not applicable AUTOIGNITION TEMPERATURE: Nonflammable

FLAMMABLE LIMITS IN AIR, % BY VOLUME- UPPER: Not applicable
LOWER: Not applicable

EXTINGUISHING MEDIA:

This product is not combustible. Foam, carbon dioxide, or dry chemical may be used in areas where the product is stored.

SPECIAL FIRE FIGHTING PROCEDURES:

Wear full protective clothing. Avoid direct contact of this product with water as this can cause a violent exothermic reaction.

UNUSUAL FIRE AND EXPLOSION HAZARD:

Direct contact with water can cause a violent exothermic reaction. See Reactivity Section.

SENSITIVITY TO MECHANICAL IMPACT:

Not Sensitive

SENSITIVITY TO STATIC DISCHARGE:

Not Sensitive

V. SPECIAL PROTECTION

VENTILATION REQUIREMENTS:

Special ventilation is not required under normal use. Use local exhaust ventilation where dust, mist, or spray may be generated.

NOTE: Where carbon monoxide or other reaction products may be generated, special ventilation may be required.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY:

Respiratory protection is not required under normal use. Use NIOSH/MSHA approved respirator where dust, mist, or spray may be generated.

EYE:

Wear chemical safety goggles plus full face shield to protect against splashing.

GLOVES:

Wear chemical resistant gloves such as natural or butyl rubber. Gloves may be decontaminated by washing with mild soap and water.

OTHER CLOTHING AND EQUIPMENT:

Impervious protective clothing and chemically resistant safety shoes should be worn to minimize contact. Wash contaminated clothing with soap and water and dry before reuse. Emergency shower and eyewash facility should be in close proximity (ANSI Z358.1).

VI. PHYSICAL DATA

BOILING POINT @ 760 mm Hg: 1388°C
FREEZING POINT: 318°C
VAPOR PRESSURE: 42 mm Hg @ 1000°C
SPECIFIC GRAVITY (H₂O=1): 2.13 @ 20°C
SOLUBILITY IN H₂O % BY WT: Completely Soluble
VAPOR DENSITY (Air=1): Not applicable
APPEARANCE AND ODOR: Clear white solid with no distinct odor.
ODOR THRESHOLD (PPM): Not Applicable
COEFFICIENT WATER/OIL DISTRIBUTION: Not Determined
pH: 0.01 moles/liter has pH. 12.0

VII. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY:

Under normal conditions of use, this material is stable.

INCOMPATIBILITY:

See Handling and Storage. Avoid contact with water. This product may be added slowly to water or acids with dilution and agitation to avoid a violent exothermic reaction. When handling this product, avoid contact with aluminum, tin, zinc, and alloys containing these metals. Do not mix with strong acids without dilution and agitation to prevent violent or explosive reaction. Avoid contact with leather, wool, acids, organic halogen compounds, and organic nitro compounds.

HAZARDOUS DECOMPOSITION PRODUCTS:

None known.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION:

Not known to polymerize.

VIII. HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS:

Do not get into eyes, on skin, on clothing.
Avoid breathing dust, mists, or spray.
Do not take internally.
Use with adequate ventilation and wear respiratory protection when exposure to dust, mist or spray is possible.
When handling, wear chemical splash goggles, face shield, rubber gloves and protective clothing.
Wash thoroughly after handling or contact - exposure can cause burns which are not immediately painful or visible.
Keep container closed.
Product can react violently with water, acids, and other substances - read Special Mixing and Handling Instructions below carefully before using.
Product is corrosive to tin, aluminum, zinc and alloys containing these metals, and will react violently with these metals in powder form.
Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures (ANSI Z117.1).

WARNING LABEL INFORMATION

SIGNAL WORD: DANGER

STATEMENT OF HAZARDS:

CAUSES SEVERE BURNS TO SKIN, EYES AND MUCOUS MEMBRANES.
CONTACT WITH EYES CAN CAUSE PERMANENT EYE DAMAGE.
INHALATION OF DUST, MIST, OR SPRAY CAN CAUSE SEVERE LUNG DAMAGE.
CAN REACT VIOLENTLY WITH WATER, ACIDS, AND OTHER SUBSTANCES.

PRECAUTIONARY STATEMENTS:

Do not get into eyes, on skin, on clothing.
Avoid breathing dust, mist, or spray.
Do not take internally.
Use with adequate ventilation and wear respiratory protection when exposure to dust, mist or spray is possible.
When handling, wear chemical splash goggles, face shield, rubber gloves, and protective clothing.
Wash thoroughly after handling or contact - exposure can cause burns which are not immediately painful or visible.
Keep container closed.
Product can react violently with water, acids, and other substances - read Handling and Storage instructions below carefully before using.
Product is corrosive to tin, aluminum, zinc and alloys containing these metals, and will react violently with these metals in powder form.
Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures.

FIRST AID:

FOR EYES:

OBJECT IS TO FLUSH MATERIAL OUT IMMEDIATELY THEN GET MEDICAL ATTENTION. IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

FOR SKIN:

IMMEDIATELY wash contaminated areas with plenty of water for at least 15 minutes. Remove contaminated clothing and footwear and wash clothing before reuse. Discard footwear which cannot be decontaminated. GET MEDICAL ATTENTION IMMEDIATELY.

IF INHALED:

Remove to fresh air. If breathing is difficult, have trained person administer oxygen. If respiration stops, give mouth-to-mouth resuscitation. GET MEDICAL ATTENTION.

IF SWALLOWED:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. GET MEDICAL ATTENTION IMMEDIATELY.

**IN CASE OF:
SPILL OR LEAK:**

Leaks should be stopped. Spills, after containment, should be shoveled up or removed by vacuum truck (if liquid) to chemical waste area. Neutralize residue with dilute acid, flush spill area with water followed by liberal covering of sodium bicarbonate. Dispose of wash water and spill by-products according to federal, state, and local regulations.

WARNING LABEL INFORMATION (Continued)

HANDLING AND STORAGE:

Considerable heat is generated when product is mixed with water. Therefore, when making solutions always carefully follow these steps:

ALWAYS wear ALL protective clothing described above. NEVER add water to product. ALWAYS add product - with constant stirring - slowly to surface of lukewarm (80-100°F) water, to assure product is being completely dissolved as it is added.

If product is added too rapidly, or without stirring, and becomes concentrated at bottom of mixing vessel, excessive heat may be generated, resulting in DANGEROUS boiling and spattering, and a possible IMMEDIATE AND VIOLENT ERUPTION of highly caustic solution.

NOTE: 50 pounds of product dissolved in 30 gallons of 90°F water will raise temperature of resulting solution to approximately 100°F. Never add more product than can be absorbed by solution while maintaining temperature below 200°F (@ sea level) to prevent boiling and spattering.

Product can react EXPLOSIVELY with acids, aldehydes, and many other organic chemicals - when mixing product with solutions containing such chemicals, follow all of above mixing instructions, and add product very gradually, while stirring constantly.

ALWAYS empty and clean containers of all residues before adding product, to avoid possible EXPLOSIVE reaction between product and unknown residue.

Returnable containers should be shipped in accordance with supplier's recommendations. Return shipments should comply with all federal, state, and DOT regulations. All residual caustic soda should be removed from containers prior to disposal.

DISPOSAL

The materials resulting from clean-up operations may be hazardous wastes and, therefore, subject to specific regulations. Package, store transport, and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state, and local health environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent and properly permitted contractors. Ensure that all responsible federal, state, and local agencies receive proper notification of disposal.

INFORMATION REQUIRED BY FEDERAL, STATE OR LOCAL REGULATIONS:

This product contains:

CAS#	NAME
1310732	Sodium hydroxide (Na(OH))
7647145	Sodium chloride (NaCl)
497198	Carbonic acid disodium salt

HMIS RATING SYSTEM: HEALTH 3 · FLAMMABILITY 0 REACTIVITY 2
FOR INDUSTRIAL USE ONLY LABEL 113M32413

MATERIAL SAFETY DATA SHEET

Ashland Chemical Co.

Page 001
 Date Prepared: 01/05/96
 Date Printed: 10/26/96
 MSDS No: 0004462-003.001

MURIATIC ACID 22 DEGREE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Identity

Product Name: MURIATIC ACID 22 DEGREE
 General or Generic ID: INORGANIC ACID

Company

Ashland Chemical Co.
 P.O. Box 2219
 Columbus, OH 43216
 614-790-3333

Emergency Telephone Number:

1-800-ASHLAND (1-800-274-5263)
 24 hours everyday

Regulatory Information Number:
 1-800-325-3751

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
WATER		63.0- 67.0
HYDROGEN CHLORIDE	7647-01-0	35.0

3. HAZARDS IDENTIFICATION

Potential Health Effects

Eye

Exposure can cause irreversible eye damage. Symptoms may include stinging, tearing, redness, swelling, corneal damage, and blindness.

Skin

Exposure can cause irreversible skin damage. Symptoms may include redness, swelling, burns, and severe skin damage.

Swallowing

Exposure may be harmful or fatal. Symptoms may include severe stomach and intestinal irritation (nausea, vomiting, diarrhea), abdominal pain, and vomiting of blood. Swallowing this material may cause burns and destroy tissue in the mouth, throat, and digestive tract. Low blood pressure and shock may occur as a result of severe tissue injury.

Inhalation

Exposure to dust is possible. Exposure may be harmful or fatal. Symptoms include severe irritation and burns to the nose, throat, and respiratory tract.

Symptoms of Exposure

No data

Target Organ Effects

No data

Developmental Information

No data

MATERIAL SAFETY DATA SHEET

Ashland Chemical Co.

Page 002
Date Prepared: 01/05/96
Date Printed: 10/26/96
MSDS No: 0004462-003.001

MURIATIC ACID 22 DEGREE

Cancer Information

No data

Other Health Effects

No data

Primary Route(s) of Entry

Inhalation, Skin contact.

4. FIRST AID MEASURES

Eyes

If material gets into the eyes, immediately flush eyes gently with water for at least 15 minutes while holding eyelids apart. If symptoms develop as a result of vapor exposure, immediately move individual away from exposure and into fresh air before flushing as recommended above. Seek immediate medical attention.

Skin

Immediately flush skin with water for at least 15 minutes while removing contaminated clothing and shoes. Seek immediate medical attention. Wash clothing before reuse and decontaminate or discard contaminated shoes.

Swallowing

Seek immediate medical attention. Do not induce vomiting. Vomiting will cause further damage to the mouth and throat. If individual is conscious and alert, immediately rinse mouth with water and give milk or water to drink. If possible, do not leave individual unattended.

Inhalation

If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

Note to Physicians

No data

5. FIRE FIGHTING MEASURES

Flash Point

Not applicable

Explosive Limit

Not applicable

Autoignition Temperature

No data

Hazardous Products of Combustion

May form: acid vapors, hydrogen chloride.

Continued on next page

MATERIAL SAFETY DATA SHEET

Ashland Chemical Co.

Page 003
Date Prepared: 01/05/96
Date Printed: 10/26/96
MSDS No: 0004462-003.001

MURIATIC ACID 22 DEGREE

Fire and Explosion Hazards

No data

Extinguishing Media

water fog, carbon dioxide, dry chemical.

Fire Fighting Instructions

Wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS.

NFPA Rating

Health - 3, Flammability - 0, Reactivity - 0

6. ACCIDENTAL RELEASE MEASURES

Small Spill

Cover the contaminated surface with sodium bicarbonate or a soda ash/flaked lime mixture (50-50). Mix and add water if necessary to form a slurry. Scoop up slurry and wash site with soda ash solution. Proper mixing procedures essential. Trained personnel should conduct this procedure. Untrained personnel should be removed from the spill area.

Large Spill

Persons not wearing protective equipment should be excluded from area of spill until clean-up is completed. Stop spill at source. Dike to prevent spreading. Pump to salvage tank.

7. HANDLING AND STORAGE

Handling

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Addition to water releases heat which can result in violent boiling and spattering. Always add slowly and in small amounts. Never use hot water. Never add water to acids. Always add acids to water.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection

Chemical splash goggles and face shield (8" min.) in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. (Consult your industrial hygienist.)

Skin Protection

Wear resistant gloves such as: natural rubber, neoprene, To prevent skin contact, wear impervious clothing and boots..

Continued on next page

MATERIAL SAFETY DATA SHEET

Ashland Chemical Co.

Page 004

Date Prepared: 01/05/96

Date Printed: 10/26/96

MSDS No: 0004462-003.001

MURIATIC ACID 22 DEGREE

Respiratory Protections

If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

Engineering Controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Exposure Guidelines

Component

WATER

No exposure limits established

HYDROGEN CHLORIDE (7647-01-0)

OSHA VPEL 5.000 ppm - Ceiling

ACGIH TLV 5.000 ppm - Ceiling

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point

(for product) 230.0 F (110.0 C) @ 760 mmHg

Vapor Pressure

(for product) 84.000 mmHg @ 68.00 F

Specific Vapor Density

1.250 @ AIR=1

Specific Gravity

1.180 @ 60.00 F

Liquid Density

9.840 lbs/gal @ 60.00 F

1.180 kg/l @ 20.00 C

Percent Volatiles

100.0 %

Evaporation Rate

10.00 (N-BUTYL ACETATE)

Appearance

No data

State

LIQUID

Continued on next page

MATERIAL SAFETY DATA SHEET

Ashland Chemical Co.

Page 005
Date Prepared: 01/05/96
Date Printed: 10/26/96
MSDS No: 0004462-003.001

MURIATIC ACID 22 DEGREE

Physical Form

HOMOGENEOUS SOLUTION

Color

COLORLESS TO LIGHT YELLOW

Odor

No data

pH

No data

10. STABILITY AND REACTIVITY

Hazardous Polymerization

Product will not undergo hazardous polymerization.

Hazardous Decomposition

May form: acid vapors, hydrogen chloride.

Chemical Stability

Stable.

Incompatibility

Avoid contact with: alkali metals, strong alkalies, Acid reacts with most metals to release hydrogen gas which can form explosive mixtures with air..

11. TOXICOLOGICAL INFORMATION

No data

12. ECOLOGICAL INFORMATION

No data

13. DISPOSAL CONSIDERATION

Waste Management Information

Collect and add slowly to large volume of agitated solution of soda ash and slaked lime. Add neutralized solution to excess running water in accordance with applicable regulations.

14. TRANSPORT INFORMATION

DOT Information - 49 CFR 172.101

DOT Description:

HYDROCHLORIC ACID, SOLUTION, 8, UN1789, II

Continued on next page

MATERIAL SAFETY DATA SHEET

Ashland Chemical Co.

Page 006
Date Prepared: 01/05/96
Date Printed: 10/26/96
MSDS No: 0004462-003.001

MURIATIC ACID 22 DEGREE

Container/Mode:
55 GAL DRUM/TRUCK PACKAGE

NOS Component:
None

RQ (Reportable Quantity) - 49 CFR 172.101
Product Quantity (lbs) Component

14205 HYDROCHLORIC ACID

15. REGULATORY INFORMATION

US Federal Regulations

TSCA (Toxic Substances Control Act) Status
TSCA (UNITED STATES) The intentional ingredients of this product are listed.

CERCLA RQ - 40 CFR 302.4
Component RQ (lbs)

HYDROGEN CHLORIDE 5000

SARA 302 Components - 40 CFR 355 Appendix A
Section 302 Component(s) TPQ (lbs) RQ (lbs)

HYDROGEN CHLORIDE 5000 5000

Section 311/312 Hazard Class - 40 CFR 370.2
Immediate(X) Delayed() Fire() Reactive() Sudden Release of
Pressure()

SARA 313 Components - 40 CFR 372.65
Section 313 Component(s) CAS Number Max %

HYDROCHLORIC ACID (acid aerosols) 7647-01-0 35.20

International Regulations
Inventory Status
Not determined

State and Local Regulations
California Proposition 65
None

New Jersey RTK Label Information
HYDROGEN CHLORIDE 7647-01-0

Pennsylvania RTK Label Information
HYDROCHLORIC ACID 7647-01-0

Continued on next page

MATERIAL SAFETY DATA SHEET

Ashland Chemical Co.

Page 007
Date Prepared: 01/05/96
Date Printed: 10/26/96
MSDS No: 0004462-003.001

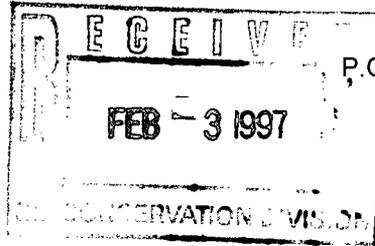
MURIATIC ACID 22 DEGREE

16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

P.O. Box 58900 Salt Lake City, Utah 84158-0900

January 29, 1997



RECEIVED

FEB - 3 1997

Environmental Bureau
Oil Conservation Division

Mr. Patricio Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87504

RE: Milagro Plant Wastewater GW-60 (Train 2 Rinse)

Dear Mr. Sanchez:

Enclosed, please find the analytical results of wastewater generated at Williams Field Services Company's Milagro Plant located in Bloomfield, New Mexico. The process generating the waste is the rinse out of process vessels and piping with a 3% amine and 97% deionized water solution. The MSDS for the amine is also enclosed for your review.

WFS requests approval to dispose of approximately 40,000 gallons of this non-hazardous, E&P exempt waste stream at Sunco's disposal well. If you have any questions or require additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,

A handwritten signature in cursive script that reads "Leigh E. Gooding".

Leigh E. Gooding

enclosure

cc: Hal Stone, Sunco
Denny Foust, NMOCD

2-3-97
called Leigh Gooding
and let her know
that this would
be handled by the
C-138 process.
JWG

2506 W. Main Street
Farmington, New Mexico 87401

Client: **Williams Field Service**
 Project: **Milagro Plant**
 Sample ID: **Train 2 Rinse**
 Laboratory ID: **0397W00093**
 Sample Matrix: **Water**
 Condition: **Cool/intact**

Date Reported: **01/28/97**
 Date Sampled: **01/21/97**
 Time Sampled: **1:15 PM**
 Date Received: **01/21/97**

Parameter	Analytical Result	Units	Units
-----------	-------------------	-------	-------

Lab pH (Corrosivity)	10.6	s.u.	
Flash Point (Ignitability)	>140	°F	
Reactivity			
Total Cyanide	0.02	mg/L	
Sulfide	275	mg/L	

RECEIVED

FEB - 3 1997

Environmental Quality
Oil Conservation Division

Trace Metals (Total)

Arsenic	0.010	mg/L
Barium	0.04	mg/L
Cadmium	0.001	mg/L
Chromium	14.6	mg/L
Lead	0.016	mg/L
Mercury	<0.001	mg/L
Selenium	<0.005	mg/L
Silver	<0.01	mg/L

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
 "Standard Methods For The Examination Of Water And Waste Water", 18th ed., 1992

Comments:

Reported by WST

Reviewed by AB



Milagro

La Maguina
El Cedro

Dow U.S.A.

The Dow Chemical Company
Midland, Michigan 48674
Emergency 517 · 636-4400

Material Safety Data Sheet

Product Code: 13693

Page: 1

Product Name: GAS/SPEC (R) CS-PLUS SOLVENT

Effective Date: 01/21/92 Date Printed: 10/06/92

MSDS:003430

1. INGREDIENTS: (% w/w, unless otherwise noted)

Methyldiethanolamine	CAS# 000105-59-9	69-70%
Proprietary Amine Derivative		30%
Water	CAS# 007732-18-5	Max. 1%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 240-280F, 152-162C
VAP. PRESS: 0.5 mmHg @ 20C
VAP. DENSITY: 3.5
SOL. IN WATER: Complete
SP. GRAVITY: 1.05-1.07 @ (25/25C)
FREEZING POINT: -20C
APPEARANCE: Pale straw liquid
ODOR: Amine odor

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 160F, 71C
METHOD USED: PMCC

FLAMMABLE LIMITS

LFL: Not established
UFL: Not established

EXTINGUISHING MEDIA: Water fog, alcohol resistant foam, CO2, dry chemical, and water spray.

(Continued on page 2)

(R) Indicates a Trademark of The Dow Chemical Company

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 13693

Page: 2

Product Name: GAS/SPEC (R) CS-PLUS SOLVENT

Effective Date: 01/21/92 Date Printed: 10/06/92

MSDS:003430

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE AND EXPLOSION HAZARDS: No special hazards.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure, self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Stable, avoid heat, sparks, and open flames.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Acids, strong oxidizers, halogenated hydrocarbons.

HAZARDOUS DECOMPOSITION PRODUCTS: Possible nitrogen oxides, carbon dioxide, carbon monoxide.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ENVIRONMENTAL DATA: (optional)

ACTION TO TAKE FOR SPILLS: Wash with small amounts of water. Dike to avoid contamination of sewer with large amounts, soak up with absorbent material, scoop into drums.

DISPOSAL METHOD: Dispose by incineration in accordance with all local, state, and federal requirements.

(Continued on page 3)

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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 13693

Page: 3

Product Name: GAS/SPEC (R) CS-PLUS SOLVENT

Effective Date: 01/21/92 Date Printed: 10/06/92

MSDS:003430

6. HEALTH HAZARD DATA:

EYE: Due to the pH of the material, it is assumed that exposure may cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness.

SKIN CONTACT: Short single exposure may cause severe skin burns. DOT classification: corrosive.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The dermal LD50 has not been determined.

INGESTION: Single dose oral toxicity is low. The oral LD50 for rats is >1000 mg/kg. Amounts ingested incidental to industrial handling are not likely to cause injury; however, ingestion of larger amounts may cause injury. Ingestion may cause gastrointestinal irritation or ulceration. Ingestion may cause burns of mouth and throat. Observations in animals include liver and kidney effects.

INHALATION: Excessive exposure may cause irritation to upper respiratory tract.

SYSTEMIC AND OTHER EFFECTS: One component did not cause birth defects in laboratory animals.

7. FIRST AID:

EYES: Immediate and continuous irrigation with flowing water for at least 30 minutes is imperative. Prompt medical consultation is essential.

SKIN: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician if irritation persists.

(Continued on page 4)

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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 13693

Page: 4

Product Name: GAS/SPEC (R) CS-PLUS SOLVENT

Effective Date: 01/21/92 Date Printed: 10/06/92

MSDS:003430

7. FIRST AID: (CONTINUED)

Wash clothing before reuse. Destroy contaminated shoes.

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

INHALATION: Remove to fresh air if effects occur. Consult physician.

NOTE TO PHYSICIAN: May cause tissue destruction leading to stricture. If lavage is performed, suggest endotracheal and/or esophagosopic control. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE (S): None established.

VENTILATION: Good general ventilation should be sufficient for most conditions.

RESPIRATORY PROTECTION: If respiratory irritation is experienced, use an approved air-purifying respirator.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Wear a face-shield which allows use of chemical goggles, or wear a full-face respirator, to protect face and eyes when there is any likelihood of splashes. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.

(Continued on page 5)

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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 13693

Page: 5

Product Name: GAS/SPEC (R) CS-PLUS SOLVENT

Effective Date: 01/21/92 Date Printed: 10/06/92

MSDS:003430

8. HANDLING PRECAUTIONS: (CONTINUED)

EYE PROTECTION: Use chemical goggles. Wear a face-shield which allows use of chemical goggles, or wear a full-face respirator, to protect face and eyes when there is any likelihood of splashes. Eye wash fountain should be located in immediate work area.

9. ADDITIONAL INFORMATION:

MSDS STATUS: Revised regsheet (WHMIS) information.

For information regarding state/provincial and federal regulations see
(R) Indicates a Trademark of The Dow Chemical Company

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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 13693

Page: R-1

Product Name: GAS/SPEC (R) CS-PLUS SOLVENT

Effective Date: 01/21/92 Date Printed: 10/06/92

MSDS:003430

REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented.)

NOTICE: The information herein is presented in good faith and believed to be accurate as the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

CANADIAN REGULATIONS

The Workplace Hazardous Materials Information System (W.H.M.I.S.)
Classification for this product is:

B3
E

A claim for exemption from ingredient disclosure has been approved under the Hazardous Materials Information Review Act (Canada). The Hazardous

(Continued on page R-2)

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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 13693

Page: R-2

Product Name: GAS/SPEC (R) CS-PLUS SOLVENT

Effective Date: 01/21/92 Date Printed: 10/06/92

MSDS:003430

REGULATORY INFORMATION (CONTINUED)

Materials Information Review Act registry number and the date assigned to this claim are:

REGULATION CLAIM NUMBER: 1068

REGULATION CLAIM DATE: 01/12/89

The Transportation of Dangerous Goods Act (T.D.G.A.) classification for this product is:

Corrosive Liquid, N.O.S. (Alkanolamine), Class 8/UN1760/11

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The Information Herein Is Given In Good Faith, But No Warranty,
Express Or Implied, Is Made. Consult The Dow Chemical Company
For Further Information.**

*** An Operating Unit of The Dow Chemical Company**

Dow Chemical U.S.A. Chemical EMERGENCY PHONE CHEMTREC 800-424-9300

Product Code: 13693

Name: GAS/SPEC (R) CS-PLUS SOLVENT

DOT BULK HAZ CLASS: CORROSIVE MATERIAL, NA1719

Effective date: 09/15/92 Date Printed: 10/09/92

ERTED # 000011

COMPOSITION AND PRODUCT CHARACTERISTICS

COMPOSITION:

PHYSICAL STATE AND APPEARANCE: Liquid

SOLUBILITY IN WATER: Mixes

FLASH PT: >160 F (PMCC)

LOWER FLAM LIMIT: Not established.

UPPER FLAM LIMIT: Not established.

AUTO-IGNITION TEMPERATURE: Not determined

BOILING PT: 240 F to 280 F

FREEZING PT: -30 C

SPECIFIC GRAVITY: 1.05-1.07 @ (25/25)

WEIGHT/GAL @ 77 DEG F: 8.7

VAPOR DENSITY (AIR = 1): 3.5

VAPOR PRESSURE @ 20 DEG F: Not determined

VAPOR PRESSURE @ 100 DEG F: Not determined.

COEFF OF THERMAL EXPANSION: Not determined.

LOADING TEMPERATURE: Ambient

MAXIMUM PRODUCT TEMPERATURE: 200 F

MAXIMUM STEAM PRESSURE: 25 psig

(R) Indicates a Trademark of The Dow Chemical Company

Dow Chemical U.S.A. Chemical EMERGENCY PHONE CHEMTREC 800-424-9300

Product Code: 13693

Name: GAS/SPEC (R) CS-PLUS SOLVENT

DOT BULK HAZ CLASS: CORROSIVE MATERIAL, NA1719

Effective date: 09/15/92 Date Printed: 10/09/92

ERTED # 000011

TRANSPORTATION EQUIPMENT DATA

TANK TRUCK: *MC 303, 304, 306, 307, 311, 312. Stainless steel, carbon steel. *Special requirements in CFR 49, 173249 (a) (6)

(NOTE: DOT 400 series may be substituted for previous MC 300 series equipment.)

TANK CAR: DOT 103W, 111A60W1, 111A100W1, 111A100W6. Carbon steel, stainless steel.

IMO CONTAINER:

INSULATION: Required

STEAM COILS: Required - tank car.

Required in cold weather - tank truck.

PUMP TYPE: Stainless steel, carbon steel. Centrifugal or positive displacement.

HOSE TYPE: Seamless stainless steel, Teflon, cross linked P/E, Neoprene.

GASKETS: Teflon, asbestos.

SPECIAL REQUIREMENTS: Prevent contact with brass, bronze & copper alloys.

PRECAUTIONS: Avoid contact with eyes, skin & clothing.
Avoid breathing vapors.

DRIVER PROTECTIVE EQUIPMENT: Use protective equipment - minimum of chemical workers goggles, hard hat, rubber gloves & boots.
Have respirator ready.

UNLOADING INSTRUCTIONS: Pump or N2 pressure. (Pressure not approved for MC 303 & 306 tanks.)

The Information Herein Is Given In Good Faith, but no Warranty Express or Implied, is Made. Consult The Dow Chemical Company For Further Information

MEMORANDUM OF MEETING OR CONVERSATION

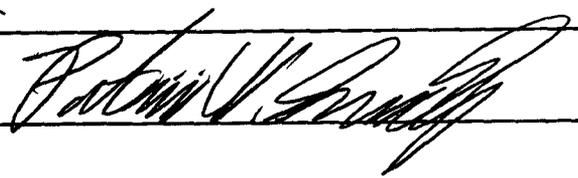
<input checked="" type="checkbox"/> Telephone	<input type="checkbox"/> Personal	Time 8:15 AM	Date 1-21-97
<u>Originating Party</u>		<u>Other Parties</u>	
Corey Chance - Phillip Environ. Milagro Gas Plant WFS		Pat Sanchez - OGD	
<u>Subject</u> Milagro GW-080 - class V investigation.			

Discussion

- Sludge Needs to be characterized in terms of RCRA status - i.e. Haz. or Non-HAZ.
- Waste water Needs to be tested for WACC parameters (i.e. appropriate organic/metal constituents)
- Lab waste - Needs to be classified in terms of RCRA status - i.e. Haz / Non-Haz. for proper offsite disposal.
- Other Leach field - Mr. Chance said that the lab analyzing the samples had contaminated them and a certification from the Lab would be submitted.

Mr. chance will see that (1), (2), (3), and (4) are addressed with.

Distribution Files, Denny Faust

Signed 

NEW MEXICO OIL CONSERVATION DIVISION
P.O. Box 58900 Salt Lake City, Utah 84158-0900

December 3, 1996

1996 DE 4 AM 8 52

RECEIVED

DEC 10 1996

Environmental Bureau
Oil Conservation Division

Mr. Patricio Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

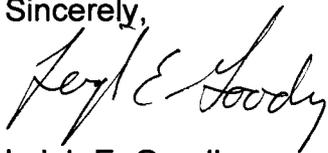
RE: Investigation of Milagro Plant Leach Field

Dear Mr. Sanchez:

Enclosed, please find the as-built diagram of the septic system and leach field at the Milagro Plant. WFS will conduct the subsurface investigation of the leach field on Thursday, December 12, 1996. Philip Environmental will be on site at 8:00 AM.

If you have any questions or need additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,



Leigh E. Gooding
Sr. Environmental Specialist

cc: Mr. Denny Foust

Roger Anderson

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES, INC.

P.O. Box 58900 Salt Lake City, Utah 84158-0900

November 26, 1996

Mr. Patricio Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

RE: Disposal of Wastewater From Milagro Plant GW-60

Dear Mr. Sanchez:

Enclosed, please find the representative analysis of wastewater generated at the Milagro Plant in Bloomfield, New Mexico. Based on process knowledge and the attached analysis, Williams Field Services maintains that the wastewater is non-hazardous. The chromium concentrations detected in the wastewater are a result of contact with the amine solution and stainless steel piping and vessels. The plant does not use and has never used chromium-containing chemicals in the process. The waste is generated from an industrial process which uses trivalent chromium exclusively and the process does not generate hexavalent chromium. Therefore, the waste is considered non-hazardous according to 40CFR Part 261.4 (b) (6) (I) (B).

Williams Field Services requests approval to dispose of this wastewater at Sunco's Class I Disposal Well. If you have any questions or need additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,



Leigh E. Gooding
Sr. Environmental Specialist

cc: Mr. Denny Foust
Hal Stone, Sunco

verbal approval from Roger 12/28/99



GARY E. JOHNSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous & Radioactive Materials Bureau
2044 Galisteo
P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-1557
Fax (505) 827-1544



MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

November 27, 1996

Mr. Patricio Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

RE: Disposal of wastewater from the Milagro Plant GW-60

Dear Mr. Sanchez:

This is to follow up on our telephone conversation re: your request for a determination of whether or not wastewaters from the above referenced facility are hazardous waste. NMED has determined that even though the wastewater does contain hazardous constituents as documented in the waste analysis report from Inter-Mountain Laboratories, Inc. dated 08-01-96, this waste is considered non-hazardous under 40 CFR §261.4(b)(6)(i).

Please feel free to contact me should need additional information.

Sincerely,

A handwritten signature in cursive script that reads "James E. Seubert".

James E. Seubert, Acting Program Manager
Hazardous and Radioactive Materials Bureau

xc: Leigh E. Gooding, Williams Field Services

93-6161

8241-1980
(505) 748-1283

NM 88210
District III - (505) 334-6178
Rio Brazos Road
NM 87410
District IV - (505) 827-7131

New Mexico
Energy Minerals and Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

RECEIVED
DEC 2 1999
OIL CON. DIV.
DIST. 3

Form C-138
Originated 8/8/95

Submit Original
Plus 1 Copy
to appropriate
District Office

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. RCRA Exempt: <input type="checkbox"/> Non-Exempt: <input checked="" type="checkbox"/>	4. Generator <u>WFS</u>
Verbal Approval Received: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	5. Originating Site <u>MILAGRO PLANT</u>
2. Management Facility Destination <u>KEY ENERGY DISPOSAL</u>	6. Transporter <u>Key</u>
3. Address of Facility Operator <u>#345 CR3500 AZTEC NM</u>	8. State <u>NM</u>
7. Location of Material (Street Address or ULSTR) <u>192 CR 4900 Bloomfield NM</u>	
9. Circle One: A. All requests for approval to accept oilfield exempt wastes will be accompanied by a certification of waste from the Generator; one certificate per job. <input checked="" type="radio"/> B. All requests for approval to accept non-exempt wastes must be accompanied by necessary chemical analysis to PROVE the material is not-hazardous and the Generator's certification of origin. No waste classified hazardous by listing or testing will be approved. All transporters must certify the wastes delivered are only those consigned for transport.	

BRIEF DESCRIPTION OF MATERIAL:

WASTE WATER FROM PONDS AT THE NATURAL GAS Breachment Plant

RECEIVED
DEC 17 1999

*NEW ANALYSIS Sampled 11-13-99

OIL CON. DIV.
DIST. 3

Estimated Volume 5000 bbls cy Known Volume (to be entered by the operator at the end of the haul) _____ cy

SIGNATURE: [Signature] TITLE: MGR DATE: 12-17-99
Waste Management Facility Authorized Agent
TYPE OR PRINT NAME: MICHAEL TACOVICH TELEPHONE NO. 505-334-6186

(This space for State Use)

APPROVED BY: Derry G. Faust TITLE: Geologist DATE: 12/20/99
APPROVED BY: Monty G. Guly **DENIED** TITLE: Environmental Geologist DATE: 1/10/2000

CERTIFICATE OF WASTE STATUS

1. Generator Name and Address: WILLIAMS FIELD SERVICES 192 CR 4900 Bloomfield NM 87413	2. Destination Name: KEY ENERGY DISPOSAL
3. Originating Site (name): MILABRO PLANT 192 CR 4900 Bloomfield NM 87413 <small>Attach list of originating sites as appropriate</small>	Location of the Waste (Street address &/or ULSTR):
4. Source and Description of Waste Waste WATER PONDOS	

I, Nelson M Sly III representative for:

WILLIAMS FIELD SERVICES do hereby certify that, according to the Resource Conservation and Recovery Act (RCRA) and Environmental Protection Agency's July, 1998, regulatory determination, the above-described waste is: (Check appropriate classification)

EXEMPT oilfield waste

NON-EXEMPT oilfield waste which is non-hazardous by characteristic analysis or by product identification

and that nothing has been added to the exempt or non-exempt non-hazardous waste defined above.

For NON-EXEMPT waste only the following documentation is attached (check appropriate items):

MSDS Information

Other (description):

RCRA Hazardous Waste Analysis

Chain of Custody

Name (Original Signature):

Nelson M Sly III

Title:

LEAD MECHANIC

Date:

12/16/98

Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 9911595

SENT WILLIAMS FIELD SERVICE
 TO: 295 CHIPETA WAY
 SALT LAKE CITY, UTAH 84158
 MARK HARVEY
 PROJECT: MILAGRO POND

DATE REPORTED: 12/08/99
 DATE COLLECTED: 11/13/99
 DATE RECEIVED: 11/17/99

Reference Fraction: 9911595-01A

Sample ID: MIL-POND-CO1

Sample Matrix: WATER

Sample Date Collected: 11/13/99 13:15:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
TCLP EXTRACTION	EPA 1311	DONE				JCC
SILVER, TCLP	SW 846 6010	0.27	MG/L	0.01	11/30/99	MS2
ARSENIC, TCLP	SW 846 7060	<0.001	MG/L	0.001	11/29/99	JMM
BARIUM, TCLP	SW 846 6010	0.08	MG/L	0.005	11/30/99	MS2
CADMIUM, TCLP	SW 846 6010	<0.005	MG/L	0.005	11/30/99	MS2
CHROMIUM, TCLP	SW 846 6010	19.9	MG/L	0.01	12/01/99	MS2
MERCURY, TCLP	SW 846 7470	<0.0002	MG/L	0.0002	11/20/99	JMM
LEAD, TCLP	SW 846 6010	0.05	MG/L	0.01	11/30/99	MS2
SELENIUM, TCLP	SW 846 7740	<0.002	MG/L	0.002	12/02/99	JMM
TCLP SEMI-VOLATILES	SW 846 8270					
O-CRESOL		0.123	MG/L	0.10	11/25/99	DN
P-CRESOL		0.119	MG/L	0.10	11/25/99	DN
M-CRESOL		ND	MG/L	0.10	11/25/99	DN
1,4-DICHLOROBENZENE		ND	MG/L	0.10	11/25/99	DN
2,4-DINITROTOLUENE		ND	MG/L	0.10	11/25/99	DN
HEXACHLOROBENZENE		ND	MG/L	0.10	11/25/99	DN
HEXACHLOROBUTADIENE		ND	MG/L	0.10	11/25/99	DN
HEXACHLOROETHANE		ND	MG/L	0.10	11/25/99	DN
NITROBENZENE		ND	MG/L	0.10	11/25/99	DN
PENTACHLOROPHENOL		ND	MG/L	0.50	11/25/99	DN
PYRIDINE		ND	MG/L	0.10	11/25/99	DN
2,4,5-TRICHLOROPHEN		ND	MG/L	0.10	11/25/99	DN
2,4,6-TRICHLOROPHEN		ND	MG/L	0.10	11/25/99	DN
TCLP VOLATILES	SW 846 8260					
BENZENE		ND	UG/L	5.0	11/25/99	JDH
CARBON TETRACHLORID		ND	UG/L	5.0	11/25/99	JDH
CHLOROBENZENE		ND	UG/L	5.0	11/25/99	JDH
CHLOROFORM		ND	UG/L	5.0	11/25/99	JDH
1,2-DICHLOROETHANE		ND	UG/L	5.0	11/25/99	JDH
1,1-DICHLOROETHYLEN		ND	UG/L	5.0	11/25/99	JDH
METHYL ETHYL KETONE		ND	UG/L	5.0	11/25/99	JDH
TETRACHLOROETHYLENE		ND	UG/L	5.0	11/25/99	JDH
TRICHLOROETHYLENE		ND	UG/L	5.0	11/25/99	JDH
VINYL CHLORIDE		ND	UG/L	5.0	11/25/99	JDH

QWAL LABORATORIES, INC.

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 9911595

SENT WILLIAMS FIELD SERVICE
TO: 295 CHIPETA WAY
SALT LAKE CITY, UTAH 84158
MARK HARVEY
PROJECT: MILAGRO POND

DATE REPORTED: 12/08/99
DATE COLLECTED: 11/13/99
DATE RECEIVED: 11/17/99

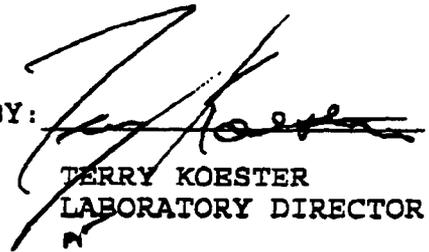
Reference Fraction: 9911595-01A
Sample ID: MIL-POND-CO1
Sample Date Collected: 11/13/99 13:15:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED BY
------	--------	--------	-------	-----	-------------

ND-NONE DETECTED
PQL-PRACTICAL QUANTITATION LIMIT
SU-STANDARD UNITS
B-DETECTED IN METHOD BLANK

APPROVED BY:


TERRY KOESTER
LABORATORY DIRECTOR

QWAL LABORATORIES, INC.

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 9911595

SENT WILLIAMS FIELD SERVICE
 TO: 295 CHIPETA WAY
 SALT LAKE CITY, UTAH 84158
 MARK HARVEY
 PROJECT: MILAGRO POND

DATE REPORTED: 12/08/99
 DATE COLLECTED: 11/13/99
 DATE RECEIVED: 11/17/99

Reference Fraction: 9911595-01B

Sample ID: MIL-POND-CO1 MS

Sample Matrix: WATER

Sample Date Collected: 11/13/99 13:15:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
TCLP EXTRACTION	EPA 1311	DONE				JCC
SILVER, TCLP	SW 846 6010	90.0	% REC		11/30/99	MS2
ARSENIC, TCLP	SW 846 7060	85.3	% REC		11/29/99	JMD
BARIUM, TCLP	SW 846 6010	104.9	% REC		11/30/99	MS2
CADMIUM, TCLP	SW 846 6010	89.5	% REC		11/30/99	MS2
CHROMIUM, TCLP	SW 846 6010	90.3	% REC		11/30/99	MS2
MERCURY, TCLP	SW 846 7470	100.6	% REC		11/20/99	JMD
LEAD, TLCP	SW 846 6010	89.9	% REC		11/30/99	MS2
SELENIUM, TCLP	SW 846 7740	79.8	% REC		12/02/99	JMD
TCLP SEMI-VOLATILES	SW 846 8270					
O-CRESOL		58	%RECOV	0.10	11/26/99	DN
P-CRESOL		92	%RECOV	0.10	11/26/99	DN
M-CRESOL		92	%RECOV	0.10	11/26/99	DN
1,4-DICHLOROBENZENE		57	%RECOV	0.10	11/26/99	DN
2,4-DINITROTOLUENE		79	%RECOV	0.10	11/26/99	DN
HEXACHLOROBENZENE		76	%RECOV	0.10	11/26/99	DN
HEXACHLOROBUTADIENE		56	%RECOV	0.10	11/26/99	DN
HEXACHLOROETHANE		39	%RECOV	0.10	11/26/99	DN
NITROBENZENE		61	%RECOV	0.10	11/26/99	DN
PENTACHLOROPHENOL		34	%RECOV	0.50	11/26/99	DN
PYRIDINE		20	%RECOV	0.10	11/26/99	DN
2,4,5-TRICHLOROPHEN		67	%RECOV	0.10	11/26/99	DN
2,4,6-TRICHLOROPHEN		60	%RECOV	0.10	11/26/99	DN
TCLP VOLATILES	SW 846 8260					
BENZENE		100	% REC	5.0	11/25/99	JDI
CARBON TETRACHLORID		444	% REC	5.0	11/25/99	JDI
CHLOROBENZENE		92.4	% REC	5.0	11/25/99	JDI
CHLOROFORM		60.0	% REC	5.0	11/25/99	JDI
1,2-DICHLOROETHANE		62.8	% REC	5.0	11/25/99	JDI
1,1-DICHLOROETHYLEN		105	% REC	5.0	11/25/99	JDI
METHYL ETHYL KETONE		21.5	% REC	5.0	11/25/99	JDI
TETRACHLOROETHYLENE		89.6	% REC	5.0	11/25/99	JDI
TRICHLOROETHYLENE		90.4	% REC	5.0	11/25/99	JDI
VINYL CHLORIDE		35.12	% REC	5.0	11/25/99	JDI

QWAL LABORATORIES, INC.

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 9911595

SENT WILLIAMS FIELD SERVICE
TO: 295 CHIPETA WAY
SALT LAKE CITY, UTAH 84158
MARK HARVEY
PROJECT: MILAGRO POND

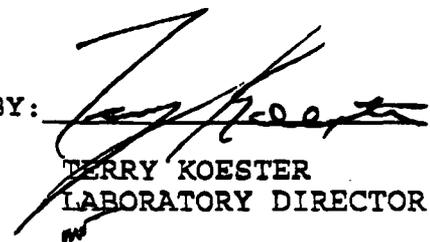
DATE REPORTED: 12/08/99
DATE COLLECTED: 11/13/99
DATE RECEIVED: 11/17/99

Reference Fraction: 9911595-01B
Sample ID: MIL-POND-CO1 MS
Sample Date Collected: 11/13/99 13:15:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED BY
------	--------	--------	-------	-----	-------------

ND=NONE DETECTED
PQL=PRACTICAL QUANTITAION LIMIT
SU=STANDARD UNITS
B=DETECTED IN METHOD BLANK

APPROVED BY: 
TERRY KOESTER
LABORATORY DIRECTOR

QWAL LABORATORIES, INC.

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 9911595

SENT WILLIAMS FIELD SERVICE
 TO: 295 CHIPETA WAY
 SALT LAKE CITY, UTAH 84158
 MARK HARVEY

DATE REPORTED: 12/08/99
 DATE COLLECTED: 11/13/99
 DATE RECEIVED: 11/17/99

PROJECT: MILAGRO POND

Reference Fraction: 9911595-02A

Sample ID: MIL POND-CO1

Sample Matrix: WATER

Sample Date Collected: 11/13/99 13:15:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
FLASH CLOSED CUP	1010 D56	>220.0	DEG F		11/24/99	JGM
PH	EPA 150.1	9.6	SU		11/17/99	SLR
REACTIVITY	SW 846	SEE	ATTACHED		11/24/99	KW

ND=NONE DETECTED

PQL=PRACTICAL QUANTIFICATION LIMIT

SU=STANDARD UNITS

B=DETECTED IN METHOD BLANK

APPROVED BY:


 TERRY KOESTER
 LABORATORY DIRECTOR

P.O. Box 58900 Salt Lake City, Utah 84158-0900

November 25, 1996

1996 DE 17 11 8 52

Mr. Patricio Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

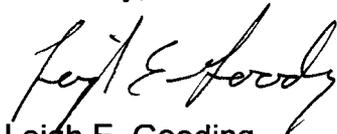
RE: Subsurface Investigation of Milagro Septic Leach Field

Dear Mr. Sanchez:

In preparing an as-built diagram of the underground septic system for the Milagro Plant, Williams Field Services (WFS) has discovered that the hand-drawn diagram of the leach field which was previously submitted to your office was, in fact, incorrect. Based on the new information, WFS proposes to re-sample the leach field. The investigation will be conducted in accordance with the original work plan and your letter of dated September 9, 1996. WFS will notify Mr. Denny Foust prior to the subsurface investigation to allow NMOCD to have a representative on site.

If you have any questions or need additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,



Leigh E. Gooding
Sr. Environmental Specialist

cc: Mr. Denny Foust
Gerald Brower, Milagro

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DEC 03 1996

Environmental Bureau
Oil Conservation Division



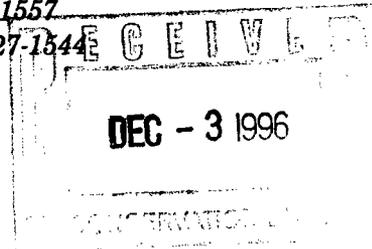
GARY E. JOHNSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous & Radioactive Materials Bureau
2044 Galisteo
P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-1557
Fax (505) 827-1544



MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY



November 27, 1996

Mr. Patricio Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

RE: Disposal of wastewater from the Milagro Plant GW-60

Dear Mr. Sanchez:

This is to follow up on our telephone conversation re: your request for a determination of whether or not wastewaters from the above referenced facility are hazardous waste. NMED has determined that even though the wastewater does contain hazardous constituents as documented in the waste analysis report from Inter-Mountain Laboratories, Inc. dated 08-01-96, this waste is considered non-hazardous under 40 CFR §261.4(b)(6)(i).

Please feel free to contact me should need additional information.

Sincerely,

James E. Seubert, Acting Program Manager
Hazardous and Radioactive Materials Bureau

xc: Leigh E. Gooding, Williams Field Services

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Environment Bureau
Oil Conservation Division

District I - (505) 393-6161
P.O. Box 1980
Tobbs, NM 88241-1980
District II - (505) 748-1283
311 S. First
Artesia, NM 88210
District III - (505) 334-6178
Rio Brazos Road
Las Alamos, NM 87410
District IV - (505) 827-7131

New Mexico
Energy Minerals and Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

Submit Original
Plus 1 Copy
to appropriate
District Office

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. RCRA Exempt: <input type="checkbox"/> Non-Exempt: <input checked="" type="checkbox"/>	4. Generator <i>Williams Field Service</i>
Verbal Approval Received: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	5. Originating Site <i>GAS PLANT</i>
2. Management Facility Destination <i>SUNCO DISPOSAL</i>	6. Transporter <i>SUNCO TRUCKING</i>
3. Address of Facility Operator <i>345 CR 3500, AZTEC NM</i>	8. State <i>NM</i>
7. Location of Material (Street Address or ULSTR) <i>MILAGRO PLANT</i>	
9. <u>Circle One:</u> A. All requests for approval to accept oilfield exempt wastes will be accompanied by a certification of waste from the Generator; one certificate per job. <input checked="" type="radio"/> B. All requests for approval to accept non-exempt wastes must be accompanied by necessary chemical analysis to PROVE the material is not-hazardous and the Generator's certification of origin. No waste classified hazardous by listing or testing will be approved. All transporters must certify the wastes delivered are only those consigned for transport.	

BRIEF DESCRIPTION OF MATERIAL:

WASTE WATER GENERATED AT MILAGRO PLANT (AMINE PLANT)

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DEC 03 1996
Environmental Bureau
Oil Conservation Division

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NOV 27 1996
OIL CON. DIV.
DIST. 3

Estimated Volume 200,000 GALS cy Known Volume (to be entered by the operator at the end of the haul) _____ cy

SIGNATURE: *Michael Talovich* TITLE: *Disposal mgr* DATE: *11-27-96*
Waste Management Facility Authorized Agent

TYPE OR PRINT NAME: *Michael Talovich* TELEPHONE NO. *505 334-6186*

(This space for State Use)

APPROVED BY: *Derry G. Jant* TITLE: *Geologist* DATE: *11/27/96*

APPROVED BY: *Petroleum Eng. SPOC* TITLE: *Petroleum Eng. SPOC* DATE: *12/23/96*

November 26, 1996

NOV 26 1996

Mr. Patricio Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

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Environmental Bureau
Oil Conservation Division

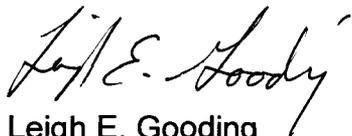
RE: Disposal of Wastewater From Milagro Plant GW-60

Dear Mr. Sanchez:

Enclosed, please find the representative analysis of wastewater generated at the Milagro Plant in Bloomfield, New Mexico. Based on process knowledge and the attached analysis, Williams Field Services maintains that the wastewater is non-hazardous. The chromium concentrations detected in the wastewater are a result of contact with the amine solution and stainless steel piping and vessels. The plant does not use and has never used chromium-containing chemicals in the process. The waste is generated from an industrial process which uses trivalent chromium exclusively and the process does not generate hexavalent chromium. Therefore, the waste is considered non-hazardous according to 40CFR Part 261.4 (b) (6) (I) (B).

Williams Field Services requests approval to dispose of this wastewater at Sunco's Class I Disposal Well. If you have any questions or need additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,



Leigh E. Gooding
Sr. Environmental Specialist

cc: Mr. Denny Foust
Hal Stone, Sunco

file



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DEC 03 1996

Environmental Bureau
Oil Conservation Division

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

12 August 1996

Leigh Gooding
Williams Field Service
P. O. Box 58900
Salt Lake City, UT 84158-0900

Ms. Gooding:

Enclosed please find the report for the samples received by our laboratory for analysis on July 11, 1996.

If you have any questions about the results of these analyses, please don't hesitate to call me at your convenience.

Sincerely,

Anna Schaerer
Organic Analyst/IML-Farmington

Enclosure

xc: File

Client: **Williams Field Service**
 Project: **Milagro Plant**
 Sample ID: **North Evap Pond**
 Laboratory ID: **0396W01325**
 Sample Matrix: **Water**
 Condition: **Cool/Intact**

Date Reported: **08/01/96**
 Date Sampled: **07/11/96**
 Time Sampled: **9:45 AM**
 Date Received: **07/11/96**

Parameter	Analytical Result	Units	Units
-----------	-------------------	-------	-------

Lab pH.....	9.8	s.u.		
Lab Conductivity @ 25° C.....	9,470	umhos/cm		
Lab Resistivity @ 25° C.....	0.11	ohm/m		
Total Dissolved Solids @ 180°C.....	13,300	mg/L		
Total Hardness as CaCO3.....	93.0	mg/L		
Total Alkalinity as CaCO3.....	43,300	mg/L		
Total Phosphorous.....	118	mg/L		
Bicarbonate as HCO3.....	2,300	mg/L	38.0	meq/L
Carbonate as CO3.....	24,800	mg/L	828	meq/L
Hydroxide as OH.....	<1.00	mg/L	<1.00	meq/L
Chloride.....	2,270	mg/L	64.0	meq/L
Sulfate.....	218	mg/L	4.54	meq/L
Nitrate.....	4.07	mg/L	0.29	meq/L
Calcium.....	18.8	mg/L	0.94	meq/L
Magnesium.....	11.2	mg/L	0.92	meq/L
Sodium.....	1,090	mg/L	47.3	meq/L
Potassium.....	56.3	mg/L	1.44	meq/L
Trace Metals (Total)				
Arsenic.....	<0.005	mg/L		
Barium.....	0.10	mg/L		
Cadmium.....	0.029	mg/L		
Chromium.....	21.1	mg/L		
Lead.....	0.069	mg/L		
Mercury.....	<0.001	mg/L		
Selenium.....	0.007	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
 "Standard Methods For The Examination Of Water And Waste Water", 18th ed., 1992.

Comments:

Reported by LM

Reviewed by OB

Client: **Williams Field Service**
 Project: **Milagro Plant**
 Sample ID: **West Evap Pond**
 Laboratory ID: **0396W01326**
 Sample Matrix: **Water**
 Condition: **Cool/Intact**

Date Reported: **08/01/96**
 Date Sampled: **07/11/96**
 Time Sampled: **10:00 AM**
 Date Received: **07/11/96**

Parameter	Analytical Result	Units	Units
-----------	-------------------	-------	-------

Lab pH.....	9.8	s.u.		
Lab Conductivity @ 25° C.....	11,100	umhos/cm		
Lab Resistivity @ 25° C.....	0.09	ohm/m		
Total Dissolved Solids @ 180°C.....	23,900	mg/L		
Total Hardness as CaCO3.....	131	mg/L		
Total Alkalinity as CaCO3.....	81,700	mg/L		
Total Phosphorous.....	164	mg/L		
Bicarbonate as HCO3.....	7,600	mg/L	125	meq/L
Carbonate as CO3.....	45,300	mg/L	1509	meq/L
Hydroxide as OH.....	<1.00	mg/L	<1.00	meq/L
Chloride.....	3,050	mg/L	86.0	meq/L
Sulfate.....	407	mg/L	8.49	meq/L
Nitrate.....	2.90	mg/L	0.21	meq/L
Calcium.....	26.7	mg/L	1.33	meq/L
Magnesium.....	15.7	mg/L	1.29	meq/L
Sodium.....	1,570	mg/L	68.3	meq/L
Potassium.....	104	mg/L	2.67	meq/L
Trace Metals (Total)				
Arsenic.....	<0.005	mg/L		
Barium.....	0.09	mg/L		
Cadmium.....	0.046	mg/L		
Chromium.....	28.3	mg/L		
Lead.....	0.060	mg/L		
Mercury.....	<0.001	mg/L		
Selenium.....	<0.005	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
 "Standard Methods For The Examination Of Water And Waste Water", 18th ed., 1992.

Comments:

Reported by WM

Reviewed by JB

Client: **Williams Field Service**
 Project: **Milagro Plant**
 Sample ID: **South Evap Pond**
 Laboratory ID: **0396W01327**
 Sample Matrix: **Water**
 Condition: **Cool/Intact**

Date Reported: **08/01/96**
 Date Sampled: **07/11/96**
 Time Sampled: **10:10 AM**
 Date Received: **07/11/96**

Parameter	Analytical		Units	
	Result	Units	Units	Units

Lab pH.....	9.8	s.u.		
Lab Conductivity @ 25° C.....	8,210	umhos/cm		
Lab Resistivity @ 25° C.....	0.12	ohm/m		
Total Dissolved Solids @ 180°C.....	10,300	mg/L		
Total Hardness as CaCO3.....	91.0	mg/L		
Total Alkalinity as CaCO3.....	43,520	mg/L		
Total Phosphorous.....	73.7	mg/L		
Bicarbonate as HCO3.....	2,800	mg/L	46.4	meq/L
Carbonate as CO3.....	24,700	mg/L	824	meq/L
Hydroxide as OH.....	<1.00	mg/L	<1.00	meq/L
Chloride.....	1,090	mg/L	30.8	meq/L
Sulfate.....	210	mg/L	4.37	meq/L
Nitrate.....	8.15	mg/L	0.58	meq/L
Calcium.....	19.8	mg/L	0.99	meq/L
Magnesium.....	10.1	mg/L	0.83	meq/L
Sodium.....	590	mg/L	25.7	meq/L
Potassium.....	59.4	mg/L	1.52	meq/L
Trace Metals (Total)				
Arsenic.....	0.006	mg/L		
Barium.....	0.10	mg/L		
Cadmium.....	0.032	mg/L		
Chromium.....	19.0	mg/L		
Lead.....	0.057	mg/L		
Mercury.....	<0.001	mg/L		
Selenium.....	0.006	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
 "Standard Methods For The Examination Of Water And Waste Water", 18th ed., 1992.

Comments:

Reported by WM

Reviewed by JB

Quality Control / Quality Assurance

Trace Metals / Known Analysis

TOTAL METALS

Client: Williams Field Service
Project: Milagro Plant
Laboratory ID: 0396W01325-1327
Sample Matrix: Water
Condition: Cool / Intact

Date Reported: 08/01/96
Date Sampled: 07/11/96
Date Received: 07/11/96

Known Analysis

Parameter	Found Value (mg/L)	Known Value (mg/L)	Percent Recovery
Arsenic	0.011	0.010	110%
Barium	0.91	1.00	91%
Cadmium	1.00	1.00	100%
Chromium	0.99	1.00	99%
Lead	0.042	0.040	105%
Mercury	0.004	0.004	110%
Selenium	0.010	0.010	100%
Silver	0.005	0.005	106%

Reference: E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 18th ed., 1992.

Comments: Quality control run concurrently with the above sample lab numbers.

Reported By: WM

Reviewed By: JB

Quality Control / Quality Assurance

Trace Metals / Spike Analysis

TOTAL METALS

Client: Williams Field Service
Project: Milagro Plant
Laboratory ID: 0396W01325-1327
Sample Matrix: Water
Condition: Cool / Intact

Date Reported: 08/01/96
Date Sampled: 07/11/96
Date Received: 07/11/96

Spike Analysis

Parameter	Spike Result (mg/L)	Unspiked		Percent Recovery
		Sample Result (mg/L)	Spike Amount (mg/L)	
Arsenic	0.027	0.002	0.030	83%
Barium	0.44	0.01	0.50	85%
Cadmium	0.45	<0.01	0.50	91%
Chromium	0.44	<0.01	0.50	88%
Lead	0.024	<0.005	0.025	95%
Mercury	0.005	<0.001	0.005	106%
Selenium	0.024	<0.005	0.025	96%
Silver	0.025	0.025	0.025	108%

Reference: E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 18th ed., 1992.

Comments: Quality control run concurrently with the above sample lab numbers.

Reported By: WM

Reviewed By: JB

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: **WILLIAMS FIELD SERVICE**
 Sample ID: North Evap. Pond
 Project ID: Milagro Plant
 Lab ID: B965800 0396G01325
 Matrix: Water

Date Reported: 08/07/96
 Date Sampled: 07/11/96
 Date Received: 07/12/96
 Date Extracted: NA
 Date Analyzed: 07/19/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	5.0	ug/L
1,1,1-Trichloroethane	ND	5.0	ug/L
1,1,2,2-Tetrachloroethane	ND	5.0	ug/L
1,1,2-Trichloroethane	ND	5.0	ug/L
1,1-Dichloroethane	ND	5.0	ug/L
1,1-Dichloroethene	ND	5.0	ug/L
1,1-Dichloropropene	ND	5.0	ug/L
1,2,3-Trichlorobenzene	ND	5.0	ug/L
1,2,3-Trichloropropane	ND	5.0	ug/L
1,2,4-Trichlorobenzene	ND	5.0	ug/L
1,2,4-Trimethylbenzene	ND	5.0	ug/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	ug/L
1,2-Dibromoethane (EDB)	ND	5.0	ug/L
1,2-Dichlorobenzene	ND	5.0	ug/L
1,2-Dichloroethane	ND	5.0	ug/L
1,2-Dichloropropane	ND	5.0	ug/L
1,3,5-Trimethylbenzene	ND	5.0	ug/L
1,3-Dichlorobenzene	ND	5.0	ug/L
1,3-Dichloropropane	ND	5.0	ug/L
1,4-Dichlorobenzene	ND	5.0	ug/L
2,2-Dichloropropane	ND	5.0	ug/L
2-Chlorotoluene	ND	5.0	ug/L
4-Chlorotoluene	ND	5.0	ug/L
4-Isopropyltoluene	ND	5.0	ug/L
Benzene	ND	5.0	ug/L
Bromobenzene	ND	5.0	ug/L
Bromochloromethane	ND	5.0	ug/L
Bromodichloromethane	ND	5.0	ug/L
Bromoform	ND	5.0	ug/L
Bromomethane	ND	5.0	ug/L

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: WILLIAMS FIELD SERVICE

Sample ID: North Evap. Pond

Project ID: Milagro Plant

Lab ID: B965800 0396G01325

Matrix: Water

Date Reported: 08/07/96

Date Sampled: 07/11/96

Date Received: 07/12/96

Date Extracted: NA

Date Analyzed: 07/19/96

Parameter	Result	PQL	Units
Continued			
Carbon Tetrachloride	ND	5.0	ug/L
Chlorobenzene	ND	5.0	ug/L
Chloroethane	ND	5.0	ug/L
Chloroform	ND	5.0	ug/L
Chloromethane	ND	5.0	ug/L
cis-1,2-Dichloroethene	ND	5.0	ug/L
cis-1,3-Dichloropropene	ND	5.0	ug/L
Dibromochloromethane	ND	5.0	ug/L
Dibromomethane	ND	5.0	ug/L
Dichlorodifluoromethane	ND	5.0	ug/L
Ethylbenzene	ND	5.0	ug/L
Hexachlorobutadiene	ND	5.0	ug/L
Isopropylbenzene	ND	5.0	ug/L
m,p-Xylene	ND	5.0	ug/L
Methylene chloride	ND	20	ug/L
n-Butylbenzene	ND	5.0	ug/L
n-Propylbenzene	ND	5.0	ug/L
Naphthalene	ND	5.0	ug/L
o-Xylene	ND	5.0	ug/L
sec-Butylbenzene	ND	5.0	ug/L
Styrene	ND	5.0	ug/L
tert-Butylbenzene	ND	5.0	ug/L
Tetrachloroethene (PCE)	ND	5.0	ug/L
Toluene	ND	5.0	ug/L
trans-1,2-Dichloroethene	ND	5.0	ug/L
Trichloroethene (TCE)	ND	5.0	ug/L
Trichlorofluoromethane	ND	5.0	ug/L
Vinyl Chloride	ND	5.0	ug/L
Xylenes (total)	ND	5.0	ug/L

Continued

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client:	WILLIAMS FIELD SERVICE	Date Reported:	08/07/96
Sample ID:	North Evap. Pond	Date Sampled:	07/11/96
Project ID:	Milagro Plant	Date Received:	07/12/96
Lab ID:	B965800 0396G01325	Date Extracted:	NA
Matrix:	Water	Date Analyzed:	07/19/96

Parameter	Result	PQL	Units
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Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	99	80 - 120
Bromofluorobenzene	100	86 - 115
Toluene-d8	104	88 - 110

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst E.D. 8/1/96

Reviewed 

**EPA METHOD 8270
POLYNUCLEAR AROMATIC HYDROCARBONS**

Client:	WILLIAMS FIELD SERVICE	Date Reported:	08/05/96
Sample ID:	North Evap. Pond	Date Sampled:	07/11/96
Project ID:	Milagro Plant	Date Received:	07/12/96
Lab ID:	B965800 0396G01325	Date Extracted:	07/15/96
Matrix:	Water	Date Analyzed:	07/31/96

Parameter	Result	PQL	Units
3-Methylcholanthrene	ND	1000	ug/L
Acenaphthene	ND	1000	ug/L
Acenaphthylene	ND	1000	ug/L
Anthracene	ND	1000	ug/L
Benzo(a)anthracene	ND	1000	ug/L
Benzo(a)pyrene	ND	1000	ug/L
Benzo(b)fluoranthene	ND	1000	ug/L
Benzo(g,h,i)perylene	ND	1000	ug/L
Benzo(k)fluoranthene	ND	1000	ug/L
Chrysene	ND	1000	ug/L
Dibenz(a,h)anthracene	ND	1000	ug/L
Fluoranthene	ND	1000	ug/L
Fluorene	ND	1000	ug/L
Indeno(1,2,3-cd)pyrene	ND	1000	ug/L
Phenanthrene	ND	1000	ug/L
Pyrene	ND	1000	ug/L

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	71	10 - 123
2-Fluorobiphenyl	74	43 - 116
2-Fluorophenol	62	21 - 110
Nitrobenzene-d5	72	35 - 114
Phenol-d6	78	10 - 110
Terphenyl-d14	75	33 - 141

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, November 1990.

Analyst 

Reviewed 

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: WILLIAMS FIELD SERVICE
 Sample ID: West Evap. Pond
 Project ID: Milagro Plant
 Lab ID: B965801 0396G01326
 Matrix: Water

Date Reported: 08/07/96
 Date Sampled: 07/11/96
 Date Received: 07/12/96
 Date Extracted: NA
 Date Analyzed: 07/18/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	5.0	ug/L
1,1,1-Trichloroethane	ND	5.0	ug/L
1,1,2,2-Tetrachloroethane	ND	5.0	ug/L
1,1,2-Trichloroethane	ND	5.0	ug/L
1,1-Dichloroethane	ND	5.0	ug/L
1,1-Dichloroethene	ND	5.0	ug/L
1,1-Dichloropropene	ND	5.0	ug/L
1,2,3-Trichlorobenzene	ND	5.0	ug/L
1,2,3-Trichloropropane	ND	5.0	ug/L
1,2,4-Trichlorobenzene	ND	5.0	ug/L
1,2,4-Trimethylbenzene	ND	5.0	ug/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	ug/L
1,2-Dibromoethane (EDB)	ND	5.0	ug/L
1,2-Dichlorobenzene	ND	5.0	ug/L
1,2-Dichloroethane	ND	5.0	ug/L
1,2-Dichloropropane	ND	5.0	ug/L
1,3,5-Trimethylbenzene	ND	5.0	ug/L
1,3-Dichlorobenzene	ND	5.0	ug/L
1,3-Dichloropropane	ND	5.0	ug/L
1,4-Dichlorobenzene	ND	5.0	ug/L
2,2-Dichloropropane	ND	5.0	ug/L
2-Chlorotoluene	ND	5.0	ug/L
4-Chlorotoluene	ND	5.0	ug/L
4-Isopropyltoluene	ND	5.0	ug/L
Benzene	ND	5.0	ug/L
Bromobenzene	ND	5.0	ug/L
Bromochloromethane	ND	5.0	ug/L
Bromodichloromethane	ND	5.0	ug/L
Bromoform	ND	5.0	ug/L
Bromomethane	ND	5.0	ug/L

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: **WILLIAMS FIELD SERVICE**
 Sample ID: West Evap. Pond
 Project ID: Milagro Plant
 Lab ID: B965801 0396G01326
 Matrix: Water

Date Reported: 08/07/96
 Date Sampled: 07/11/96
 Date Received: 07/12/96
 Date Extracted: NA
 Date Analyzed: 07/18/96

Parameter	Result	PQL	Units
Continued			
Carbon Tetrachloride	ND	5.0	ug/L
Chlorobenzene	ND	5.0	ug/L
Chloroethane	ND	5.0	ug/L
Chloroform	ND	5.0	ug/L
Chloromethane	ND	5.0	ug/L
cis-1,2-Dichloroethene	ND	5.0	ug/L
cis-1,3-Dichloropropene	ND	5.0	ug/L
Dibromochloromethane	ND	5.0	ug/L
Dibromomethane	ND	5.0	ug/L
Dichlorodifluoromethane	ND	5.0	ug/L
Ethylbenzene	ND	5.0	ug/L
Hexachlorobutadiene	ND	5.0	ug/L
Isopropylbenzene	ND	5.0	ug/L
m,p-Xylene	ND	5.0	ug/L
Methylene chloride	ND	20	ug/L
n-Butylbenzene	ND	5.0	ug/L
n-Propylbenzene	ND	5.0	ug/L
Naphthalene	ND	5.0	ug/L
o-Xylene	ND	5.0	ug/L
sec-Butylbenzene	ND	5.0	ug/L
Styrene	ND	5.0	ug/L
tert-Butylbenzene	ND	5.0	ug/L
Tetrachloroethene (PCE)	ND	5.0	ug/L
Toluene	ND	5.0	ug/L
trans-1,2-Dichloroethene	ND	5.0	ug/L
Trichloroethene (TCE)	ND	5.0	ug/L
Trichlorofluoromethane	ND	5.0	ug/L
Vinyl Chloride	ND	5.0	ug/L
Xylenes (total)	ND	5.0	ug/L

Continued

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client:	WILLIAMS FIELD SERVICE	Date Reported:	08/07/96
Sample ID:	West Evap. Pond	Date Sampled:	07/11/96
Project ID:	Milagro Plant	Date Received:	07/12/96
Lab ID:	B965801 0396G01326	Date Extracted:	NA
Matrix:	Water	Date Analyzed:	07/18/96

Parameter	Result	PQL	Units
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Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	90	80 - 120
Bromofluorobenzene	110	86 - 115
Toluene-d8	111 #	88 - 110

ND - Not Detected at Practical Quantitation Level (PQL)

- Surrogate Recovery not within control limits.

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst E.O. 8/7/96

Reviewed 

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: WILLIAMS FIELD SERVICE
 Sample ID: South Evap. Pond
 Project ID: Milagro Plant
 Lab ID: B965802 0396G01327
 Matrix: Water

Date Reported: 08/07/96
 Date Sampled: 07/11/96
 Date Received: 07/12/96
 Date Extracted: NA
 Date Analyzed: 07/19/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	5.0	ug/L
1,1,1-Trichloroethane	ND	5.0	ug/L
1,1,2,2-Tetrachloroethane	ND	5.0	ug/L
1,1,2-Trichloroethane	ND	5.0	ug/L
1,1-Dichloroethane	ND	5.0	ug/L
1,1-Dichloroethene	ND	5.0	ug/L
1,1-Dichloropropene	ND	5.0	ug/L
1,2,3-Trichlorobenzene	ND	5.0	ug/L
1,2,3-Trichloropropane	ND	5.0	ug/L
1,2,4-Trichlorobenzene	ND	5.0	ug/L
1,2,4-Trimethylbenzene	ND	5.0	ug/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	ug/L
1,2-Dibromoethane (EDB)	ND	5.0	ug/L
1,2-Dichlorobenzene	ND	5.0	ug/L
1,2-Dichloroethane	ND	5.0	ug/L
1,2-Dichloropropane	ND	5.0	ug/L
1,3,5-Trimethylbenzene	ND	5.0	ug/L
1,3-Dichlorobenzene	ND	5.0	ug/L
1,3-Dichloropropane	ND	5.0	ug/L
1,4-Dichlorobenzene	ND	5.0	ug/L
2,2-Dichloropropane	ND	5.0	ug/L
2-Chlorotoluene	ND	5.0	ug/L
4-Chlorotoluene	ND	5.0	ug/L
4-Isopropyltoluene	ND	5.0	ug/L
Benzene	ND	5.0	ug/L
Bromobenzene	ND	5.0	ug/L
Bromochloromethane	ND	5.0	ug/L
Bromodichloromethane	ND	5.0	ug/L
Bromoform	ND	5.0	ug/L
Bromomethane	ND	5.0	ug/L

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: WILLIAMS FIELD SERVICE

Sample ID: South Evap. Pond

Project ID: Milagro Plant

Lab ID: B965802 0396G01327

Matrix: Water

Date Reported: 08/07/96

Date Sampled: 07/11/96

Date Received: 07/12/96

Date Extracted: NA

Date Analyzed: 07/19/96

Parameter	Result	PQL	Units
Continued			
Carbon Tetrachloride	ND	5.0	ug/L
Chlorobenzene	ND	5.0	ug/L
Chloroethane	ND	5.0	ug/L
Chloroform	ND	5.0	ug/L
Chloromethane	ND	5.0	ug/L
cis-1,2-Dichloroethene	ND	5.0	ug/L
cis-1,3-Dichloropropene	ND	5.0	ug/L
Dibromochloromethane	ND	5.0	ug/L
Dibromomethane	ND	5.0	ug/L
Dichlorodifluoromethane	ND	5.0	ug/L
Ethylbenzene	ND	5.0	ug/L
Hexachlorobutadiene	ND	5.0	ug/L
Isopropylbenzene	ND	5.0	ug/L
m,p-Xylene	ND	5.0	ug/L
Methylene chloride	ND	20	ug/L
n-Butylbenzene	ND	5.0	ug/L
n-Propylbenzene	ND	5.0	ug/L
Naphthalene	ND	5.0	ug/L
o-Xylene	ND	5.0	ug/L
sec-Butylbenzene	ND	5.0	ug/L
Styrene	ND	5.0	ug/L
tert-Butylbenzene	ND	5.0	ug/L
Tetrachloroethene (PCE)	ND	5.0	ug/L
Toluene	ND	5.0	ug/L
trans-1,2-Dichloroethene	ND	5.0	ug/L
Trichloroethene (TCE)	ND	5.0	ug/L
Trichlorofluoromethane	ND	5.0	ug/L
Vinyl Chloride	ND	5.0	ug/L
Xylenes (total)	ND	5.0	ug/L

Continued

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client:	WILLIAMS FIELD SERVICE	Date Reported:	08/07/96
Sample ID:	South Evap. Pond	Date Sampled:	07/11/96
Project ID:	Milagro Plant	Date Received:	07/12/96
Lab ID:	B965802	Date Extracted:	NA
Matrix:	Water	Date Analyzed:	07/19/96
	0396G01327		

Parameter	Result	PQL	Units
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Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	97	80 - 120
Bromofluorobenzene	105	86 - 115
Toluene-d8	105	88 - 110

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst E.O. 8/7/96

Reviewed 

EPA METHOD 8270
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	WILLIAMS FIELD SERVICE	Date Reported:	08/05/96
Sample ID:	South Evap. Pond	Date Sampled:	07/11/96
Project ID:	Milagro Plant	Date Received:	07/12/96
Lab ID:	B965802	Date Extracted:	07/15/96
Matrix:	Water	Date Analyzed:	07/30/96
	0396G01327		

Parameter	Result	PQL	Units
3-Methylcholanthrene	ND	400	ug/L
Acenaphthene	ND	400	ug/L
Acenaphthylene	ND	400	ug/L
Anthracene	ND	400	ug/L
Benzo(a)anthracene	ND	400	ug/L
Benzo(a)pyrene	ND	400	ug/L
Benzo(b)fluoranthene	ND	400	ug/L
Benzo(g,h,i)perylene	ND	400	ug/L
Benzo(k)fluoranthene	ND	400	ug/L
Chrysene	ND	400	ug/L
Dibenz(a,h)anthracene	ND	400	ug/L
Fluoranthene	ND	400	ug/L
Fluorene	ND	400	ug/L
Indeno(1,2,3-cd)pyrene	ND	400	ug/L
Phenanthrene	ND	400	ug/L
Pyrene	ND	400	ug/L

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	79	10 - 123
2-Fluorobiphenyl	78	43 - 116
2-Fluorophenol	69	21 - 110
Nitrobenzene-d5	78	35 - 114
Phenol-d6	32	10 - 110
Terphenyl-d14	60	33 - 141

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, November 1990.

Analyst



Reviewed



**LAB QA/QC
EPA METHOD 8260
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Date Analyzed: 07/18/96
Lab ID: IBW96200A
Matrix: Water

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.005	mg/L
1,1,1-Trichloroethane	ND	0.005	mg/L
1,1,2,2-Tetrachloroethane	ND	0.005	mg/L
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	0.005	mg/L
1,1,2-Trichloroethane	ND	0.005	mg/L
1,1-Dichloroethane	ND	0.005	mg/L
1,1-Dichloroethene	ND	0.005	mg/L
1,1-Dichloropropene	ND	0.005	mg/L
1,2,3-Trichlorobenzene	ND	0.005	mg/L
1,2,3-Trichloropropane	ND	0.005	mg/L
1,2,4-Trichlorobenzene	ND	0.005	mg/L
1,2,4-Trimethylbenzene	ND	0.005	mg/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.005	mg/L
1,2-Dibromoethane (EDB)	ND	0.005	mg/L
1,2-Dichlorobenzene	ND	0.005	mg/L
1,2-Dichloroethane	ND	0.005	mg/L
1,2-Dichloropropane	ND	0.005	mg/L
1,3,5-Trimethylbenzene	ND	0.005	mg/L
1,3-Dichlorobenzene	ND	0.005	mg/L
1,3-Dichloropropane	ND	0.005	mg/L
1,4-Dichlorobenzene	ND	0.005	mg/L
1,4-Dioxane	ND	0.005	mg/L
2,2-Dichloropropane	ND	0.005	mg/L
2-Butanone (MEK)	ND	0.005	mg/L
2-Chloro-1,3-butadiene (Chloroprene)	ND	0.005	mg/L
2-Chloroethylvinyl ether	ND	0.005	mg/L
2-Chlorotoluene	ND	0.005	mg/L
2-Hexanone	ND	0.005	mg/L
3-Chloroprene (Allyl Chloride)	ND	0.005	mg/L
4-Chlorotoluene	ND	0.005	mg/L
4-Isopropyltoluene	ND	0.005	mg/L
4-Methyl-2-pentanone (MIBK)	ND	0.005	mg/L
Acetone	ND	0.005	mg/L

Continued

**LAB QA/QC
EPA METHOD 8260
INSTRUMENT BLANK**Date Analyzed: 07/18/96
Lab ID: IBW96200A
Matrix: Water

Parameter	Result	PQL	Units
Acetonitrile (Methylcyanide)	ND	0.005	mg/L
Acrolein	ND	0.005	mg/L
Acrylonitrile	ND	0.005	mg/L
Benzene	ND	0.005	mg/L
Bromobenzene	ND	0.005	mg/L
Bromochloromethane	ND	0.005	mg/L
Bromodichloromethane	ND	0.005	mg/L
Bromoform	ND	0.005	mg/L
Bromomethane	ND	0.005	mg/L
Carbon Disulfide	ND	0.005	mg/L
Carbon Tetrachloride	ND	0.005	mg/L
Chlorobenzene	ND	0.005	mg/L
Chloroethane	ND	0.005	mg/L
Chloroform	ND	0.005	mg/L
Chloromethane	ND	0.005	mg/L
cis-1,2-Dichloroethene	ND	0.005	mg/L
cis-1,3-Dichloropropene	ND	0.005	mg/L
Cyclohexanone	ND	0.005	mg/L
Dibromochloromethane	ND	0.005	mg/L
Dibromomethane	ND	0.005	mg/L
Dichlorodifluoromethane	ND	0.005	mg/L
Ethyl acetate	ND	0.005	mg/L
Ethyl ether	ND	0.005	mg/L
Ethyl methacrylate	ND	0.005	mg/L
Ethylbenzene	ND	0.005	mg/L
Hexachlorobutadiene	ND	0.005	mg/L
Iodomethane	ND	0.005	mg/L
Isobutanol	ND	0.005	mg/L
Isopropylbenzene	ND	0.005	mg/L
m,p-Xylene	ND	0.005	mg/L
Methacrylonitrile	ND	0.005	mg/L
Methyl methacrylate	ND	0.005	mg/L

Continued

Continued

**LAB QA/QC
EPA METHOD 8260
INSTRUMENT BLANK**

Date Analyzed: 07/18/96
Lab ID: IBW96200A
Matrix: Water

Parameter	Result	PQL	Units
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Continued

Methylene chloride	ND	0.005	mg/L
n-Butanol	ND	0.005	mg/L
n-Butylbenzene	ND	0.005	mg/L
n-Propylbenzene	ND	0.005	mg/L
Naphthalene	ND	0.005	mg/L
o-Xylene	ND	0.005	mg/L
Propionitrile	ND	0.005	mg/L
sec-Butylbenzene	ND	0.005	mg/L
Styrene	ND	0.005	mg/L
tert-Butylbenzene	ND	0.005	mg/L
Tetrachloroethene (PCE)	ND	0.005	mg/L
Toluene	ND	0.005	mg/L
trans-1,2-Dichloroethene	ND	0.005	mg/L
trans-1,3-Dichloropropene	ND	0.005	mg/L
trans-1,4-Dichlorobutene	ND	0.005	mg/L
Trichloroethene (TCE)	ND	0.005	mg/L
Trichlorofluoromethane	ND	0.005	mg/L
Vinyl Acetate	ND	0.005	mg/L
Vinyl Chloride	ND	0.005	mg/L
Xylenes (total)	ND	0.005	mg/L

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	89	80 - 120
Bromofluorobenzene	106	74 - 121
Toluene-d8	107	81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Analyst R.O. 8/7/96

Reviewed 

**LAB QA/QC
EPA METHOD 8260
INSTRUMENT BLANK**Date Analyzed: 07/19/96
Lab ID: IBW96201A
Matrix: Water

Parameter	Result	PQL	Units
Acetonitrile (Methylcyanide)	ND	0.005	mg/L
Acrolein	ND	0.005	mg/L
Acrylonitrile	ND	0.005	mg/L
Benzene	ND	0.005	mg/L
Bromobenzene	ND	0.005	mg/L
Bromochloromethane	ND	0.005	mg/L
Bromodichloromethane	ND	0.005	mg/L
Bromoform	ND	0.005	mg/L
Bromomethane	ND	0.005	mg/L
Carbon Disulfide	ND	0.005	mg/L
Carbon Tetrachloride	ND	0.005	mg/L
Chlorobenzene	ND	0.005	mg/L
Chloroethane	ND	0.005	mg/L
Chloroform	ND	0.005	mg/L
Chloromethane	ND	0.005	mg/L
cis-1,2-Dichloroethene	ND	0.005	mg/L
cis-1,3-Dichloropropene	ND	0.005	mg/L
Cyclohexanone	ND	0.005	mg/L
Dibromochloromethane	ND	0.005	mg/L
Dibromomethane	ND	0.005	mg/L
Dichlorodifluoromethane	ND	0.005	mg/L
Ethyl acetate	ND	0.005	mg/L
Ethyl ether	ND	0.005	mg/L
Ethyl methacrylate	ND	0.005	mg/L
Ethylbenzene	ND	0.005	mg/L
Hexachlorobutadiene	ND	0.005	mg/L
Iodomethane	ND	0.005	mg/L
Isobutanol	ND	0.005	mg/L
Isopropylbenzene	ND	0.005	mg/L
m,p-Xylene	ND	0.005	mg/L
Methacrylonitrile	ND	0.005	mg/L
Methyl methacrylate	ND	0.005	mg/L

Continued

Continued

**LAB QA/QC
EPA METHOD 8260
INSTRUMENT BLANK**

Date Analyzed: 07/19/96
Lab ID: IBW96201A
Matrix: Water

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.005	mg/L
1,1,1-Trichloroethane	ND	0.005	mg/L
1,1,2,2-Tetrachloroethane	ND	0.005	mg/L
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	0.005	mg/L
1,1,2-Trichloroethane	ND	0.005	mg/L
1,1-Dichloroethane	ND	0.005	mg/L
1,1-Dichloroethene	ND	0.005	mg/L
1,1-Dichloropropene	ND	0.005	mg/L
1,2,3-Trichlorobenzene	ND	0.005	mg/L
1,2,3-Trichloropropane	ND	0.005	mg/L
1,2,4-Trichlorobenzene	ND	0.005	mg/L
1,2,4-Trimethylbenzene	ND	0.005	mg/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.005	mg/L
1,2-Dibromoethane (EDB)	ND	0.005	mg/L
1,2-Dichlorobenzene	ND	0.005	mg/L
1,2-Dichloroethane	ND	0.005	mg/L
1,2-Dichloropropane	ND	0.005	mg/L
1,3,5-Trimethylbenzene	ND	0.005	mg/L
1,3-Dichlorobenzene	ND	0.005	mg/L
1,3-Dichloropropane	ND	0.005	mg/L
1,4-Dichlorobenzene	ND	0.005	mg/L
1,4-Dioxane	ND	0.005	mg/L
2,2-Dichloropropane	ND	0.005	mg/L
2-Butanone (MEK)	ND	0.005	mg/L
2-Chloro-1,3-butadiene (Chloroprene)	ND	0.005	mg/L
2-Chloroethylvinyl ether	ND	0.005	mg/L
2-Chlorotoluene	ND	0.005	mg/L
2-Hexanone	ND	0.005	mg/L
3-Chloroprene (Allyl Chloride)	ND	0.005	mg/L
4-Chlorotoluene	ND	0.005	mg/L
4-Isopropyltoluene	ND	0.005	mg/L
4-Methyl-2-pentanone (MIBK)	ND	0.005	mg/L
Acetone	ND	0.005	mg/L

Continued

**LAB QA/QC
EPA METHOD 8260
INSTRUMENT BLANK**

Date Analyzed: 07/19/96
Lab ID: IBW96201A
Matrix: Water

Parameter	Result	PQL	Units
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Continued

Methylene chloride	ND	0.005	mg/L
n-Butanol	ND	0.005	mg/L
n-Butylbenzene	ND	0.005	mg/L
n-Propylbenzene	ND	0.005	mg/L
Naphthalene	ND	0.005	mg/L
o-Xylene	ND	0.005	mg/L
Propionitrile	ND	0.005	mg/L
sec-Butylbenzene	ND	0.005	mg/L
Styrene	ND	0.005	mg/L
tert-Butylbenzene	ND	0.005	mg/L
Tetrachloroethene (PCE)	ND	0.005	mg/L
Toluene	ND	0.005	mg/L
trans-1,2-Dichloroethene	ND	0.005	mg/L
trans-1,3-Dichloropropene	ND	0.005	mg/L
trans-1,4-Dichlorobutene	ND	0.005	mg/L
Trichloroethene (TCE)	ND	0.005	mg/L
Trichlorofluoromethane	ND	0.005	mg/L
Vinyl Acetate	ND	0.005	mg/L
Vinyl Chloride	ND	0.005	mg/L
Xylenes (total)	ND	0.005	mg/L

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	96	80 - 120
Bromofluorobenzene	99	74 - 121
Toluene-d8	102	81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Analyst E.O. 8/7/96

Reviewed 

LAB QA/QC
EPA METHOD 8270
METHOD BLANK

Date Analyzed: 07/26/96
 Lab ID: MBW096196
 Matrix: Water
 Date Extracted: 07/15/96

Parameter	Result	PQL	Units
1,2,4-Trichlorobenzene	ND	10	ug/L
1,2-Dichlorobenzene	ND	10	ug/L
1,3-Dichlorobenzene	ND	10	ug/L
1,4-Dichlorobenzene	ND	10	ug/L
2,4,5-Trichlorophenol	ND	20	ug/L
2,4,6-Trichlorophenol	ND	20	ug/L
2,4-Dichlorophenol	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
2,4-Dinitrophenol	ND	50	ug/L
2,4-Dinitrotoluene	ND	10	ug/L
2,6-Dinitrotoluene	ND	10	ug/L
2-Chloronaphthalene	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
2-Nitroaniline	ND	50	ug/L
2-Nitrophenol	ND	10	ug/L
3,3'-Dichlorobenzidine	ND	20	ug/L
3-Methylphenol/4-Methylphenol	ND	10	ug/L
3-Nitroaniline	ND	50	ug/L
4,6-Dinitro-2-methylphenol	ND	50	ug/L
4-Bromophenyl-phenylether	ND	10	ug/L
4-Chloro-3-methylphenol	ND	20	ug/L
4-Chloroaniline	ND	20	ug/L
4-Chlorophenyl-phenylether	ND	10	ug/L
4-Nitroaniline	ND	20	ug/L
4-Nitrophenol	ND	50	ug/L
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L

Continued

**LAB QA/QC
EPA METHOD 8270
METHOD BLANK**

Date Analyzed: 07/26/96
Lab ID: MBW096196
Matrix: Water
Date Extracted: 07/15/96

Parameter	Result	PQL	Units
Continued			
Benzo(g,h,i)perylene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzoic Acid	ND	50	ug/L
Benzyl Alcohol	ND	20	ug/L
bis(2-Chloroethoxy)methane	ND	10	ug/L
bis(2-Chloroethyl)ether	ND	10	ug/L
bis(2-Chloroisopropyl)ether	ND	10	ug/L
bis(2-Ethylhexyl)phthalate	ND	50	ug/L
Butylbenzylphthalate	ND	10	ug/L
Chrysene	ND	10	ug/L
Di-n-Butylphthalate	ND	50	ug/L
Di-n-Octylphthalate	ND	50	ug/L
Dibenz(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Diethylphthalate	ND	10	ug/L
Dimethylphthalate	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Hexachlorobenzene	ND	20	ug/L
Hexachlorobutadiene	ND	20	ug/L
Hexachlorocyclopentadiene	ND	10	ug/L
Hexachloroethane	ND	20	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Isophorone	ND	10	ug/L
N-Nitrosodi-n-propylamine	ND	10	ug/L
N-Nitrosodiphenylamine	ND	10	ug/L
Naphthalene	ND	10	ug/L
Nitrobenzene	ND	10	ug/L
Pentachlorophenol	ND	50	ug/L
Phenanthrene	ND	10	ug/L
Phenol	ND	10	ug/L
Pyrene	ND	10	ug/L

Continued

**LAB QA/QC
EPA METHOD 8270
METHOD BLANK**

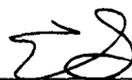
Date Analyzed: 07/26/96
Lab ID: MBW096196
Matrix: Water
Date Extracted: 07/15/96

Parameter	Result	PQL	Units
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Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	68	10 - 123
2-Fluorobiphenyl	55	43 - 116
2-Fluorophenol	47	21 - 110
Nitrobenzene-d5	71	35 - 114
Phenol-d6	46	10 - 110
Terphenyl-d14	57	33 - 141

ND - Not Detected at Practical Quantitation Level (PQL)

Analyst 

Reviewed 

LAB QA/QC
EPA METHOD 8260
MATRIX SPIKE

Date Analyzed: 07/19/96
Lab ID: 0596H05800 SK1 0396G01325
Matrix: Water

Parameter	Spike Added (ug/L)	Sample Result (ug/L)	Spike Result (ug/L)	MS Recovery %	QC Limits Rec.
1,1-Dichloroethene	20	0	22.5	113	75 -145
Benzene	20	0	20	100	71 -120
Chlorobenzene	20	0	19.4	97	76 -127
Toluene	20	0	21.1	106	71 -127
Trichloroethene (TCE)	20	0	19.3	97	75 -130

QUALITY CONTROL - Surrogate Recovery

	%	QC Limits
1,2-Dichloroethane-d4	103	88 -110
Bromofluorobenzene	102	76 -114
Toluene-d8	105	76 -114

Note: Spike Recoveries are calculated using zero for Sample result if Sample result was less than PQL (Practical Quantitation Level).

Spike Recovery: 0 out of 5 outside QC limits.

Analyst E.D. 8/7/96

Reviewed 

LAB QA/QC
EPA METHOD 8260
MATRIX SPIKE

Date Analyzed: 07/18/96
Lab ID: 0596H05801 SK1 0396G01326
Matrix: Water

Parameter	Spike Added (ug/L)	Sample Result (ug/L)	Spike Result (ug/L)	MS Recovery %	QC Limits Rec.
1,1-Dichloroethene	20	0	19.6	98	75 -145
Benzene	20	0	17.1	86	71 -120
Chlorobenzene	20	0	16.1	81	76 -127
Toluene	20	0	17.2	86	71 -127
Trichloroethene (TCE)	20	0	16.6	83	75 -130

QUALITY CONTROL - Surrogate Recovery

	%	QC Limits
Bromofluorobenzene	108	76 -114
1,2-Dichloroethane-d4	93	88 -110
Toluene-d8	108	76 -114

Note: Spike Recoveries are calculated using zero for Sample result if Sample result was less than PQL (Practical Quantitation Level).

Spike Recovery: 0 out of 5 outside QC limits.

Analyst E.D. 8/7/96

Reviewed 

**LAB QA/QC
EPA METHOD 8270
MATRIX SPIKE**

Date Analyzed: 07/26/96
 Lab ID: 0596H05754 SK1
 Matrix: Water
 Date Extracted: 07/15/96

Parameter	Spike Added (ug/L)	Sample Result (ug/L)	Spike Result (ug/L)	MS Recovery %	QC Limits Rec.
1,2,4-Trichlorobenzene	100	0	58	58	39 - 98
1,4-Dichlorobenzene	100	0	60	60	36 - 97
2,4-Dinitrotoluene	100	0	84	84	24 - 96
2-Chlorophenol	200	0	126	63	27 - 123
4-Chloro-3-methylphenol	200	0	160	80	23 - 97
4-Nitrophenol	200	0	125	63	10 - 80
Acenaphthene	100	0	70	70	46 - 118
N-Nitrosodi-n-propylamine	100	0	116	116	41 - 116
Pentachlorophenol	200	0	125	63	9 - 103
Phenol	200	0	102	51	12 - 89
Pyrene	100	0	61	61	26 - 127

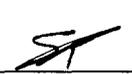
QUALITY CONTROL - Surrogate Recovery

	%	QC Limits
2,4,6-Tribromophenol	69	10 - 123
2-Fluorobiphenyl	66	43 - 116
2-Fluorophenol	50	21 - 110
Nitrobenzene-d5	86	35 - 114
Phenol-d6	53	10 - 110
Terphenyl-d14	53	33 - 141

Note: Spike Recoveries are calculated using zero for Sample result if Sample result was less than PQL (Practical Quantitation Level).

Spike Recovery: 0 out of 11 outside QC limits.

Analyst 

Reviewed 

TOTAL PETROLEUM HYDROCARBONS
EPA METHOD 418.1Client: **Williams Field Serv.**
Project: Milagro Plant
Matrix: Water
Condition: Intact/CoolDate Reported: 07/30/96
Date Sampled: 07/11/96
Date Received: 07/11/96
Date Extracted: 07/18/96
Date Analyzed: 07/18/96

Sample ID	Lab ID	Result mg/L	Detection Limit mg/L
N. Evap. Pond	0396W01325	* 108	5.0
W. Evap. Pond	0396W01326	* 69.8	5.0
S. Evap. Pond	0396W01327	* 61.6	5.0

ND - Analyte not detected at stated detection level.

References: **Method 418.1:** Petroleum Hydrocarbons, Total Recoverable, USEPA Chemical Analysis of Water and Waste, 1978.**Method 3510:** Separatory Funnel Liquid - Liquid Extraction, USEPA SW-846, Test Methods for Evaluating Solid Waste, Rev. 1, July 1992.

Comments: *Samples were analyzed 07/18/96 and were over the calibration curve. Extract was discarded and there was no sample left to reanalyze. On 07/22/96 a 250mg/L point was analyzed to show that the calibration curve is in fact linear at this level so the data for these samples could be reported with confidence.

Analyst: AKReviewed: JB

TOTAL PETROLEUM HYDROCARBONS
Quality Assurance/Quality Control

Client: **Williams Field Services**
Project: **Milagro Plant**
Matrix: **water**
Condition: **Intact/Cool**

Date Reported: **07/30/96**
Date Sampled: **07/11/96**
Date Received: **07/11/96**
Date Extracted: **07/18/96**
Date Analyzed: **07/18/96**

Duplicate Analysis

Lab ID	Sample Result	Duplicate Result	Units	% Difference
0396G01326	68.8	71.6	mg/L	4.0%

Method Blank Analysis

Lab ID	Result	Units	Detection Limit
Method Blank	ND	mg/L	1.0

Spike Analysis

Lab ID	Found Conc. mg/L	Sample Conc. mg/L	Spike Amount mg/L	Percent Recovery	Acceptance Limits
Method Blank	13.3	ND	12.5	106%	70-130%

Known Analysis

Lab ID	Found Conc. mg/L	Known Conc. mg/L	Percent Recovery	Acceptance Limits
QC	21.1	20.6	103%	70-130%

References: **Method 418.1:** Petroleum Hydrocarbons, Total Recoverable, USEPA Chemical Analysis of Water and Waste, 1978.

Method 3510: Separatory Funnel Liquid - Liquid Extraction, USEPA SW-846, Test Methods for Evaluating Solid Waste, Rev. 1, July 1992.

Analyst: *elt*

Reviewed: *JB*

P.O. Box 58900 Salt Lake City, Utah 84158-0900

NOVEMBER 13 1996
OIL CONSERVATION DIVISION
RECEIVED

November 13, 1996
Mr. Pat Sanchez
NMOCD
2040 South Pacheco Street
Santa Fe, New Mexico 87505

RECEIVED

NOV 18 1996

Environmental Bureau
Oil Conservation Division

RE: Response to Discharge Inspection Reports

Dear Mr. Sanchez:

Milagro GW-60

8. Lab wastes have been characterized and accepted for disposal per Philip Environmental's report dated, October 24, 1996.

Coyote Springs GW-250

1. The lube oil drum has been placed on pad and curb type containment.
2. Oil-absorbent pads and catch basins will be used to contain leaking lube oil.
3. A catch basin has been placed underneath the condensate storage tank load line.
6. Operators have been instructed in how to inspect leak detection,
7. Below-grade process/wastewater piping is pressure tested at the time of installation.
10. Oil spills from the compressor will be contained using oil-absorbent pads and catch basins.

Trunk A Compressor Station GW-248

No compliance issues noted.

Trunk B Compressor Station GW-249

No compliance issues noted.

Trunk C Compressor Station GW-257

No compliance issues noted.

Lateral N-30 GW-256

3. The condensate above-ground storage tank is not placed on an impermeable type pad. The tank and valving is visually inspected at least annually as stated in the WFS Policy and Procedures for Spill Prevention (Appendix B of the Discharge Plan). In lieu of the impermeable type pad, WFS will clean out and visually inspect the interior of the tank at the time of the Discharge plan renewal.
6. The below-grade sump is inspected monthly and documented in a monthly inspection log retained on site.
7. A copy of the hydrostatic test of underground process/wastewater piping is attached.

If you have any questions or require additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,



Leigh E. Gooding
Sr. Environmental Specialist

cc: Denny Foust

PIPELINE FACILITY TEST REPORT

FORM 910 1239 (1-94)

1. WORK ORDER NO.

FACILITY DESCRIPTION

2-NAME OF FACILITY Gardner N-30		3-FACILITY LOCATION AIRFA		DISTRICT	COUNTY/STATE
4-FACILITY TYPE <input type="checkbox"/> Gathering <input type="checkbox"/> Line Pipe <input type="checkbox"/> Hot Tap <input type="checkbox"/> Fabrication		<input type="checkbox"/> Transmission <input type="checkbox"/> Vessel <input type="checkbox"/> Well Setting <input type="checkbox"/> Other		3A-SECTION	TOWNSHIP
		5-PIPE MANUFACTURER		RANGE	
		6-PIPE DATA		DIAMETER 40'-6"	
				WALL THICKNESS	
				SPEC. & GRADE 80ft-12"-120ft-8"	
				LENGTH OF TEST SECTION	

7-DESCRIPTION OF PORTION TESTED (FROM - TO)

TEST SPECIFICATIONS

8-TYPE OF TEST <input type="checkbox"/> Strength <input checked="" type="checkbox"/> Leak <input checked="" type="checkbox"/> Both	9-TEST STATIONS AND ELEVATION	BEGIN LOCATION	END LOCATION	DEAD WEIGHT
10-REASON FOR TEST <input checked="" type="checkbox"/> New Facility <input type="checkbox"/> Pre-Test <input type="checkbox"/> Repair <input type="checkbox"/> Retest		HIGH POINT	LOW POINT	PRESSURE PUMP
11-PRESSURE DATA	PRELIMINARY LEAK PRESSURE	BEGIN STATION MINIMUM PRESSURE		END STATION MINIMUM PRESSURE
	REQUIRED TEST PRESSURE 750#	HIGH POINT MINIMUM PRESSURE		LOW POINT MAXIMUM PRESSURE
	REQUIRED TEST DURATION 4 HRS	TEST LIMITATIONS (VALVES, FITTINGS, ETC.)		TEST MEDIUM

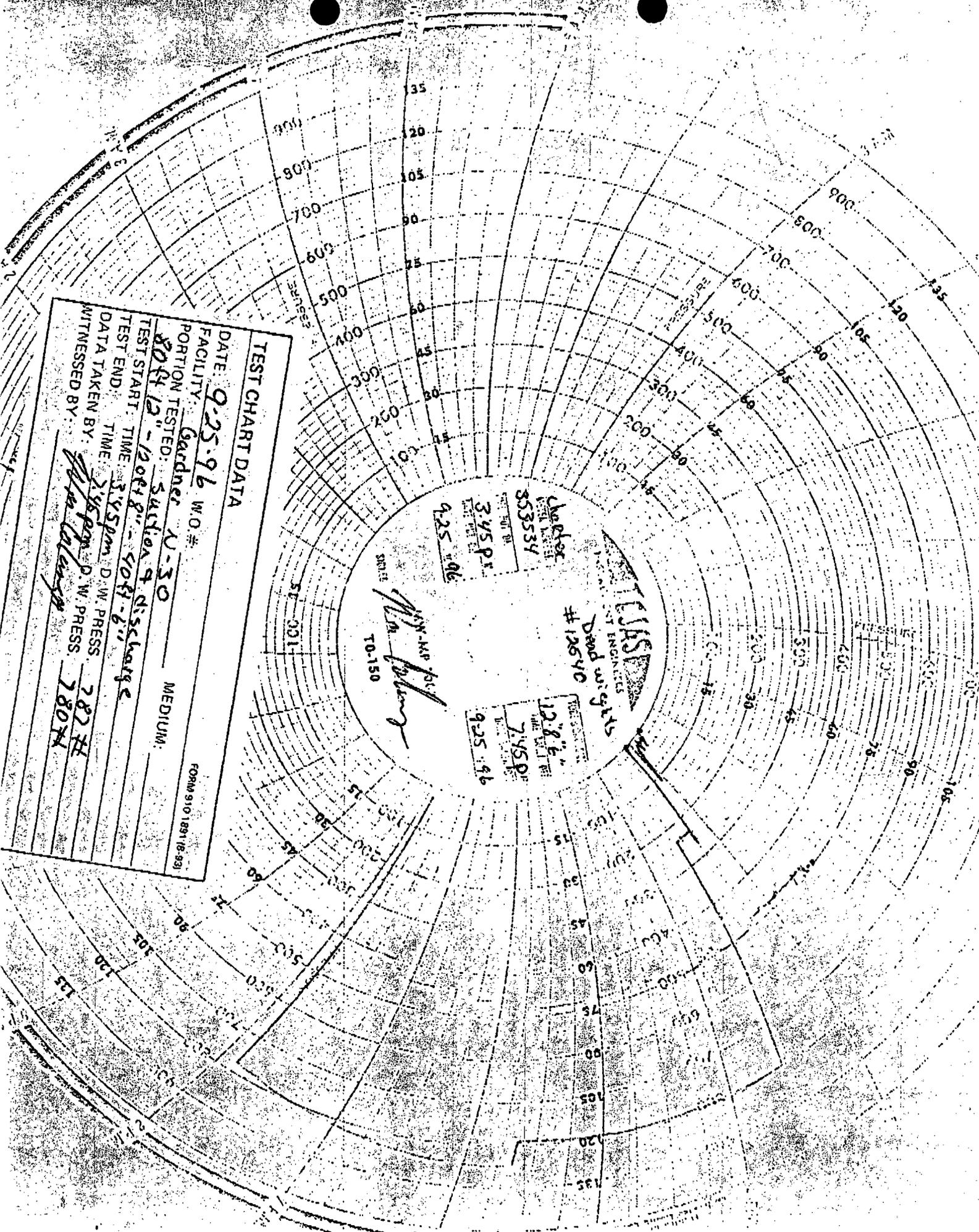
TEST RESULTS

12-TEST START DATE 9-25-96 HOUR 3:45pm	13-TEST COMPLETED DATE 9-25-96 HOUR 7:45pm	14-WEATHER cloudy turning to night fall
15-COMMENTS		

TIME	D.W. PRESSURE	AMB. TEMP. °F	REMARKS
3:45	787	75	on test sunny
4:00	800	75	"
4:15	800	75	getting cloudy
4:30	805	72	cloudy
4:45	805	72	"
5:00	800	71	"
5:15	800	72	partly cloudy
5:30	790	72	"
5:40	790	72	pressured up to 846# partly cloudy
6:00	846	72	
6:15	840	69	
6:30	838	69	
6:45	830	69	
7:00	818 818	69	sunny going down
7:15	805	69	getting dark
7:30	792	63	dark
7:45	780	59	off test

APPROVALS

DATA TAKEN BY: <i>[Signature]</i>	TEST APPROVED BY:	DATE:
TEST WITNESSED BY:	TEST COMPANY: Flint Eng.	



TEST CHART DATA

DATE: 9-25-96 W.O. #:
 FACILITY: Gardner
 PORTION TESTED: Section A-30 MEDIUM:
 TEST START TIME: 12:08 PM - 4:04 PM
 TEST END TIME: 3:45 PM
 DATA TAKEN BY: D.W. PRESS
 WITNESSED BY: [Signature] D.W. PRESS

FORM 910 (8/81)

Checker
 853534
 3:45 PM
 9-25-96

[Signature]
 10-150

TESTED
 Dead weights
 #12640

12:08 PM
 3:45 PM
 9-25-96

8 A.M.

PRINTED IN U. S. A.

9 A.M.

4 A.M.

5 A.M.

6 A.M.

135

120

105

90

45

30

15

11 P.M.

10 P.M.

9 P.M.

8 P.M.

7 P.M.

6 P.M.

TEST CHART DATA

DATE: 9/23/46 W.O.#: 1175
 FACILITY: AVC
 PORTION TESTED: 1-30 CAP
 TEST START TIME: 11:35 P MEDIUM: AIR
 TEST END TIME: 11:45 P
 DATA TAKEN BY: [Signature]
 WITNESSED BY: [Signature]

D.W. PRESS. 1175
 D.W. PRESS. 1175

1-30 CAP
 MEDIUM: AIR

FORM 10 1891 (8-59)

TEJAS
 INSTRUMENT ENGINEERS

WATER NUMBER
 DATE PUT ON 11

TUBE & ORIF. SIZE
 TIME TAKEN OFF 11
 DATE TAKEN OFF 11

MAN-IMP 50

12 NIGHT

Pat Sanchez

From: Denny Foust
Sent: Thursday, October 31, 1996 7:53 AM
To: Pat Sanchez
Subject: WFS MILAGRO SEPTIC LEACH FIELD REPORT

OCTOBER 31, 1996

I AM NOT PREPARED TO EVALUATE THIS REPORT WITHOUT AN AS BUILT LOCATION FOR THE LEACH FIELD FROM THE ORIGINAL PLANS SHOWING TYPE OF LEACH FIELD, METHOD (MATERIALS) OF CONSTRUCTION, AND SPECIFIC LOCATION. IF THERE IS NO CONFLICT OF THE LEACH FIELD DATA WITH THE TEST RESULTS IN HAND WE SHOULD BE OKAY.

DGF

LOCD FILE COPY >
CLASS V

**REPORT ON THE FIELD WORK FOR
THE SUBSURFACE INVESTIGATION OF THE MILAGRO
PLANT SEPTIC LEACH FIELD
SAN JUAN BASIN, NEW MEXICO**

RECEIVED

OCT 28 1996

Environmental Bureau
Oil Conservation Division

September 1996

Prepared For

**WILLIAMS FIELD SERVICES
SALT LAKE CITY, UTAH**

Project 16766

PHILIP

ENVIRONMENTAL

**4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262**

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3.0 RESULTS..... 3
4.0 SUMMARY 3

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APPENDIX B - LABORATORY REPORTS

1.0 INTRODUCTION

On September 23, 1996, Philip Environmental Services Corporation (Philip) initiated field work for a subsurface investigation of Williams Field Services (WFS) Milagro Plant Septic Leach Field. The Milagro Plant is located northeast of Bloomfield, New Mexico, in Township - 29 North, Range - 11 West, Section 11. This investigation was required based on the plant laboratories past practice of disposing chemical wastes into the septic system. Chemical wastes are no longer disposed of in this manner and are currently stored on-site prior to disposal at a licensed facility.

Prior to commencing with the field work for this project, Philip developed a work plan detailing the method of investigation, and the analytical parameters for samples. The work plan was approved on September 9, 1996, with modifications, by the New Mexico Oil Conservation Division (NMOCD). Philip completed the following scope of work for this project.

1.1 SCOPE OF WORK

One soil boring was drilled within the approximate center of the septic leach field. One soil sample was collected from within the septic leach field area and one soil sample was collected from approximately 10 feet beneath the bottom of the leach field. Both samples were submitted for laboratory analysis.

Two soil borings were drilled on the estimated down gradient edge of the leach field. Soil samples were collected from each boring at approximately 10 feet beneath the bottom of the leach field. Both samples were submitted for laboratory analysis. Boring locations, septic lines, and the septic tank locations are presented in Figure 1.

In addition to the field investigation, the laboratory chemical wastes were profiled for disposal and accepted by Laidlaw Environmental Services' Clive, Utah, facility for disposal. The chemical wastes will be lab-packed prior to transporting, and will be picked up from the Laboratory for disposal at Laidlaw's facility on an as needed basis.

2.0 METHODOLOGY

One soil boring (BH-1) was advanced in the approximate center of the leach field using a CME-75 drill rig and 4 1/4-inch inside diameter hollow-stem augers. Soil samples were collected at 5 foot intervals, using a split-spoon soil sampler. The samples were screened for volatiles with a photoionization detector (PID). No volatiles were detected with the PID. One soil sample was collected from approximately 5 - 7 feet below ground surface (bgs) for laboratory analysis. This sample appeared to exhibit the most moisture, indicating the sample was collected from within the discharge area of the leach field. A second sample was collected from approximately 25 - 27 feet bgs and submitted for laboratory analysis. The boring was then grouted to the surface with a neat cement slurry containing 5 percent bentonite. A description of soils encountered in each boring was recorded on individual Record of Subsurface Exploration forms found in Appendix A.

A second boring (BH-2) was advanced on the approximate down gradient side of the leach field. Soil samples were collected at 5 foot intervals, and were screened for volatiles using a PID. No volatiles were detected with the PID. Refusal with the hollow-stem augers occurred in sandstone at approximately 17 feet bgs. One soil sample was collected from approximately 17 - 18 feet bgs for laboratory analysis. The boring was then grouted to the surface in the same manner as BH-1.

A third boring (BH-3) was advanced to 22 feet bgs, with a soil sample collected for laboratory submittal from 20 - 22 feet bgs. BH-3 is located west of BH-1, on the outside edge of the leach field. Soil samples were collected at 5 foot intervals, and were screened for volatiles using a PID. No volatiles were detected with the PID. The boring was then grouted to the surface in the same manner as BH-1.

One background sample was collected using a stainless-steel hand auger. The sample was collected topographically upgradient from the septic tank. The hand auger was advanced to approximately 5 feet bgs, and a soil sample was collected for laboratory analysis. A separate aliquot of soil was collected at this depth and screened for volatiles. No volatiles were detected with the PID. The boring was then backfilled with native soil.

All samples were submitted for total Resource Conservation and Recovery Act (RCRA) Metals (Method SW 6010/7470), Semi-Volatile Organics (Method SW 8270), and Volatile Organics (Method SW 8260). All sample containers were labeled with the appropriate analysis, date and time of collection, sample number, sample location, and sample collector. All sample identification numbers and requested analysis were documented on a Chain-of-Custody form. Samples were placed on ice, and shipped via overnight delivery to Zenon Laboratory following strict Chain-of-Custody procedures. All field documentation forms are presented in Appendix A.

3.0 RESULTS

Analytical results are presented in Table 1, with the laboratory report presented in Appendix B. With the exception of arsenic and barium, all metals were at or below method detection limits (MDL). Cadmium was detected at levels slightly above the MDL in BH-1, from the 5 - 7 foot interval, and the 25 - 27 foot interval; and in BH-3, from the 20 - 22 foot interval. Chromium was detected at 9 milligrams per kilogram (mg/kg) in BH-1 from the 25 - 27 foot interval. Acetone, methylene chloride, and toluene were detected at levels slightly above the MDL in all samples including the background sample. All semi-volatiles were at or below the MDL for each parameter. In addition, groundwater was not encountered at any of the boring locations.

4.0 SUMMARY

The laboratory analytical results indicate minimal impact to the soils from discharged used chemical wastes, within and down gradient of the septic leach field. The local geology indicates shallow bedrock (sandstone), as documented in the boring log for borehole 2. Also, groundwater was not encountered in any boring within or down gradient of the septic leach field. On average, depth to groundwater in the vicinity of the Milagro Plant ranges from 30 feet to 100 feet bgs ("Hydrogeology and Water Resources of San Juan Basin, New Mexico" 1983, & "Availability of Hydrologic Data in San Juan County, New Mexico", 1984). In addition, laboratory chemical wastes are no longer disposed of into the septic leach field, and are currently disposed of at a permitted facility. Based on these factors, Philip believes no further action is warranted at this site.

FIGURE 1 - BORING LOCATIONS, SEPTIC LINES AND SEPTIC TANK LOCATIONS

TABLE 1 - SOIL ANALYTICAL RESULTS - MILAGRO SEPTIC FIELD

TABLE 1
SOIL ANALYTICAL RESULTS
MILAGRO SEPTIC FIELD

PART I - METALS						
PARAMETER	BH-1 (5-7)	BH-1 (25-27)	BH-2 (17-18)	BH-3 (20-22)	BG-1 (5-7)	MDL
TOTAL RCRA METALS						
Arsenic	1.4	1.3	1.2	1.2	2.2	0.5
Barium	74	96	110	160	140	0.1
Cadmium	0.4	0.5	<0.4	0.4	<0.4	0.2
Chromium	<10	9.0	<10	<10	<10	5
Lead	<20	<20	<20	<20	<20	10
Mercury	<0.04	<0.04	<0.04	<0.04	<0.04	0.04
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Silver	<1.0	<1.0	<1.0	<1.0	<1.0	0.5
All results reported in milligrams per kilogram (mg/kg)						
MDL - Method Detection Limit (See Laboratory Report Cover Sheet for MDL comments)						
< - Less than MDL						

TABLE 1
(Continued)

**SOIL ANALYTICAL RESULTS
MILAGRO SEPTIC FIELD**

PART II - VOLATILE ORGANICS						
PARAMETER	BH-1 (5-7)	BH-1 (25-27)	BH-2 (17-18)	BH-3 (20-22)	BG-1 (5-7)	MDL
VOLATILE ORGANICS						
Acetone	0.12	0.27	0.17	0.07	0.072	0.030
Acrolein	<	<	<	<	<	0.010
Acrylonitrile	<	<	<	<	<	0.010
Benzene	<	<	<	<	<	0.005
Bromoform	<	<	<	<	<	0.010
Bromomethane	<	<	<	<	<	0.010
2-Butanone	<	<	<	<	<	0.015
Carbon Disulfide	<	<	<	<	<	0.010
Carbon Tetrachloride	<	<	<	<	<	0.010
Chlorobenzene	<	<	<	<	<	0.005
Chlorodibromomethane	<	<	<	<	<	0.005
Chloroethane	<	<	<	<	<	0.010
2-Chloroethylvinylether	<	<	<	<	<	0.010
Chloroform	<	<	<	<	<	0.005
Chloromethane	<	<	<	<	<	0.010
1,2-Dichlorobenzene	<	<	<	<	<	0.005
1,3-Dichlorobenzene	<	<	<	<	<	0.005
1,4-Dichlorobenzene	<	<	<	<	0.008	0.005
Dichlorobromomethane	<	<	<	<	<	0.005
1,1-Dichloroethane	<	<	<	<	<	0.005
1,2-Dichloroethane	<	<	<	<	<	0.005
1,1-Dichloroethene	<	<	<	<	<	0.010
cis-1,2-Dichloroethene	<	<	<	<	<	0.010
trans-1,2-Dichloroethene	<	<	<	<	<	0.010
1,2-Dichloropropane	<	<	<	<	<	0.005
cis-1,3-Dichloropropene	<	<	<	<	<	0.005
trans-1,3-Dichloropropene	<	<	<	<	<	0.005
Ethylbenzene	<	<	<	<	<	0.005
2-Hexanone	<	<	<	<	<	0.010
All results reported in milligrams per kilogram (mg/kg)						
MDL - Method Detection Limit (See Laboratory Report Cover Sheet for MDL comments)						
< - Less than MDL						

TABLE 1
(Continued)

**SOIL ANALYTICAL RESULTS
MILAGRO SEPTIC FIELD**

PART II - VOLATILE ORGANICS (Continued)						
PARAMETER	BH-1 (5-7)	BH-1 (25-27)	BH-2 (17-18)	BH-3 (20-22)	BG-1 (5-7)	MDL
VOLATILE ORGANICS						
Methylene Chloride	0.19	0.21	0.17	0.18	0.091	0.010
4-Methyl-2-Pentanone	<	<	<	<	<	0.010
Styrene	<	<	<	<	<	0.005
1,1,1,2-Tetrachloroethane	<	<	<	<	<	0.010
1,1,2,2-Tetrachloroethane	<	<	<	<	<	0.010
Tetrachloroethene	<	<	<	<	<	0.020
Toluene	0.005	0.007	0.005	<	0.005	0.005
1,1,1-Trichloroethane	<	<	<	<	<	0.005
1,1,2-Trichloroethane	<	<	<	<	<	0.010
Trichloroethene	<	<	<	<	<	0.005
Vinyl Acetate	<	<	<	<	<	0.010
Vinyl Chloride	<	<	<	<	<	0.010
Xylenes (Total)	<	<	<	<	0.005	0.005
All results reported in milligrams per kilogram (mg/kg)						
MDL - Method Detection Limit (See Laboratory Report Cover Sheet for MDL comments)						
< - Less than MDL						

TABLE 1
(Continued)

**SOIL ANALYTICAL RESULTS
MILAGRO SEPTIC FIELD**

PART III - SEMI-VOLATILE ORGANICS						
PARAMETER	BH-1 (5-7)	BH-1 (25-27)	BH-2 (17-18)	BH-3 (20-22)	BG-1 (5-7)	MDL
SEMI-VOLATILE ORGANICS						
Phenol	<0.22	<0.22	<0.22	<0.22	<0.22	0.11
Bis(2-chloroethyl)ether	<0.36	<0.36	<0.36	<0.36	<0.36	0.18
2-Chlorophenol	<0.54	<0.54	<0.54	<0.54	<0.54	0.27
1,3-Dichlorobenzene	<0.40	<0.40	<0.40	<0.40	<0.40	0.20
1,4-Dichlorobenzene	<0.40	<0.40	<0.40	<0.40	<0.40	0.20
1,2-Dichlorobenzene	<0.40	<0.40	<0.40	<0.40	<0.40	0.20
Bis(2-chloroisopropyl)ether	<0.30	<0.30	<0.30	<0.30	<0.30	0.15
Hexachloroethane	<0.40	<0.40	<0.40	<0.40	<0.40	0.20
N-Nitrosodi-N-Propylamine	<0.42	<0.42	<0.42	<0.42	<0.42	0.21
Nitrobenzene	<0.40	<0.40	<0.40	<0.40	<0.40	0.20
Isophorone	<0.80	<0.80	<0.80	<0.80	<0.80	0.40
2-Nitrophenol	<0.28	<0.28	<0.28	<0.28	<0.28	0.14
2,4-Dimethylphenol	<0.34	<0.34	<0.34	<0.34	<0.34	0.17
Bis(2-chloroethoxy)methane	<0.26	<0.26	<0.26	<0.26	<0.26	0.13
2,4-Dichlorophenol	<0.24	<0.24	<0.24	<0.24	<0.24	0.12
1,2,4-Trichlorobenzene	<0.40	<0.40	<0.40	<0.40	<0.40	0.20
Naphthalene	<0.06	<0.06	<0.06	<0.06	<0.06	0.03
Hexachlorobutadiene	<0.40	<0.40	<0.40	<0.40	<0.40	0.20
4-Chloro-3-Methylphenol	<0.28	<0.28	<0.28	<0.28	<0.28	0.14
Hexachlorocyclopentadiene	<0.40	<0.40	<0.40	<0.40	<0.40	0.20
2,4,6-Trichlorophenol	<0.24	<0.24	<0.24	<0.24	<0.24	0.12
2-Chloronaphthalene	<0.18	<0.18	<0.18	<0.18	<0.18	0.09
Acenaphthylene	<0.08	<0.08	<0.08	<0.08	<0.08	0.04
Dimethyl phthalate	<0.22	<0.22	<0.22	<0.22	<0.22	0.11
2,6-Dinitrotoluene	<0.12	<0.12	<0.12	<0.12	<0.12	0.06
Acenaphthene	<0.14	<0.14	<0.14	<0.14	<0.14	0.07
2,4-Dinitrophenol	<0.96	<0.96	<0.96	<0.96	<0.96	0.48
2,4-Dinitrotoluene	<0.10	<0.10	<0.10	<0.10	<0.10	0.05
4-Nitrophenol	<0.28	<0.28	<0.28	<0.28	<0.28	0.14
Fluorene	<0.06	<0.06	<0.06	<0.06	<0.06	0.03
4-Chlorophenylphenylether	<0.18	<0.18	<0.18	<0.18	<0.18	0.09
Diethyl phthalate	<0.22	<0.22	<0.22	<0.22	<0.22	0.11
4,6-Dinitro-2-methylphenol	<0.30	<0.30	<0.30	<0.30	<0.30	0.15
N-Nitrosodiphenylamine	<0.38	<0.38	<0.38	<0.38	<0.38	0.19
All results reported in milligrams per kilogram (mg/kg)						
MDL - Method Detection Limit (See Laboratory Report Cover Sheet for MDL comments)						
< - Less than MDL						

TABLE 1
(Continued)

SOIL ANALYTICAL RESULTS
MILAGRO SEPTIC FIELD

PART III - SEMI-VOLATILE ORGANICS (Continued)						
PARAMETER	BH-1 (5-7)	BH-1 (25-27)	BH-2 (17-18)	BH-3 (20-22)	BG-1 (5-7)	MDL
SEMI-VOLATILE ORGANICS						
4-Bromophenylphenylether	<0.06	<0.06	<0.06	<0.06	<0.06	0.03
Hexachlorobenzene	<0.40	<0.40	<0.40	<0.40	<0.40	0.20
Pentachlorophenol	<0.22	<0.22	<0.22	<0.22	<0.22	0.11
Phenanthrene	<0.06	<0.06	<0.06	<0.06	<0.06	0.03
Anathracene	<0.04	<0.04	<0.04	<0.04	<0.04	0.02
Di-n-butyl phthalate	<0.22	<0.22	<0.22	<0.22	<0.22	0.11
Fluoranthene	<0.04	<0.04	<0.04	<0.04	<0.04	0.02
Pyrene	<0.06	<0.06	<0.06	<0.06	<0.06	0.03
Benzyl butyl phthalate	<0.12	<0.12	<0.12	<0.12	<0.12	0.06
3,3-Dichlorobenzidine	<0.20	<0.20	<0.20	<0.20	<0.20	0.10
Benzo(a)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	0.02
Chrysene	<0.06	<0.06	<0.06	<0.06	<0.06	0.03
Bis(2-ethylhexyl)phthalate	<0.28	<0.28	<0.28	<0.28	<0.28	0.14
Di-n-octyl phthalate	<0.22	<0.22	<0.22	<0.22	<0.22	0.11
Benzo(b)fluoranthene	<0.08	<0.08	<0.08	<0.08	<0.08	0.04
Benzo(k)fluoranthene	<0.08	<0.08	<0.08	<0.08	<0.08	0.04
Benzo(a)pyrene	<0.10	<0.10	<0.10	<0.10	<0.10	0.05
Indeno(1,2,3-cd)pyrene	<0.12	<0.12	<0.12	<0.12	<0.12	0.06
Dibenzo(a,h)anthracene	<0.08	<0.08	<0.08	<0.08	<0.08	0.04
Benzo(g,h,i)perylene	<0.08	<0.08	<0.08	<0.08	<0.08	0.04
N-Nitrosodimethylamine	<2.0	<2.0	<2.0	<2.0	<2.0	1.0
Aniline	<1.0	<1.0	<1.0	<1.0	<1.0	0.50
Benzyl alcohol	<1.0	<1.0	<1.0	<1.0	<1.0	0.50
Carbazole	<1.0	<1.0	<1.0	<1.0	<1.0	0.50
2-Methylphenol	<1.0	<1.0	<1.0	<1.0	<1.0	0.50
Benzoic acid	<1.0	<1.0	<1.0	<1.0	<1.0	0.50
4-Chloroaniline	<1.0	<1.0	<1.0	<1.0	<1.0	0.50
2-Methylnaphthalene	<0.20	<0.20	<0.20	<0.20	<0.20	0.10
2,4,5-Trichlorophenol	<0.20	<0.20	<0.20	<0.20	<0.20	0.10
2-Nitroaniline	<1.0	<1.0	<1.0	<1.0	<1.0	0.50
3-Nitroaniline	<1.0	<1.0	<1.0	<1.0	<1.0	0.50
Dibenzofuran	<1.0	<1.0	<1.0	<1.0	<1.0	0.50
Benzidine	<1.0	<1.0	<1.0	<1.0	<1.0	0.50
4-Nitroaniline	<1.0	<1.0	<1.0	<1.0	<1.0	0.50

All results reported in milligrams per kilogram (mg/kg)
MDL - Method Detection Limit (See Laboratory Report Cover Sheet for MDL comments)
< - Less than MDL

APPENDIX A - FIELD DOCUMENTATION

RECORD OF SUBSURFACE EXPLORATION

PHILIP ENVIRONMENTAL SERVICES INC.

4000 Monroe Road
 Farmington, New Mexico 87401
 (505) 326-2262 FAX (505) 326-2388

Borehole # BH-1
 Well # _____
 Page 1 of 1

Project Name WFS Milagro
 Project Number 16766 Phase 6001.77
 Project Location Milagro Plant, Bloomfield, NM

Well Logged By C. M. Chance
 Personnel On-Site D. Charlie, D Foust
 Contractors On-Site _____
 Client Personnel On-Site _____

Drilling Method 4 1/4" I.D. Hollow Stem Auger
 Air Monitoring Method PID

Elevation _____
 Borehole Location Center of Leach Field
 GWL Depth _____
 Logged By CM Chance
 Drilled By K Padilla
 Date/Time Started 9/23/96 - 0950
 Date/Time Completed 9/23/96 - 1100

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM			Drilling Conditions & Blow Counts
							BZ	BH	S	
0										
5	1	5-7	24	Lt brown silty CLAY, soft, low plastic, moist ----- Lt brown sandy SILT, trace v. fine sand v. loose, dry, trace crystalline parting			0	0	0	-1000 hr Collect Sample
10	2	10-12	8	Lt brown sandy SILT, trace v. fine sand, v. loose, dry			0	0	0	-1010 hr
15	3	15-17	14	Lt brown sandy SILT, trace fine-med sand v. loose, dry			0	0	0	-1020 hr
20	4	20-22	6	Lt brown silty SAND, v. fine-fine sand, slightly cemented, dense, dry, trace crystalline parting			0	0	0	-1028 hr
25	5	25-27	24	Lt br sandy CLAY, trace v. fine-fine sand, soft, nonplastic, dry ----- TOB 27'			0	0	0	-1038 hr Collect Sample
30										
35										
40										

Comments: Collected sample from 5' - 7' & 25' - 27' BGS. The 5' -7' sample exhibited the most moisture. Did not encounter groundwater. Borehole grouted to the surface.

Geologist Signature Cory Chance

RECORD OF SUBSURFACE EXPLORATION

PHILIP ENVIRONMENTAL SERVICES INC.

4000 Monroe Road
 Farmington, New Mexico 87401
 (505) 326-2262 FAX (505) 326-2388

Borehole # BH-2
 Well # _____
 Page 1 of 1

Project Name WFS Milagro
 Project Number 16766 Phase 6001.77
 Project Location Milagro Plant, Bloomfield, NM

Elevation _____
 Borehole Location SW Corner of Leach Field
 GWL Depth _____
 Logged By CM Chance
 Drilled By K Padilla
 Date/Time Started 9/23/96 - 1135
 Date/Time Completed 9/23/96 - 1220

Well Logged By CM Chance
 Personnel On-Site D Charlie, D Foust
 Contractors On-Site _____
 Client Personnel On-Site _____
 Drilling Method 4 1/4 ID Hollow Stem Auger
 Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM			Drilling Conditions & Blow Counts
							BZ	BH	S	
0										
5	1	5-7	6	Lt brown sandy SILT, trace v.fine sand med. dense, dry, trace crystalline parting			0	0	0	-1141 hr
10	2	10-12	24	Lt brown silty CLAY, soft, low plastic, dry Lt brown silty SAND, v.fine-fine sand, loose, dry			0	0	0	-1147 hr
15	3	15-16	6	Lt grey-brown SANDSTONE, v.fine-fine sand, well cemented, dense, dry			0	0	0	1155 hr
20	4	17-18	6	AA Brown sandy CLAY, trace v.fine sand, soft, low plastic, dry			0	0	0	-Refusal @ 17' with augers -1202 hr Collect Sample
25				TOB 18'						
30										
35										
40										

Comments: Refusal at 17' bgs with augers. Collected sample at 17'-18'. Grouted borehole to surface.

Geologist Signature Carl Chance

RECORD OF SUBSURFACE EXPLORATION

PHILIP ENVIRONMENTAL SERVICES INC.

4500 Monroe Road
 Farmington, New Mexico 87401
 (505) 326-2262 FAX (505) 326-2388

Borehole # BH-3
 Well # _____
 Page 1 of 1

Project Name WFS Milagro
 Project Number 16766 Phase 6001.77
 Project Location Milagro Plant, Bloomfield, NM

Well Logged By CM Chance
 Personnel On-Site D Charlie, D Foust
 Contractors On-Site _____
 Client Personnel On-Site _____

Drilling Method 4 1/4 ID Hollow Stem Auger
 Air Monitoring Method PID

Elevation _____
 Borehole Location W. of Leach Field
 GWL Depth _____
 Logged By CM Chance
 Drilled By K Padilla
 Date/Time Started 9/23/96 - 1305
 Date/Time Completed 9/23/96 - 1340

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM			Drilling Conditions & Blow Counts
							BZ	BH	S	
0										
5	1	5-7	6	Lt brown sandy SILT, trace v.fine sand, loose, dry, trace crystalline parting			0	0	0	-1310 hr
10	2	10-12	24	Lt brown silty CLAY, soft, low plastic, dr. trace crystalline parting			0	0	0	-1318 hr
15	3	15-17	6	Lt brown silty SAND, fine-v.fine sand, med. dense, slightly cemented, dry			0	0	0	-1324 hr
20	4	20-22	24	Lt brown silty SAND, fine-med. sand, loose, dry			0	0	0	-1335 hr Collect Sample
				TOB 22'						
25										
30										
35										
40										

Comments: Sample collected from 20'-22' bgs. Borehole grouted to the surface.

Geologist Signature CM Chance



SOIL/SEDIMENT/SLUDGE SAMPLING DATA

Serial No. SSSSD

Date 9/23/96

Project Name WFS Milagro

Project No. 16766

Project Manager CM Chance

Phase/Task No. 6001.77

Client Company Williams Field Services

Site Name Milagro Plant Septic Leach Field

Site Address Bloomfield, NM

Sampling Method

- Hand Auger
- Spoon
- Backhoe
- Drill Rig
- Other

QA

- Primary
- Duplicate

Reason For Collection

- Lab Analysis
- On-Site Headspace
- Physical Testing
- Other

Portable Screening Instrument Used

None

- | Type | Manufacturer | Model |
|---|--------------|-------------|
| <input checked="" type="checkbox"/> PID (Lamp <u>10-P</u> eV) | <u>TEI</u> | <u>480B</u> |
| <input type="checkbox"/> FID | | |
| <input type="checkbox"/> CGI | | |
| <input type="checkbox"/> Other | | |
| <input type="checkbox"/> Other | | |

Type of Sample

- Grab
- Composite

Sample No.	Location	Time Collected	Sample Type			Volume Collected	Field Instrument Reading
			Soil	Sed.	Slg.		
BH1-5-7	Borehole 1 5-7' BGS	1000	✓			2-50ml 1-250ml	0
BH1-25-27	" 25-27' BGS	1035	✓			↓	0
BH2-17-18	Borehole 2 17-18' BGS	1202	✓			↓	0
BH3-20-22	Borehole 3 20-22' BGS	1335	✓			↓	0
BG1-5-7	Background 5-7' BGS	1400	✓			↓	0

9/23/96

Chain-of-Custody Form Number C3115

Comments Samples iced & shipped overnight to Zenon labs

Signature CM Chance Date 9/23/96 Reviewer _____ Date _____

APPENDIX B - LABORATORY REPORTS

Certificate of Analysis

CLIENT INFORMATION

Attention: Cory Chance
Client Name: Philip Environmental Inc.
Project: 16766
Project Desc: WFS Milagro

Address: 4000 Monroe Road
Farmington, NM
87401
Fax Number: 505 326-2388
Phone Number: 505 326-2262

LABORATORY INFORMATION

Contact: Ada Blythe, B.Sc., C.Chem.
Project: AN961045
Date Received: 96/09/24
Date Reported: 96/10/09

Submission No.: 610684
Sample No.: 038764-038774

NOTES:

"." = not analysed "<" = less than Method Detection Limit (MDL) "NA" = no data available
I.O.Q. can be determined for all analytes by multiplying the appropriate MDL X 3.33
Solids data is based on dry weight except for biota analyses.
Organic analyses are not corrected for extraction recovery standards except for isotope
dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by Zenon are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Seventeenth Edition. Other methods are based on the principles of MISA or EPA methodologies.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at Zenon for a period of three weeks from receipt of data or as per contract.

COMMENTS:

"NR" Not recovered. Vinyl acetate recoveries are low, likely due to the fact that the samples sat at room temperature for several hours and the compound had degraded.

"**"Matrix interference suspected

Some blank spike recoveries are high for volatiles. We are checking the reference solution. This will have no impact on the volatiles sample data.

For Lead and Chromium, the detection limits were raised by a factor of two in the samples. This occurs because the samples need to be "matrix matched" to the standards. The digested sample is in a 20% Nitric acid matrix, whereas the standards are in 10% Nitric acid. Therefore, the sample is brought to a final concentration of 10% Nitric acid (via a two fold dilution) resulting in a two-fold increase in the detection limit.

Certified by:



Additional comments regarding samples 038764-038774

All of the samples analysed for semi-volatiles were cleaned up using Gel Permeation Chromatography (GPC). The nature of GPC clean-up involves taking an extract at 10 mL final volume and injecting this extract into the GPC to clean out any interferences in the sample by employing the use of gel permeation chromatography. Half of that extract is lost in the GPC (ie. 5mLs) to flush the system and avoid cross contamination from the previous sample. The final volume after the GPC is performed is the same as the initial volume (ie. 10 mLs) due to dilution from solvents in the GPC procedure. Therefore, half of the extract is taken to the same initial volume (ie. 10 mLs) which results in a two-fold increase in the detection limit

Client ID: Method Blank Blank
 Blank Spike 1 Spike 1 BH1-5-7 BH1-5-7 BH1-5-7 BH1-5-7
 Zenon ID: 038764 96 038764 96 038764 96 038766 96 038766 96 038766 96 038766 96
 Date Sampled: 96/09/23 96/09/23 96/09/23 96/09/23 96/09/23 96/09/23 96/09/23

Component	MDL	Units		% Recovery	Duplicate	M. Spike	MS % Rec.		
Arsenic (gfaa) via Method 7060	0.5	mg/kg	<	4.1	83	1.4	1.4	4.1	54*
Mercury via Method 7471	0.04	"	<	0.98	98	<	<	0.98	98
Selenium (gfaa) via Method 7740	0.5	"	<	4.4	88	<	<	3.6	70
Metals via SW846 Method 6010									
Barium	0.1	mg/kg	<	100	100	74	66	270	100
Cadmium	0.2	"	<	50	100	0.4	<0.4	100	100
Chromium	5	"	<	110	110	<10	<10	210	110
Lead	10	"	<	100	100	<20	<20	210	110
Silver	0.5	"	<	52	100	<1.0	<1.0	100	100

Zenon Environmental Laboratories - Certificate of Analysis

Component	Client ID:		BH1	BH2	BH3	BG1-5-7		
	MDL	Units	25-27	17-18	20-22	038774 96		
	Zenon ID:		038768 96	038770 96	038772 96	038774 96		
	Date Sampled:		96/09/23	96/09/23	96/09/23	96/09/23		
			MS Dup	MSD % Rec.	(1)	(1)	(1)	
Arsenic (gfaa) via Method 7060	0.5	mg/kg	5.0	71*	1.3	1.2	1.2	2.2
Mercury via Method 7471	0.04	"	0.99	99	<	<	<	<
Selenium (gfaa) via Method 7740	0.5	"	3.8	73	<	<	<	<
Metals via SW846 Method 6010								
Barium	0.1	mg/kg	270	98	96	110	160	140
Cadmium	0.2	"	98	98	0.5	<0.4	0.4	<0.4
Chromium	5	"	210	100	9.0	<10	<10	<10
Lead	10	"	210	100	<20	<20	<20	<20
Silver	0.5	"	98	98	<1.0	<1.0	<1.0	<1.0

Component	MDL	Units	Method	Blank	Blank	Blank	Blank
			Blank	Spike 1	Spike 1	Spike 2	Spike 2
<i>Client ID:</i>							
<i>Zenon ID:</i>			038764 96	038764 96	038764 96	038764 96	038764 96
<i>Date Sampled:</i>			96/09/23	96/09/23	96/09/23	96/09/23	96/09/23
					% Recovery		% Recovery
Volatiles via SW846 Method 8260							
Acetone	0.030	mg/kg	0.052	0.50	170	-	-
Acrolein	0.010	"	<	0.93	190	-	-
Acrylonitrile	0.010	"	<	0.56	110	-	-
Benzene	0.005	"	<	0.24	98	-	-
Bromoform	0.010	"	<	0.24	94	-	-
Bromomethane	0.010	"	<	0.25	100	-	-
2-Butanone	0.015	"	<	0.47	190	-	-
Carbon Disulfide	0.010	"	<	0.35	140	-	-
Carbon Tetrachloride	0.010	"	<	0.23	93	-	-
Chlorobenzene	0.005	"	<	0.23	92	-	-
Chlorodibromomethane	0.005	"	<	0.24	96	-	-
Chloroethane	0.010	"	<	0.25	98	-	-
2-Chloroethylvinylether	0.010	"	<	0.24	97	-	-
Chloroform	0.005	"	<	0.24	98	-	-
Chloromethane	0.010	"	<	0.27	110	-	-
1,2-Dichlorobenzene	0.005	"	<	0.21	84	-	-
1,3-Dichlorobenzene	0.005	"	<	0.21	85	-	-
1,4-Dichlorobenzene	0.005	"	<	0.21	84	-	-
Dichlorobromomethane	0.005	"	<	0.24	94	-	-
1,1-Dichloroethane	0.005	"	<	0.25	99	-	-
1,2-Dichloroethane	0.005	"	<	0.23	92	-	-
1,1-Dichloroethene	0.010	"	<	0.37	150	-	-
cis-1,2-Dichloroethene	0.010	"	<	0.24	96	-	-
trans-1,2-Dichloroethene	0.010	"	<	0.35	140	-	-
1,2-Dichloropropane	0.005	"	<	0.23	94	-	-
cis-1,3-Dichloropropene	0.005	"	<	0.28	110	-	-
trans-1,3-Dichloropropene	0.005	"	<	0.25	98	-	-
Ethylbenzene	0.005	"	<	0.24	95	-	-
2-Hexanone	0.010	"	<	0.32	130	-	-
Methylene Chloride	0.010	"	0.21	0.53	120	-	-
4-Methyl-2-Pentanone	0.010	"	<	0.22	89	-	-
Styrene	0.005	"	<	0.24	97	-	-
1,1,1,2-Tetrachloroethane	0.010	"	<	0.23	90	-	-
1,1,2,2-Tetrachloroethane	0.010	"	<	0.21	82	-	-
Tetrachloroethene	0.020	"	<	0.21	86	-	-
Toluene	0.005	"	0.006	0.24	97	-	-
1,1,1-Trichloroethane	0.005	"	<	0.23	93	-	-
1,1,2-Trichloroethane	0.010	"	<	0.23	94	-	-
Trichloroethene	0.005	"	<	0.24	95	-	-
Vinyl Acetate	0.010	"	<	0.19	76	-	-
Vinyl Chloride	0.010	"	<	0.29	110	-	-
Xylenes(Total)	0.005	"	<	0.50	100	-	-
Surrogate Recoveries		%					
d4-1,2-Dichloroethane			93	102	102	-	-
d8-Toluene			98	100	100	-	-
Bromofluorobenzene			96	98	98	-	-

Component	MDL	Units	Method	Blank	Blank	Blank	Blank
			Blank	Spike 1	Spike 1	Spike 2	Spike 2
			038764 96	038764 96	038764 96	038764 96	038764 96
			96/09/23	96/09/23	96/09/23	96/09/23	96/09/23
					% Recovery		% Recovery
Semi - volatiles via SW846 Method 8270							
Phenol	0.11	mg/kg	<0.22	4.4	44	7.0	70
Bis(2-chloroethyl)ether	0.18	"	<0.36	-	-	-	-
2-Chlorophenol	0.27	"	<0.54	4.5	45	7.1	71
1,3-Dichlorobenzene	0.20	"	<0.40	-	-	-	-
1,4-Dichlorobenzene	0.20	"	<0.40	2.0	41	2.8	57
1,2-Dichlorobenzene	0.20	"	<0.40	-	-	-	-
Bis(2-chloroisopropyl)ether	0.15	"	<0.30	-	-	-	-
Hexachloroethane	0.20	"	<0.40	-	-	-	-
N-Nitroso-di-N-Propylamine	0.21	"	<0.42	2.1	43	3.4	68
Nitrobenzene	0.20	"	<0.40	-	-	-	-
Isophorone	0.40	"	<0.80	-	-	-	-
2-Nitrophenol	0.14	"	<0.28	-	-	-	-
2,4-Dimethylphenol	0.17	"	<0.34	-	-	-	-
Bis(2-chloroethoxy)methane	0.13	"	<0.26	-	-	-	-
2,4-Dichlorophenol	0.12	"	<0.24	-	-	-	-
1,2,4-Trichlorobenzene	0.20	"	<0.40	2.2	45	3.2	64
Naphthalene	0.03	"	<0.06	-	-	-	-
Hexachlorobutadiene	0.20	"	<0.40	-	-	-	-
4-Chloro-3-Methylphenol	0.14	"	<0.28	4.2	42	7.0	70
Hexachlorocyclopentadiene	0.20	"	<0.40	-	-	-	-
2,4,6-Trichlorophenol	0.12	"	<0.24	-	-	-	-
2-Chloronaphthalene	0.09	"	<0.18	-	-	-	-
Acenaphthylene	0.04	"	<0.08	-	-	-	-
Dimethyl phthalate	0.11	"	<0.22	-	-	-	-
2,6-Dinitrotoluene	0.06	"	<0.12	-	-	-	-
Acenaphthene	0.07	"	<0.14	2.4	47	3.7	74
2,4-Dinitrophenol	0.48	"	<0.96	-	-	-	-
2,4-Dinitrotoluene	0.05	"	<0.10	1.8	37	3.3	66
4-Nitrophenol	0.14	"	<0.28	3.5	35	5.7	57
Fluorene	0.03	"	<0.06	-	-	-	-
4-Chlorophenylphenylether	0.09	"	<0.18	-	-	-	-
Diethyl phthalate	0.11	"	<0.22	-	-	-	-
4,6-Dinitro-2-methylphenol	0.15	"	<0.30	-	-	-	-
N-Nitrosodiphenylamine	0.19	"	<0.38	-	-	-	-
4-Bromophenylphenylether	0.03	"	<0.06	-	-	-	-
Hexachlorobenzene	0.20	"	<0.40	-	-	-	-
Pentachlorophenol	0.11	"	<0.22	4.1	41	7.3	73
Phenanthrene	0.03	"	<0.06	-	-	-	-
Anthracene	0.02	"	<0.04	-	-	-	-
Di-n-butyl phthalate	0.11	"	<0.22	-	-	-	-
Fluoranthene	0.02	"	<0.04	-	-	-	-
Pyrene	0.03	"	<0.06	2.8	56	4.0	80
Benzyl butyl phthalate	0.06	"	<0.12	-	-	-	-
3,3-Dichlorobenzidine	0.10	"	<0.20	-	-	-	-
Benzo(a)anthracene	0.02	"	<0.04	-	-	-	-
Chrysene	0.03	"	<0.06	-	-	-	-

Component	MDL	Units	Method	Blank	Blank	Blank	Blank
			Blank	Spike 1	Spike 1	Spike 2	Spike 2
			038764 96	038764 96	038764 96	038764 96	038764 96
			96/09/23	96/09/23	96/09/23	96/09/23	96/09/23
			% Recovery		% Recovery		
Bis(2-ethylhexyl)phthalate	0.14	"	<0.28	-	-	-	-
Di-n-octyl phthalate	0.11	"	<0.22	-	-	-	-
Benzo(b)fluoranthene	0.04	"	<0.08	-	-	-	-
Benzo(k)fluoranthene	0.04	"	<0.08	-	-	-	-
Benzo(a)pyrene	0.05	"	<0.10	-	-	-	-
Indeno(1,2,3-cd)pyrene	0.06	"	<0.12	-	-	-	-
Dibenzo(a,h)anthracene	0.04	"	<0.08	-	-	-	-
Benzo(ghi)perylene	0.04	"	<0.08	-	-	-	-
N-Nitrosodimethylamine	1.0	"	<2.0	-	-	-	-
Aniline	0.50	"	<1.0	-	-	-	-
Benzyl alcohol	0.50	"	<1.0	-	-	-	-
Carbazole	0.50	"	<1.0	-	-	-	-
2-Methylphenol	0.50	"	<1.0	-	-	-	-
Benzoic acid	0.50	"	<1.0	-	-	-	-
4-Chloroaniline	0.50	"	<1.0	-	-	-	-
2-Methylnaphthalene	0.10	"	<0.20	-	-	-	-
2,4,5-Trichlorophenol	0.10	"	<0.20	-	-	-	-
2-Nitroaniline	0.50	"	<1.0	-	-	-	-
3-Nitroaniline	0.50	"	<1.0	-	-	-	-
Dibenzofuran	0.50	"	<1.0	-	-	-	-
Benzidine	0.50	"	<1.0	-	-	-	-
4-Nitroaniline	0.50	"	<1.0	-	-	-	-
Surrogate Recoveries		%					
2-Fluorophenol			29	42	42	52	52
d5-Phenol			55	45	45	72	72
d5-Nitrobenzene			43	40	40	61	61
2-Fluorobiphenyl			65	46	46	71	71
2,4,6-Tribromophenol			66	46	46	73	73
d14-p-Terphenyl			74	70	70	83	83

Component	MDL	Units	Client ID:		
			BH1	BH2	
			25-27	17-18	
Zenon ID:	038766 96	038768 96	038770 96		
Date Sampled:	96/09/23	96/09/23	96/09/23		
Volatiles via SW846 Method 8260					
Acetone	0.030	mg/kg	0.12	0.27	0.17
Acrolein	0.010	"	<	<	<
Acrylonitrile	0.010	"	<	<	<
Benzene	0.005	"	<	<	<
Bromoform	0.010	"	<	<	<
Bromomethane	0.010	"	<	<	<
2-Butanone	0.015	"	<	<	<
Carbon Disulfide	0.010	"	<	<	<
Carbon Tetrachloride	0.010	"	<	<	<
Chlorobenzene	0.005	"	<	<	<
Chlorodibromomethane	0.005	"	<	<	<
Chloroethane	0.010	"	<	<	<
2-Chloroethylvinylether	0.010	"	<	<	<
Chloroform	0.005	"	<	<	<
Chloromethane	0.010	"	<	<	<
1,2-Dichlorobenzene	0.005	"	<	<	<
1,3-Dichlorobenzene	0.005	"	<	<	<
1,4-Dichlorobenzene	0.005	"	<	<	<
Dichlorobromomethane	0.005	"	<	<	<
1,1-Dichloroethane	0.005	"	<	<	<
1,2-Dichloroethane	0.005	"	<	<	<
1,1-Dichloroethene	0.010	"	<	<	<
cis-1,2-Dichloroethene	0.010	"	<	<	<
trans-1,2-Dichloroethene	0.010	"	<	<	<
1,2-Dichloropropane	0.005	"	<	<	<
cis-1,3-Dichloropropene	0.005	"	<	<	<
trans-1,3-Dichloropropene	0.005	"	<	<	<
Ethylbenzene	0.005	"	<	<	<
2-Hexanone	0.010	"	<	<	<
Methylene Chloride	0.010	"	0.19	0.21	0.17
4-Methyl-2-Pentanone	0.010	"	<	<	<
Styrene	0.005	"	<	<	<
1,1,1,2-Tetrachloroethane	0.010	"	<	<	<
1,1,2,2-Tetrachloroethane	0.010	"	<	<	<
Tetrachloroethene	0.020	"	<	<	<
Toluene	0.005	"	0.005	0.007	0.005
1,1,1-Trichloroethane	0.005	"	<	<	<
1,1,2-Trichloroethane	0.010	"	<	<	<
Trichloroethene	0.005	"	<	<	<
Vinyl Acetate	0.010	"	<	<	<
Vinyl Chloride	0.010	"	<	<	<
Xylenes(Total)	0.005	"	<	<	<
Surrogate Recoveries		%			
d4-1,2-Dichloroethane			93	95	99
d8-Toluene			94	91	97
Bromofluorobenzene			95	95	97

Component	MDL	Units	Client ID:	BH1	BH2
			Zenon ID:	25-27	17-18
			Date Sampled:	96/09/23	96/09/23
				038766 96	038770 96
Semi - volatiles via SW846 Method 8270					
Phenol	0.11	mg/kg	<0.22	<0.22	<0.22
Bis(2-chloroethyl)ether	0.18	"	<0.36	<0.36	<0.36
2-Chlorophenol	0.27	"	<0.54	<0.54	<0.54
1,3-Dichlorobenzene	0.20	"	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	0.20	"	<0.40	<0.40	<0.40
1,2-Dichlorobenzene	0.20	"	<0.40	<0.40	<0.40
Bis(2-chloroisopropyl)ether	0.15	"	<0.30	<0.30	<0.30
Hexachloroethane	0.20	"	<0.40	<0.40	<0.40
N-Nitroso-di-N-Propylamine	0.21	"	<0.42	<0.42	<0.42
Nitrobenzene	0.20	"	<0.40	<0.40	<0.40
Isophorone	0.40	"	<0.80	<0.80	<0.80
2-Nitrophenol	0.14	"	<0.28	<0.28	<0.28
2,4-Dimethylphenol	0.17	"	<0.34	<0.34	<0.34
Bis(2-chloroethoxy)methane	0.13	"	<0.26	<0.26	<0.26
2,4-Dichlorophenol	0.12	"	<0.24	<0.24	<0.24
1,2,4-Trichlorobenzene	0.20	"	<0.40	<0.40	<0.40
Naphthalene	0.03	"	<0.06	<0.06	<0.06
Hexachlorobutadiene	0.20	"	<0.40	<0.40	<0.40
4-Chloro-3-Methylphenol	0.14	"	<0.28	<0.28	<0.28
Hexachlorocyclopentadiene	0.20	"	<0.40	<0.40	<0.40
2,4,6-Trichlorophenol	0.12	"	<0.24	<0.24	<0.24
2-Chloronaphthalene	0.09	"	<0.18	<0.18	<0.18
Acenaphthylene	0.04	"	<0.08	<0.08	<0.08
Dimethyl phthalate	0.11	"	<0.22	<0.22	<0.22
2,6-Dinitrotoluene	0.06	"	<0.12	<0.12	<0.12
Acenaphthene	0.07	"	<0.14	<0.14	<0.14
2,4-Dinitrophenol	0.48	"	<0.96	<0.96	<0.96
2,4-Dinitrotoluene	0.05	"	<0.10	<0.10	<0.10
4-Nitrophenol	0.14	"	<0.28	<0.28	<0.28
Fluorene	0.03	"	<0.06	<0.06	<0.06
4-Chlorophenylphenylether	0.09	"	<0.18	<0.18	<0.18
Diethyl phthalate	0.11	"	<0.22	<0.22	<0.22
4,6-Dinitro-2-methylphenol	0.15	"	<0.30	<0.30	<0.30
N-Nitrosodiphenylamine	0.19	"	<0.38	<0.38	<0.38
4-Bromophenylphenylether	0.03	"	<0.06	<0.06	<0.06
Hexachlorobenzene	0.20	"	<0.40	<0.40	<0.40
Pentachlorophenol	0.11	"	<0.22	<0.22	<0.22
Phenanthrene	0.03	"	<0.06	<0.06	<0.06
Anthracene	0.02	"	<0.04	<0.04	<0.04
Di-n-butyl phthalate	0.11	"	<0.22	<0.22	<0.22
Fluoranthene	0.02	"	<0.04	<0.04	<0.04
Pyrene	0.03	"	<0.06	<0.06	<0.06
Benzyl butyl phthalate	0.06	"	<0.12	<0.12	<0.12
3,3-Dichlorobenzidine	0.10	"	<0.20	<0.20	<0.20
Benzo(a)anthracene	0.02	"	<0.04	<0.04	<0.04
Chrysene	0.03	"	<0.06	<0.06	<0.06

Component	MDL	Units	BH1		BH2	
			Client ID:	BH1-5-7	25-27	17-18
			Zenon ID:	038766 96	038768 96	038770 96
			Date Sampled:	96/09/23	96/09/23	96/09/23
Bis(2-ethylhexyl)phthalate	0.14	"	<0.28	<0.28	<0.28	
Di-n-octyl phthalate	0.11	"	<0.22	<0.22	<0.22	
Benzo(b)fluoranthene	0.04	"	<0.08	<0.08	<0.08	
Benzo(k)fluoranthene	0.04	"	<0.08	<0.08	<0.08	
Benzo(a)pyrene	0.05	"	<0.10	<0.10	<0.10	
Indeno(1,2,3-cd)pyrene	0.06	"	<0.12	<0.12	<0.12	
Dibenzo(a,h)anthracene	0.04	"	<0.08	<0.08	<0.08	
Benzo(ghi)perylene	0.04	"	<0.08	<0.08	<0.08	
N-Nitrosodimethylamine	1.0	"	<2.0	<2.0	<2.0	
Aniline	0.50	"	<1.0	<1.0	<1.0	
Benzyl alcohol	0.50	"	<1.0	<1.0	<1.0	
Carbazole	0.50	"	<1.0	<1.0	<1.0	
2-Methylphenol	0.50	"	<1.0	<1.0	<1.0	
Benzoic acid	0.50	"	<1.0	<1.0	<1.0	
4-Chloroaniline	0.50	"	<1.0	<1.0	<1.0	
2-Methylnaphthalene	0.10	"	<0.20	<0.20	<0.20	
2,4,5-Trichlorophenol	0.10	"	<0.20	<0.20	<0.20	
2-Nitroaniline	0.50	"	<1.0	<1.0	<1.0	
3-Nitroaniline	0.50	"	<1.0	<1.0	<1.0	
Dibenzofuran	0.50	"	<1.0	<1.0	<1.0	
Benzidine	0.50	"	<1.0	<1.0	<1.0	
4-Nitroaniline	0.50	"	<1.0	<1.0	<1.0	
Surrogate Recoveries		%				
2-Fluorophenol			47	73	52	
d5-Phenol			66	107	73	
d5-Nitrobenzene			60	100	60	
2-Fluorobiphenyl			65	101	79	
2,4,6-Tribromophenol			69	103	72	
d14-p-Terphenyl			83	128	82	

	BH3	
Client ID:	20-22	BG1-5-7
Zenon ID:	038772 96	038774 96
Date Sampled:	96/09/23	96/09/23

Component	MDL	Units		
Volatiles via SW846 Method 8260				
Acetone	0.030	mg/kg	0.070	0.072
Acrolein	0.010	"	<	<
Acrylonitrile	0.010	"	<	<
Benzene	0.005	"	<	<
Bromoform	0.010	"	<	<
Bromomethane	0.010	"	<	<
2-Butanone	0.015	"	<	<
Carbon Disulfide	0.010	"	<	<
Carbon Tetrachloride	0.010	"	<	<
Chlorobenzene	0.005	"	<	<
Chlorodibromomethane	0.005	"	<	<
Chloroethane	0.010	"	<	<
2-Chloroethylvinylether	0.010	"	<	<
Chloroform	0.005	"	<	<
Chloromethane	0.010	"	<	<
1,2-Dichlorobenzene	0.005	"	<	<
1,3-Dichlorobenzene	0.005	"	<	<
1,4-Dichlorobenzene	0.005	"	<	0.008
Dichlorobromomethane	0.005	"	<	<
1,1-Dichloroethane	0.005	"	<	<
1,2-Dichloroethane	0.005	"	<	<
1,1-Dichloroethene	0.010	"	<	<
cis-1,2-Dichloroethene	0.010	"	<	<
trans-1,2-Dichloroethene	0.010	"	<	<
1,2-Dichloropropane	0.005	"	<	<
cis-1,3-Dichloropropene	0.005	"	<	<
trans-1,3-Dichloropropene	0.005	"	<	<
Ethylbenzene	0.005	"	<	<
2-Hexanone	0.010	"	<	<
Methylene Chloride	0.010	"	0.18	0.091
4-Methyl-2-Pentanone	0.010	"	<	<
Styrene	0.005	"	<	<
1,1,1,2-Tetrachloroethane	0.010	"	<	<
1,1,2,2-Tetrachloroethane	0.010	"	<	<
Tetrachloroethene	0.020	"	<	<
Toluene	0.005	"	<	0.005
1,1,1-Trichloroethane	0.005	"	<	<
1,1,2-Trichloroethane	0.010	"	<	<
Trichloroethene	0.005	"	<	<
Vinyl Acetate	0.010	"	<	<
Vinyl Chloride	0.010	"	<	<
Xylenes(Total)	0.005	"	<	0.005
Surrogate Recoveries		%		
d4-1,2-Dichloroethane			103	99
d8-Toluene			103	100
Bromofluorobenzene			100	96

	BH3	
Client ID:	20-22	BG1-5-7
Zenon ID:	038772 96	038774 96
Date Sampled:	96/09/23	96/09/23

Component	MDL	Units		
Semi - volatiles via SW846 Method 8270				
Phenol	0.11	mg/kg	<0.22	<0.22
Bis(2-chloroethyl)ether	0.18	"	<0.36	<0.36
2-Chlorophenol	0.27	"	<0.54	<0.54
1,3-Dichlorobenzene	0.20	"	<0.40	<0.40
1-4-Dichlorobenzene	0.20	"	<0.40	<0.40
1,2-Dichlorobenzene	0.20	"	<0.40	<0.40
Bis(2-chloroisopropyl)ether	0.15	"	<0.30	<0.30
Hexachloroethane	0.20	"	<0.40	<0.40
N-Nitroso-di-N-Propylamine	0.21	"	<0.42	<0.42
Nitrobenzene	0.20	"	<0.40	<0.40
Isophorone	0.40	"	<0.80	<0.80
2-Nitrophenol	0.14	"	<0.28	<0.28
2,4-Dimethylphenol	0.17	"	<0.34	<0.34
Bis(2-chloroethoxy)methane	0.13	"	<0.26	<0.26
2,4-Dichlorophenol	0.12	"	<0.24	<0.24
1,2,4-Trichlorobenzene	0.20	"	<0.40	<0.40
Naphthalene	0.03	"	<0.06	<0.06
Hexachlorobutadiene	0.20	"	<0.40	<0.40
4-Chloro-3-Methylphenol	0.14	"	<0.28	<0.28
Hexachlorocyclopentadiene	0.20	"	<0.40	<0.40
2,4,6-Trichlorophenol	0.12	"	<0.24	<0.24
2-Chloronaphthalene	0.09	"	<0.18	<0.18
Acenaphthylene	0.04	"	<0.08	<0.08
Dimethyl phthalate	0.11	"	<0.22	<0.22
2,6-Dinitrotoluene	0.06	"	<0.12	<0.12
Acenaphthene	0.07	"	<0.14	<0.14
2,4-Dinitrophenol	0.48	"	<0.96	<0.96
2,4-Dinitrotoluene	0.05	"	<0.10	<0.10
4-Nitrophenol	0.14	"	<0.28	<0.28
Fluorene	0.03	"	<0.06	<0.06
4-Chlorophenylphenylether	0.09	"	<0.18	<0.18
Diethyl phthalate	0.11	"	<0.22	<0.22
4,6-Dinitro-2-methylphenol	0.15	"	<0.30	<0.30
N-Nitrosodiphenylamine	0.19	"	<0.38	<0.38
4-Bromophenylphenylether	0.03	"	<0.06	<0.06
Hexachlorobenzene	0.20	"	<0.40	<0.40
Pentachlorophenol	0.11	"	<0.22	<0.22
Phenanthrene	0.03	"	<0.06	<0.06
Anthracene	0.02	"	<0.04	<0.04
Di-n-butyl phthalate	0.11	"	<0.22	<0.22
Fluoranthene	0.02	"	<0.04	<0.04
Pyrene	0.03	"	<0.06	<0.06
Benzyl butyl phthalate	0.06	"	<0.12	<0.12
3,3-Dichlorobenzidine	0.10	"	<0.20	<0.20
Benzo(a)anthracene	0.02	"	<0.04	<0.04
Chrysene	0.03	"	<0.06	<0.06

Batch Code:	0925SPA1	0925SPA1	0925SPA1	0925SPA1	0925SPA1
pH	038766 96	038768 96	038770 96	038772 96	038774 96
Date analyzed	96/09/26	96/09/26	96/09/26	96/09/26	96/09/26
Date prepared	96/09/25	96/09/25	96/09/25	96/09/25	96/09/25

Batch Code:	1002MJA1
Arsenic (gfaa)	038764 96
	038766 96
	038768 96
	038770 96
	038772 96
	038774 96
Date analyzed	96/10/03
Date prepared	96/10/02

Batch Code:	1001MGA1
Mercury	038764 96
	038766 96
	038768 96
	038770 96
	038772 96
	038774 96
Date analyzed	96/10/02
Date prepared	96/10/01

Batch Code:	1002MJA1
Selenium (gfaa)	038764 96
	038766 96
	038768 96
	038770 96
	038772 96
	038774 96
Date analyzed	96/10/04
Date prepared	96/10/02

Batch Code:	1002MJA1
Metals	038764 96
	038766 96
	038768 96
	038770 96
	038772 96
	038774 96
Date analyzed	96/10/02
Date prepared	96/10/02

Batch Code:	1002SM02	1005SM02
Volatiles	038764 96	038774 96
	038766 96	
	038768 96	

10/9/96

ZEL Summary of Analysis Pre. Dates

Page MS-14 of 14

	038770 96	
	038772 96	
Date analyzed	96/10/02	96/10/05
Date prepared	96/10/02	96/10/05

Batch Code:	0925PB01
Semi-volatiles	038764 96
	038766 96
	038768 96
	038770 96
	038772 96
	038774 96
Date analyzed	96/09/27
Date prepared	96/09/25



Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401

(505) 326-2262 Phone
(505) 326-2388 FAX

MBS - 38704
MBW - 38765

COC Serial No. C 3115

Project Name <u>WFS Milagro</u>				Total Number of Bottles	Type of Analysis and Bottle <i>TCLP Metals SW601077110</i> <i>VOAS SW8260</i> <i>Semi-VOAS SW8270</i>										
Project Number <u>16766</u>		Phase / Task <u>6006 .77</u>													
Samplers <u>CM Chance</u>															
Laboratory Name <u>Zenon</u>		Location													
Sample Number (and depth)	Date	Time	Matrix												Comments
BH1-5-7	9/23/96	1000	SOIL	3	X	X	X								38766-6F 2 SUB, SOAL-2
BH1-25-27		1038		3	X	X	X								38768-6F
BH2-17-18		1202		3	X	X	X								38770-9F
BH3-20-22		1325		3	X	X	X								38772-9B
BG1-5-7		1400		3	X	X	X								38774-7B
<i>Case 9/23/96</i>															
<i>Total Metals at TELP area CC 9/6 09:30</i>															

Relinquished by:			Received By:		
Signature <i>Cory Chance</i>	Date 9/23/96	Time 1500	Signature <i>Zenon</i>	Date 9/23/96	Time 11:45 am

Samples Iced: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Carrier: <u>Fed Ex</u>	Airbill No. <u>7483873095</u>
Preservatives (ONLY for Water Samples) <input type="checkbox"/> Cyanide Sodium hydroxide (NaOH) <input type="checkbox"/> Volatile Organic Analysis Hydrochloric acid (HCl) <input type="checkbox"/> Metals Nitric acid (HNO3) <input type="checkbox"/> TPH (418.1) Sulfuric acid (H2SO4) <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Other (Specify) _____	Shipping and Lab Notes: <i>Standard Turnaround. Fax results to Cory Chance @ above #</i>	

MEMORANDUM OF MEETING OR CONVERSATION

<input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Personal	Time 7:45 AM	Date Nov. 27, 1996
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<u>Originating Party</u>	<u>Other Parties</u>
Jim Seibert, NMED HRMB	Pat Sanchez, NMOC

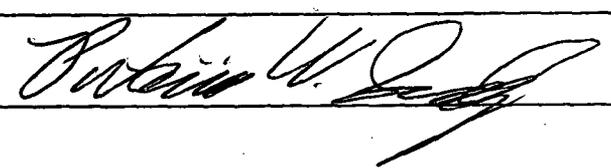
Subject WFS - Milagro waste water - Gw-60
Regulatory Determination
"Letter / Analysis from WFS dated Nov. 26, 1996"

Discussion
Mr. Seibert agreed with the determination as cited by Ms. Gooding in the November 26, 1996 letter regarding - Disposal of Wastewater From Milagro Plant Gw-60."

Mr. Seibert gave me a verbal approval, with a written correspondence to follow.

Conclusions or Agreements
① The wastewater per NMED, HRMB (Mr. Jim. Seibert) is NON-HAZARDOUS in terms of RCRA SUBTITLE C Regulations.

Distribution File, Hal Stone,
Leigh Gooding

Signed 



P.O. Box 58900 Salt Lake City, Utah 84158-0900

November 26, 1996

Mr. Patricio Sanchez
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

RE: Disposal of Wastewater From Milagro Plant GW-60

Dear Mr. Sanchez:

Enclosed, please find the representative analysis of wastewater generated at the Milagro Plant in Bloomfield, New Mexico. Based on process knowledge and the attached analysis, Williams Field Services maintains that the wastewater is non-hazardous. The chromium concentrations detected in the wastewater are a result of contact with the amine solution and stainless steel piping and vessels. The plant does not use and has never used chromium-containing chemicals in the process. The waste is generated from an industrial process which uses trivalent chromium exclusively and the process does not generate hexavalent chromium. Therefore, the waste is considered non-hazardous according to 40CFR Part 261.4 (b) (6) (I) (B).

Williams Field Services requests approval to dispose of this wastewater at Sunco's Class I Disposal Well. If you have any questions or need additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,

A handwritten signature in cursive script that reads "Leigh E. Gooding".

Leigh E. Gooding
Sr. Environmental Specialist

cc: Mr. Denny Foust
Hal Stone, Sunco

2506 W Main Street
 Farmington, New Mexico 87401

Client: **Williams Field Service**
 Project: **Milagro Plant**
 Sample ID: **North Evap Pond**
 Laboratory ID: **0396W01325**
 Sample Matrix: **Water**
 Condition: **Cool/Intact**

Date Reported: **08/01/96**
 Date Sampled: **07/11/96**
 Time Sampled: **9:45 AM**
 Date Received: **07/11/96**

Parameter	Analytical Result	Units	Units
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Lab pH.....	9.8	s.u.		
Lab Conductivity @ 25° C.....	9,470	umhos/cm		
Lab Resistivity @ 25° C.....	0.11	ohm/m		
Total Dissolved Solids @ 180°C.....	13,300	mg/L		
Total Hardness as CaCO3.....	93.0	mg/L		
Total Alkalinity as CaCO3.....	43,300	mg/L		
Total Phosphorous.....	118	mg/L		
Bicarbonate as HCO3.....	2,300	mg/L	38.0	meq/L
Carbonate as CO3.....	24,800	mg/L	828	meq/L
Hydroxide as OH.....	<1.00	mg/L	<1.00	meq/L
Chloride.....	2,270	mg/L	64.0	meq/L
Sulfate.....	218	mg/L	4.54	meq/L
Nitrate.....	4.07	mg/L	0.29	meq/L
Calcium.....	18.8	mg/L	0.94	meq/L
Magnesium.....	11.2	mg/L	0.92	meq/L
Sodium.....	1,090	mg/L	47.3	meq/L
Potassium.....	56.3	mg/L	1.44	meq/L

Trace Metals (Total)

Arsenic.....	<0.005	mg/L		
Barium.....	0.10	mg/L		
Cadmium.....	0.029	mg/L		
Chromium.....	21.1	mg/L		
Lead.....	0.069	mg/L		
Mercury.....	<0.001	mg/L		
Selenium.....	0.007	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
 "Standard Methods For The Examination Of Water And Waste Water", 18th ed., 1992.

Comments:

Reported by lwm

Reviewed by OB

2506 W Main Street
 Farmington, New Mexico 87401

Client: Williams Field Service
Project: Milagro Plant
Sample ID: West Evap Pond
Laboratory ID: 0396W01326
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 08/01/96
Date Sampled: 07/11/96
Time Sampled: 10:00 AM
Date Received: 07/11/96

Parameter	Analytical Result	Units	Units
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Lab pH.....	9.8	s.u.		
Lab Conductivity @ 25° C.....	11,100	umhos/cm		
Lab Resistivity @ 25° C.....	0.09	ohm/m		
Total Dissolved Solids @ 180°C.....	23,900	mg/L		
Total Hardness as CaCO3.....	131	mg/L		
Total Alkalinity as CaCO3.....	81,700	mg/L		
Total Phosphorous.....	164	mg/L		
Bicarbonate as HCO3.....	7,600	mg/L	125	meq/L
Carbonate as CO3.....	45,300	mg/L	1509	meq/L
Hydroxide as OH.....	<1.00	mg/L	<1.00	meq/L
Chloride.....	3,050	mg/L	86.0	meq/L
Sulfate.....	407	mg/L	8.49	meq/L
Nitrate.....	2.90	mg/L	0.21	meq/L
Calcium.....	26.7	mg/L	1.33	meq/L
Magnesium.....	15.7	mg/L	1.29	meq/L
Sodium.....	1,570	mg/L	66.3	meq/L
Potassium.....	104	mg/L	2.67	meq/L
Trace Metals (Total)				
Arsenic.....	<0.005	mg/L		
Barium.....	0.09	mg/L		
Cadmium.....	0.046	mg/L		
Chromium.....	28.3	mg/L		
Lead.....	0.080	mg/L		
Mercury.....	<0.001	mg/L		
Selenium.....	<0.005	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
 "Standard Methods For The Examination Of Water And Waste Water", 18th ed., 1992.

Comments:

Reported by WM

Reviewed by JB

Inter-Mountain Laboratories, Inc.

2508 W. Main Street
Farmington, New Mexico 87401

Client: **Williams Field Service**
 Project: **Milagro Plant**
 Sample ID: **South Evap Pond**
 Laboratory ID: **0396W01327**
 Sample Matrix: **Water**
 Condition: **Cool/Intact**

Date Reported: **06/01/96**
 Date Sampled: **07/11/96**
 Time Sampled: **10:10 AM**
 Date Received: **07/11/96**

Parameter	Analytical Result	Units	Units
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Lab pH.....	9.8	s.u.		
Lab Conductivity @ 25° C.....	8,210	umhos/cm		
Lab Resistivity @ 25° C.....	0.12	ohm/m		
Total Dissolved Solids @ 180°C.....	10,300	mg/L		
Total Hardness as CaCO3.....	91.0	mg/L		
Total Alkalinity as CaCO3.....	43,520	mg/L		
Total Phosphorous.....	73.7	mg/L		
Bicarbonate as HCO3.....	2,800	mg/L	46.4	meq/L
Carbonate as CO3.....	24,700	mg/L	824	meq/L
Hydroxide as OH.....	<1.00	mg/L	<1.00	meq/L
Chloride.....	1,080	mg/L	30.8	meq/L
Sulfate.....	210	mg/L	4.37	meq/L
Nitrate.....	8.15	mg/L	0.58	meq/L
Calcium.....	19.8	mg/L	0.99	meq/L
Magnesium.....	10.1	mg/L	0.83	meq/L
Sodium.....	590	mg/L	25.7	meq/L
Potassium.....	59.4	mg/L	1.52	meq/L
Trace Metals (Total)				
Arsenic.....	0.006	mg/L		
Barium.....	0.10	mg/L		
Cadmium.....	0.032	mg/L		
Chromium.....	19.0	mg/L		
Lead.....	0.057	mg/L		
Mercury.....	<0.001	mg/L		
Selenium.....	0.006	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
 "Standard Methods For The Examination Of Water And Waste Water", 18th ed., 1992.

Comments:

Reported by WJM

Reviewed by JB



NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

November 25, 1996

CERTIFIED MAIL
RETURN RECEIPT NO. P-288-258-696

Ms. Leigh Gooding
Williams Field Services, Inc. (WFS)
P.O. Box 58900, M.S. 2G1
Salt Lake City, Utah 84158-0900

RE: Class V Investigation Report
Prepared by Philip Environmental on Behalf of WFS
Discharge Plan GW-60, Milagro Gas Plant
San Juan County, New Mexico

Dear Ms. Gooding:

The OCD has received the "The Subsurface Investigation of the Milagro Plant Septic Leach Field San Juan Basin, New Mexico - September 1996", from Philip Environmental dated October 24, 1996. The investigation was part of a work plan approved by the OCD with conditions dated September 9, 1996. The OCD upon review of the investigation as submitted by Philip Environmental on behalf of WFS will require that the following points of deficiency be resolved and submitted by WFS - Please submit your response(s) in duplicate to the Santa Fe OCD Division Office, with a copy to the Aztec OCD District Office:

Point of Deficiency Number 1. From the September 9, 1996 letter from OCD:

Point number 3. (previous page) upon telephone conversation with Ms. Leigh Gooding of Williams Field Services at about 11:00 AM, today September 9, 1996 it was learned that Williams Field Services had not sent any of its lab waste to the City of Bloomfield POTW, and that the lab waste is currently being stored at Milagro Plant. Williams Field Services according to Ms. Gooding has decided to seek other disposal options. Since this waste is a solid waste, non-exempt from RCRA Subtitle C the OCD will require the following:

- The waste needs to be determined as to its status as hazardous or non-hazardous as defined in 40 CFR Part 261, i.e. is the waste listed (F.K.P. or U), or is the waste characteristic hazardous by TCLP constituents, or Reactive, Ignitable, or Corrosive?

Williams must make this determination and submit the appropriate documentation to the OCD Santa Fe Office certifying the status of the waste as hazardous or non-hazardous. This determination will be completed and submitted by October 9, 1996. Note: this waste cannot be removed for the Milagro plant facility until the status and proper disposal options have been determined. In the meantime, the lab waste will be properly stored and labeled at Milagro Plant until this situation is clarified.

This Item has not been addressed, Philip Environmental's report under "1.1 Scope of Work" states only that the waste will be sent to "Laidlaw Environmental - Clive, Utah Facility", the OCD has not authorized this method of offsite disposal, and can not approve this until the status of the waste is clarified as previously required. Note: If the waste is hazardous WFS must notify the New Mexico Environment Department, Hazardous and Radioactive Materials Bureau for proper hazardous waste treatment/disposal methods, their phone number is (505)-827-1558. In any case, if the waste is hazardous or non-hazardous OCD must have

Ms. Leigh Gooding
 November 25, 1996
 Report on Class V Investigation,
 GW-060
 Pg 2

the information required previously in order to approve or disapprove of the offsite disposal. WFS will submit this information to the OCD Santa Fe and Aztec District Office by December 9, 1996.

Point of Deficiency Number 2. The sludge and wastewater contained within the septic tank itself has not been analyzed as required in the September 9, 1996 letter from OCD:

- L. Proposed analytical methods for profiling of the soils, sludges, and wastewater associated with the perimeter and interior of the well to determine the potential contamination of the well. the constituents of concern will be in accordance with 40 CFR Part 261 and WQCC Regulations.

WFS will submit the above requested analysis for the interior of the septic tank by January 31 1997, wastewater will be analyzed for WQCC 20 NMAC 6.2.3103 constituents, and the septic sludge will be analyzed for 40 CFR Part 261 TCLP constituents of concern as well as Reactivity, Ignitability, and Corrosivity.

Point of Deficiency Number 3. From section 3.0 Results as submitted by Philip Environmental on October 24, 1996. The lab results indicate that the entire sample specimens including the background sample contained Acetone, Methylene Chloride, and Toluene. WFS needs to explain the presence of the compounds and propose a plan of action to deal with these constituents. WFS will address this issue by January 31, 1997.

Point of Deficiency Number 4. An as-built diagram of the septic/leach system to scale indicating the location of the boreholes needs to be prepared and submitted. WFS will submit the scaled diagram by January 31, 1997.

WFS should submit point of deficiency clarifications for 2 through 4 as a package.

Sincerely,



Patricio W. Sanchez
 Petroleum Engineering Specialist
 Environmental Bureau - OCD
 (505)-827-7156

xc: Mr. Denny Foust, New Mexico Oil Conservation Division Aztec Office.

P 288 258 696

US Postal Service	
Receipt for Certified Mail	
No Insurance Coverage Provided.	
Do not use for International Mail (See reverse)	
Sent to	WFS - Ms. Gooding
Street & Number	GW-060, Milagro Class V
Post Office, State, & ZIP Code	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

PHILIP

ENVIRONMENTAL

Environmental Services Group
Southern Region

October 24, 1996

Project 16766

Mr. Roger Anderson
Bureau Chief
New Mexico Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505

RECEIVED

OCT 28 1996

Environmental Bureau
Oil Conservation Division

**RE: Final Report on Field Work for the Subsurface Investigation of
Williams Field Services' Milagro Plant Septic Leach Field,
Bloomfield, New Mexico**

Dear Mr. Anderson:

On behalf of Williams Field Services, Salt Lake City, Utah, Philip Environmental Services Corporation hereby submits the enclosed report for the above referenced project.

If you have any questions or require further information, please contact Ms. Leigh Gooding, Williams Field Services, at (801) 584-6543.

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Cory M. Chance / RD

Cory M. Chance
Geologist

CMC:cc

Enclosure -
As stated

cc: Mr. Denny Foust, New Mexico Oil Conservation Division Aztec Office
Ms. Leigh Gooding, Williams Field Services, Salt Lake City, Utah



ACKNOWLEDGEMENT OF RECEIPT
OF CHECK/CASH

I hereby acknowledge receipt of check No. [REDACTED] dated 9/4/96
or cash received on _____ in the amount of \$ 1717.50
from Williams Field Services

for Melago G.P. GW-60
(Facility Name) (DP No.)

Submitted by: _____ Date: _____

Submitted to ASD by: R. Anderson Date: 10/18/96

Received in ASD by: PKH Date: 10/23/96

Filing Fee _____ New Facility _____ Renewal _____
Modification Other _____

Organization Code 521.07 Applicable FY 97

To be deposited in the Water Quality Management Fund.

Full Payment or Annual Increment _____

WILLIAMS FIELD SERVICES COMPANY
ONE OF THE WILLIAMS COMPANIES
P.O. Box 58900
Salt Lake City, Utah 84158-0900

Chase Manhattan Bank Delaware
1201 Market Street
Wilmington DE 19801
62-26 5736-09
311

DATE	CHECK NO.	NET AMOUNT
09/04/96	[REDACTED]	1717.50

PAY
ONE THOUSAND SEVEN HUNDRED SEVENTEEN AND 50/100-----

TO THE ORDER OF
NEW MEXICO DEPARTMENT ENERGY
MINERALS AND NATURAL RESOURCES
OIL CONSERVATION DIVISION
2040 S PACHECO
SANTE FE NM 87505

Williams Field Services Company
Franklin Hill
VICE PRESIDENT
AUTHORIZED REPRESENTATIVE



Williams Field Services Company

2209 NEW MEXICO DEPARTMENT ENERGY

09/04/96

INVOICE NUMBER	DESCRIPTION	INVOICE DATE	AMOUNT	DISCOUNT	NET AMOUNT
594835-299	FILING FEE-MILAGRO	08/13/96	1717.50	0.00	1717.50
	<i>6w-60 Milagro - Modification</i>				
			1717.50	0.00	1717.50

PLEASE DETACH BEFORE DEPOSITING

RECEIVED
OCT 8 1996

P.O. Box 58900 Salt Lake City, Utah 84158-0900

October 1, 1996

95 00 7 117 8 52

Mr. Patricio Sanchez
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

RECEIVED

OCT 8 1996

Environmental Bureau
Oil Conservation Division

Dear Mr. Sanchez:

In response to your request to schedule Discharge Plan inspections, I have contacted the operations personnel responsible for each facility and have arranged the following inspection schedule:

Monday October 21, 1996

8:00am Milagro Plant:
10:00am San Juan Area Office
Trunk A Booster Station
Trunk B Booster Station
Trunk C Booster Station

Site Contact

Gerald Brower at 632-4675
Rex Fox at 632-4632

Tuesday October 22, 1996

8:00am Torre Alta Area Office
Coyote Springs C/S
10:00am Ignacio Field Office
Lateral N-30

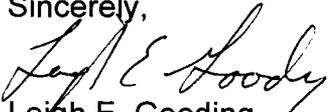
Site Contact

John McKinney at 632-4411
Gip Aulbert at 632-3865

The San Juan Area Office is located across from the Milagro Plant on County Road 4900 in Bloomfield. The Torre Alta Area Office is located across from the Kutz Plant on County Road 4980 in Bloomfield. The Ignacio Field Office is located on Goddard Ave at the southern city limits of Ignacio, CO.

If you have any questions or require additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,


Leigh E. Gooding
Sr. Environmental Specialist

cc: Denny Foust, NMOCD Aztec Office
Gip Aulbert, IGF
Gerald Smith, MIL
Jim West, MND
Ed Hobday, MND
Larry Hjalmarson, SJA
Tom O'Keefe, TAA

Ms. Leigh Gooding
September 9, 1996
Work Plan GW-060
Pg 2

Point number 2. (previous page) was addressed with the letter dated August 9, 1996 from Williams Field Services as requested by the OCD in July 25, 1996 NOV.

Point number 3. (previous page) upon telephone conversation with Ms. Leigh Gooding of Williams Field Services at about 11:00 AM, today September 9, 1996 it was learned that Williams Field Services had not sent any of its lab waste to the City of Bloomfield POTW, and that the lab waste is currently being stored at Milagro Plant. Williams Field Services according to Ms. Gooding has decided to seek other disposal options. Since this waste is a solid waste, non-exempt from RCRA Subtitle C the OCD will require the following:

- The waste needs to be determined as to its status as hazardous or non-hazardous as defined in 40 CFR Part 261. i.e. is the waste listed (F,K,P, or U), or is the waste characteristic hazardous by TCLP constituents, or Reactive, Ignitable, or Corrosive?

Williams must make this determination and submit the appropriate documentation to the OCD Santa Fe Office certifying the status of the waste as hazardous or non-hazardous. This determination will be completed and submitted by October 9, 1996. Note: this waste cannot be removed for the Milagro plant facility until the status and proper disposal options have been determined. In the meantime, the lab waste will be properly stored and labeled at Milagro Plant until this situation is clarified.

The work plan along with this letters conditions is hereby approved, all work associated with the work plan will begin by September 19, 1995 with a "Class V Investigation" report to be submitted to the OCD Santa Fe Office for review, with a copy to the Aztec OCD District office. The report will include onsite technical notations - i.e. boring location, sample points-dates, times, and lab analysis with proper lab QA/QC reports attached, and Williams Field Services observations and recommendations regarding the investigation of the data collected. The report will be due to the OCD within 30 days of the work plan completion.

Please note, that approval of this work plan with the conditions of this letter dated September 9, 1996 from OCD does not relieve Williams Field Services from liability should it be found that further investigation is needed as a result of this work plan. Further, OCD approval does not relieve Williams Field Services from compliance with other Federal, State, and Local Rules/Regulations that may apply.

If you have any questions please contact me at (505) 827-7152 or Pat Sanchez at (505)-827-7156.

Sincerely,



Roger C. Anderson
Bureau Chief

RCA/pws

xc: Mr. Denny Foust, New Mexico Oil Conservation Division Aztec Office.
Mr. Coby Muckelroy, NMED, HRMB
Mr. Gerry Brower - Plant Manager, WFS Milagro Plant P-288-258-618



NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

September 9, 1996

CERTIFIED MAIL
RETURN RECEIPT NO. P-288-258-617

Ms. Leigh Gooding
Williams Field Services, Inc.
P.O. Box 58900, M.S. 2G1
Salt Lake City, Utah 84158-0900

**RE: Class V Work Plan Proposal
Discharge Plan (GW-60) Milagro Gas Plant
San Juan County, New Mexico**

Dear Ms. Gooding:

The OCD has received the Class V work plan proposal from William Field Services dated August 9, 1996 which responded to the NOV from OCD dated July 25, 1996. The OCD required that the work plan address the following concerns:

1. Proposed analytical methods for profiling of the soils, sludges, and wastewater associated with the perimeter and interior of the well to determine the potential contamination of the well, the constituents of concern will be in accordance with 40 CFR Part 261 and WQCC Regulations.
2. A comprehensive listing of all wastes that have been discharged to the well.
3. A proposal to modify the existing discharge plan for the proper disposition of the laboratory waste(s).

Point number 1. will be addressed as proposed by Philip Environmental with the following revision:

A. The leech field will be drilled at midpoint as stated in the plan with the condition that if groundwater is encountered the OCD Santa Fe Office will be notified within 24 hours and procedures will be proposed to complete the well so that groundwater samples may be obtained. The samples will be analyzed for WQCC constituents of concern. The soil sample(s) that are taken as part of the investigation as proposed by Philip Environmental on behalf of Williams Field Services will be analyzed for Total RCRA Metals, Semi-Volatile Organics, and Volatile Organics with the methods specified in the work plan.

B. The septic tank itself will have the waste-water in the tank tested for WQCC constituents using the appropriate EPA approved test methods. The sludge (if present) of the septic tank will be tested for Total RCRA Metals, Semi-Volatile Organics, and Volatile Organics with the methods specified in the work plan, and Reactivity, Ignitability, and Corrosivity per 40 CFR Part 261 using the methods in SW-846.

P 229 258 617

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

Sent to WFS - Gardiner	
Street & Number Milagro Class V.	
Post Office, State, & ZIP Code	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

PS Form 3800, April 1995

P 288 258 618

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

Sent to WFS - Bruner	
Street & Number Milagro Class - 5	
Post Office, State, & ZIP Code	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

S Form 3800, April 1995

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES 

MILAGRO PLANT
P O BOX 700
BLOOMFIELD NM 87415

RECEIVED

SEP 06 1996

Environmental Bureau
Oil Conservation Division



IMPORTANT FAX MAIL COMING THROUGH !!

FAX TRANSMITTAL

TO: PAT SANCHEZ - New Mexico OCD

DATE: 9/6/96

FAX NO. 505-827-8177

FROM: GERRY BROWER 505-632-4675

FAX NO. 505-632-4664

NO. PAGES 3
(Including Cover Sheet)

COMMENTS:

MILAGRO PLANT SEPTIC SYSTEM

PER REQUEST FROM LEIGH GOODING

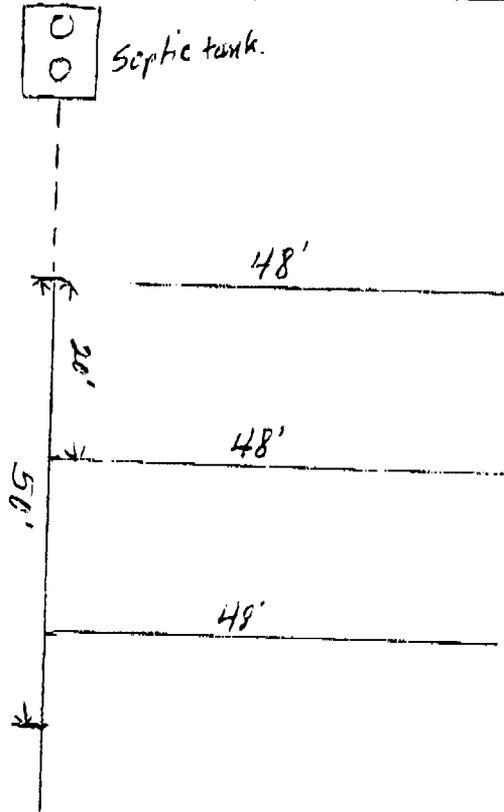
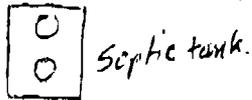
* If you do not receive all pages of this transmittal, please call Carrie Oshroff at 505/632-1607.

Bloomfield Plumbing & Heating

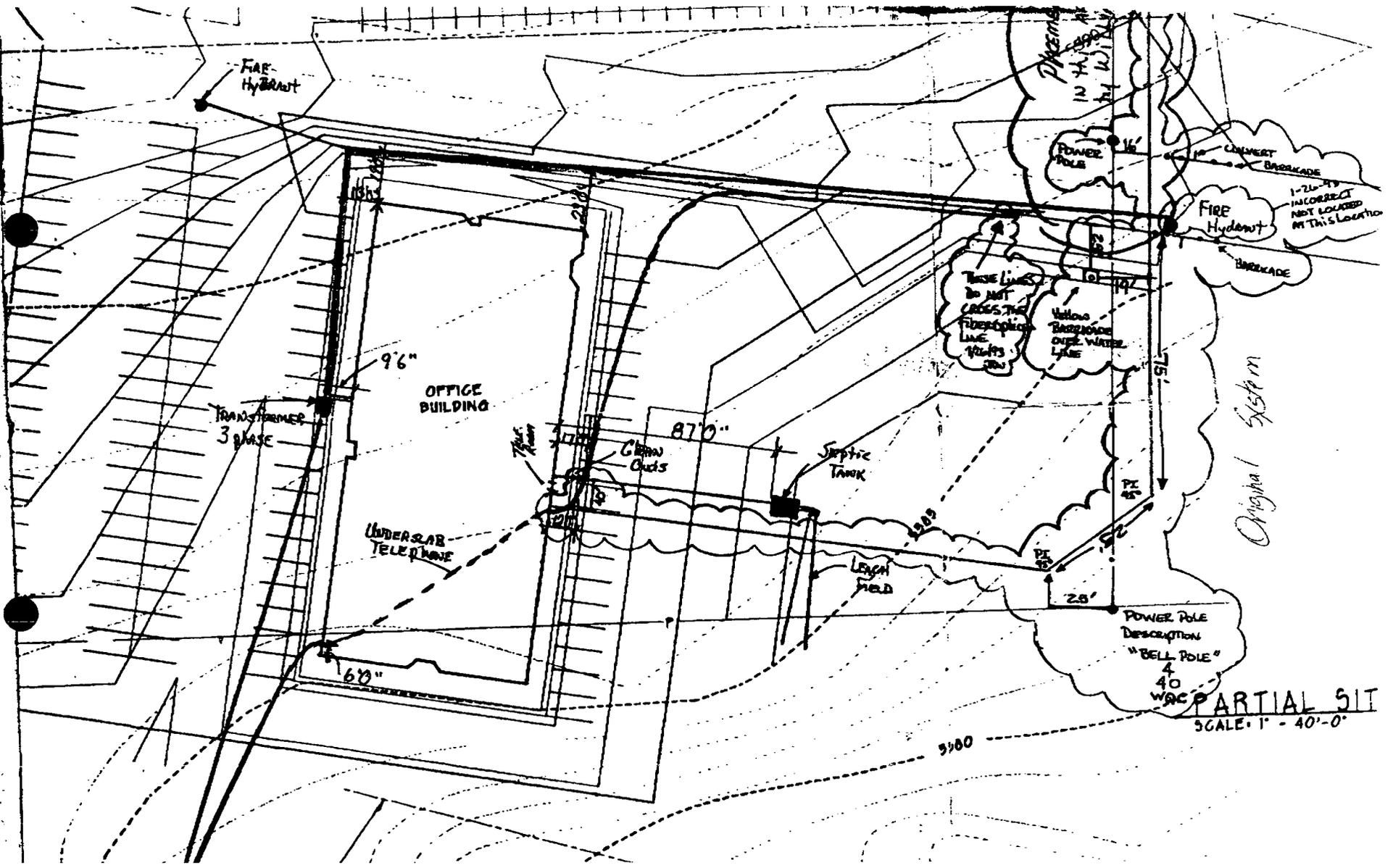
317 W. Sycamore
Bloomfield, NM 87413
(505) 632-3118

Office Bldg.

Parking lot



Current septic system
Installed Feb '96



PARTIAL SIT
SCALE: 1" = 40'-0"

Pat Sanchez

From: Denny Foust
Sent: Wednesday, August 21, 1996 9:33 AM
To: Pat Sanchez
Subject: WFS MILAGRO PLANT CLASS V WELL CONTAMINATION
Importance: High

August 21, 1996

Leigh Gooding's proposal to evaluate contamination at the septic system receiving lab waste seems to include insufficient testing for contamination. I recommend a minimum of three samples points within the leach field. If groundwater is encountered the water should be tested for contamination exceeding WQCC standards. WFS should also look at the possibility of eliminating molybdenum from the lab waste stream.

Denny G. Foust

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES 

P.O. Box 58900
Salt Lake City, UT 84158-0900
(801) 584-7033
FAX: (801) 584-6483

RECEIVED

AUG 13 1996

Environmental Bureau
Oil Conservation Division

August 9, 1996

Mr. Roger Anderson
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

**RE: RESPONSE TO NOTICE OF VIOLATION: DISCHARGE PLAN (GW-60)
MILAGRO GAS PLANT, SAN JUAN COUNTY, NEW MEXICO**

Dear Mr. Anderson:

In response to the Notice of Violation issued to Williams Field Services Company's (WFS) Milagro Plant (GW-60), I have attached the following:

- * A work plan to investigate the subsurface for potential contamination (prepared by Philip Environmental);
- * Proposed analytical methods for profiling of the soils, sludges, and wastewater associated with the perimeter and interior of the septic leach field to determine potential contamination of the field (Attachment A of Philip proposal); and
- * A comprehensive listing of all laboratory wastes which have been discharged to the leach field (previously submitted to NMOCD in the Discharge Plan Renewal).

The existing Discharge Plan will not be modified as all laboratory waste are currently disposed at the Bloomfield Wastewater Treatment plant as stated in the Discharge Plan Renewal.

Upon approval from NMOCD, WFS will proceed with the proposed work plan. If you have any questions, or require additional information, please feel free to contact me at (801) 584-6543.

Sincerely,



Leigh E. Gooding
Sr. Environmental Specialist

attachment

cc: Denny Foust, NMOCD District III Office



Environmental Services Group
Southern Region

RECEIVED

AUG 13 1996

Environmental Bureau
Oil Conservation Division

Project 16766

August 7, 1996

Ms. Leigh E. Gooding
Sr. Environmental Specialist
Williams Field Services
P.O. Box 58900
Salt Lake City, Utah 84158-0900

RE: Subsurface Investigation of Septic Leach Field, Located at Williams Field Service's Milagro Plant, Bloomfield, New Mexico

Dear Ms. Gooding:

Philip Environmental Services Corporation (Philip) is pleased to submit to Williams Field Services (WFS) the following proposal and cost estimate to perform the above mentioned project. Philip has prepared this proposal based on WFS's Request for Proposal (RFP) dated July 29, 1996.

Philip understands WFS requires soil borings and soil sample collection at the Milagro Plant, located in Bloomfield, New Mexico. Philip proposes to perform the following scope of work:

- Drill one soil boring within the approximate center of the septic leach field. Collect one soil sample from within the impacted area and one soil sample from approximately 10 feet beneath the bottom of the leach field, or 10 feet beneath visible impact to the soil, and submit for laboratory analysis.
- Drill two soil borings on the estimated downgradient edge of the leach field. Collect soil samples from each boring at approximately 10 feet beneath the bottom of the leach field, or 10 feet beneath visible impact to the soil, and submit for laboratory analysis.
- Soil samples shall be submitted for the analytical parameters presented in Attachment A.

SCOPE OF WORK

One boring shall be advanced in the approximate center of the leach field with soil samples collected at 5 foot intervals. One soil sample shall be collected from within the impacted area of the leach field and submitted for laboratory analysis.



A second soil sample shall be collected from either ten foot beneath the bottom of the leach field, or ten foot beneath visible impact to the soil, and shall be submitted for laboratory analysis. The soil shall be screened for volatiles while drilling, using a photoionization detector. If auger refusal occurs, the sample from the bottom of the borehole will be submitted for laboratory analysis. The boring will then be grouted shut with a neat cement slurry containing a minimum of 5% bentonite.

Two additional soil borings shall be advanced on the estimated down-gradient outer edge of the leach field in the same manner as above. One soil sample shall be collected from each soil boring, and shall be submitted for laboratory analysis. The borings shall be located at an appropriate distance relative to each other, to achieve representative soil samples.

In addition to the leach field samples, one background sample shall be collected at a location up-gradient from the leach field. The sample shall be collected at approximately five foot below ground surface, and will be analyzed for the parameters listed in Attachment A.

If shallow groundwater is encountered, the soil sample from above the water table will be submitted for laboratory analysis. If the analytes of concern are detected in the soil samples, a second investigation may be conducted, with the installation of temporary groundwater monitoring wells.

All sample containers will be labeled with the appropriate analysis, date and time of collection, sample number, sample location, and sample collector. All sample identification numbers and requested analysis will be documented on a Chain-of-Custody Form. Samples will be placed on ice, and shipped via overnight delivery to the laboratory following strict Chain-of-Custody procedures.

Philip's on-site geologist will complete daily drilling reports, lithologic logs, soil and groundwater sampling forms, and chain-of-custody forms, which shall be submitted with the final report, following completion of all field work.

COSTS

Philip proposes to perform the services described in the Scope of Work on a unit-rate and lump-sum basis, as listed below. State and local taxes are not included in this cost estimate.

- | | | |
|-----------------------------------|----------|-----------------------------|
| • Soil Boring and Sampling | \$25.00 | Unit Rate (per linear foot) |
| • Mobilization, Set-up, and Decon | \$190.00 | Lump Sum |
| • Analytical | \$570.00 | Unit Rate (per sample) |

Page 3
Ms. Leigh Gooding
Williams Field Services

- Report \$1650.00 Lump Sum

ASSUMPTIONS

The following assumptions, in addition to those in the text of this proposal, were used to develop the costs for this project.

- All drilling and access to boring locations can be completed using a CME-75 hollow-stem auger drill rig.
- Drill cuttings can be disposed of by thin spreading at each boring location.
- Auger refusal will be determined by the driller.
- Drill equipment decontamination waste water can be disposed of on-site.
- Philip assumes all work will be performed in Level D personal protective equipment.
- Philip assumes there will be no stand-by due to weather, unforeseen conditions, or other delays beyond Philip's control.

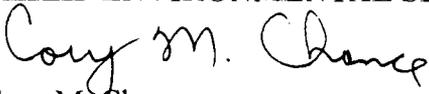
SCHEDULE

Philip shall commence with field activities for this Scope of Work within one week of authorization by WFS. Philip plans to conduct field activities approximately ten hours per day, for approximately one to two days.

Philip appreciates the opportunity to submit this proposal. Please feel free to contact Martin Nee or Cory Chance at (505)326-2262 if you have any questions regarding this proposal.

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION


Cory M. Chance
Geologist

Attachments - As stated

ATTACHMENT A

Analytical Parameters

Parameter	Method
Chloride	EPA 300
pH	EPA 150.1
Total RCRA Metals	SW 6010/7470
Semi-Volatile Organics	SW 8270
Volatile Organics	SW 8260

WILLIAMS FIELD SERVICE
MILAGRO PLANT

Chemical Disposal List

The following reagents are used during routine testing done at our laboratory facility. All of the reagents are consumed through chemical reactions and are not disposed of in a pure state. The acids and bases that are used, are chemically neutralized and all fall into the 5.0-11.3 pH range. However, after test are run DI Water is added to bring pH down to ≤ 10.0 .

<u>Chemical Name</u>	<u>Approximate Disposal Amount/Year</u>
*Acid Reagent	365 gms
*Amino Acid	365 gms
*Amino Acid F	182 gms
*Citric Acid	730 gms
*Ferrover Iron	547 gms
Gallic Acid	15 gms
Hardness Indicator	60 gms
Hardness Buffer	55 gms
(1)Hydrochloric Acid .1N	3.0 L
Methanol	73 L
*Molybdate Powder	365 gms
*Molybdate Liquid	4.8 L
*Molybdate 3 Powder	180 gms
pH 7 buffer	7.8 L
pH 10 buffer	600 ml
(2)Potassium Hydroxide .2N	250 ml
(1)Sulfuric Acid 10N	5.0 L

* Diluted 25:1 with boiler and/or deionized water.

(1) Neutralized to pH of 5.0 before disposal.

(2) Neutralized to pH ≤ 10.0 before disposal.

AFFIDAVIT OF PUBLICATION

No. 36465

STATE OF NEW MEXICO
County of San Juan:

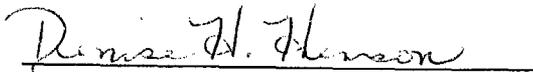
ROBERT LOVETT being duly sworn says: That he is the Classified Manager of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication on the following day(s):

Wednesday, June 12, 1996;

and the cost of publication is: \$64.84.



On 6/12/96 ROBERT LOVETT
appeared before me, whom I know
personally to be the person who signed the
above document.



My Commission Expires May 17, 2000

COPY OF PUBLICATION

Legals



NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to the New Mexico Water Quality Control Commission Regulations, the following discharge plan modification application has been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

(GW-60) - Williams Field Services, Leigh Gooding, Environmental Specialist, P.O. Box 58900, M.S. 10368, Salt Lake, Utah 84158-0900, has submitted a request to modify their existing discharge plan for the Milagro Gas Plant located in the SW/4 SE/4, Section 12, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. This modification proposal addresses the addition of a fifth boiler and amline train. Approximately 1500 gallons per day of process wastewater will be disposed of in an evaporation pond double-lined with a synthetic impervious liner with a leak detection system. Groundwater most likely to be affected by an accidental discharge is at a depth of 60 feet with total dissolved solids concentrations of approximately 5800 mg/l. The discharge plan addresses how spill, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday thru Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Request for public hearing shall set forth the reasons why a hearing shall be held. A hearing will be held if the director determines that there is significant public interest.

If no hearing is held, the Director will approve or disapprove the plan based on the information available. If a public hearing is held, the Director will approve the plan based on the information in the plan and information presented at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 28th day of May, 1996.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

/s/William J. LeMay
WILLIAM J. LEMAY, Director

SEAL

Legal No. 36465 published in The Daily Times, Farmington, New Mexico, on Wednesday, June 12, 1996.

The Santa Fe New Mexican

Since 1849. We Read You.

NEW MEXICO OIL CONSERVATION
ATTN: SALLY MARTINEZ
2040 S. PACHECO
SANTA FE, NM 87505

AD NUMBER: 511037

ACCOUNT: 56689

LEGAL NO: 59809

P.O. #: 96199002997

174 LINES once at \$ 69.60

Affidavits: 5.25

Tax: 4.68

Total: \$ 79.53

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS
AND NATURAL
RESOURCES
DEPARTMENT
OIL CONSERVATION
DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan modification application has been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico, 87505, Telephone (505) 827-7131:

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If no public hearing is held, the Director will approve or disapprove the proposed plans based on information available. If a public hearing is held, the director will approve or disapprove the proposed plans based on information in the discharge plan applications and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 28th day of May, 1996.

STATE OF NEW MEXICO
OIL CONSERVATION
DIVISION
WILLIAM J. LEMAY,
Director
Legal #59809
Pub. June 7, 1996

AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO
COUNTY OF SANTA FE

I, BETSY PERNER being first duly sworn declare and say that I am Legal Advertising Representative of THE SANTA FE NEW MEXICAN, a daily news paper published in the English language, and having a general circulation in the Counties of Santa Fe and Los Alamos, State of New Mexico and being a Newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 on Session Laws of 1937; that the publication # 59809 a copy of which is heretofore attached was published in said newspaper once each week for one consecutive week(s) and that the notice was published in the newspaper proper and not in any supplement; the first publication being on the 59809 day of JUNE 1996 and that the undersigned has personal knowledge of the matter and things set forth in this affidavit.

/s/

Betsy Pernerk
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this 7th day of JUNE A.D., 1996



OFFICIAL SEAL

Candace C. Ruiz

NOTARY PUBLIC - STATE OF NEW MEXICO

My Commission Expires: 4/29/99



P.O. Box 58900
Salt Lake City, UT 84158-0900
(801) 584-7033
FAX: (801) 584-6483

RECEIVED DIVISION
APR 23 1996
03 PM '96 APR 8 52

April 23, 1996

Mr. Chris Eustice
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87504

Re: Discharge Plan Revision for Milagro Plant Located in San Juan
County, New Mexico (GW-60).

Dear Mr. Eustice:

Attached, please find two copies of the Discharge Plan Revision for
Williams Field Services' Milagro Plant. This revision addresses
the addition of a fifth amine treating train.

If you have any questions or require additional information, please
do not hesitate to contact me at (801) 584-6543.

Sincerely,

Leigh E. Gooding
Sr. Environmental Specialist

attachment

cc: Mr. Denny Foust, NMOCD District III Office (letter and
attachment)

WILLIAMS FIELD SERVICES
MILAGRO GAS TREATMENT PLANT DISCHARGE PLAN UPDATE
April 1996

I. BACKGROUND INFORMATION

On November 30, 1990, Williams Field Services (WFS) submitted a Discharge Plan for the Milagro Gas Treatment Plant to the New Mexico Oil Conservation Division (OCD) for review and approval. The plan addressed the handling, storage, and disposal of wastes generated during the process of removing CO₂ from Fruitland formation coal seam gas. The plan, GW-60, was subsequently approved by OCD on March 21, 1991. WFS received approval of the Discharge Plan Renewal on January 18, 1996. According to the terms of the Discharge Plan, WFS is required to notify the Director of the OCD of any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume. This revision addresses proposed modifications at the Milagro Plant.

II PROPOSED MODIFICATIONS

Williams Field Services proposes to install an additional 120 MMSCFD amine-treating train at the Milagro Plant. No additional fired air emission sources will be installed. No new liquid wastes are expected to be generated by the proposed modification. Provisions for amine-train wastes are given in the original Discharge Plan and its Renewal. The added volume of amine-train wastes are handled in accordance with the approved Discharge Plan and its Renewal. The location of the fifth train is depicted in the Facility Site Plan (attached).

III SUMMARY

No new liquid wastes will be generated by the proposed modification at this facility. All liquid wastes will be handled in accordance with the approved OCD Discharge Plan and its Renewal (GW-60).

IV AFFIRMATION

I hereby certify that I am familiar with the information contained in and submitted with this revision and that such information is true, accurate, and complete to the best of my knowledge and belief.



Signature

4-23-96

Date

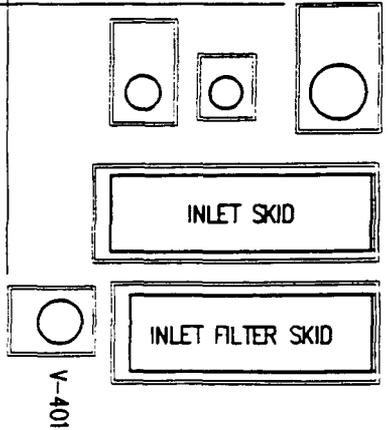
Terry G. Spradlin

Manager, Environment, Health & Safety

EXISTING FENCE
E. 8+45'-6" ±

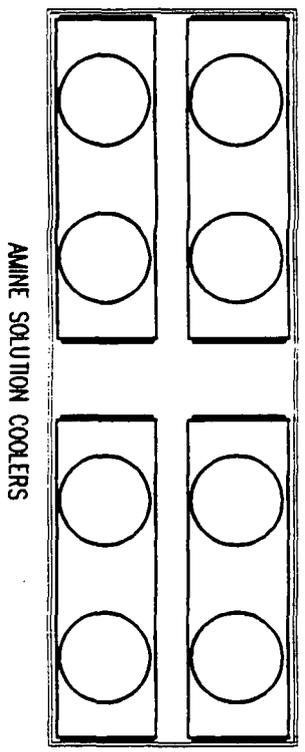
N. 5+00'-0"

GAS CONTACTOR V-501
RES. SCRUBBER V-402
WET/DRY GAS SCRUBBER
V-572/V-478



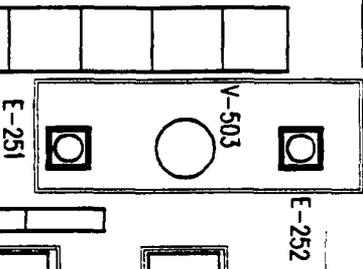
N. 6+00'-0"

299'-6" ±



N. 7+00'-0"

REBOILER CONTROL SKID

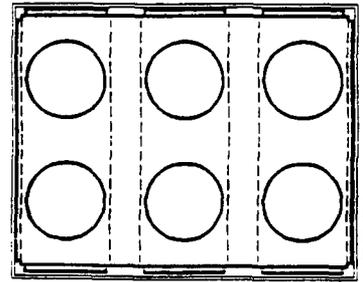


N. 8+00'-0"

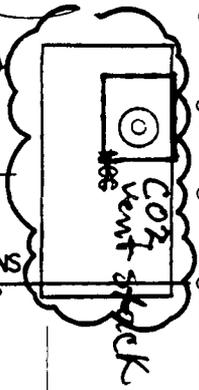
HOLD FOR MCC LOCATION

A-371 GLYCOL COOLER

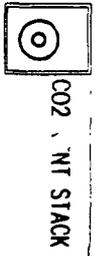
MCC



PIPERACK COLUMNS
N. 8+17'-5 1/4"



20'
14' ±



PIPERACK COLUMNS
E. 9+00'-0" 9+2

Milagro Fifth Train
Proposed Plot Plan
April 1996

Groundwater Discharge Plan
Milagro Gas Treatment Plant

prepared for

Williams Field Services
November 1995



4665 INDIAN SCHOOL NE
SUITE 106
ALBUQUERQUE
NEW MEXICO
87110

State of New Mexico
Energy, Minerals and Natural Resources Department
OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87501

**DISCHARGE PLAN APPLICATION FOR NATURAL GAS PROCESSING PLANTS,
OIL REFINERIES AND GAS COMPRESSOR STATIONS**

(Refer to OCD Guidelines for assistance in completing the application.)

- I. TYPE: Natural Gas Processing Plant
- II. OPERATOR: Williams Field Services
ADDRESS: 295 Chipeta Way, Salt Lake City, Utah, 84158-0900
CONTACT PERSON: Leigh Gooding PHONE: 801-584-6543
- III. LOCATION: /4 /4 Section 12 Township 29N Range 11W
Submit large scale topographic map showing exact location.
- IV. Attach the name and address of the landowner(s) of the disposal facility site.
- V. Attach description of the facility with a diagram indicating location of fences, pits, dikes, and tanks on the facility.
- VI. Attach a description of sources, quantities and quality of effluent and waste solids.
- VII. Attach a description of current liquid and solid waste transfer and storage procedures.
- VIII. Attach a description of current liquid and solid waste disposal procedures.
- IX. Attach a routine inspection and maintenance plan to ensure permit compliance.
- X. Attach a contingency plan for reporting and clean-up of spills or releases.
- XI. Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact fresh water. Depth to and quality of ground water must be included.
- XII. Attach such other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.
- XIII. CERTIFICATION

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Terry G. Spradlin Title: Manager, Environmental Health and Safety

Signature: 

Date: 11-27-95

Groundwater Discharge Plan

GW-60

Milagro Gas Treatment Plant

prepared for

Williams Gas Services
295 Chipeta Way
Salt Lake City, UT 84158-0900

November 1995

prepared by

Environmental Services, Inc.
4665 Indian School NE Suite 106
Albuquerque, NM 87110
505-266-6611

Milagro Gas Treatment Plant - Groundwater Discharge Plan

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Milagro Gas Treatment Plant Discharge Plan GW-60

This document constitutes an application to renew Groundwater Discharge Plan GW-60 for the Milagro Gas Treatment Plant. This Discharge Plan renewal application has been prepared in accordance with the New Mexico Oil Conservation Division's (OCD) "Guidelines for the Preparation of Ground Water Discharge Plans at Natural Gas Processing Plants, Oil Refineries, and Gas Compressor Stations" (revised 05-92) and New Mexico Water Quality Control Commission regulations 3-104 and 3-106.

Discharge Plan GW-60 was approved by the OCD on March 21, 1991. It expires on March 21, 1996. Modifications to the plan to incorporate plant expansions were approved by the OCD on November 16, 1992 and April 26, 1995. This renewal application consolidates the information presented in the original plan and that covered by subsequent modifications.

I Type of Operation

The Milagro Plant removes carbon dioxide and water from raw natural gas. Plant processes include gas dehydration using triethylene glycol, CO₂ removal using Ucarsol CR 422, and glycol and Ucarsol regeneration. Ancillary processes provide process water treatment using a mixed bed quality demineralizer for generating boiler steam. A cogeneration facility consisting of two natural gas combustion turbines which will supply electricity to the power grid and steam to the plant is currently under construction. The cogeneration unit is expected to be in full operation by early 1996.

II Operator/Legally Responsible Party

Williams Field Services
295 Chipeta Way
PO Box 58900
Salt Lake City, UT 84158-0900
(801) 584-6543
attention: Leigh Gooding

III Location of Discharge/Facility

192 County Road 4900
PO Box 700
Bloomfield, NM 87413
Section 12, Township 29 North, Range 11 West

IV Landowner

The site is owned by Williams Field Services.

V Facility Description

The Milagro facility processes coal seam natural gas through four amine trains. The incoming gas in each train passes through a filter membrane and an inlet separator, then it enters an amine contactor where CO₂ is removed from the gas. The CO₂ is vented to the atmosphere through a vent which services all four trains. The gas then passes into a glycol contactor where liquids are removed. The amine and glycol are both recycled in separate regeneration systems. Process steam is currently provided by four boilers. Additional plant steam capacity will be provided by the cogeneration unit currently under construction. Appendix 1 contains a plant layout and piping and instrumentation diagrams (P&IDs).

VI Plant Processes—Effluent Sources, Quantities, and Quality of Effluent and Waste Solids

Figure 1 depicts the effluent and solid waste sources at the plant. Table 1 summarizes the effluent and solid wastes generated at the plant. The major sources of liquid and solid waste are described in the sections following table 1.

table 1

Effluent and Solid Waste Sources, Quantity, Quality and Disposition

<i>Source</i>	<i>Waste/Quality</i>	<i>Quantity</i>	<i>Disposition</i>
inlet/outlet gas separators	natural gas liquids - 50% oil; 50% glycol-water mixture.	10,000 gal/yr	closed drain system; slop tank #1 - top 5,000 gal. oil - Mesa Oil Recyclers - bottom 5,000 gal. glycol/water - Basin Disposal
amine regeneration	amine/water	varies	open drain system
glycol regeneration	glycol/water	varies	glycol/water tanks; Coastal Chemical
boiler blowdown	water w/ additives	500 gallon	closed system; emergency to evaporation ponds per emergency
berm containments	oily waste water	varies	open drain system; evaporation pond
building drains	oily waste water	varies	open drain system; evaporation pond
equipment maintenance	oily waste water	varies	open drain system; evaporation pond
sinks and toilets	sewage	varies	septic tank
laboratory	rinseate	varies	septic tank
laboratory	testing chemicals	varies	sent to Bloomfield Water Treatment Plant
evaporation ponds	water w/ trace hydrocarbons	varies	- ponds emptied up to twice per year by Basin Disposal into Class II injection well. Pilot program initiated for zero-discharge alternative.
amine processing train	filters	40 filters total	Waste Management landfill, special waste cell
glycol contactor	filters	/month	Waste Management landfill, special waste cell
equipment lube oil	filters		Waste Management landfill, special waste cell
plant operations	solid waste	1 dumpster/wk	Waste Management landfill



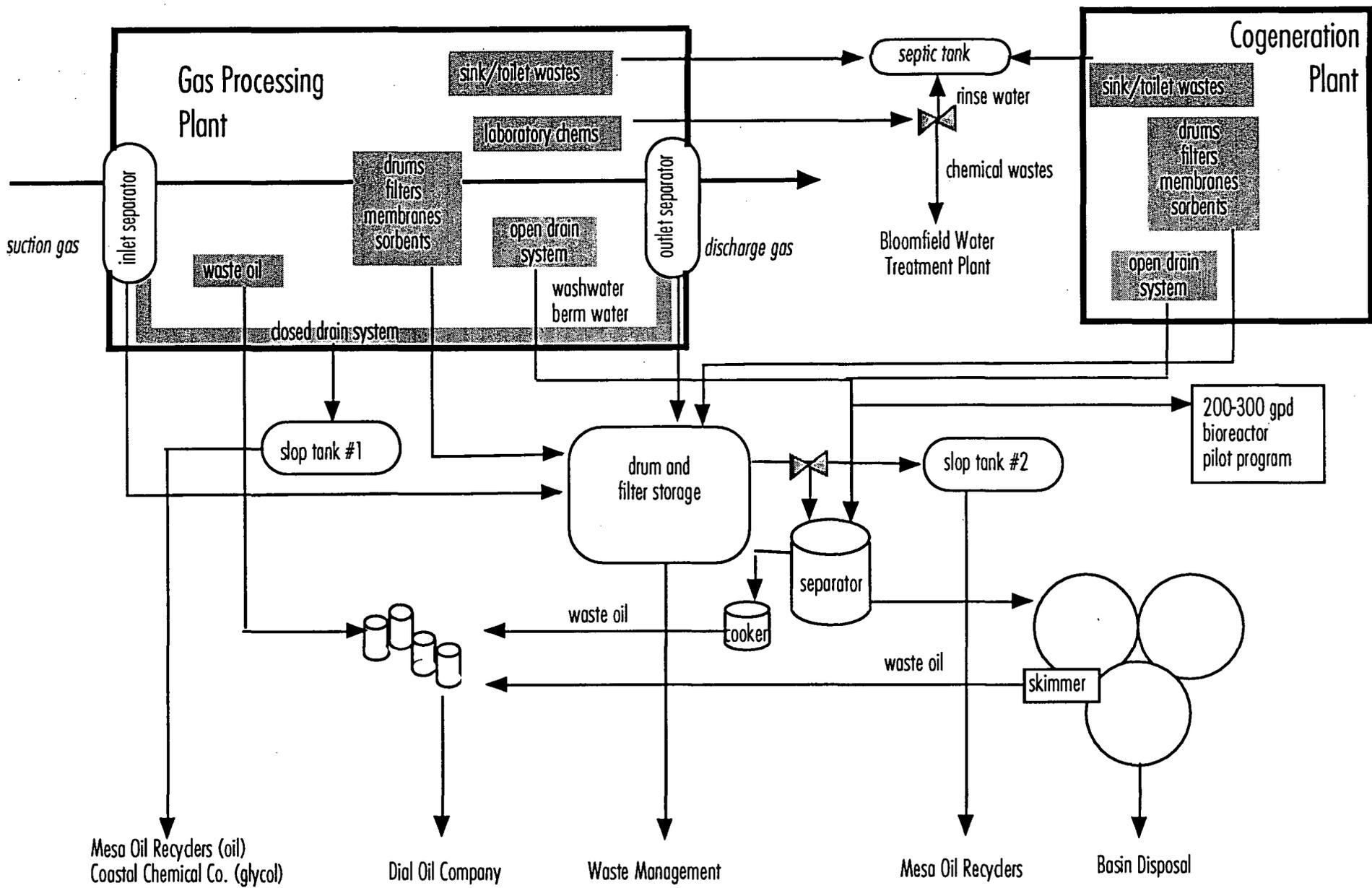


Figure 1
Milagro Plant Effluent and Solid Waste Production

Separators

Each of the four trains has an inlet and outlet separator. The liquids which are produced by these units flow through a closed underground drain system into the 10,000-gal. slop tank #1. The liquid is water with a high concentration of total dissolved solids and some hydrocarbons. The amount removed by the separators from the gas varies with daily plant throughput. Slop tank #1 is generally emptied no more than once per year.

Boilers

In an emergency, approximately 500 gallons of blowdown water from each of the four on-site boilers would flow into the open drain system into the evaporation ponds. The blowdown would consist of high TDS water and water treatment chemicals. Material Safety Data Sheets (MSDS) for the water treatment chemicals are in appendix 2.

Engine/turbine Cooling Waters

Water is used for engine/turbine cooling at the plant. Ambitrol is used in the radiators of the engines for corrosion control. The cooling systems are closed systems.

Relief valves, vents, and drains off the cooling water systems for the cogeneration units drain into glycol sumps at each of the units. The sumps meet OCD requirements and are equipped with leak detection. Appendix 1 contains a sketch/specification sheet for these sumps.

Cooling Towers

There are no cooling towers at the plant.

Sewage

Sewage from washrooms and toilets flows into the plant's septic tank system.

Glass rinse water from the chemical testing laboratory also flows into the septic system. Used chemicals are kept out of the septic system and shipped to the Bloomfield Sewage Treatment Plant. Williams consulted with NMED and Bloomfield Water Treatment Plant personnel, receiving approval to handle laboratory wastes in this fashion (see appendix 9).

Sewage effluent is completely separate from other effluents with no commingling.

Waste Lubrication and Motor Oils

Waste lubrication and motor oils are generated by maintenance of the various plant equipment. Drums of waste lubrication oils are stored on a curbed concrete pad near the lube oil storage building on the east side of the plant. Any liquids spilled on the pad flow into the open drain system.



Each of the two cogeneration turbines have an oil drain sump. The sumps meet OCD requirements and are equipped with leak detection. Appendix 1 contains a sketch/specification sheet for these sumps. Waste oil from the sumps is periodically pumped out, placed in a drum, and removed by the supplier, Dial Oil.

Waste and Slop Oil

Slop oil and oily waste water, including equipment washwater, is generated at building floor drains and tank berm containments. Equipment washwater may contain small amounts of non-chlorinated solvents or detergents. All oily waste water flows through the plant's open drain system and into the oil-water separator.

Drains in the newly constructed maintenance shop/warehouse building feed into the plant's open drain system which leads into the oil-water separator.

Used Filters

Used oil and glycol filters from the plant are drained at the point of removal from the equipment. After they are drained, the filters are placed into a special waste dumpster provided by Waste Management of Four Corners. Approximately 40 used filters are generated monthly by the plant. Current waste profiles are on file with the San Juan County regional landfill and copies are retained in the plant files.

Solids and Sludges

No solids or sludges are generated from the tanks at Milagro.

Cleaning Operations Using Solvents/Degreasers

Minor amounts of a non-chlorinated solvent are used in cleaning operations at the plant. Waste solvent is usually discharged at the point of use into the open drain system and into the oil-water separator. The MSDS for the solvent used at Milagro is located in appendix 2.

Truck, Tank, and Drum Washing

Drums, tanks, and trucks are not washed down at the facility. The ground surface of the drum storage area located above the oil-water separator is occasionally washed down. All wash water from this surface flows into the oil-water separator. If, however, a spill were to take place on this storage area, it would be channeled into slop tank #2 rather than into the oil-water separator.

Other Liquid and Solid Wastes

Paper and other solid waste, excluding filters, are removed from the site weekly by Waste Management of Four Corners. All used drums at the facility are picked up by their vendors.



VII Transfer and Storage of Process Fluids and Effluents

Effluent Transfer

Gas process piping at Milagro is located above ground. The process area of the plant is graveled to allow for early leak detection and immediate response by plant personnel in the event of a leak of process fluids.

As shown on the piping and instrumentation diagrams (P&ID) in appendix 1, there are two underground waste water piping systems at the Milagro plant. A closed drain system in the natural gas processing plan, moves liquids from the inlet and outlet separators into slop tank #1.

The open drain systems in the gas processing and cogeneration portions of the Milagro plant, channel oily waste water into the oil-water separator. Oily waste water enters this system via drains located throughout the plant areas, equipment buildings, and tank berms.

Underground piping was pressure tested for this discharge plan renewal on September 13-14, 1995. No potential leaks were discovered. Testing results are in appendix 3.

Storm water at the Milagro facility is channeled across and around and off the site via designated storm water drains. Storm water which accumulates in bermed containment areas flows into the open-drain system.

Material and Effluent Storage

All drums used and stored at Milagro are stored on pads with curbed containment.

All tanks that contain materials other than fresh water are placed on gravel or concrete pads and bermed to contain at least one and one-third the capacity of the largest tank within the berm or one and one-third the total capacity of all interconnected tanks. Storage tanks and berm area volumes are identified in the SPCC plan in appendix 4.

Waste water from the oil-water separator flows into the three 99-foot diameter above-ground evaporation ponds. If any oil inadvertently enters the ponds, it is removed as soon as possible using a skimmer apparatus. Appendix 5 contains information regarding the ponds' design specifications.

VIII Effluent Disposal

On-Site Disposal

Up until this time, effluent from the ponds was removed twice year by Basin Disposal and transferred to a class II injection well. Currently, however, Williams is investigating



methods to make these ponds zero-discharge units by increasing their rate of evaporation. One such method is to expose the plant's waste water to special microbes. Williams is entering into an agreement with a contractor for a pilot demonstration of such a process. If the pilot is successful, Williams will consider authorizing expansion of the system. Appendix 6 contains a proposal from one of the potential contractors.

For now, the pilot demonstration will process approximately 200 to 300 gallons/day of waste water from the plant's open drain system. The remaining daily waste water volume will continue to be routed through the oil-water separator and into the evaporation ponds. Water from the ponds will continue to be removed when necessary by Basin Disposal and disposed of in a class II injection well.

As described by NVS' proposal in appendix 6, the 30 to 60-day pilot program will involve the installation of a 1500-gallon fiberglass, open-top bioreactor tank. The tank will be filled 3/4 with sand. Microbes and their nutrients will be introduced as needed into the system. The unit will process approximately 200 to 300 gallons of waste water per day. A 2-inch drain valve will be located on the bottom of the tank to remove amino acid by-products. These amino acids will be removed from the site by the contractor and sold.

A septic system is located at the facility which utilizes a concrete tank with leach field. The septic system serves the Milagro facility and does not receive non-sewage or mixed flow from any process units or internal drains. No injection wells, drying beds, or pits are used the facility. No other on-site disposal, other than that described above, is present at the facility.

Off-site Disposal

All remaining effluent and waste is removed and disposed of elsewhere as follows.

solid waste
and used filters

Waste Management of Four Corners
101 Spruce Ave.
Farmington, NM
505-327-6284

transported to

San Juan County Regional Landfill
#78, County Road 3140
Farmington, NM
505-334-1121



used oil	Dial Oil Co. 206 N. Rio Grande Ave. Aztec, NM 505-334-3300
slop tank #1, used oil	Mesa Oil Company 20 Lucero Dr. Belen, NM 87002 1-800-873-3645
laboratory chemical waste	Bloomfield Water Treatment Plant PO Box 1839 Bloomfield, NM 87413
produced water hauled by	Dawn Trucking Farmington, NM 505-327-6314
produced water disposed of at	Basin Disposal OGRID #001739 6 Road 5046 Bloomfield, NM 505-325-6336

IX Inspection, Maintenance, and Reporting

The plant is manned 24 hours per day, 365 days per year. The site is inspected daily by the facility operator. Inspection and maintenance will be performed according to the guidelines set forth in the SPCC plan. A copy of the SPCC plan is in appendix 4.

X Spill/Leak Prevention and Reporting (Contingency Plans)

Leaks, spills, and drips will be handled in accordance with OCD rule 116 and WQCC 1-203, and the spill response procedures outlined in the Milagro SPCC Plan and Williams' Policy and Procedures Manual, Section 12.10.020. These documents are located in the plant office and reproduced here in appendix 4.

Effect of Discharge Plan on Wildlife Species

Plant personnel will not unnecessarily disturb or destroy wetlands, riparian vegetation, or any identified threatened or endangered species' sensitive habitat on or near the site during operation of the facility. If adverse impacts cannot be avoided, the facility operator will notify the USFW so that the adverse impacts can be discussed in greater detail. The plant owner will inform on-site employees of any threatened or endangered



species and habitat on or near the site to increase individual awareness of these issues.

Williams has requested an exception to the OCD requirement to screen the three open topped evaporation ponds at the facility on the basis that the ponds are not hazardous to wild fowl. Appendix 7 contains an Application for Exception to Division Order R-8952 for Protection of Migratory Birds which was submitted to the OCD on July 23, 1991.

XI Site Characteristics

Information regarding the site and area characteristics were prepared for the original discharge plan and are repeated for this renewal in appendix 8.

XII Additional Information

No other information is being submitted with this discharge plan renewal .

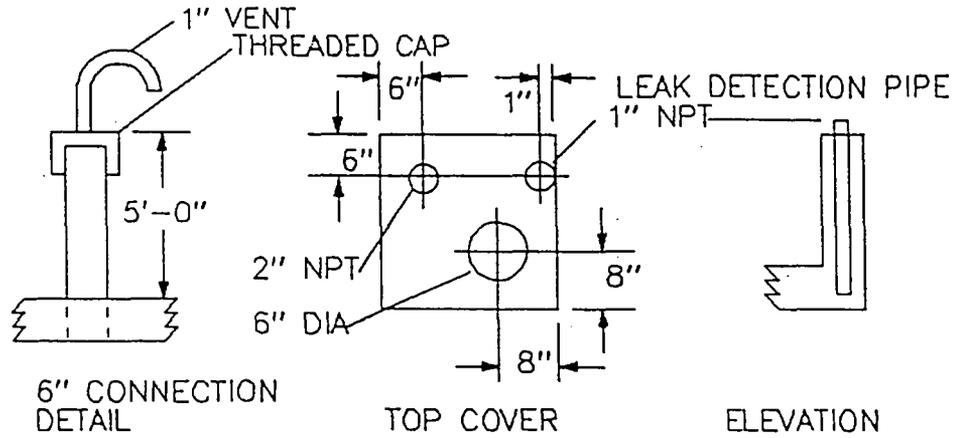
Affirmation

I hereby certify that I am familiar with the information contained in and submitted with this discharge plan for the Milagro Plant and that such information is true, accurate, and complete to the best of my knowledge and belief.

Terry M. Spradlin
Manager, Environmental Health and Safety
Williams Field Services

Date





MK	QTY	SIZE	RATING	SERVICE	ELEVATION	
1	1	2"	NPT	Inlet	Top	Coupling
2	1	6"	NPT	Outlet	Top, Pipe to Grade	Cap and Vent
3	1	1"	NPT	Leak Detection Pipe	Top, Pipe to Bottom	Coupling
4						
5						
6						

1.0	Service/ Quantity/ Equipment Number	Oily Waste	2	T-65001A& B
1.1	Manufacturer/ Serial Number			
2.0	Capacity, gal (ft ³)/ Internals	100 gal nominal	Double Wall	
2.1	Operating Pressure, psig/ Temperature, °F	Atmos.	165°F	
2.2	Design Pressure, psig/ Temperature, °F	Atmos.	180°F	
2.3	Safety Valve Setting/ Hydro Test Press (at top), psig	N/A	Flooded	
3.0	Applicable Codes & Specs/ Joint Efficiency: Shell/ Head		N/A	N/A
3.1	Wind Loading/ Seismic Bracing Req'd	N/A	N/A	
4.0	Thickness: Shell/ Head/ Corrosion Allowance, in	1/4"	1/4"	N/A
4.1	Overall Diameter, in/ Overall Length (Height), in	30" L x 30" W	30" H	
4.2	Clips Req'd: Ladder/ Platform/ Pipe Supports	N/A	N/A	N/A
4.3	Insulation Clips Req'd/ Insulation Thickness, in	N/A	N/A	
5.0	Material: Shell/ Head/ Skirt	Fiberglass	Fiberglass	N/A
5.1	Material: Forgings/ Piping/ Structural	N/A	Carbon Steel	N/A
6.0	Weight: Net Empty, lbs/ Flooded (Test), lbs			
7.0	Stress Relieve Req'd/ Exam: Radio, UT, MT, PT	N/A	N/A	
8.0	Internal Liner/ Exterior Primer/ Exterior Finish	Double Wall	N/A	N/A
9.0	Drawing: Outline/ Standard Appurtenances			

Remarks: Manufacturer to provide missing data.

NO	DATE	REVISION DESCRIPTION	BY	CHK	APR
2	5/18/95	Revised and Reissued for Quotation	EST	By	G

 MT100R0.DS	CTG WASTE OIL SUMP DATA SHEET	JOB NO 22725-001	
	MILAGRO COGENERATION PROJECT	SPECIFICATION NO 22725-3PS-MT-011	REV 2
		SHEET 1 OF 1	

REQUESTED FOR:

20707209
NORTHWEST PIPELINE
295 CHIPETA WAY
PO BOX 8900
SALT LK CTY UT 84108

ORDER NO:
PROD NO: 04203826

Dow is Manufacturer

VAN WATERS & ROGERS INC., SUBSIDIARY OF UNIVAR
1600 NORTON BLDG. SEATTLE, WA 98104-1564 (408) 435-8700

-----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800)424-9300

-----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

-----PRODUCT IDENTIFICATION-----

PRODUCT NAME: DIISOPROPANOLAMINE CAS NO.: 110-97-4
COMMON NAMES/SYNONYMS: NONE VWR CODE: T1600001

FORMULA: C6 H15 NO2 DATE ISSUED: 08/89
HAZARD RATING (NFPA 704 CRITERIA) SUPERCEDES: 10/87

HEALTH: 2
FIRE: 1
REACTIVITY: 0
SPECIAL: NONE

HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

-----HAZARDOUS INGREDIENTS-----

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, PPM			HAZARD
			OSHA PEL	ACGIH TLV	OTHER LIMIT	
DIISOPROPANOLAMINE	000110-97-4	99	NONE	NONE	NONE	NONE

-----PHYSICAL PROPERTIES-----

BOILING POINT, DEG F: 480 VAPOR PRESSURE, MM HG/20 DEG C: NIL
MELTING POINT, DEG F: 111 VAPOR DENSITY (AIR=1): NOT DETERMINED
SPECIFIC GRAVITY (WATER=1): 1.0 WATER SOLUBILITY, %: COMPLETE
APPEARANCE AND ODOR: SLIGHT AMMONIA ODOR, WHITE SOLID
EVAPORATION RATE (BUTYL ACETATE=1): N/D

-----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES. LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING. DESTROY LEATHER ARTICLES.

PROD: 04203826 14:02:54 01 NOV 1989 CUST: 20707209 INVOICE:

DIISOPROPANOLAMINE

REVISION OF: 09-02-89

IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: IRRITATION FROM VAPORS AT HIGHER TEMPERATURES.

EYE CONTACT: VAPORS MAY IRRITATE THE EYES. LIQUID AND MISTS MAY SEVERELY IRRITATE OR DAMAGE THE EYES.

SKIN CONTACT: PROLONGED OR REPEATED EXPOSURE MAY CAUSE IRRITATION OR EVEN BURN.

SWALLOWED: SMALL AMOUNTS NOT LIKELY TO CAUSE PROBLEMS. LARGER AMOUNTS WILL CAUSE INJURY.

CHRONIC EFFECTS OF EXPOSURE: PROLONGED OR REPEATED OVEREXPOSURE MAY RESULT IN DELAYED KIDNEY DAMAGE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

TOXICITY DATA

ORAL: RAT LD50 = 2000 - 4000 MG/KG

DERMAL: NOT DETERMINED

INHALATION: NOT DETERMINED

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

PERSONAL PROTECTION

VENTILATION: GENERAL ROOM VENTILATION.

RESPIRATORY PROTECTION: A RESPIRATOR IS NORMALLY NOT REQUIRED IF THIS PRODUCT IS USED WITH ADEQUATE VENTILATION.

EYE PROTECTION: CHEMICAL GOGGLES. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, RUBBER BOOTS, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: 276

FLAMMABLE LIMITS IN AIR, %

METHOD USED: SETAFASH

LOWER: N/A UPPER: N/D

EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOL FOAM.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

HAZARDOUS REACTIVITY

DIISOPROPLANOLAMINE

REVISION OF:09-02-89

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NONE

MATERIALS TO AVOID: AVOID CONTACT WITH SODIUM NITRITE OR OTHER
NITROSING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE,
CARBON DIOXIDE AND NITROGEN OXIDES.

-----SPILL, LEAK, AND DISPOSAL PROCEDURES-----

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED WITH PARTICULATE FILTERS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. FOR SMALL SPILLS, SWEEP UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, SHOVEL INTO DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: 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.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

-----SPECIAL PRECAUTIONS-----

STORAGE AND HANDLING PRECAUTIONS: STORE IN A DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: NONE.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (408)435-8700

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-----REVISION-----

P1600001

MATERIAL SAFETY DATA SHEET

PG 4

DIISOPROPANOLAMINE

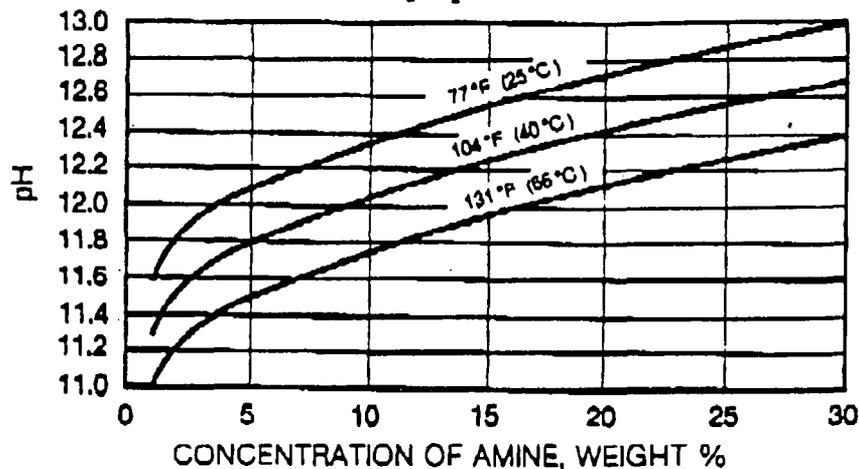
REVISION OF: 09-02-89

08/89: CHANGED HEADING AND CONTACT INFORMATION.
**** END OF MSDS ****

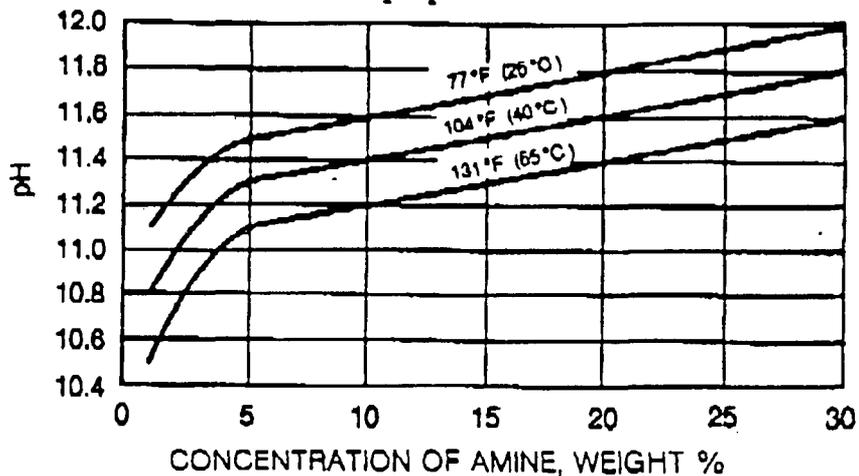
PRGD: 04203326 14:02:54 01 NOV 1989 CUST: 20707209 INVOICE:

pH Values of Aqueous Isopropanolamines

Monoisopropanolamine



Diisopropanolamine



P1235

MATERIAL SAFETY DATA SHEET

TRIETHYLENE GLYCOL (VWR)

TRIETHYLENE GLYCOL VW&R

REVISION OF: 07-21-87

MAIL TO:

20070702
NORTHWEST PIPELINE
3M W HWY 374 STAR RT 2

ORDER NO: 209000134
PROD NO: 04764856

GREEN RIVER WY 82901
ATTN:

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1364

-----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC
(800) 424-9300.

-----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

-----PRODUCT IDENTIFICATION-----

PRODUCT NAME: TRIETHYLENE GLYCOL
COMMON NAMES/SYNONYMS:
TRIETHYLENE GLYCOL; TEG

CAS NO.: 112-27-6
VW&R CODE: T1255

FORMULA: C6 H14 O4
HAZARD RATING (NFPA 325M)
HEALTH: 1
FIRE: 1
REACTIVITY: 0
SPECIAL: NONE

DATE ISSUED: 08/87
SUPERCEDES: 02/86
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

-----HAZARDOUS INGREDIENTS-----

COMPONENT	%	EXPOSURE LIMITS, PPM			HAZARD
		OSHA PEL	ACGIH TLV	OTHER LIMIT	
TRIETHYLENE GLYCOL	>99	NONE	NONE	NONE	NONE

-----PHYSICAL PROPERTIES-----

BOILING POINT, DEG F: 546 VAPOR PRESSURE, MM HG/20 DEG C: NIL
MELTING POINT, DEG F: N/A VAPOR DENSITY (AIR=1): 5.2
SPECIFIC GRAVITY (WATER=1): 1.1 WATER SOLUBILITY, %: 100
APPEARANCE AND ODOR: EVAPORATION RATE (BUTYL ACETATE=1): <1
COLORLESS LIQUID; MILD ODOR

-----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

TRIETHYLENE GLYCOL VW&R

REVISION OF: 07-21-87

IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

-----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE
INHALATION: NONE CURRENTLY KNOWN.

EYE CONTACT: LIQUID AND MIST MAY IRRITATE THE EYES.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS. A SINGLE PROLONGED EXPOSURE IS NOT LIKELY TO RESULT IN THE ABSORPTION OF HARMFUL AMOUNTS. MAY CAUSE A MORE SEVERE RESPONSE IF THE SKIN IS ABRADED. SKIN SENSITIVATION TESTING IN 25 HUMAN VOLUNTEERS DID NOT FIND ANY SENSITIVATION TO OCCUR.

SWALLOWED: SWALLOWING LARGE QUANTITIES MAY CAUSE NAUSEA AND VOMITING AND MAY CAUSE INJURY. THE TRIETHYLENE GLYCOL PRODUCED BY SOME MANUFACTURERS MAY CONTAIN SMALL AMOUNTS OF DIETHYLENE GLYCOL, IN WHICH CASE SWALLOWING MAY PRODUCE CNS DEPRESSION AND KIDNEY DAMAGE, WHICH MAY BE FATAL, AND LIVER DAMAGE.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: PRE-EXISTING EYE, SKIN, AND RESPIRATORY DISORDERS OR IMPAIRED LIVER AND KIDNEY FUNCTION.

-----TOXICITY DATA-----

ORAL: RAT LD50 = 17 G/KG; HUMAN LD50 = 5000 MG/KG

DERMAL: NO DATA FOUND

INHALATION: NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

-----PERSONAL PROTECTION-----

VENTILATION: GENERAL ROOM VENTILATION.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE MISTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CART-RIDGE RESPIRATOR WITH PARTICULATE FILTERS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, AND GLOVES.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

-----FIRE AND EXPLOSION INFORMATION-----

FLASH POINT, DEG F: 350

FLAMMABLE LIMITS IN AIR, %

PROD: 04764856 23:04:27 05 MAY 1988 CUST: 20070702 INVOICE: 209000134

TRIETHYLENE GLYCOL VW&R

REVISION OF: 07-21-87

METHOD USED: PMCC LOWER: 0.9 UPPER: 9.2
EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL OR CO2.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

-----HAZARDOUS REACTIVITY-----

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: EXCESSIVE HEAT. WILL IGNITE IN AIR AT 700 DEG F.

MATERIALS TO AVOID: OXIDIZERS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE OR CARBON DIOXIDE.

-----SPILL, LEAK, AND DISPOSAL PROCEDURES-----

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR PARTICULATES MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE SORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOILS.

COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: 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.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

-----SPECIAL PRECAUTIONS-----

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)447-5911

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TRIETHYLENE GLYCOL VW&R

REVISION OF: 07-21-87

ION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&R'S CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

-----REVISION-----

08/87: CORRECTED NFPA REFERENCE. EXPANDED HAZARDS OF EYE AND SKIN CONTACT AND SWALLOWING. EXPANDED AGGRAVATED MEDICAL CONDITIONS. REVISED PERSONAL PROTECTION, SPILL AND LEAK PROCEDURES AND HANDLING ADVICE.

**** END OF MSDS ****

PROD: 04764856 23:04:27 05 MAY 1988 CUST: 20070702 INVOICE: 209000134

M A T E R I A L S A F E T Y D A T A S H E E T P A G E : 1
 DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 11 JUN 79

PRODUCT CODE: 07656

PRODUCT NAME: AMBITROL (R) FL COOLANT

MSD: 0584

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS)	:	%	:
ETHYLENE GLYCOL MIX	:	50	:
INHIBITORS	:	1	:
D. I. WATER	:	49	:
DYE	:		:

SECTION 1

PHYSICAL DATA

BOILING POINT: 229F, 109C : SOL. IN WATER: COMPLETELY MISCIBLE
 VAP PRESS: APPROX. 2.5 MMHG @ 20C : SP. GRAVITY: 1.084 @ 60/60F, 16C
 VAP DENSITY (AIR=1): NOT APPLIC. : % VOLATILE BY VOL: APPROX. 99%

APPEARANCE AND ODOR: RED LIQUID

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE : FLAMMABLE LIMITS
 METHOD USED: ---- : LFL: NOT APPLIC. UFL: NOT APPLIC.

EXTINGUISHING MEDIA: NON-COMBUSTIBLE.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: NONE

SECTION 3

REACTIVITY DATA

STABILITY: ----

INCOMPATIBILITY: OXIDIZING MATERIAL

HAZARDOUS DECOMPOSITION PRODUCTS: ----

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): SMALL SPILLS:
 COVER WITH ABSORBENT MATERIAL, SOAK UP AND SWEEP INTO A DRUM.
 LARGE SPILLS: DIKE AROUND SPILL AND PUMP INTO SUITABLE CONTAINERS.

(CONTINUED ON PAGE 2)

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 11 JUN 79
PRODUCT (CONT'D): AMBITROL (R) FL COOLANT

PRODUCT CODE: 07666
MSD: 0584

SECTION 4 SPILL, LEAK, AND DISPOSAL PROCEDURES (CONTINUED)

DISPOSAL METHOD: REPROCESS OR BURN IN PROPER INCINERATOR IN ACCORDANCE WITH LOCAL REGULATIONS.

SECTION 5 HEALTH HAZARD DATA

INGESTION: LOW SINGLE DOSE ORAL TOXICITY FOR ANIMALS. ETHYLENE GLYCOL IS MODERATELY TOXIC FOR HUMANS.

EYE CONTACT: UP TO MILD TRANSIENT IRRITATION, BUT NO CORNEAL INJURY EXPECTED.

SKIN CONTACT: PROLONGED CONTACT: SLIGHT IRRITATION; REPEATED EXPOSURE MAY CAUSE UP TO MODERATE IRRITATION, EVEN A BURN.

SKIN ABSORPTION: NOT LIKELY TO BE ABSORBED IN TOXIC AMOUNTS. LOW IN TOXICITY BY THIS ROUTE.

INHALATION: ACGIH TLV FOR ETHYLENE GLYCOL IS 100 PPM (1978) AS VAPOR, 10 MG/M3 AS MIST.

EFFECTS OF OVEREXPOSURE: NOT KNOWN.

SECTION 6 FIRST AID

EYES: IRRIGATION OF THE EYE IMMEDIATELY WITH WATER FOR FIVE MINUTES IS GOOD SAFETY PRACTICE.

SKIN: IN CASE OF CONTACT, IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. CALL A PHYSICIAN. WASH CLOTHING BEFORE REUSE. DESTROY CONTAMINATED SHOES.

INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. CONSULT MEDICAL PERSONNEL.

INGESTION: IF SWALLOWED, INDUCE VOMITING IMMEDIATELY BY GIVING TWO GLASSES OF WATER AND STICKING FINGER DOWN THROAT. CALL A PHYSICIAN.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE MILD IRRITATION. STAIN FOR EVIDENCE OF CORNEAL INJURY.

SKIN: MAY CAUSE MODERATE IRRITATION. WITH REPEATED CONTACT MAY CAUSE BURN. IF RASH IS PRESENT, TREAT AS ANY CONTACT DERMATITIS. IF BURN IS PRESENT, TREAT AS ANY THERMAL BURN.

RESPIRATORY: INJURY IS UNLIKELY.

ORAL: MODERATELY TOXIC.

SYSTEMIC: WITH ACUTE ETHYLENE GLYCOL OVEREXPOSURE (ORAL) ETHANOL

(CONTINUED ON PAGE 3)

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 11 JUN 79
PRODUCT (CONT'D): AMBITROL (R) FL COOLANT

PRODUCT CODE: 07666
MSD: 0584

SECTION 6 FIRST AID (CONTINUED)

NOTE TO PHYSICIAN: (CONTINUED)

ADMINISTRATION MAY BE INDICATED (SEE TOX OF DRUGS AND CHEMICALS -
DEICHMANN AND GERARD, P. 258). KIDNEY MAY BE TARGET ORGAN WITH
OVEREXPOSURE. TREATMENT BASED ON THE SOUND JUDGMENT OF THE PHYSICIAN
AND THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7 SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF VAPORS OR MISTS OF ETHYLENE
GLYCOL TO SUGGESTED GUIDE.

RESPIRATORY PROTECTION: NONE NORMALLY NEEDED. NIOSH APPROVED RESPIRATORY
PROTECTION REQUIRED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL.

PROTECTIVE CLOTHING: CLEAN, BODY-COVERING CLOTHING.

EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS.

SECTION 8 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: AVOID SKIN AND EYE
CONTACT. AVOID BREATHING VAPORS OR MISTS.

ADDITIONAL INFORMATION: REVISIONS 6/11/79 --- EXTINGUISHING MEDIA,
INGESTION, EYE CONTACT, SKIN CONTACT, INHALATION, FIRST AID
PROCEDURES, NOTE TO PHYSICIAN, VENTILATION, RESPIRATORY PROTECTION,
PROTECTIVE CLOTHING, CENTIGRADE TEMPS ADDED.

LAST PAGE

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

CONSULT THE DOW CHEMICAL COMPANY FOR FURTHER INFORMATION.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY,
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BETZ INDUSTRIAL

4636 SOMERTON ROAD TREVOSE, PA. 19047

BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT :MAGNI-FORM 305

EFFECTIVE DATE 10-31-88
PRINTED: 12/15/8PRODUCT APPLICATION : WATER BASED DISSOLVED OXYGEN SCAVENGER/METAL PASSIVATOR.
-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

METHOXYPROPYLAMINE, 3-*** (MOPA) CAS#5332-73-0; FLAMMABLE LIQUID; CORROSIVE;
PEL: NONE; TLV: NONE.HYDROQUINONE*** (1,4-BENZENEDIOL); CAS#123-31-9; POTENTIAL SKIN SENSITIZER;
EYE IRRITANT; TOXIC (ORAL INGESTION); PEL: 2MG/M3; TLV: 2MG/M3.DIETHYLAMINOETHANOL*** (DEAE); CAS#100-37-8; COMBUSTIBLE LIQUID; IRRITANT (EYE
AND SKIN); PEL: 10PPM (SKIN); TLV: 10PPM (SKIN).

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 11.0	ODOR: MILD
FL.PT.(DEG.F):	200 SETA(CC)	SP.GR.(70F)OR DENSITY: 1.007
VAPOR PRESSURE(mmHG):	20	VAPOR DENSITY(AIR=1): 1
VISC cps70F:	6.5	%SOLUBILITY(WATER): 100
EVAP.RATE: ND	WATER=1	APPEARANCE: BROWN
PHYSICAL STATE:	LIQUID	FREEZE POINT(DEG.F): 18

-----SECTION 3-----REACTIVITY DATA-----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: MAGNI-FORM 305

EFFECTIVE DATE 10-31-88

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SEVERE IRRITANT TO THE SKIN.ABSORBED BY SKIN.SKIN SENSITIZER.

ACUTE EYE EFFECTS ***

CORROSIVE TO THE EYES

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

VAPORS,GASES,MISTS AND/OR AEROSOLS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT. PROLONGED EXPOSURE MAY CAUSE DIZZINESS AND HEADACHE.

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED OVEREXPOSURES MAY CAUSE NERVOUS SYSTEM TOXICITY,AND MAY CAUSE BLOOD CELL DAMAGE OR IMPAIR BLOOD CELL FUNCTION.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

INHALATION MAY CAUSE IRRITATION OF MUCOUS MEMBRANES AND RESPIRATORY TRACT; SKIN CONTACT CAUSES SEVERE IRRITATION OR BURNS.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***

MAY BE TOXIC IF ORALLY INGESTED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CLOTHING.WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER FOR 15 MIN.IMMEDIATELY CONTACT PHYSICIAN

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA.APPLY NECESSARY FIRST AID TREATMENT.IMMEDIATELY CONTACT A PHYSICIAN.

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS. FLUSH AREA WITH WATER.WET AREA MAY BE SLIPPERY.IF SO,SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).

DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: MAGNI-FORM 305

EFFECTIVE DATE 10-31-88

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

GAUNTLET-TYPE NEOPRENE GLOVES,CHEMICAL RESISTANT APRON

WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES.FACE SHIELD

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING.IF FROZEN,THAW COMPLETELY AND MIX
THOROUGHLY PRIOR TO USE

HANDLING INSTRUCTIONS***

IMMEDIATELY REMOVE CONTAMINATED CLOTHING,WASH BEFORE REUSE

ALKALINE.DO NOT MIX WITH ACIDIC MATERIAL.

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD

HAROLD M. HERSH (ENVIROMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

2.6GAL (HYDROQUINONE)

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD CLASSIFICATION: NOT APPLICABLE

...DOT SHIPPING DESIGNATION IS: NOT APPLICABLE

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 302 CHEMICALS: HYDROQUINONE(123-31-9) 2.0-5.0% ;

...SARA SECTION 313 CHEMICALS: HYDROQUINONE(123-31-9) , 2.0-5.0% ;

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

...MICHIGAN CRITICAL MATERIALS: HYDROQUINONE(123-31-9) ;

NFPA/HMIS : HEALTH - 3 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - D

BETZ INDUSTRIAL

4636 SOMERTON ROAD TREVOSE, PA. 19047

BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT :NEUTRAFILM 463

EFFECTIVE DATE 10-31-88

PRINTED: 12/15/8

PRODUCT APPLICATION : WATER BASED CONDENSATE CORROSION INHIBITOR.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

OCTADECYLAMINE ACETATE***CAS#2190-04-7;CORROSIVE(EYES);IRRITANT(SKIN);
PEL:NONE;TLV:NONE.

MORPHOLINE***CAS#110-91-8;FLAMMABLE LIQUID;CORROSIVE;TOXIC;POTENTIAL LIVER
AND KIDNEY TOXIN;PEL:20PPM(SKIN);TLV:20PPM(SKIN).

OCTADECYLAMINE***CAS#124-30-1;CORROSIVE;ABSORBED BY SKIN;PEL/TLV:NONE.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 10.3	ODOR: AMINE
FL.PT.(DEG.F):	200 SETA(CC)	SP.GR.(70F)OR DENSITY: 0.999
VAPOR PRESSURE(mmHG):	ND	VAPOR DENSITY(AIR=1): ND
VISC cps70F:	300	%SOLUBILITY(WATER): 25
EVAP.RATE:	1 ETHER=1	APPEARANCE: WHITE
PHYSICAL STATE:	DISPERSION	FREEZE POINT(DEG.F): 30

-----SECTION 3-----REACTIVITY DATA-----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

PRODUCT: NEUTRAFILM 463

EFFECTIVE DATE 10-31-88

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE
 MODERATELY IRRITATING TO THE SKIN.ABSORBED BY SKIN
 ACUTE EYE EFFECTS ***
 SEVERE IRRITANT TO THE EYES, POSSIBLY CORROSIVE
 ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE
 VAPORS,GASES,MISTS OR AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY
 TRACT.PROLONGED EXPOSURE MAY CAUSE DIZZINESS AND HEADACHE.
 CHRONIC EFFECTS OF OVEREXPOSURE***
 PROLONGED OR REPEATED EXPOSURES MAY CAUSE LIVER AND KIDNEY TOXICITY.
 MEDICAL CONDITIONS AGGRAVATED ***
 NOT KNOWN

SYMPTOMS OF EXPOSURE ***

INHALATION MAY CAUSE LIGHTHEADEDNESS,SLURRED SPEECH,NAUSEA AND
 VOMITING(PULMONARY EDEMA MAY RESULT);SKIN CONTACT CAN CAUSE SEVERE
 IRRITATION OR BURNS.
 PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***
 MAY BE TOXIC IF ABSORBED THROUGH SKIN.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF
 SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A
 PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE
 FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
 DILUTE CONTENTS OF STOMACH.INDUCE VOMITING BY ONE OF THE STANDARD
 METHODS.IMMEDIATELY CONTACT A PHYSICIAN

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB
 ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE
 CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL,
 SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
 FLUSH AREA WITH WATER.WET AREA MAY BE SLIPPERY.IF SO,SPREAD
 SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY
 SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A
 PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT
 PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING
 APPARATUS(FULL FACE-PIECE TYPE).
 DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER.FOAM OR WATER CREATE A SLIPPERY
 CONDITION.SPREAD SAND OR GRIT

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: NEUTRAFILM 463

EFFECTIVE DATE 10-31-88

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

GAUNTLET-TYPE RUBBER GLOVES, CHEMICAL RESISTANT APRON

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES. FACE SHIELD

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS***

IMMEDIATELY REMOVE CONTAMINATED CLOTHING, WASH BEFORE REUSE

NORMAL CHEMICAL HANDLING

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD

HAROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

TREAT AS OIL SPILL

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD CLASSIFICATION: NOT APPLICABLE

...DOT SHIPPING DESIGNATION IS: NOT APPLICABLE

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 313 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

NFPA/HMIS : HEALTH - 2 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - D

BETZ INDUSTRIAL

4636 SOMERTON ROAD TREVOSE, PA. 19047

BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT :B.P.7400 SERIES 7408B

EFFECTIVE DATE 10-31-88
PRINTED: 12/15/8

PRODUCT APPLICATION : WATER BASED INTERNAL BOILER TREATMENT CHEMICAL.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

ETHYLENEDIAMINE TETRAACETIC ACID, TETRASODIUM SALT***(EDTA.4NA);CAS#64-02-8; IRRITANT(SKIN);CORROSIVE(EYES);PEL:NONE;TLV:NONE.

SODIUM HYDROXIDE***(CAUSTIC SODA);CAS#1310-73-2;CORROSIVE;TOXIC IF ORALLY INGESTED;PEL:2.0MG/M3;TLV:2.0MG/M3(CEILING).

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 13.0	ODOR: NONE
FL.PT.(DEG.F):	200 SETA(CC)	SP.GR.(70F)OR DENSITY: 1.126
VAPOR PRESSURE(mmHG):	18	VAPOR DENSITY(AIR=1): 1
VISC cps70F:	23	%SOLUBILITY(WATER): 100
EVAP.RATE:	1 ETHER=1	APPEARANCE: YELLOW
PHYSICAL STATE:	LIQUID	FREEZE POINT(DEG.F): 26

-----SECTION 3-----REACTIVITY DATA-----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: B.P.7400 SERIES 7408B

EFFECTIVE DATE 10-31-88

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS ***

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS ***

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED CONTACT MAY CAUSE PRIMARY IRRITANT DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

MAY CAUSE REDNESS OR ITCHING OF SKIN.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***

MAY BE TOXIC IF ORALLY INGESTED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM. DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS. FLUSH AREA WITH WATER.WET AREA MAY BE SLIPPERY.IF SO,SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).

DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: B.P.7400 SERIES 7408B

EFFECTIVE DATE 10-31-88

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING.IF FROZEN,THAW COMPLETELY AND MIX

THOROUGHLY PRIOR TO USE

HANDLING INSTRUCTIONS***

IMMEDIATELY REMOVE CONTAMINATED CLOTHING,WASH BEFORE REUSE

NORMAL CHEMICAL HANDLING

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD

HAROLD M. HERSH (ENVIROMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

10664 GAL (SODIUM HYDROXIDE)

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE

IDENTIFICATION NUMBER IS: D002=CORROSIVE

...DOT HAZARD CLASSIFICATION: NOT APPLICABLE

...DOT SHIPPING DESIGNATION IS: NOT APPLICABLE

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 313 CHEMICALS: SODIUM HYDROXIDE(1310-73-2) , 0.1-1.0% ;

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

NFPA/HMIS : HEALTH - 2 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - ALK ; PE - B

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED: 01/12/89

***** I. PRODUCT IDENTIFICATION *****
MOBIL RARUS 427

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: COMPRESSOR OIL
PRODUCT TECHNICAL INFORMATION: (800) 662-4525

***** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES *****

APPEARANCE: ASTM 4.0 LIQUID ODOR: MILD PH: NA
VISCOSITY AT 100 F, SUS: 527.0 AT 40 C, CS: 101.3
VISCOSITY AT 210 F, SUS: 65.0 AT 100 C, CS: 11.3
FLASH POINT F(C): > 450(232) (ASTM D-92)
MELTING POINT F(C): NA POUR POINT F(C): 20(-7)
BOILING POINT F(C): > 600(316)
RELATIVE DENSITY, 15/4 C: 0.88 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	EXPOSURE LIMITS	SOURCES
	(APPROX)	MG/M3	PPM (AND NOTES)
POTENTIALLY HAZARDOUS INGREDIENTS:			
NONE			

OTHER INGREDIENTS:
REFINED MINERAL OILS >95
ADDITIVES AND/OR OTHER INGREDIENTS < 5

SEE SECTION XII FOR COMPONENT REGULATORY INFORMATION.

SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, O=OSHA, S=SUPPLIER
NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

***** IV. HEALTH HAZARD DATA *****

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---
THRESHOLD LIMIT VALUE: 5.00 MG/M3 SUGGESTED FOR OIL MIST
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): > 450(232) (ASTM D-92)
FLAMMABLE LIMITS. LEL: .6 UEL: 7.0
EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.
SPECIAL FIRE FIGHTING PROCEDURES: WATER OR FOAM MAY CAUSE FROTHING.
USE WATER TO KEEP FIRE EXPOSED CONTAINERS COOL. WATER SPRAY MAY BE
USED TO FLUSH SPILLS AWAY FROM EXPOSURE. FOR FIRES IN ENCLOSED
AREAS, FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.
PREVENT RUNOFF FROM FIRE CONTROL OR DILUTION FROM ENTERING STREAMS
OR DRINKING WATER SUPPLY.
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 TOXICOLOGY---

ORAL TOXICITY (RATS): LD50: > 5 G/KG SLIGHTLY TOXIC(ESTIMATED) ---
BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG 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. ---BASED ON
TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. ---BASED ON
TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

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.

---CHRONIC TOXICOLOGY (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.

***** XII. REGULATORY INFORMATION *****

GOVERNMENTAL INVENTORY STATUS: ALL COMPONENTS REGISTERED IN ACCORDANCE WITH TSCA.

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 29 CFR 1910.1200 AND DETERMINED NOT TO BE HAZARDOUS.

COMPONENTS OF THIS PRODUCT MEET FDA REGULATIONS: PRODUCT IS NOT INTENDED FOR FOOD CONTACT APPLICATION.

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.

THIS PRODUCT HAS BEEN USDA APPROVED UNDER THE FOLLOWING CATEGORY: H2 - LUBRICANTS WITH NO FOOD CONTACT

U.S. SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III: THIS PRODUCT CONTAINS NO "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (302) REPORTABLE HAZARD CATEGORIES: NONE

THIS PRODUCT CONTAINS NO CHEMICALS REPORTABLE UNDER SARA (313) TOXIC RELEASE PROGRAM.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
*** NO REPORTABLE INGREDIENTS ***		

--- KEY TO LIST CITATIONS ---

1 = OSHA 2,	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 = MI 293,
16 = FL RTK,	17 = PA RTK,	18 = CA P65.		

--- NTP, IARC, AND OSHA INCLUDE CARCINOGENIC LISTINGS ---

NOTE: MOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBs.

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: MTL314050) MCN: , MHC: 1* 1* NA 0* 0*,
MPPEC: C, PPEC: A, US87-793 APPROVE 09/26/88

1 - Site Specific Information

Customer:

2 - Section I (General Information)

MANUFACTURER'S NAME: Interstate Chemical Co.

EMERGENCY TELEPHONE NUMBER: (412) 981-3771

CHEMTREC EMERGENCY TELEPHONE NUMBER: (800) 424-9300

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP): 2797 Freedland Rd.
Hermitage, Pa. 16148

CHEMICAL NAME AND SYNONYMS: N/A

TRADE NAME AND SYNONYMS: SOLVENT 140

CHEMICAL FAMILY: Petroleum hydrocarbon.

FORMULA: See Ingredients

DATE OF PREPARATION: 03/02/93

PREPARED BY: F. James Corbett, Chemist (ESB)

INTERSTATE CHEMICAL COMPANY INC.
2797 FREEDLAND ROAD
HERMITAGE, PA 16148
602-422-2436

DISCLAIMER: All information contained in this data sheet is believed to be true and accurate at this time. However, there is no guarantee expressed or implied. The physical data has been calculated from available information.

3 - Section II - Hazardous Ingredients

COMPONENT	CAS #:	VOL%	TLV(ppm)
SOLVENT 140	64742-47-8	100%	200ppm

Interstate Chemical Co.
MSDS for SOLVENT 140

- Section III - Physical Data

BOILING POINT (INDICATE IF "F" OR "C"): 367 - 414 F

VAPOR PRESSURE(mm Hg): <1 @ R.T.

VAPOR DENSITY (AIR = 1): 5.40

SPECIFIC GRAVITY (H2O=1): 0.7900

PERCENT VOLATILE BY VOLUME (%): 100

EVAPORATION RATE (But Ac) =1: 0.1

SOLUBILITY IN WATER: nil

APPEARANCE AND ODOR: Clear, colorless, liquid; mild odor.

5 - Section IV - Fire and Explosion Hazard Data

FLASH POINT (METHOD USED): 143 F (TCC)

FLAMMABLE LIMITS: Volume % in Air

LEL: 2.1

UEL: 13.0

EXTINGUISHING MEDIA: CO2, dry chemical, alcohol foam, water mist (fog).

SPECIAL FIRE FIGHTING PROCEDURES: Use SCBA, wear protective equipment, combustible liquid.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

6 - Section V - Health Hazard Data

THRESHOLD LIMIT VALUE: See sect. II.

EFFECTS OF OVEREXPOSURE:

EYE CONTACT: Slightly irritating but does not injure eye tissue.

Section V - Health Hazard Data (continued)

SKIN CONTACT: Low order of toxicity. Frequent or prolonged contact causes irritation and/or dermatitis.

INHALATION: High vapor/aerosol concentrations (greater than approximately 1000ppm) are irritating to the eyes and the respiratory tract. This may cause headaches, dizziness, drowsiness, unconsciousness, anesthesia, and other central nervous system effects, including death.

INGESTION: Minimal toxicity. Small amounts of this product aspirated into the respiratory system during ingestion or vomiting may cause mild to severe pulmonary injury, possibly progressing to death.

EMERGENCY AND FIRST AID PROCEDURES:

EYE CONTACT: Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT: Immediately flush with large amounts of water; use soap if available. Remove contaminated clothing, including shoes, after flushing has begun.

INHALATION: Using proper respiratory protection, immediately remove the affected victim to fresh air. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

INGESTION: If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

7 - Section VI - Reactivity Data

STABILITY (choose one): () UNSTABLE
(x) STABLE

* CONDITIONS TO AVOID: Heat, sparks, open flame.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: CO & CO2

Interstate Chemical Co.
MSDS for SOLVENT 140

- Section VI - Reactivity Data (continued)

HAZARDOUS POLYMERIZATION (choose one): ()MAY OCCUR
(x)WILL NOT OCCUR

* CONDITIONS TO AVOID: None.

8 - Section VII - Spill or Leak Procedures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Contain spill; provide adequate ventilation; keep people away; EXTINGUISH ALL IGNITION SOURCES; keep material out of public waters; use dry absorbant on small spills.

WASTE DISPOSAL METHOD: Incinerate according to all federal, state and local regulations.

9 - Section VIII - Special Protection Information

RESPIRATORY PROTECTION (SPECIFY TYPE): NIOSH approved organic vapor cartridge.

VENTILATION:

LOCAL EXHAUST: preferred
MECHANICAL (GENERAL): acceptable
SPECIAL:
OTHER:

PROTECTIVE GLOVES: Rubber or neoprene.

EYE PROTECTION: Safety glasses or goggles.

OTHER PROTECTIVE EQUIPMENT: Rubber apron and boots.

10 - Section IX - Special Precautions

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in dry, cool area; keep containers closed; use adequate ventilation; wash thoroughly after handling; use protective clothing; no ignition sources present.

Interstate Chemical Co.
MSDS for SOLVENT 140

0 - Section IX - Special Precautions (continued)

OTHER PRECAUTIONS: COMBUSTIBLE LIQUID- Clean equipment thoroughly prior to maintenance and/or repair.

11 - Section X - SARA Title III

This product may contain toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Right to Know Act of 1986 and of 40 CFR 372.

PIPELINE FACILITY TEST REPORT

FORM 910 1239 (8-93)

1-WORK ORDER NO.
3-1092.01

FACILITY DESCRIPTION			
NAME OF FACILITY JFS Milagro Plant	3-FACILITY LOCATION Bloomfield	DISTRICT	COUNTY/STATE San Juan / N.M.
4-FACILITY TYPE <input type="checkbox"/> Gathering <input type="checkbox"/> Line Pipe <input type="checkbox"/> Hot Tap <input type="checkbox"/> Fabrication	<input type="checkbox"/> Transmission <input type="checkbox"/> Vessel <input type="checkbox"/> Well Setting <input checked="" type="checkbox"/> Plant/Station <input type="checkbox"/> Line Junct. <input type="checkbox"/> Other	3A-SECTION TOWNSHIP RANGE	5-PIPE MANUFACTURER
6-PIPE DATA DIAMETER 2" to 6" SPEC. & GRADE 106 B		WALL THICKNESS Sch 40 LENGTH OF TEST SECTION 200' ?	

7-DESCRIPTION OF PORTION TESTED (FROM - TO) Under ground piping from boilers 1,2,3,4 to KO Drum

TEST SPECIFICATIONS			
8-TYPE OF TEST <input type="checkbox"/> Strength <input checked="" type="checkbox"/> Leak <input type="checkbox"/> Both	9-TEST STATIONS AND ELEVATION	BEGIN LOCATION Boiler #1 HIGH POINT N/A	END LOCATION KO Drum LOW POINT N/A
10-REASON FOR TEST <input type="checkbox"/> New Facility <input type="checkbox"/> Pre-Test <input checked="" type="checkbox"/> Retest	REPAIR <input type="checkbox"/> Repair	DEAD WEIGHT N/A	PRESSURE PUMP 125 Compressor
11-PRESSURE DATA	PRELIMINARY LEAK PRESSURE N/A	BEGIN STATION MINIMUM PRESSURE N/A	END STATION MINIMUM PRESSURE N/A
	REQUIRED TEST PRESSURE 3 PSI	HIGH POINT MINIMUM PRESSURE N/A	LOW POINT MAXIMUM PRESSURE N/A
	REQUIRED TEST DURATION 4 hr	TEST LIMITATIONS (VALVES, FITTINGS, ETC.) 3000*	TEST MEDIUM Air

TEST RESULTS

12-TEST START DATE 9-13-95	HOUR 8:00 AM	13-TEST COMPLETED DATE 9-13-95	HOUR	14-WEATHER Sunny
15-COMMENTS Check pipe for leaks underground. Air test with Barton port Recorder 27-707201 = 1 PSI & Meric Digital Monometer				

TIME	D.W. PRESSURE	Meric D.M.	REMARKS
8:15 AM	86%	3.036	Pressurized up - leak check - small leak?
8:30	87%	2.961	Pressured back up to 92% or 3.285 P.S.I Begin Test
8:45	91%	3.238	
9:00	89%	3.177	
9:15	88%	3.119	Started tightening packing on all above ground valves
9:30	87%	3.087	
9:45	86%	3.051	
10:00	85%	3.018	
10:15	85%	3.015	
10:30	85%	3.015	
10:45	85%	3.011	
11:00	85%	3.015	
11:15	85%	3.015	
11:30	85%	3.007	
11:45	84%	3.004	
12:00 P.M.	85%	3.000	
12:15	85%	3.000	other side

APPROVALS	
DATA TAKEN BY: <i>Darron D. Albatt</i>	TEST APPROVED BY: <i>Fred E. Hoody</i> DATE: 9-13-95
TEST WITNESSED BY: <i>[Signature]</i>	TEST COMPANY: <i>Elkhorn Coast</i>

PIPELINE FACILITY TEST REPORT

FORM 910 1239 (8-93)

1-WORK ORDER NO.

3-1082.01

FACILITY DESCRIPTION

1-NAME OF FACILITY WFS Milagro Plant		3-FACILITY LOCATION Bloomfield		DISTRICT	COUNTY/STATE San Juan / N.M.
4-FACILITY TYPE <input type="checkbox"/> Gathering <input type="checkbox"/> Line Pipe <input type="checkbox"/> Hot Tap <input type="checkbox"/> Fabrication		3A-SECTION		TOWNSHIP	RANGE
<input type="checkbox"/> Transmission <input type="checkbox"/> Plant/Station <input type="checkbox"/> Line Junct. <input type="checkbox"/> Other		<input type="checkbox"/> Vessel <input type="checkbox"/> Well Setting		5-PIPE MANUFACTURER	
6-PIPE DATA		DIAMETER 2" to 6"		WALL THICKNESS sch. 40	
		SPEC. & GRADE 106 B		LENGTH OF TEST SECTION 500' +	

7-DESCRIPTION OF PORTION TESTED (FROM - TO) **underground drain system from Boiler KO Drum to 6" at ponds**

TEST SPECIFICATIONS

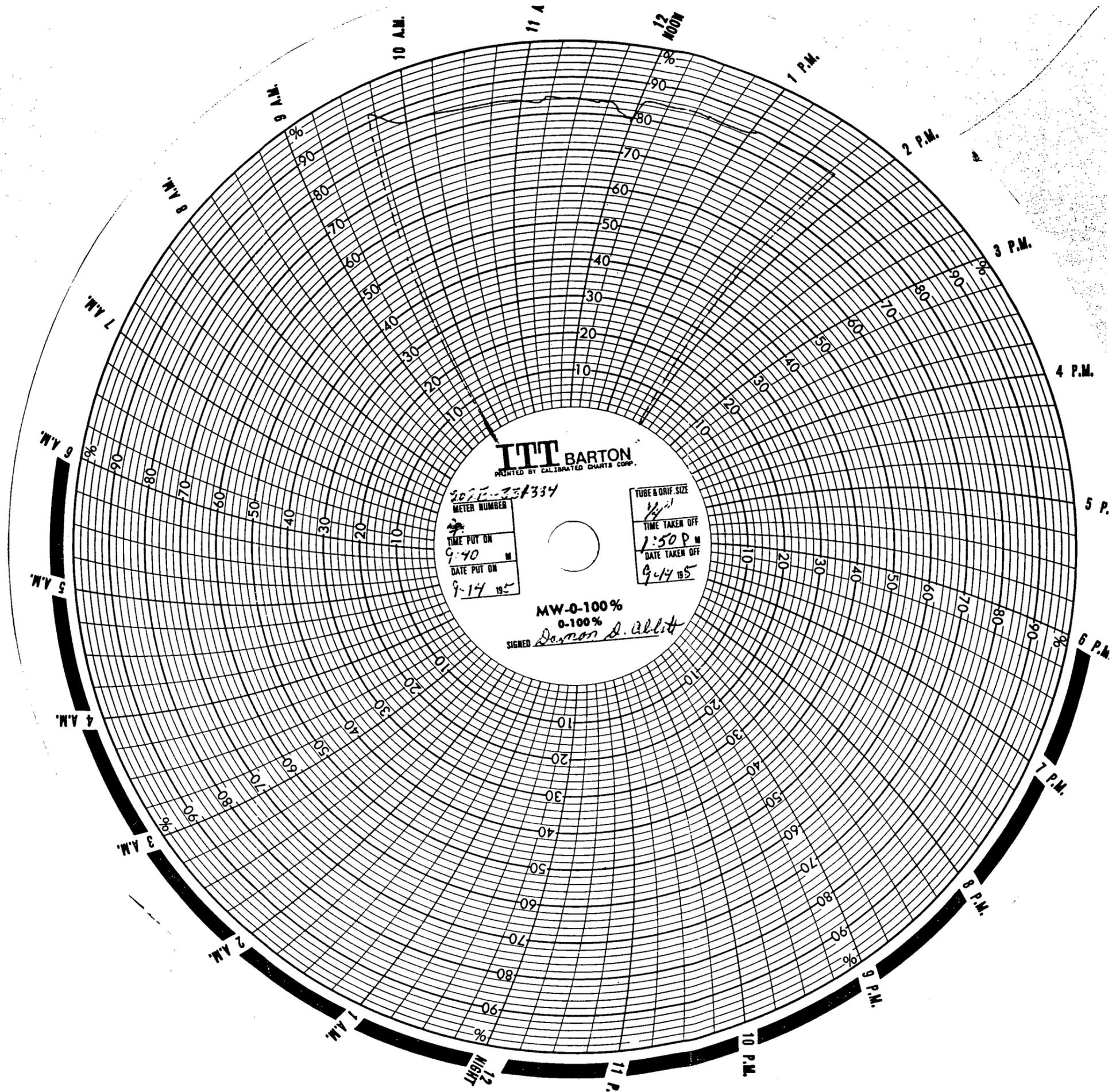
8-TYPE OF TEST <input type="checkbox"/> Strength	<input checked="" type="checkbox"/> Leak <input type="checkbox"/> Both	9-TEST STATIONS	BEGIN LOCATION Boiler KO Drum	END LOCATION 6" At ponds	DEAD WEIGHT N/A
10-REASON FOR TEST <input type="checkbox"/> New Facility	<input type="checkbox"/> Repair <input type="checkbox"/> Pre-Test	AND ELEVATION	HIGH POINT N/A	LOW POINT N/A	PRESSURE PUMP 125 Compressor
11-PRESSURE DATA	PRELIMINARY LEAK PRESSURE N/A		BEGIN STATION MINIMUM PRESSURE N/A		END STATION MINIMUM PRESSURE N/A
	REQUIRED TEST PRESSURE 3 Psi		HIGH POINT MINIMUM PRESSURE N/A		LOW POINT MAXIMUM PRESSURE N/A
	REQUIRED TEST DURATION 4 hrs.		TEST LIMITATIONS (VALVES, FITTINGS, ETC.) 3000#		TEST MEDIUM Air

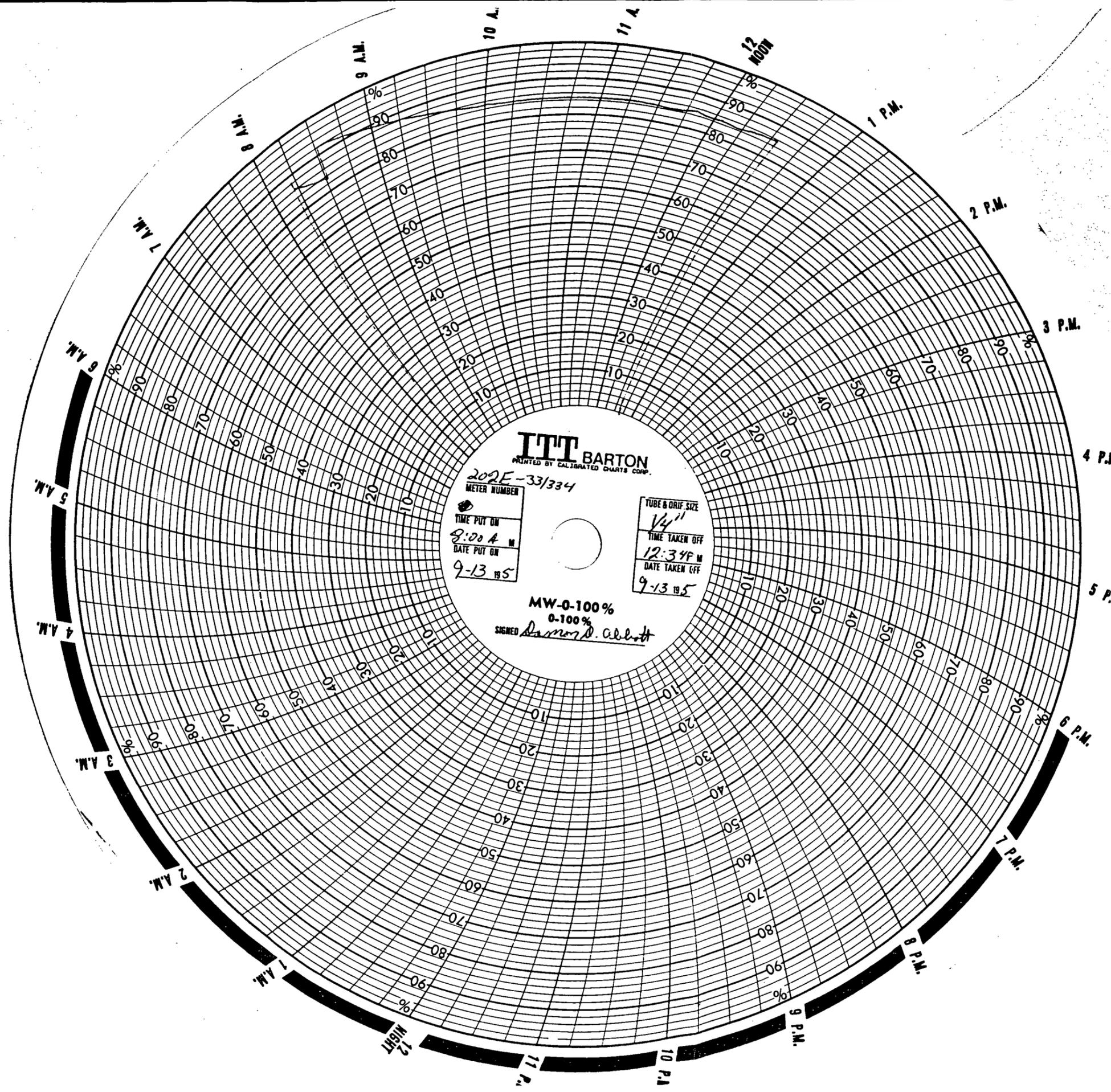
TEST RESULTS

12-TEST START DATE 9-14-95	HOUR 9:45 AM	13-TEST COMPLETED DATE 9-14-95	HOUR 1:45 PM	14-WEATHER Partly Cloudy
15-COMMENTS Test recorded w/ Barton chart recorder & Meri-Cal Digital Monometers on Chart 27.707201 = 3 PSI				

TIME	D.W. PRESSURE	AMBIENT TEMP. ^{at} Medical Dist.	REMARKS
9:45 AM	91%	3.242	Leak checked for 2 days previously - start test
10:00	87%	3.119	Leak Found small leak at plug
10:15	86%	3.080	
10:30	85%	3.065	
10:45	85%	3.065	
11:00	85%	3.061	Cloudy - starting to rain
11:15	85%	3.061	Recorder Bumped
11:30	84%	3.057	
11:45	84%	3.065	Raining again
12:00 P.M.	80%	3.028	Raining hard - cooling off - (Pressured back up to 85% Temp. Drop)
12:15	85%	3.117	Hail storm -
12:30	85%	3.259	Sun shining
12:45	85%	3.236	
1:00	85%	3.231	
1:15	86%	3.285	
1:30	86%	3.281	
1:45	86%	3.301	End test

APPROVALS		
DATA TAKEN BY: Damon R. Albatt	TEST APPROVED BY: Lyle E. Hood	DATE: 9-14-95
TEST WITNESSED BY: [Signature]	TEST COMPANY: Elkhorn Const.	





ITT BARTON
PRINTED BY CALIBRATED CHARTS CORP.

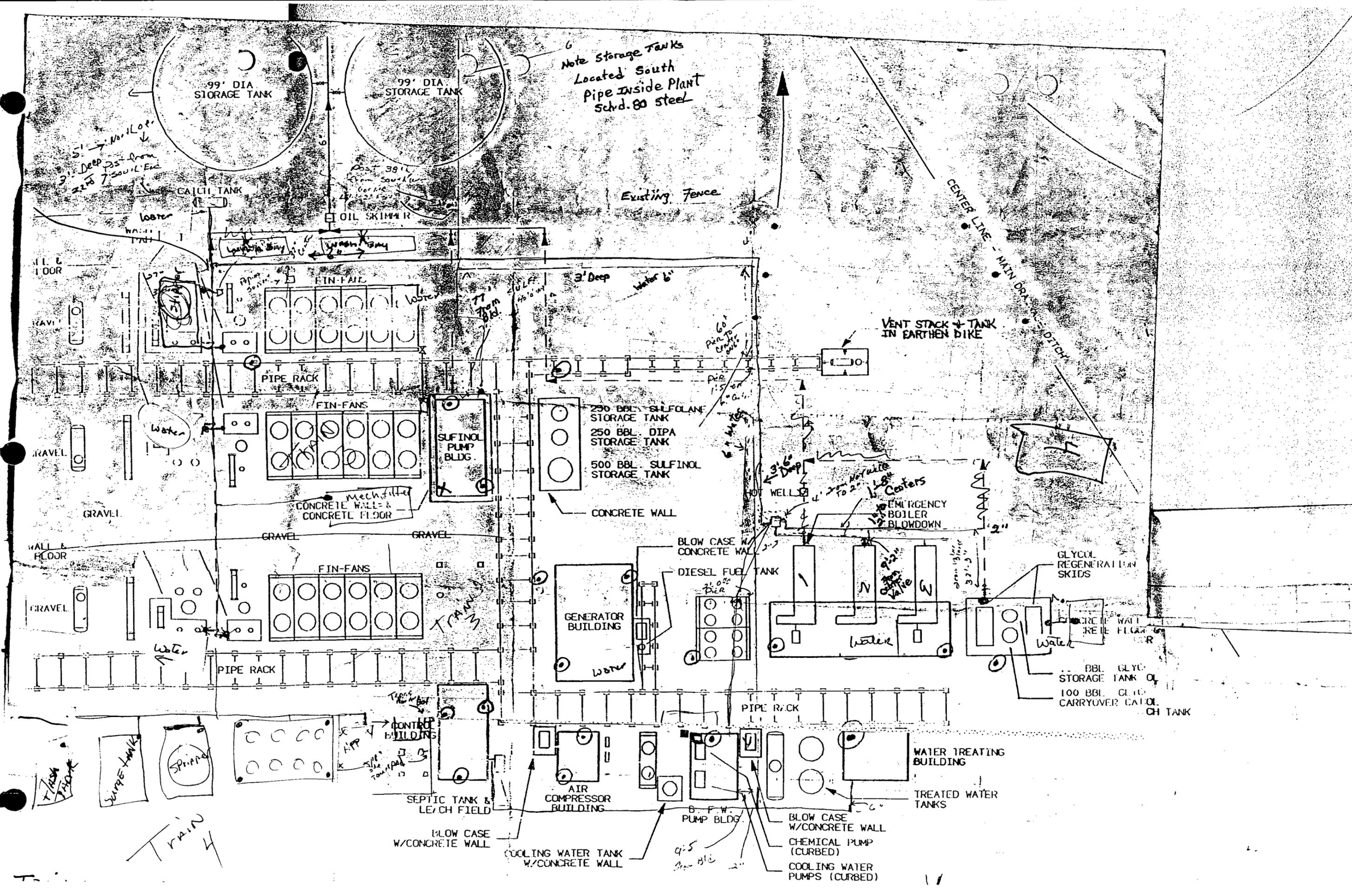
METER NUMBER
202E-33/334

TIME PUT ON
8:00 A M
DATE PUT ON
9-13 1955

TUBE & ORIF. SIZE
1/4"
TIME TAKEN OFF
12:34 P M
DATE TAKEN OFF
9-13 1955

MW-0-100%
0-100%

SIGNED *Samuel D. Abbott*



Note Storage Tanks
Located South
Pipe Inside Plant
Sched. 80 steel

Existing Fence

CENTER LINE - MAIN DRAINAGE DITCH

VENT STACK + TANK
IN EARTHEN DIKE

250 BBL. SULFOLAN
STORAGE TANK
250 BBL. DIPA
STORAGE TANK
500 BBL. SULFINOL
STORAGE TANK

CONCRETE WALL

GENERATOR
BUILDING

BLOW CASE W/
CONCRETE WALL

DIESEL FUEL TANK

PIPE RACK

WATER TREATING
BUILDING

TREATED WATER
TANKS

SEPTIC TANK &
LEACH FIELD

AIR
COMPRESSOR
BUILDING

B.F.W.
PUMP BLDG.

BLOW CASE
W/CONCRETE WALL

CHEMICAL PUMP
(CURBED)

COOLING WATER
PUMPS (CURBED)

GLYCOL
REGENERATION
SKIDS

100 BBL. GLYCOL
STORAGE TANK
100 BBL. GLYCOL
CARRYOVER
CATCH TANK

99' DIA
STORAGE TANK

99' DIA
STORAGE TANK

CALCI TANK

OIL SKIMMER

FIN-FAN

FIN-FAN

FIN-FAN

PIPE RACK

CONTROL
BUILDING

BLOW CASE
W/CONCRETE WALL

COOLING WATER TANK
W/CONCRETE WALL

51' No. 10' ↓
3' Deep 35' from
22' to 7' Soil End

205' 39' L.
From South
Corner
4' to 10' 0"

77
From
Bldg.

3' Deep

Water 6"

3.6' Deep

Water 6"

1.5' 6"

6' 6"

3.6' Deep

Water 6"

2.0' 6"

Water 6"

TRAIN

JURPE TANK

SPRING

OPERATIONS

Manual Milagro Plant Emergency Operating Procedures		
Section Emergency Oper. Procedure	Tab 13	Document No. 42.13.001
Effective Date	Issue No. 2	Page No. 1 of 6

Subject of Title
SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

A. PURPOSE AND SCOPE

A.1 To establish a Spill Prevention Control and Countermeasure Plan for preventing and controlling spills of oil and hazardous substances at Milagro Plant in accordance with Company policies and Procedures, Code of Federal Regulations Title 40, Part 112.7 (if applicable), state, and local government agency requirements. This document is to be used in conjunction with Policy and Procedure: Discharges or Spills of Oil or Hazardous Substances; Preventing, Controlling, and Reporting of.

B. CONTENTS

C. POLICY

- C.1 Name and Ownership
- C.2 Description of Facility
- C.3 Past Spill Experience and Spill Prevention

ATTACHMENT A - Product and Waste Storage Locations
ATTACHMENT B - Emergency Notification List
ATTACHMENT C - Plan Certification

C. POLICY

C.1 NAME AND OWNERSHIP

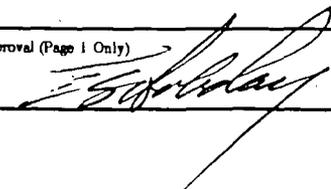
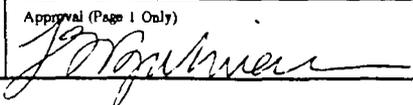
C.1.1 Name and Ownership of the facility is as follows:

- a. Site Name: Milagro Plant
192 County Road 4900
Bloomfield, NM 87413
Township 29-N, Range 11-W, Section 12
- b. Director, San Juan Area: Larry Hjalmarson
- c. Other Personnel On Site: Gerald Smith, Plant Superintendent
- d. Date of Construction: 1981
- e. Owner: Williams Field Services
295 Chipeta Way
P.O. Box 58900
Salt Lake City, Utah 84158-0900
- f. Contact: Leigh Gooding - Environmental Specialist (801) 584-6543

C.2 DESCRIPTION OF FACILITY

C.2.1 The Milagro facility is a natural gas conditioning plant for Williams Field Services, Manzanares natural gas gathering system and is described as follows:

- a. Storage facilities listed below are subject to Operating and Maintenance Procedure, Discharges or Spills of Oil or Hazardous Substances; Preventing, Controlling, and Reporting of; however, items listed with (#) are not subject to the provisions of 40 CFR 112 (Oil Pollution Prevention). All Product and Waste Storage Locations are listed on Attachment A.
 - (1) Product Storage Facilities:
 - #(a) (1) 100 bbl Triethylene and 50% Water Storage Tank (south of the boiler pump building)
 - #(b) (2) 100 bbl Triethylene Glycol 5% and Water Storage Tanks (north of the main

Approval (Page 1 Only) 	Approval (Page 1 Only) 	Approval (Page 1 Only)
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OPERATIONS

Manual Milagro Plant Emergency Operating Procedures		
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Subject of Title

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

boiler building)

- *(c) (1) 100 bbl Triethylene Glycol Storage tank (north of the boiler building)
- *(d) (1) 500 bbl Gas/Spec CS-Plus 50% and water mixture Storage Tank (west of the generator building)
- *(e) (2) 250 bbl Gas/Spec CS-Plus Storage Tanks (west of the generator building)
- (f) (1) 1175 gal Diesel Fuel Storage Tank (north of the generator building)
- (g) (1) 16 gal Lube Oil (bulk container) stored in the Lube Oil Storage Building
- (h) (2) 55 gal Lube Oil (bulk containers) stored in the Lube Oil Storage Buildings
- (i) (1) 1000 gal Oil Skimmer Tank
- (j) (1) 500 gal Fuel Tank (1/2 unleaded gasoline and 1/2 diesel fuel)
- (k) (1) 300 gal Solvent Tank

(2) Waste Storage Facilities

- *(a) (3) 99 foot Evaporation Basins with a maximum capacity of 5024 bbl
- (b) (1) 100 bbl recompressor gravity drain tank (southeast of the evaporation ponds)
- (c) (2) 250 bbl slop tank (east of evaporation ponds) capacity of 2284 bbl with two feet of free board.
- (d) (1) 250 bbl Inlet/Outlet Filter Liquids (east of the evaporation ponds)

b. The documents listed below are incorporated by reference into this site specific SPCC plan. Specific information on preventing, controlling and reporting of spills or discharges are contained in document (1) below. Documents (2) through (7) below are documents that contain site specific information on actions to be taken during emergency situations.

1. O&M procedure, DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling, and Reporting of.
2. Emergency Plan for Plants - see Emergency Operating Procedure (42.01.001).
3. Location Maps - WFS Drawing 798.3-1, Manzanares System Map (42.02.003).
4. Emergency Shutdown System Diagram - see Emergency Operating Procedure (42.05.002).
5. Gas Flow Diagram - see Emergency Operating Procedure 42.05.002.
6. Isolating Station by Closing Mainline Block Valves - see Emergency Operating Procedure 42.07.001.
7. Fire Protection and First Aid Equipment - see Emergency Operating Procedure 42.09.001.
8. MSDS sheets for stored materials are available in the Employee Hazard Communication Program binders located in the Control Room.

OPERATIONS

Manual Milagro Plant Emergency Operating Procedures		
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Subject of Title
SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

C.2.2 The Milagro Plant is located about four (4) miles northeast of Bloomfield, New Mexico on the east flank of Hare Canyon, approximately 1100 feet north and 2400 feet west of the southeast corner of Section 12, Township 29 North, Range 11 West in San Juan County, New Mexico. Milagro Plant is designed to remove carbon dioxide and water from coal seam gas.

Ethylene glycol is used as anti-freeze in the plant's closed loop cooling water system. The 100 barrel tank has a 155 barrel concrete containment wall with a concrete floor.

Triethylene glycol is used for gas dehydration in the three plant process units called trains. Two of the process units and the 100 barrel pure triethylene glycol tank and one of the 100 barrel triethylene glycol-water tanks are mounted within a 172 barrel concrete containment that has a two inch drain line to the evaporation basins. The third process unit and the remaining 100 barrel triethylene glycol-water tank are mounted within a 80 barrel concrete containment that has a two inch drain line to the evaporation basins.

A specialty amine, Gas/Spec CS-Plus, is used in each of the three process trains to remove the carbon dioxide from the natural gas. The three storage tanks for the Gas/Spec CS-Plus (1,320 barrel total storage) are mounted within a 1,320 barrel concrete containment.

Diesel fuel is for the emergency generator that provides power to the plant during initial start-up of the boilers and the steam driven generators. The 1175 gallon tank is mounted within a 3200 gallon concrete containment.

Conoco Dectol R & O 46 and Fleet 15w-40 are the lubricating oils for the rotating equipment. Two drums (100 gallons) and 16 gallons of Pennzoil Dextron II automatic transmission fluid are kept in the oil building which has a 109 gallon concrete containment.

The evaporation basins are equipped with an oil skimmer tank on the pond inlet water. The 1000 gallon skimmer tank is mounted in a 2350 gallon concrete containment.

Liquids from the natural gas stream filters on the plant inlet and outlet may contain lubricating oils or triethylene glycol. These liquids are sent to a 250 barrel storage tank within a concrete containment.

The evaporation basins receive liquids from the boiler blowdowns, the Gas/Spec CS-Plus pump containment areas and the dehydration containment areas. These ponds are double lined with a leak detector pipe installed to test for liquids between the liners.

C.2.3 The facility is surrounded by a steel security fence. The facility is attended 24 hours a day.

C.3 PAST SPILL EXPERIENCE AND SPILL PREVENTION

C.3.1 Two spills have occurred at the facility within the past twelve months. The first release involved a loss of approximately 150 gallons of amine from a concrete containment structure in November 1994. The second release involved an unknown volume of ethylene glycol which leaked out of a concrete containment structure. Both spills resulted from a design flaw in the facility's concrete containment structure. WFS reported both spills to the New Mexico Oil Conservation Division (OCD) and submitted subsequent notification reports. WFS personnel resealed all seams in the facility's containment structures in December 1994 to prevent future occurrences.

OPERATIONS

Manual Milagro Plant Emergency Operating Procedures		
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Subject of Title SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN
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ATTACHMENT B

Emergency Notification List

Gas Control Salt Lake City	801-584-6948
Environmental Services Salt Lake City	801-584-6543
New Mexico Environmental Department 24-Hour Emergency Division	505-827-9329
New Mexico Emergency Response Officer	505-470-9223 505-470-3733
New Mexico Oil Conservation Division Aztec Office	505-334-6178
National Response Center	1-800-424-8802

Additional emergency related contacts, such as customer companies, sheriff, fire departments, police department, ambulance services, and hospitals - see Emergency Operating Procedure 42.04.001.

OPERATIONS

Manual Milagro Plant Emergency Operating Procedures		
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SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

ATTACHMENT C

**PLAN CERTIFICATION
MILAGRO PLANT
SPCC PLAN**

Name of Facility: Milagro Plant

Type of Facility: Natural Gas Processing Plant

Date of Initial Operation: 1991

Name and Address of Owner:

Williams Field Services
295 Chipeta Way
P.O. Box 58900
Salt Lake City, Utah 84158-0900

Designated person responsible for oil spill prevention:

On Site: Gerald Smith, Plant Superintendent

Salt Lake City: Terry Spradlin - Manager, Environmental Health and Safety Services

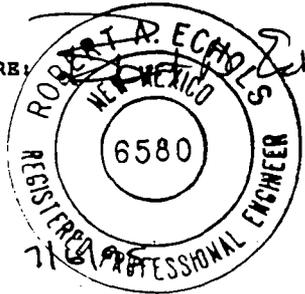
Management Approval: Full approval is extended by Management at a level with authority to commit the necessary resources toward spill prevention.

Signature:  Larry Hjalmarson, Director San Juan Area

CERTIFICATION: I hereby certify that I have examined the facility and, being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

NAME: ROBERT A. ECHOLS, JR.

SIGNATURE: 



(Seal)

Registration No.: 6580

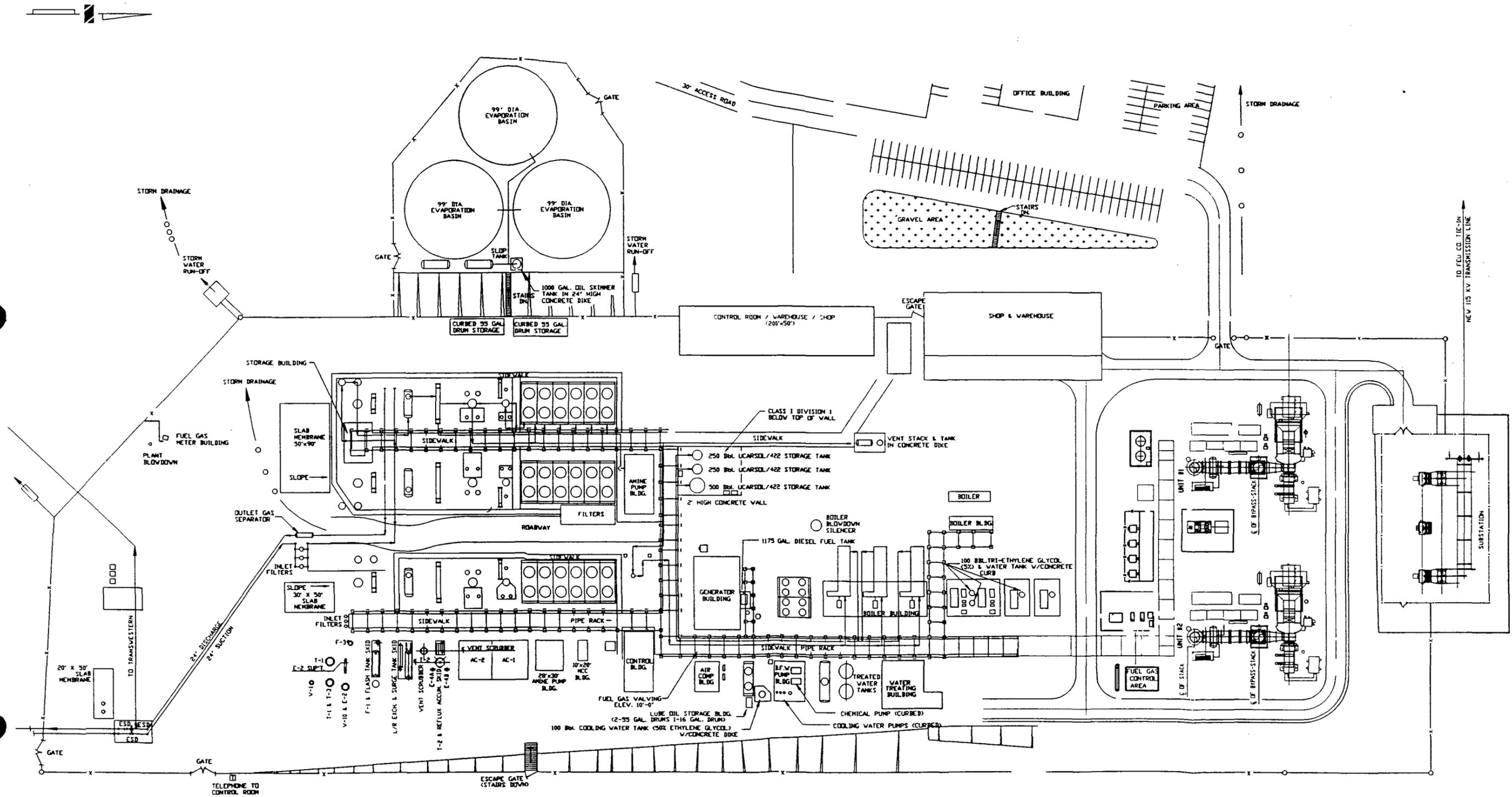
Date:

State: NM

Manual	MILAGRO GAS CONDITIONING PLANT	
Section EMERGENCY OPERATIONS PROCEDURES	Tab 13	Document No. 42.13.001
Effective Date AUGUST, 1995	Issue No. 4	Page No. 4 of 6
Subject or Title: SPILL PREVENTION & COUNTERMEASURE PLAN		Scale: 1"=110'

OPERATIONS

ATTACHMENT "A" PRODUCT & WASTE STORAGE LOCATIONS





OPERATIONS

Manual O & M Procedure	Department	
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Subject of Title
DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling and Reporting of

A. PURPOSE AND SCOPE

- A.1 To establish the policy and procedure for preventing, controlling, and reporting of spills or discharges of oil or hazardous substances to the environment in accordance with Company practices and federal, state, and local requirements, including Title 40 of the Code of Federal Regulations - Part 112 (Oil Pollution Prevention).
- A.2 This document pertains to Company personnel and Company and non-company facilities. The spill prevention and control requirements in this Policy and Procedure are Federally mandated guidelines for oil pollution prevention. The Company policy is to also apply these standards, where appropriate, to facilities containing hazardous substances. This is a discretionary application of the standards; however, variations from the standards should be approved by the responsible Director.

B. CONTENTS

C. POLICY

- C.1 General
- C.2 Bulk Storage Tanks
- C.3 Facility Drainage
- C.4 Transfer Operations, Pumping, and In-Plant/Station Process
- C.5 Facility Tank Car and Tank Truck Loading/Unloading Rack

D. PROCEDURE

- D.1 Identifying, Containing and Initial Reporting of a Discharge or Spill of a Hazardous or Toxic Substance
- D.2 Submitting Written Notification of a Discharge or Spill

ATTACHMENT A: Discharge or Spill Containment Procedures and Materials

C. POLICY

C.1 GENERAL

- C.1.1 All Company facilities which could discharge or spill oil or hazardous substances which may affect natural resources or present an imminent and substantial danger to the public health or welfare including, but not limited to fish, shellfish, wildlife, shorelines, and beaches are subject to the provisions of this document.
- C.1.2 Hazardous Substance, for purposes of this procedure, is defined as any chemical or material that has or should have a Material Safety Data Sheet (MSDS); however, hazardous substances are further defined by the following environmental statutes:
 - a. Section 101 (N) and Section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
 - b. Section 307(a) and Section 311 (b)(2)(A) of the Clean Water Act
 - c. Section 3001 of the Solid Waste Act (excluding items suspended by Congress)
 - d. Section 112 of the Clean Air Act
 - e. Section 7 of the Toxic Substance Control Act

Supersedes Policy and Procedure 12.10.020 dated July 7, 1989.

Approval (Page 1 Only) <i>[Signature]</i>	Approval (Page 1 Only) <i>[Signature]</i> 6/18/93	Approval (Page 1 Only) <i>[Signature]</i> B. C. England
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OPERATIONS

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DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling and Reporting of

- C.1.3 The term hazardous substance does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance in the first sentence of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).
- C.1.4 Oil, for the purpose of this document, means oil of any kind or in any form, including but not limited to petroleum, fuel oil, Y grade, mixed products, sludge, oil refuse, and oil mixed with wastes other than dredged spoil (earth and rock). LPG (propane, butane, ethane) are not considered to be oil.
- C.1.5 Facilities which could discharge or spill oil or hazardous substances into a watercourse must comply with the required federal, state, or local laws and regulations. A discharge includes but is not limited to any spilling, leaking, pumping, pouring, emitting, emptying, or dumping. A watercourse is any perennial or intermittent river, stream, gully, wash, lake, or standing body of water capable of collecting or transporting an oil or hazardous substance.
- C.1.6 Facilities which are subject to the requirements stated in this policy are as follows:
 - a. Non-Transportation Related Facilities
 - (1) Storage or drip tanks and other aboveground containers (excluding pressurized or inline process vessels) having a capacity in excess of 660 gallons for each single container or an aggregate capacity of 1,321 gallons or more for multiple containers.
 - (2) Underground storage facilities having a total capacity in excess of 42,000 gallons.
 - b. Transportation Related Facilities
 - (1) All vehicles, pipeline facilities, loading/unloading facilities, and other mobile facilities which transport oil or hazardous substances.
- C.1.7 Each Company location which has facilities subject to paragraph C.1.1 shall have a site specific Spill Prevention Control and Countermeasure Plan (SPCC Plan) which identifies all facilities subject to 40 CFR 112. The plan shall identify all hazardous substance storage vessels at the facility and the spill prevention measures in place to control discharges or spills. This plan shall also identify all regulatory agencies that must be notified in case of a spill.
- C.1.8 The facility supervisor is responsible for spill prevention. His/her duties include, but are not limited to, the following:
 - a. Instructing personnel in the operation and maintenance of equipment to prevent the discharge of oil.
 - b. Conduct briefings for operating personnel at intervals frequent enough to assure adequate understanding of the Spill Plan at that facility.
 - c. Briefings should highlight and describe known discharges or spills, and recently developed precautionary measures.
- C.1.9 Each individual facility is checked by the supervisor or designee to determine the potential for discharges or spills of oil or hazardous substances in harmful quantities that violate water quality standards or which may cause a film, sheen, or discoloration on the surface of water. All facilities which have the potential for discharging or spilling harmful quantities of oil or hazardous substances into a watercourse are required to have the following preventive measures:
 - a. Examination of all tanks, valves and fittings, at least annually, to determine any maintenance requirements.

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DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling and Reporting of

- b. All tank batteries should, as far as practicable, have a secondary means of containment for the entire contents of the largest single tank plus sufficient freeboard in the containment facility to allow for precipitation.
- c. A annual monitoring and inspection program to prevent accidental spills or discharges into watercourses. This includes annual inspection for faulty systems and monitoring line valves and liquid pipelines for leaks or blowouts.

C.1.10 Any field drainage ditches, road ditches, traps, sumps, or skimmers should be inspected at annual scheduled intervals for accumulation of liquid hydrocarbons or other hazardous substances which may have escaped from small leaks. Any such accumulations should be removed.

C.2 BULK STORAGE TANKS

C.2.1 A tank should not be used for storage of oil or hazardous substances unless the material and construction of the tank is compatible with the material stored and conditions of storage such as pressure and temperature. Buried storage tanks must be protected from corrosion by coatings, cathodic protection, or other methods compatible with local soil conditions. Aboveground tanks should be subject to visual inspection for system integrity.

C.2.2 The facility supervisor should evaluate level monitoring requirements to prevent tank overflow.

C.2.3 Leaks which result in loss of oil or hazardous substances from tank seams, gaskets, rivets and bolts sufficiently large to cause accumulation of oil or hazardous substances in diked areas should be promptly corrected.

C.2.4 Mobile or portable oil or hazardous substances storage tanks should be positioned or located to prevent the contents from reaching a watercourse. The mobile facilities should be located so their support structure will not be undermined by periodic flooding or washout.

C.3 FACILITY DRAINAGE

C.3.1 Make provisions for drainage from diked storage areas where necessary in areas with high precipitation levels. Drainage from dike areas should be restrained by valves or other means to prevent a discharge or spill. Diked areas should be emptied by pumps or ejectors which are manually activated. Valves used for the drainage of diked areas should be of manual, open-and-closed design.

C.3.2 Rain water may be drained from diked areas providing drainage water does not contain oil or hazardous substances that may cause a harmful discharge. Drain valves must be closed following drainage of diked areas.

C.3.3 When possible, drainage systems from undiked areas should flow into ponds, lagoons, or catchment basins designed to retain oil or hazardous substances or return the substances to the facility. Any drainage system which is not designed to allow flow into ponds, lagoons, or catchment basins should be equipped with a diversion system that could, in the event of a discharge or spill, contain the oil or hazardous substances on the Site.

C.3.4 The principal means of containing discharges or spills is the use of dikes which are constructed wherever regulated quantities of oil or hazardous substances have the potential of reaching a watercourse. The construction of dikes must meet the following requirements:

- a. Capacity must be at least equivalent to the storage capacity of the largest tank of the battery plus sufficient freeboard to allow for precipitation, or displacement by foreign materials.
- b. Small dikes for temporary containment are constructed at valves where potential leaking of oil or hazardous substances may occur.

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c. Any dike three feet or higher should have a minimum cross section of two feet at the top.

C.3.5 Other means of containment or spill control include, but are not limited to:

- a. Berms or retaining walls;
- b. Curbing;
- c. Culverting, gutters, or other drainage systems;
- d. Weirs, booms, or other barriers;
- e. Spill diversion ponds or retention ponds;
- f. Sorbent materials

C.4 TRANSFER OPERATIONS, PUMPING, AND IN-PLANT/STATION PROCESS

C.4.1 Aboveground valves and pipelines should be examined annually by operating personnel to determine whether there are any leaks from flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, valve locks, and metal surfaces.

C.5 FACILITY TANK CAR AND TANK TRUCK LOADING/UNLOADING RACK

C.5.1 Rack area drainage which does not flow into a catchment basin or treatment facility designed to handle spills should have a quick drainage system for use in tank truck loading and unloading areas. The containment system should have a maximum capacity of any single compartment of a truck loaded or unloaded in the station.

C.5.2 Aboveground piping that has potential for damage by vehicles entering the Site should be protected by logically placed warning signs or by concrete-filled pipe barriers.

C.5.3 Loading and unloading areas should be provided with an interlocked warning light, grounding shutdown, physical barrier system, or warning signs to prevent vehicular departure before complete disconnect of flexible or fixed transfer lines. All drains and outlets of any truck should be closely examined for leakage prior to filling and departure. All drains and outlets which may allow leakage should be tightened, adjusted, or replaced to prevent liquid leakage while in transit.

NOTE: LPG loading facilities and remote field loading of condensate are exempt from the C.5 requirements of this document.

D. PROCEDURE

D.1 IDENTIFYING, CONTAINING AND INITIAL REPORTING OF A DISCHARGE OR SPILL OF OIL OR HAZARDOUS SUBSTANCE

Any Employee

D.1.1 Upon noticing a discharge or spill of an oil or hazardous substance in any quantity initiates immediate containment procedures and notifies facility supervisor.

NOTE: Refer to Attachment A for containment procedures.

Facility Supervisor

D.1.2 Contacts Gas Control and responsible Director immediately by telephone and provides the following information:

- a. Name of company facility and/or location of facility and nature of discharge or spill
- b. Description and quantity of emission or substance discharged
- c. Name, title, and telephone number of person initially reporting the discharge or spill and person reporting to Gas Control
- d. Action taken or being taken to mitigate and correct discharge or spill
- e. Water bodies or streams involved
- f. Time and duration of discharge or spill
- g. Outside involvement during discharge or spill (public government agencies, etc. See Emergency Operating Procedure Manuals)

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Gas Control Personnel

D.1.3 Advises Environmental Services departments immediately by telephone concerning the incident including any incidents reported by persons not employed with the Company.

NOTE: If Gas Control is contacted by a person not employed with the Company, the necessary information is obtained as indicated in D.1.2 and the Supervisor and Environmental Services are immediately contacted to begin containment and clean-up of the discharge or spill.

D.1.4 If Environmental Services cannot be contacted, notifies Director over Environmental Services.

Facility Supervisor

D.1.5 Coordinates containment and clean-up of discharge or spill, keeping the responsible Director informed.

D.1.6 If the discharge or spill is too large for Company personnel to contain, contacts qualified local contractors for assistance. (See Emergency Operating Procedure Manuals tab #11, contractors with available equipment and services).

D.1.7 Advises Environmental Services by telephone if emergency containment or clean-up assistance from a state agency or a response team from the U.S. Coast Guard is required.

Environmental Services

D.1.8 Contacts Legal Department (and Right-of-Way Department, if appropriate) and assesses reporting requirements to state and federal agencies. (See Emergency Operating Procedure Manuals).

D.1.9 Makes appropriate contacts with U.S. Coast Guard and state agencies when necessary.

D.1.10 If spill is significant, dispatches Environmental Specialist to scene to oversee cleanup and reporting responsibilities.

D.2 SUBMITTING WRITTEN NOTIFICATION OF A DISCHARGE OR SPILL

Facility Supervisor

D.2.1 Completes a written description of the incident as soon as possible after initial notification is given, which should include the following:

- a. Time and date of discharge or spill
- b. Facility name and location
- c. Type of material spilled
- d. Quantity of material spilled
- e. Area affected
- f. Cause of spill
- g. Special circumstances
- h. Corrective measures taken
- i. Description of repairs made
- j. Preventative measures taken to prevent recurrence.

D.2.2 Forwards the completed report to Environmental Services and a copy to Legal Department. Retains a copy for future reference.

NOTE: Environmental Services, in coordination with the Legal Department, submits written reports to government agencies.

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DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling and Reporting of

ATTACHMENT A

Discharge or Spill Containment Procedures and Materials

Type of Facility where the Discharge or Spill occurs	Containment Procedures	Material Used for Containment
A. Oil Pipeline (as defined in C.1.4)	<ol style="list-style-type: none"> 1. Closes appropriate block valves. 2. Contains discharge or spill by: ditching covering, applying sorbents, constructing an earthen dam, or burning. 3. If burning is required, obtains approval from the appropriate state air quality control government agencies before burning. 	<ol style="list-style-type: none"> 1. Straw 2. Loose Earth 3. Oil Sorbent - 3M Brand 4. Plain Wood Chips 5. Sorb - Oil Chips Banta Co. 6. Sorb - Oil Swabs - Banta Co. 7. Sorb - Oil Mats - Banta Co. 8. Or Equivalent Materials.
B. Vehicle	<ol style="list-style-type: none"> 1. Contains discharge or spill by: ditching, covering surface with dirt, constructing earthen dams, applying sorbents, or burning. 2. Notifies immediately the Compliance and Safety Department and if there is any imminent danger to local residents; notifies immediately the highway patrol or local police officials. 3. If burning is required, obtains approval from the appropriate state air quality control government agencies before burning. <p>NOTE: Any vehicle carrying any hazardous or toxic substance will carry a shovel or other ditching device to contain a spill. If the vehicle has sufficient room, sorbent materials should also be carried.</p>	
c. Bulk Storage Tanks or any other Facilities	<ol style="list-style-type: none"> 1. Contains discharge or spill by: ditching, covering, applying sorbents, constructing an earthen dam, or burning. 2. If burning is required, obtains approval from the appropriate state air quality control government agencies before burning. 	



Title: NM - Environment Department • Environmental Improvement Board • Water Quality Control Commission • Groundwater Protection and Remediation Bureau • WQCC 82-1 • Part I • 1-200 • 1-203

Section: 1-203 Notification of Discharge -- Removal

Date: November 18, 1993

Subject:

Terms:

1-203. Notification of Discharge -- Removal.

A. With respect to any discharge from any facility of oil or water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, the following notifications and corrective actions are required;

1. As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, any person in charge of the facility shall orally notify the Chief, Ground Water Bureau, Environmental Improvement Division, or his counterpart in any constituent agency delegated responsibility for enforcement of these rules as to any facility subject to such delegation. To the best of that person's knowledge, the following items of information shall be provided:

- a. the name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- b. the name and address of the facility;
- c. the date, time, location, and duration of the discharge;
- d. the source and cause of discharge;
- e. a description of the discharge, including its chemical composition;
- f. the estimated volume of discharge; and
- g. any actions taken to mitigate immediate from the discharge.

2. When in doubt as to which agency to notify, the person in charge of the facility shall notify the Chief, Ground Water Bureau, Environmental Improvement Division. If that division does not have authority pursuant to Commission delegation, the division shall notify the appropriate constituent agency.

3. Within one week after the discharger has learned of the discharge, the facility owner and/or operator shall send written notification to the same division official, verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

4. The oral and written notification and reporting requirements contained in the three preceding paragraphs and the paragraphs below are not intended to be duplicative of discharge notification and reporting requirements promulgated by the Oil Conservation Commission (OCC) or by the Oil Conservation Division (OCD); therefore, any facility which is subject to OCC or OCD discharge

notification and reporting requirements need not additionally comply with the notification and reporting requirements herein.

5. As soon as possible after learning of such a discharge, the owner/operator of the facility shall take such corrective actions as are necessary or appropriate to contain and remove or mitigate the damage caused by the discharge.

6. If it is possible to do so without unduly delaying needed corrective action, the facility owner/operator shall endeavor to contact and consult with the Chief, Ground Water Bureau, Environmental Improvement Division or appropriate counterpart in a delegated agency, in an effort to determine the division's views as to what further corrective actions may be necessary or appropriate to the discharge in question. In any event, no later than fifteen (15) days after the discharger learns of the discharge, the facility owner/operator shall send to said Bureau Chief a written report describing any corrective actions taken and/or to be taken relative to the discharge. Upon a written request and for good cause shown, the Bureau Chief may extend the time limit beyond fifteen (15) days.

7. The Bureau Chief shall approve or disapprove in writing the foregoing corrective action report within thirty (30) days of its receipt by the division. In the event that the report is not satisfactory to the division, the Bureau Chief shall specify in writing to the facility owner/operator any shortcomings in the report or in the corrective actions already taken or proposed to be taken relative to the discharge, and shall give the facility owner/operator a reasonable and clearly specified time within which to submit a modified corrective action report. The Bureau Chief shall approve or disapprove in writing the modified corrective action report within fifteen (15) days of its receipt by the division.

8. In the event that the modified corrective action report also is unsatisfactory to the division, the facility owner/operator has five (5) days from the notification by the Bureau Chief that it is unsatisfactory to appeal to the division director. The division director shall approve or disapprove the modified corrective action report within five (5) days of receipt of the appeal from the Bureau Chief's decision. In the absence of either corrective action consistent with the approved corrective action report or with the decision of the director concerning the shortcomings of the modified corrective action report, the division may take whatever enforcement or legal action it deems necessary or appropriate.

B. Exempt from the requirements of this section are continuous or periodic discharges which are made:

1. in conformance with water quality control commission regulations and rules, regulations or orders of other state or federal agencies; or

2. in violation of water quality control commission regulations but pursuant to an assurance of discontinuance or schedule of compliance approved by the Commission or one of its duly authorized constituent agencies.

C. As used in this section:

1. "discharge" means spilling, leaking, pumping, pouring, emitting, emptying, or dumping into water or in a location and manner where there is a reasonable probability that the discharged substance will reach surface or subsurface water;

2. "facility" means any structure, installation, operation, storage tank, transmission line, motor vehicle, rolling stock, or activity of any kind, whether stationary or mobile;

Title: NM - Environment Department · Environmental Improvement Board · Water Quality Control Commission · Groundwater Protection and Remediation Bureau · WQCC 82-1 · Part I · 1-200 · 1-203

Section: 1-203 Notification of Discharge — Removal
Date: November 18, 1993
Subject
Terms:

3. "oil" means oil of any kind or in any form including petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes.

4. "operator" means the person or persons responsible for the overall operation of a facility; and

5. "owner" means the person or persons who own a facility, or part of a facility.

D. Notification of discharge received pursuant to this regulation or information obtained by the exploitation of such notification shall not be used against any such person in any criminal case, except for perjury or for giving a false statement.

GENERAL DESCRIPTION OF WASTEWATER EVAPORATION BASINS

1. Facilities Description:

A series of three (3) 99' diameter evaporation tanks with conical bottoms will be utilized for storage/disposal of process water and storm runoff from spill containment areas. The tanks will be at subgrade to allow gravity flow into the cells. The tank sidewalls will be constructed of heavy gauge galvanized corrugated steel. The primary and secondary liners will be flexible membrane material which is resistant to hydrocarbons, salts, and acidic and alkaline solutions. The leak detection system will be a HDPE drainage net material sandwiched between the liners. The drainage net will collect any fluid which may penetrate the primary liner and convey it to a small sump from which an underdrain will carry it to a PVC inspection well.

2. Technical Information:

Type and Volume of Effluents Stored -

Plant Effluent and Process Fluids - 1500 gpd (see Table 1 for description).

Storm Runoff From Spill Containment Areas -
7,500 ft² (approx.) containment area * .63 ft precip./yr =
4,725 ft³/yr

Evaporative Surface Area: 23,093 ft²

The required surface area is 19,727 ft². This was calculated as shown in Exhibit 1 and includes a 20% safety factor. The total combined surface area of the three tanks is 23,093 ft².

Volume - 288,000 gallons

The storage volume was determined by the shortest available steel sidewall (44") minus the two feet of required freeboard, multiplied by the evaporative surface area. The adequacy of the storage volume was checked by running it through a computer program written to determine monthly water balances (see Exhibit 2 for computer printout).

The monthly precipitation and evaporation data used to determine monthly water balances are provided in Exhibit 3.

Depth - Storage Depth 20" + Freeboard 24" = Total Depth 44"

Slope of Pond Sides - The cells will have vertical corrugated steel sidewalls.

TABLE 1

SOURCES OF PLANT EFFLUENT AND PROCESS FLUIDS
STORED IN BASINS

<u>Source</u>	<u>Quantity</u>	<u>Quality Type</u>	<u>Additives</u>
1. Sulfinol Reclaimer	60 gpd	high TDS water, amine salts	diisopropanolamine, sulfolane, DIPA, oxazolidone
2. Boiler (emergency blowdown)	None normally, maximum 1500 gallons in emergency	high TDS water	Betz Neutrafilm 463, Betz Magniform 308, Betz Balanced Polymer
3. Drains from Sulfinol pump building containment	Trace	amine	fugitive amine leaks
4. Drains in spill containment dikes		rainwater	fugitive leaks

Subgrade Description - The sub-grade material will be silty fine sand and sand. The sub-grade will be graded at 1% slope to the center and will be smooth, compacted and free of debris which could rupture the liner. In addition, the design calls for a 10 oz. geotextile material between the soil and secondary liner, as a barrier to reduce the risk of damage to the liner. (see Exhibit 4 for information on the geotextile material).

Liner Type and Thickness - The primary and secondary liners will be Seaman Corp's XR-5 flexible membrane liner. The liner thickness is 30 mil.

Compatibility of Liner and Effluents - XR-5 is a chemical, oil, and high temperature resistant geomembrane material designed for use in municipal industrial waste pits and ponds. For the manufacturer's specification and sulfinol compatibility test results, refer to Exhibit 5 and 6 respectively.

Installation Method - The primary and secondary liners will be fabricated in the factory in a one-piece, polar cap design with 2" factory thermal heat sealed seams. The geotextile wall buffer material, primary liner, HDPE drainage net and secondary liner will all be secured to the top edge of the steel sidewalls by a continuous top angle which also serves as a wind girder. See Exhibits 7 and 8 for an illustration and explanation of the liner installation in a tank.

Leak Detection Method - HDPE drainage net will be sandwiched between the primary and secondary liners to collect any fluid which may break through the primary liner. The drainage net will convey the fluid into a small sump from which it will drain to a 2" diameter schedule 40 PVC inspection well. See Exhibit 8 for an illustration of the lining and leak detection system.

Freeboard - 24 inches

Runoff/Runon Protection - A one foot high berm with 1:1 side slopes will be constructed around the upgradient half of each cell to divert surface runoff from entering the cells.

Venting of Gas - In order to prevent the possibility of gas accumulating beneath the liner, the cells will be conical shaped with a minimum 1% slope to the outside. Any gas beneath the liner will be vented via geotextile buffer material between the soil and secondary liner.

Leak Detection and Plans for Corrective Action - The leak detection wells will be inspected weekly and an inspection log book kept up to date. If any leaks are detected, the fluid will immediately be removed from the sump. A grab sample of the fluid will be sent to a certified laboratory for analysis. The New Mexico Oil Conservation Division will be notified of all leaks within one work day of discovery.

Should a leak occur, the valve to the leaking cell will be closed and all fluids will be diverted to the remaining two cells. If necessary, there is more than adequate storage capacity to pump the fluid from the damaged tank into the other two cells. If the leak can be found and is repairable in place, it will be repaired. If the source of the leak cannot be determined or repaired, the primary liner can easily be removed and a new liner placed in the cell. Once repairs are completed, the fluids removed from the cell will be pumped back into it so that the fluid level in the cells is equal.

Fences and Signs - The entire plant area is surrounded by a fence to keep unauthorized persons, livestock and wildlife from entering the facilities. In addition, an approximately 5'6" high fence will surround the cells as a safety precaution (see Exhibit 9, Detail "C" for a typical fence design).

A sign not less than 12" x 24" with lettering of not less than 2" will be posted at the entrance to the fenced evaporation cell area (see Exhibit 10).

EXHIBIT 1

Milagro Plant Evaporation Pond - Area Calculation

Given: Evaporation Rate = 5.25'/yr
 Precipitation Rate = .51'/yr
 Process Inflow Rate = $1500 \text{ gpd} * 365 \text{ days/yr} \div 7.48 \text{ gals/ft}^3 = 73,195 \text{ ft}^3/\text{yr}$
 Surface Area Runoff = $7,500 \text{ ft}^2 * .63 \text{ ft/yr} = 4,725 \text{ ft}^3/\text{yr}$
 Total Inflow = 77,920 ft³/yr

Assumption: * Inflow does not include oil which would interfere with evaporation
 * No outflow, Total containment

Net Evaporation rate: = $5.25'/\text{yr} - .51'/\text{yr} = 4.74'/\text{yr}$

Evaporation Area: = $\frac{77,920 \text{ ft}^3/\text{yr}}{4.74 \text{ ft/yr}} = 16,439 \text{ ft}^2 * 1.20 \text{ (safety factor)} = 19,727 \text{ ft}^2$

EXHIBIT 2

MILAGRO GAS TREATMENT PLANT EVAPORATION CELLS-WATER BALANCE

WATER BALANCE (GALS)

GALLONS INFLOW/DAY = 1500
 TOTAL PIT CAPACITY (GALS) = 287894
 PIT SURFACE AREA (FT2) = 23093
 SURFACE RUNOFF AREA (FT2) = 25500

MONTH	CARRYOVER	INFLOW	PRECIP	EVAP	BALANCE
1	0	46500	13933.23	0	60433.24
2	60433.24	42000	14539.03	0	116972.3
3	116972.3	46500	10904.27	0	174376.5
4	174376.5	45000	12115.86	93277.25	138215.1
5	138215.1	46500	9995.581	158916.8	35793.91
6	35793.91	45000	6057.928	162371.5	0
7	0	46500	17870.89	157189.4	0
8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77
12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4
2	175133.4	42000	14539.03	0	231672.5
3	231672.5	46500	10904.27	0	289076.7
4	289076.7	45000	12115.86	93277.25	252915.3
5	252915.3	46500	9995.581	158916.8	150494.1
6	150494.1	45000	6057.928	162371.5	39180.53
7	39180.53	46500	17870.89	157189.4	0
8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77
12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4
2	175133.4	42000	14539.03	0	231672.5
3	231672.5	46500	10904.27	0	289076.7
4	289076.7	45000	12115.86	93277.25	252915.3
5	252915.3	46500	9995.581	158916.8	150494.1
6	150494.1	45000	6057.928	162371.5	39180.53
7	39180.53	46500	17870.89	157189.4	0
8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77
12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4
2	175133.4	42000	14539.03	0	231672.5
3	231672.5	46500	10904.27	0	289076.7
4	289076.7	45000	12115.86	93277.25	252915.3
5	252915.3	46500	9995.581	158916.8	150494.1
6	150494.1	45000	6057.928	162371.5	39180.53
7	39180.53	46500	17870.89	157189.4	0
8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77

12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4
2	175133.4	42000	14539.03	0	231672.5
3	231672.5	46500	10904.27	0	289076.7
4	289076.7	45000	12115.86	93277.25	252915.3
5	252915.3	46500	9995.581	158916.8	150494.1
6	150494.1	45000	6057.928	162371.5	39180.53
7	39180.53	46500	17870.89	157189.4	0
8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77
12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4

EXHIBIT 3

Milagro Gas Treatment Plant Evaporation Cells Precipitation and Evaporation Data

	<u>Potential Evaporation (in) (1)</u>	<u>Precipitation (in) (2)</u>
January	0.0	.46
February	0.0	.48
March	0.0	.36
April	6.5	.40
May	11.0	.33
June	11.3	.20
July	10.9	.59
August	8.63	.91
September	8.90	.75
October	5.50	.78
November	0.25	.34
December	0.0	.54

(1) Evaporation data was provided by the Bureau of Reclamation from data collected at Navajo Dam, New Mexico from January - December 1989.

(2) Precipitation data is from the Farmington, New Mexico weather station and is an average of monthly precipitation from 1931-1978.

EXHIBIT 4

MILAGRO GAS TREATMENT PLANT EVAPORATION CELLS-GEOTEXTILE SPECIFICATIONS

ENV-1016-01 Geotextile

ENV-1016-01 is a nonwoven fabric composed of polypropylene filaments which are formed into a stable network such that the filaments retain their relative position. The fabric is inert to biological degradation and naturally encountered chemicals, alkalies, and acids. ENV-1016-01 conforms to the typical property values listed in the following table.

<u>Fabric Property</u>	<u>Unit</u>	<u>Test Method</u>	<u>Typical Value</u>
Weight	oz/sy	ASTM D-3776-79	10.0
Thickness	mils	ASTM D-1777-64	120
Grab Tensile Strength	lb	ASTM D-4632-86 (2)	285
Grab Tensile Elongation	%	ASTM D-4632-86	50
Puncture Strength	lb	ASTM D-3787-80 (3)	130
Burst Strength	psi	ASTM D-3786-80a (4)	425
Trapezoid Tear Strength	lb	ASTM D-4533-85	120
Water Permeability, k	cm/sec	ASTM D-4491-85 (5)	0.4
Water Flow Rate	gpm/sf	ASTM D-4491-85 (5)	100

(1) The values listed are typical values. Contact the Environetics Technical Department for minimum certifiable values.

(2) Using constant rate of extension (CRE), machine at 12±, 1/2-inch/minute, as per Section 6.1.

(3) Tension testing machine with ring clamp; steel ball replaced with a 5/16-inch diameter solid steel cylinder centered within the ring clamp; (F).

(4) Hydraulic Diaphragm Bursting Tester.

(5) 5cm Constant Head Test Method.

EXHIBIT 5

MILAGRO GAS TREATMENT PLANT EVAPORATION CELLS
PRIMARY AND SECONDARY LINER MANUFACTURERS SPECIFICATIONS

XR-5[®]

Chemical, Oil and High Temperature Resistant Geomembrane



Seaman Corporation

INDUSTRIAL FABRIC DIVISION

1000 Venture Blvd.
Wooster, Ohio 44691

SEAMAN CORPORATION XR-5® CHEMICAL RESISTANT GEOMEMBRANE

PRODUCT FEATURES

1. POLYESTER –

Better chemical resistance, exceptional dimensional stability, longer life than nylon, non hydroscopic, lower elongation.

2. POLY-R® WEAVE –

Lower elongation, good tear resistance, lower stretch helps adhesion, seam strength, dead load.

3. POLYMER COATING –

Excellent chemical and oil resistance – no plasticizers to migrate or extract – high temperature performance, up to 220°F.

Flexibility over the years – dielectrically and heat sealable with ease, excellent abrasion resistance.

4. COATED FABRIC –

Chemical and mechanical adhesion, no wicking, low water absorption.

5. EASE OF FIELD REPAIR –

Can be patched with portable heat gun.

XR-5* FLUID RESISTANCE

The data below is the result of laboratory tests and is intended to serve only as a guide. No performance warranty is intended or implied. The degree of chemical attack on any material is governed by the conditions under which it is exposed. Exposure time, temperature, and size of the area of exposure usually varies considerably in application, therefore, this table is given and accepted at the user's risk. Confirmation of the validity and suitability in specific cases should be obtained.

When considering XR-5 for specific applications, it is suggested that a sample be tested in actual service before specification. Where impractical, tests should be devised which simulate actual service conditions as closely as possible.

EXPOSURE	RATING	EXPOSURE	RATING
Acetic Acid (5%)	B	Kerosene	A
Acetic Acid (50%)	C	Magnesium Chloride	T
Ammonium Phosphate	T	Magnesium Hydroxide	T
Ammonium Sulfate	T	Methyl Alcohol	A
Antifreeze (ethylene glycol)	A	Methyl Ethyl Ketone	X
Animal Oil	A	Mineral Spirits	A
Aqua Regia	X	Naptha	A
ASTM Fuel A	A	Nitric Acid (5%)	B
ASTM Oil #2	A	Nitric Acid (50%)	C
Benzene	X	Perchloroethylene	C
Calcium Chloride Solutions	T	Phenol	X
Calcium Hydroxide	T	Phenol Formaldehyde	B
20% Chlorine Solution	A	Phosphoric Acid (50%)	A
Clorox	A	Phosphoric Acid (100%)	C
Conc. Ammonium Hydroxide	A	Phthalate Plasticizer	C
Corn Oil	A	Potassium Chloride	T
Crude Oil	A	Potassium Sulphate	T
Diesel Fuel	A	Raw Linseed Oil	A
Ethyl Acetate	C	SAE-30 Oil	A
Ethyl Alcohol	A	Salt Water (25%)	B
Fertilizer Solution	A	Sea Water	A
#2 Fuel Oil	A	Sodium Acetate Solutions	T
#6 Fuel Oil	A	Sodium Bisulfite Solution	T
Furfural	X	Sodium Hydroxide (60%)	A
Gasoline	B	Sodium Phosphate	T
Glycerin	A	Sulphuric Acid (50%)	A
Hydraulic Fluid	A	50% Tanic Acid	A
Hydrocarbon Type II	C	Toluene	C
Hydrochloric Acid (50%)	A	Transformer Oil	A
Hydrofluoric Acid (5%)	A	Turpentine	A
Hydrofluoric Acid (50%)	A	Urea Formaldehyde	A
Hydrofluosilicic Acid (30%)	A	Vegetable Oil	A
Isopropyl Alcohol	T	Water (200°F.)	A
Ivory Soap	A	Xylene	X
JP-4 Jet Fuel	A	Zinc Chloride	T

Ratings are based on visual and physical examination of samples after removal from the test chemical after the samples of Black XR-5 were immersed for 28 days at room temperature. Results represent ability of material to retain its performance properties when in contact with the indicated chemical.

RATING KEY:

- A - Fluid has little or no effect
- B - Fluid has minor to moderate effect
- C - Fluid has severe effect
- T - No data - likely to be acceptable
- X - No data - not likely to be acceptable

Perhaps a more meaningful test is determination of the permeability or diffusion rate of the liquid chemical through the coated fabric. The permeability of Style 8130 XR-5, 30 Mil Hypalon laminate, and 30 Mil CPE laminate to various chemicals was determined by the ASTM D814-55 inverted cup method. All tests were run at room temperature and results are shown in the table.

**COMPARATIVE CHEMICAL PERMEABILITY DATA
Tested According to ASTM D814-55 Inverted Cup Method**

Chemical	8130 XR-5 Black		30 Mil Hypalon Laminate		30 Mil CPE Laminate	
	Fl. oz./ft. ² / 24 hours	Gal./Acre/ 24 hours	Fl. oz./ft. ² / 24 hours	Gal./Acre/ 24 hours	Fl. oz. ft. ² / 24 hours	Gal. Acre 24 hours
Kerosene	0.0134	4.6	0.147	50.0	0.223	75.8
Hi-Test Gas	0.184	62.5	1.51	513.8	2.280	776.0
Ohio Crude Oil	0.003	1.1	0.014	4.7	0.010	3.5
Low-Test Gas	0.523	178.0	-	3000.0*	-	3000.0
Raw Linseed Oil	0.001	0.34	0.006	2.0	0.008	2.7
Ethyl Alcohol	0.021	7.2	0.073	24.8	-	3000.0*
Naphtha	0.0369	12.6	0.376	127.9	0.096	32.6
Perchloroethylene	1.797	611.0	-	3000.0*	-	3000.0*
Hydraulic Fluid	0.0006	0.21	0.009	3.3	1.110	378.0
100% Phosphoric Acid	0.320	108.9	Not available	Not available	Not available	Not available
50% Phosphoric Acid	0.023	7.8	Not available	Not available	Not available	Not available

* Fluid totally diffused after seven days

Using the same test procedure, the water permeability of Style 8130 XR-5* versus a comparable Hypalon and CPE laminate was determined.

	Water Permeability	
	Fl. oz./ft. ² /24 hours	Gal./acre/24 hours
Style 8130 XR-5 Black	0.0086	3.0
Hypalon laminate	0.0079	2.7
CPE laminate	0.34	114.0

Style 8130 XR-5 Black Seam Strength After Immersion

Two pieces of Style 8130 were heat sealed together (seam width 1 inch overlap) and formed into a bag. Various oils and chemicals were placed in the bags so that the seam area was entirely covered. After 28 days at R.T., the chemicals were removed and one inch strips were cut across the seam and the breaking strengths immediately determined. Results are listed below.

Chemical	Seam Strength
None	340 lbs. fabric break – No Seam Failure
Kerosene	355 lbs. fabric break – No Seam Failure
Ohio Crude Oil	320 lbs. fabric break – No Seam Failure
Hydraulic Fluid	385 lbs. fabric break – No Seam Failure
Toluol	0 lbs. fabric delaminate
Naphtha	380 lbs. fabric break – No Seam Failure
Perchloroethylene	390 lbs. fabric break – No Seam Failure

Even though 1 inch overlap seam is used in the tests to study the accelerated effects, it is very important that XR-5 is used with a minimum of 2 inch overlap seams in actual application. In some cases where temperatures exceed 160°F and application demands extremely high seam load it may be necessary to use a wider width seam.

30 DAY SOIL BURIAL TEST

The samples were weighed, then placed on a 4-inch bed of active, compacted soil and covered with a 1-inch layer, of loosely packed soil. After 30 days in a chamber maintained at 85°F. to 90°F., and 90% relative humidity, the samples were recovered, rinsed with water, air dried and reweighed for % weight loss determination.

30 Day Soil Burial				
Sample	Weight (gms)		Weight Loss (gms)	% Weight Loss
	Before Soil Burial	After 30 days Soil Burial		
8130 XR-5 DC-7 Black	39.50	39.40	0.1	0.25

Accelerated Weathering Test

XR-5 has been tested in the carbon arc weatherometer for over 8000 hours of exposure. The sample showed no loss in flexibility and no significant color change. Based on field experience of Seaman Corporation vinyls and similar weatherometer exposure tests, XR-5 should have an outdoor weathering life significantly longer than vinyls, particularly in tropical or subtropical applications.

Summary

XR-5 is a proprietary polymeric alloy. Extensive laboratory tests have been performed in the past 8 years to determine the true chemical resistant characteristics of this compound. These tests were compared with other well-known chemical resistant materials to get a relative measure of the quality of XR-5. In addition, over 20,000,000 sq. ft. of XR-5 are currently in application. This test data may be modified as further research data and field experience are obtained.

As can be seen from the presented data, XR-5 shows superior over-all chemical resistance. Added to the chemical resistant qualities of the compound is Seaman Corporation's Poly-R base fabric which has excellent chemical resistance, as well as very high tear strengths. Seaman Corporation's unique coating system along with specially compounded adhesive systems gives a true chemical bond between the coating and the fibers, preventing delamination failures and wicking of chemicals in the yarns.

XR-5 also has the advantage of fabrication ease. This material can be seamed with high frequency or thermal welding equipment.

As can be noted from the physical specifications, XR-5 has cold weather performance limitations. This must be considered in any anticipated applications.

All technical information published in the brochure refers to the Black XR-5; other colors may not have the same chemical resistance as the black. If a color other than black is required, we suggest you check with Seaman Corporation as to the compatibility and resistance to that particular chemical environment.

Before utilizing XR-5 in any applications, all of the presented data should be studied carefully, particularly the permeability information. Contact your Seaman Corporation representative or Seaman Corporation Sales office if there is any question concerning a particular application. If a chemical is not listed in the test results, the Seaman Corporation customer should perform immersion tests with subsequent testing by the Seaman Corporation laboratory.

MEMBRANE LINER SPECIFICATIONS SUPPORTED ELASTOMERIC FLEXIBLE

Material supplied under these specifications should be first quality products as designed and manufactured specifically for this application and demonstrated to be suitable and durable for this purpose. A minimum of 100,000 square feet of this material should be installed for lining hydraulic structures for proven material experience.

The liner material is to be a coated fabric. The base fabric to be a suitable strength polyester filament yarns and the coating shall be of a suitable polymer like elasticized PVC which is resistant to wastewater, brine solutions, oils and sunlight. The coated fabric should be dielectrically sealable and heat sealable.

Liner fabric should have good appearance qualities and be free of defects such as holes (including pinholes), tears, modules, delamination, blisters or any other defects that may affect its serviceability. Edges shall be free of nicks and cuts visible to the naked eye. Pinholes shall be patched in accordance with the approved procedure (available from the manufacturer).

Coated fabric shall meet the following specification:

8130 XR-5*: Property	Test Method	Requirement
1. Thickness	ASTM 751	30 ± 2 mil 0.030 to 0.034 in.
2. Weight	ASTM D-751	30.0 ± 2 oz./sq. yd.
3. Tear Strength	ASTM D-751	125 lbs./125 lbs.
4. Breaking Strength	ASTM-D-751 Grab Tensile	475 lbs./425 lbs.
5. Low Temperature	ASTM-D-2136 4 hrs. — 1/8" mandrel	—30°F. No cracking
6. Dimensional Stability (each direction)	ASTM-D-1204 212°F. — 1 hr.	2% max.
7. Hydrostatic Resistance	ASTM-D-751 Method A	500 psi (min.)
8. Blocking Resistance 180°F.	Method 5872 Fed. Std. 191a	#2 Rating Max.
9. Adhesion — Ply. lbs./in. of width	ASTM-D-413 2" per min.	9 lbs./in. (min.) On film tearing bond
10. Adhesion — heat sealed seam lbs./in. of width	ASTM-D-751	10 lbs./in. (min.)
11. Dead Load Seam shear strength	(Mil-T-43211[GL]) Para. 4.4.4 (4 hours) 2" overlap seam	Must withstand 210 lbs./in. @ 70°F. 105 lbs./in. @ 160°F.
12. Abrasion Resistance (Taber Method)	Method 5306 Fed. Std. 191a H-18 Wheel 1000 gm. load	2000 cycles before fabric exposure 50 mg./100 cycles max. wt. loss
13. Weathering Resistance	Carbon-Arc Atlas Weather-o-meter	8000 hrs. No appreciable changes or stiffening or cracking of coating
14. Water Absorption	ASTM-D-471 7 days	5% max. @ 70°F. 12% max. @ 212°F.
15. Wicking	Shelter-Rite procedure (copy attached)	1/8" max.
16. Puncture Resistance	FTMS 101B Method 2031	350 lbs.

8430 XR-5: Property	Test Method	Requirement
1. Thickness	ASTM-751	30 ± 2 mil. 0.030 to 0.034 in.
2. Weight	ASTM D-751	30.0 ± 2 oz./sq. yd.
3. Tear Strength	ASTM D-751	60 lbs./60 lbs.
4. Breaking Strength	ASTM-D-751 Grab Tensile	375 lbs./350 lbs.
5. Low Temperature	ASTM-D-2136 4 hrs. — 1/8" mandrel	—30°F. No cracking
6. Dimensional Stability (each direction)	ASTM-D-1204 212°F. — 1 hr.	2% max.
7. Hydrostatic Resistance	ASTM-D-751 Method A	500 psi (min.)
8. Blocking Resistance 180°F.	Method 5872 Fed. Std. 191a	#2 Rating max.
9. Adhesion — Ply. lbs./in. of width	ASTM-D-413 2" per min.	9 lbs./in. (min.) On film tearing bond
10. Adhesion — heat sealed seam lbs./in. of width	ASTM D-751	10 lbs./in. (min.)
11. Dead Load Seam shear strength	(Mil-T-43211[GL]) Para. 4.4.4 (4 hours)	Must withstand 106 lbs./in. @ 70°F. 53 lbs./in. @ 160°F.
12. Abrasion Resistance (Taber Method)	Method 5306 Fed. Std. 191a H-18 Wheel 1000 gm. load	2000 cycles before fabric exposure 50 mg./100 cycles max. wt. loss
13. Weathering Resistance	Carbon-Arc Atlas Weather-o-meter	8000 hrs. No appreciable changes or stiffening or cracking of coating
14. Water Absorption	ASTM-D-471 7 days	5% max. @ 70°F. 12% max. @ 212°F.
15. Wicking	Shelter-Rite procedure (copy attached)	1/8" max.
16. Puncture Resistance	FTMS 101B Method 2031	300 lbs.

MILAGRO GAS TREATMENT PLANT EVAPORATION CELLS
MANUFACTURERS SULFINOL COMPATIBILITY TEST RESULTS

 **Seaman Corporation**

INDUSTRIAL FABRIC DIVISION

Research and Development Dept.
4510 Crown Hill Dr.
Millersburg, OH 44654
216/874-2015

October 14, 1986

CUSTOMER: Shell Western E&P Inc.
REQUEST: #1215
SUBJECT: XR-5 8130 Chemical Compatibility to Sulfinol Diisopropanolamine Solution, 28 Day Immersion

Samples of 8130 XR-5[®] DC-7 Black were immersed in sulfinol solution for 14 days and 28 days at room temperature by Shell Western E&P Inc. and sent to us for testing.

COMMENTS: After 28 days the fabric samples remained flexible and appear to be satisfactory with no apparent degradation of the coating and no significant loss of tensile strength.

A properly fabricated liner of 8130 XR-5[®] would be suitable for the application.

Bala Venkataraman
Vice President
Research & Development

Original: Felon Wilson
cc: Cheryl/lab/file

Attach: Test Results

Seaman Corporation
Millersburg, Ohio

Report of Test
9/24/86

CUSTOMER: Shell Western E&P Inc.

REQUEST: #1215

RESULTS: 14 DAY IMMERSION AT ROOM TEMPERATURE 8130 XR-5[®]
SUFINOL DIISOPROPANOLAMINE

TRAPEZOID TEAR Method 5136		STRIP TENSILE Method 5102	
<u>Warp</u>	<u>Fill</u>	<u>Warp</u>	<u>Fill</u>
31	53	365	385
33	47	370	375
30	47	380	360
31 lbs.	49 lbs.	372 lbs./in.	373 lbs./in.

RESULTS: 29 DAY IMMERSION AT ROOM TEMPERATURE 8130 XR-5[®]
10/14/86 SULFINOL DIISOPROPANOLAMINE

TRAPEZOID TEAR Method 5136		STRIP TENSILE Method 5102	
<u>Warp</u>	<u>Fill</u>	<u>Warp</u>	<u>Fill</u>
41	54	365	380
38	52	355	375
37	57	360	340
39 lbs.	54 lbs.	360 lbs./in.	365 lbs./in.

Bala Venkataraman
Vice President
Research & Development

NOV 15 1985 14:38 ENVIRONMENTAL HEALTH SAFETY 0000

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

MSD: 000072 Page: 1

DIPA
PRODUCT NAME: DIISOPROPANOLAMINE - COMMERCIAL GRADE

Effective Date: 09/25/78 Date Printed: 10/16/85 Product Code: 21326

1. INGREDIENTS:

Diisopropanolamine, minimum 99%

2. PHYSICAL DATA:

BOILING POINT: 486F 5mm hg
VAP PRESS: < 0.1 mmHg @ 20C
VAP DENSITY:
SOL. IN WATER: Completely miscible.
SP. GRAVITY: 1.0 30/4C
APPEARANCE: White solid.
ODOR: Slightly ammoniacal odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 280F
METHOD USED: PMCC

FLAMMABLE LIMITS
LFL:
UFL:

EXTINGUISHING MEDIA: Water fog, alcohol foam.

FIRE & EXPLOSION HAZARDS: Not available.

FIRE-FIGHTING EQUIPMENT: Not available.

(Continued on Page 2)

(R) Indicates a trademark of The Dow Chemical Company



SHELL OIL COMPANY
 SHELL CHEMICAL COMPANY
 SHELL DEVELOPMENT COMPANY
 SHELL PIPE LINE CORPORATION



MATERIAL SAFETY DATA SHEET

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or of state or federal regulations for legal action.

SECTION I

MANUFACTURER'S NAME Shell Chemical Company		EMERGENCY TELEPHONE NO. 713-473-2461
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 2463, Houston, Texas 77001		
CHEMICAL NAME AND SYNONYMS Chemical Bleed		TRADE NAME Chemical Bleed
CHEMICAL FAMILY Chemical Bleed		FORMULA

SECTION II HAZARDOUS INGREDIENTS*

COMPOSITION	%	SPECIES	LD ₅₀		LC ₅₀	
			ORAL	DERMAL	CONCENTRATION	EXPOSURE
PIGMENTS						
CATALYST						
VEHICLE						
SOLVENTS						
ADDITIVES						
OTHERS	Typical Mixture			Rabbit		
Diisopropanolamine	85					
Sulfolane V	50	Rat	5,000 mg/kg	2.8 gm/kg		
Water	25					

SECTION III PHYSICAL DATA

BOILING POINT (°F) Range	212-550	SPECIFIC GRAVITY (H ₂ O=1) at 68°F	1.1
VAPOR PRESSURE (mmHg) at 68°F	3	PERCENT VOLATILE BY VOLUME (%)	25
VAPOR DENSITY (AIR=1)	3.9	EVAPORATION RATE (%)	
SOLUBILITY IN WATER	Appreciable		
APPEARANCE AND ODOR	Slightly viscous fluid, mild odor		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
ca 260°F C.O.C.			
EXTINGUISHING MEDIA	Dry Chemical, Foam, CO ₂		
SPECIAL FIRE FIGHTING PROCEDURES			
ADDITIONAL FIRE AND EXPLOSION HAZARDS	Releases SO ₂ on combustion		

EXHIBIT 7

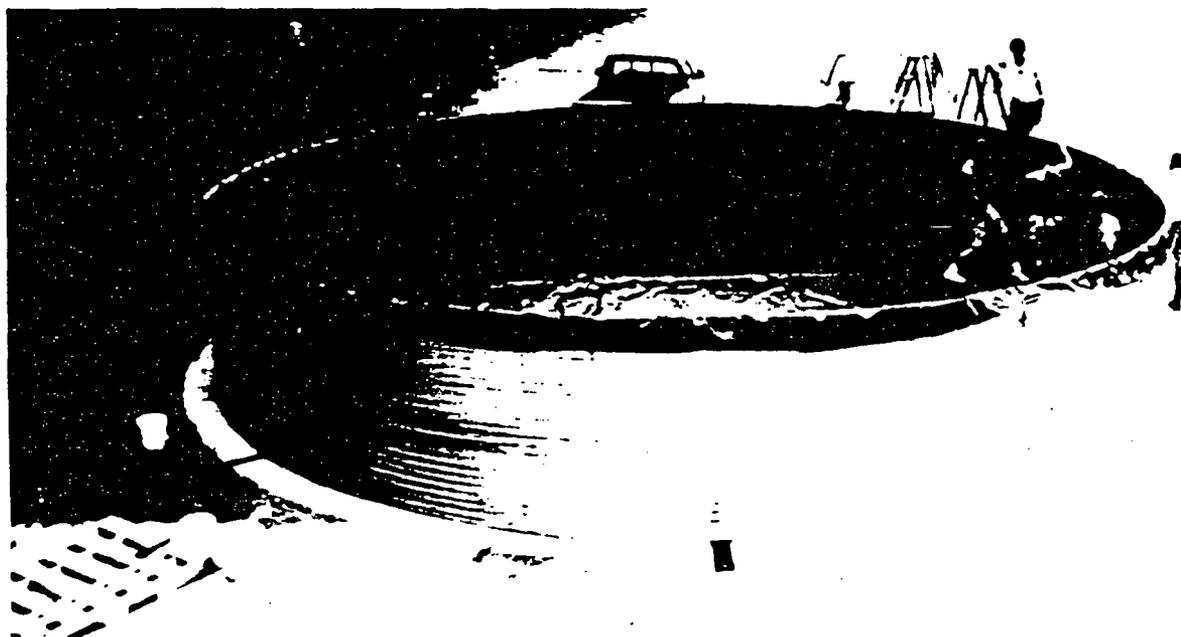
MILAGRO GAS TREATMENT PLANT EVAPORATION CELLS TANK DESIGN AND CONSTRUCTION

Environetics Porta Tank System

The patented* Porta Tank system is a unique component tank system designed for easy installation in a wide range of demanding applications. This

revolutionary design provides safe, low cost storage for all types of liquids: potable water, sewage, chemical solutions, even hazardous waste! The modular

design allows the versatile Porta Tank system to be assembled quickly and easily with basic hand tools and minimal site preparation.



Modular Construction

Porta Tank utilizes pre-drilled galvanized steel wall sections that bolt together on-site for maximum transportability. Most of our tanks ship in the space of a single wall panel... 9'-9" long by 2'-9" wide. Corrugated wall sheets are rolled to the precise tank diameter, color coded by gauge and nested on a single pallet for shipment. Mill rolled, galvanized top and base angles provide additional structural reinforcement against wind loads and settling. This combination of industry proven components provides quick and easy construction at the lowest cost per gallon in the industry.

Industrial Fabric Buffer

To ensure high security liquid storage, Environetics protects the liquid containment liner from harm with a patented total isolation buffer. The high-tech non-woven polypropylene buffer material maintains 100 mils of distance between the reinforced liner and the tank walls. The fabric buffer also provides a base for the reinforced thermoplastic liner and the steel walls to rest on. This barrier reduces the risk of leaks by isolating the liner from sharp objects and abrasive actions.

20 Year Tank Life...

Porta Tank is constructed from durable industrial thermoplastic materials and heavy gauge galvanized steel wall sections. These durable materials have been field proven for over twenty years in highly reliable liquid containment applications.

The double lined Porta Tank II system is available with optional electronic leak detection sensors to guarantee security for critical liquid containment applications. Please contact Environetics for additional information concerning the double lined Porta Tank II system or any other specific applications.

* U. S. Patent No. 4.860.916

Environetics offers a wide range of pre-engineered sizes for any need. Twelve standard pre-fabricated tanks ranging in capacity from 6,500 to 485,000 gallons... or custom sizes for your specific application.

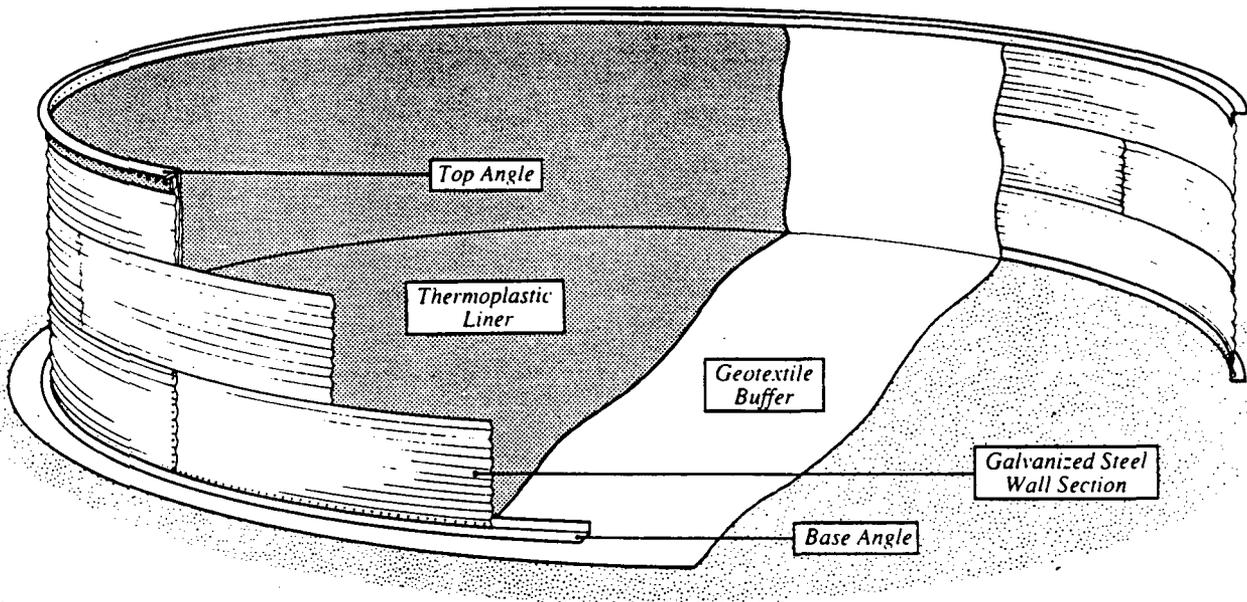
Porta Tank Features

1. Only "Buffered" Tank Design

The exclusive buffered design protects the tank liner membrane from the galvanized steel wall structure and from irregular

surfaces beneath the tank structure. This bottom buffer also significantly reduces wall settling problems without requiring the construction of a

concrete tank foundation. Using the Porta Tank system will reduce installation time and material costs, therefore lowering the overall cost of your installation.



2. Versatile Liner

Environetics' wide selection of tank liner materials safely hold most industrial liquids. Liner systems can be ordered for secondary containment of hazardous liquids. Biological liners have been proven for over 20 years in field applications.

3. Tough Construction

Heavy gauge steel wall sections (similar to road culvert design) are hot-dip galvanized to provide years of service. Chemical-resistant reinforced membrane materials are used for the liquid storage liners.

4. Low Cost

High strength galvanized corrugated steel is durable and economical. Industrial thermoplastic liners feature maximum economy and extended service life.

5. Quick Installation

A six man crew can erect up to a 100,000 gallon Porta Tank in only one day (less than one-third of the time required for a welded tank) using ordinary hand tools. Pipes and drains can be easily connected in a variety of ways. Light-weight components provide easy transportation to the construction site by two men.

6. Easy Site Preparation

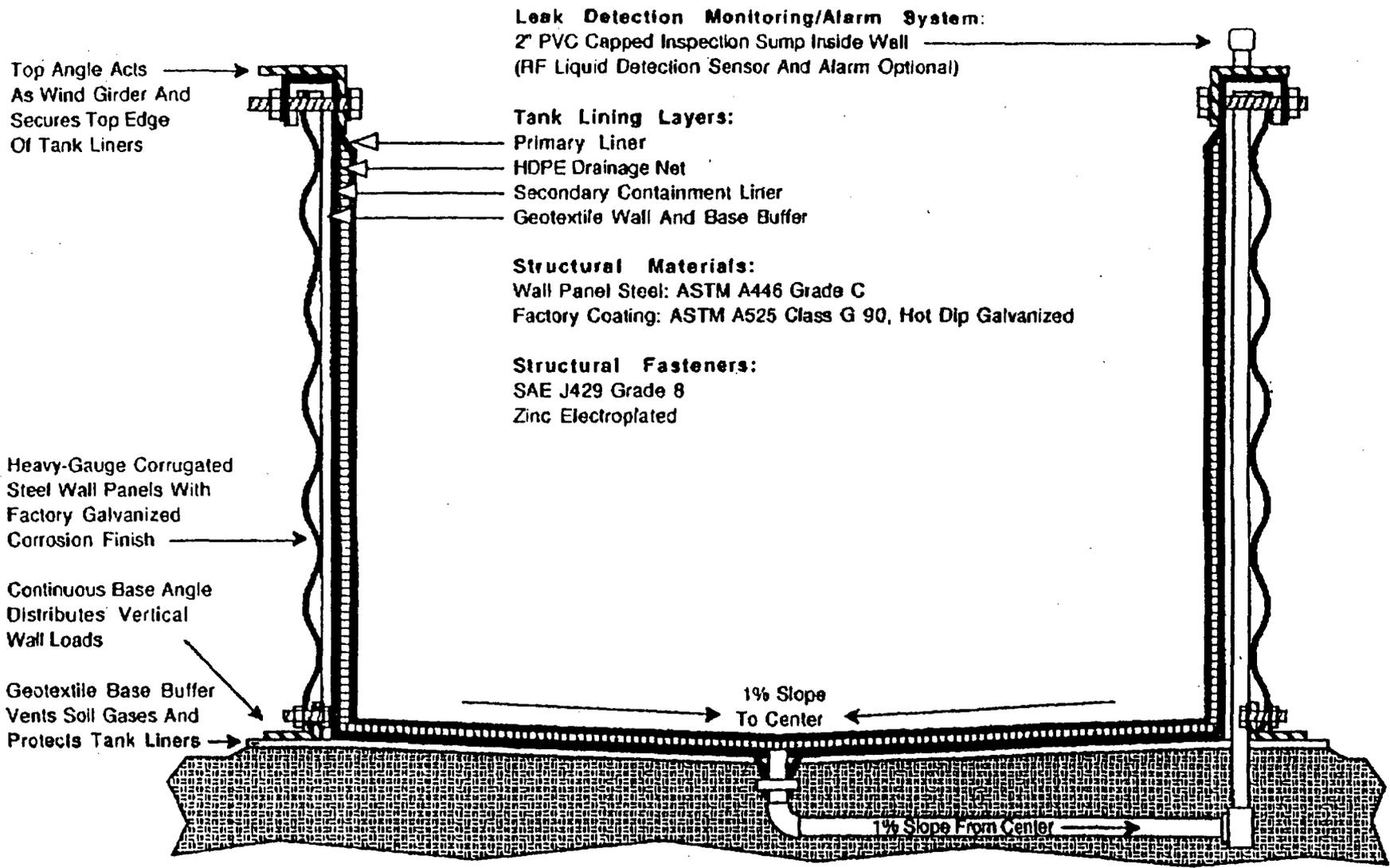
The Porta Tank can be assembled on almost any firm, level surface. Simply level the ground smooth, then remove any sharp objects.

7. Re-locatable

Rapidly disassembles into 9'-9" x 2'-9" sections for easy handling. The Porta Tank leaves no on-site materials after relocation.

8. Easy to Ship

Porta Tank shipping packages take up very little space. A 26,000 gallon tank is shipped on a single pallet that will fit into a standard van. Larger tanks are shipped in a similar fashion.



Porta Tank Section With Secondary Containment System
Not To Scale

Site Preparation Notes:

1. Soil should be free of obvious sharp objects which could penetrate liner.
2. Soil should be graded to $\pm 1/2$ " across perimeter of tank wall and compacted to 95% of dry density.
3. Foundations should be checked for soil bearing capacity prior to installation.



ENVIRONETICS, INC.
 1201 Commerce Street SK# 901113-2
 Lockport, Illinois 60441 Date: 11/13/90
 Tel: (815) 838-8331 Drawn By: SJW
 Fax: (815) 838-8336 Scale: NTS

WILLIAMS FIELD SERVICES
MILAGRO GAS TREATMENT PLANT
SE 1/4 SEC. 12, T-29-N, R-11-W
(801) 584-6949

EXHIBIT 10

Sign at Facility

NATURE'S VITAL SOLUTIONS, INC.

Environmental & Energy Technology Provider

September 28, 1995

Ms. Leigh Gooding
Williams Field Services
295 Chipeta Way
P.O. Box 58900
Salt Lake City, Utah 84158

Dear Leigh:

Thank you for your interest in a new technological solution to the waste water situation at Williams Field Services' Milagro Processing Plant facility. As you know, I have been conducting a test at that site in order to discover how best to use my company's (Nature's Vital Solutions, or NVS) bioreactors and Patent Pending microbial process to convert waste water to useable, profitable products. This letter is to provide an overview as to how that process will work and how it will benefit your company.

As I mentioned, I have contacted the New Mexico State Oil Conservation Division in reference to your site and discussed the situation with Mr. Christopher Eustice. Mr. Eustice believes that NVS' process will be of major benefit if two conditions are met: 1) the process does not require major operational or physical changes at the existing facility, and 2) no hazardous materials are brought on site. Both conditions can be met.

Mr. Eustice also believes that only a minor permit modification would be needed to bring NVS' process on site. He also agrees that the process can be implemented within a short timeframe.

On the heels of the most recent tests, I am documenting which amino acids have been produced in the test bioreactors and will be able to provide that information to you soon. At the same time, NVS is developing liquid organic fertilizer and pharmaceutical markets for these end product amino acids.

Given this background, let me explain how this process will work at the Milagro site.

The concept is to establish a series of bioreactors in an area roughly 20' x 100' at the northeast corner of the property where the evaporation ponds reside (See Diagram A). Estimated cost for installation is \$75,000 with a simple evaporator not capable of separating free amino acids. To separate amino acids on-site would require a more sophisticated evaporator in the \$250,000 to \$350,000 range.

P.O. Box 60268, Sacramento, CA 95860-0268

(916) 448-4281

Fax (916) 442-4005

1129 Firehouse Alley, Old Sacramento, CA 95814

The bioreactor concept is to use a stationary containment vessel which receives a constant in-flow of waste water (See Diagram B). The vessel, or reactor, contains a medium (sand) upon which NVS' Patent Pending microbes, enzymes and nutrients convert the waste water into marketable amino acids. Waste water is added to the top of the bioreactor, and by-products are drawn off of the bottom.

Of special benefit is the fact that no special processing of the waste water is needed, i.e., you don't need to "cook off" the water. In fact, the waste water provides the oxygen, hydrogen and hydroxyl ions needed to convert hydrocarbons to amino acids. This means that you can eliminate the "cooker" that you are currently using.

The existing waste water main line will need to be re-routed to feed the bioreactors on a rotating basis using a time clock for valve switching to regulate the in-flow.

Waste water should reside in the bioreactor for approximately 48 hours before the acid by-products are drawn off. Nutrients must be added to the bioreactors each day (circa 35 lbs. per bioreactor, but this amount may vary depending on which acids are targeted for production).

After conversion in the reactors, the acids are placed in an evaporator to separate the higher quality free amino acids. Once the "high dollar" products are removed, the remaining organics and nutrients are packaged and sold to agricultural markets as liquid organic fertilizers.

At this point any remaining water is of a distilled quality and can be used in the plant as "process water." Any unconverted hydrocarbons simply can be placed back in the bioreactors for reprocessing. Unprocessed materials should not exceed 5% of the initial in-flow volume. Accordingly, there is no waste water or solid residue. Everything is utilized.

I should note that your compressor oils, amines, and glycola wastes are "heat sinks" or hydroscopic, and can only be dehydrated at a significant cost over a long period. If, however, NVS' bioreactors are used, these wastes become hydrophobic and dehydrate with very little effort.

Presently, no one in your company has been able to tell me either Milagro's current waste water disposal costs or the daily flow into the evaporation ponds. Based upon the information that I have received you could save as much as 50% of your disposal costs using NVS' process. It is not possible without additional financial analysis to project specific savings.

Given the potential for significant benefits to Williams Field Services; a partnership in amino acid by-product sales, the potential for waste water disposal savings and eliminating all of the plant's waste water liabilities (i.e., "zero discharge"), and elimination of the "cooker"; I suggest a pilot bioreactor to 1) perform a cost benefit analysis, 2) size the bioreactors to fit

your needs, and 3) determine if full scale product separation is feasible at your site. Specifics concerning this pilot reactor proposal can be found in Appendix I.

If, after this pilot is deemed successful, we agree that there is an opportunity to manufacture and recover products on a large scale, we can discuss a long term agreement.

Thank you for your attention to this matter. Please forward your comments and suggestions regarding the information that I have supplied to:

Alan Waite, President
Nature's Vital Solutions
1129 Firchouse Alley
Old Sacramento, CA 95814
FAX (916) 442-4005

We look forward to hearing from you soon as we seize this opportunity to use NVS' cutting edge technology to solve your waste water concerns.

Best regards,

Alan Waite, for

Jerry Finney, Director
Nature's Vital Solutions

Pilot Bioreactor Proposal for the Milagro Plant Site**I. Bioreactor Configuration**

The proposal is for a 30-60 day pilot using one 1500 gallon above-ground fiberglass bioreactor. The bioreactor is open-topped and filled 3/4 full with sand. There should be a 2" valve on the bottom to recover the acid by-products. Waste water injection through the tank should be between 200-300 gallons per day.

No permanent lines need be installed; only one hose to inject waste water into the bioreactor, and a second running from the reactor drain valve to an evaporator unit in order to concentrate the amino acids.

The bioreactor should be within 15 feet of the "cooker." This will minimize the "nose length" and allow for easy waste heat application.

II. Costs

A detailed cost analysis should precede any agreement, however, NVS' price should not exceed 10 cents per gallon of waste water injected during the pilot phase. As a base line, Coastal Chemical Company currently spends 15 cents per gallon (plus shipping to Texas) in waste products disposal.

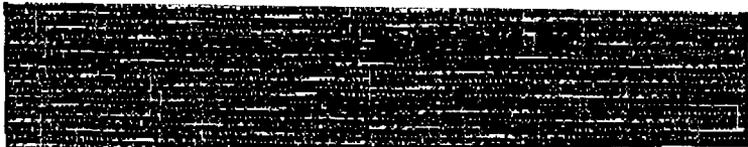
NVS will supply the bioreactor, sand, nutrients, and microbes. Williams Field Services will supply the hoses and heat. NVS can supply the flow meter for monitoring the through-put. Williams Field Services personnel should monitor flow meter readings. NMOCD should be advised and consulted before the pilot is implemented.

III. Summary

NVS would like to begin the test as soon as possible. A "kick-off" meeting should take place to itemize the specific technical details before implementing the pilot.

Actual installation should take less than one week, with results from the first pilot waste water bioreactor injection within a matter of days. Payments can be arranged on a through-put basis and we would supply follow-up analysis relating to the acid by-products production.

Contact Jerry Finney at (505) 632-5578 for technical questions regarding this pilot proposal.



Parking Area

New Metal Building

Existing Green Plant

Gate

Amino acid Evaporator

Bio-reactor

Bio-reactor

Bio-reactor

Reinforced retaining wall 8" thick, 3' high concrete

Evaporation Pond

Bio-reactor

Bio-reactor

Bio-reactor

Concrete Area
7 X 2,000 gal. fibreglass tanks

Waste Heat

Existing Lines

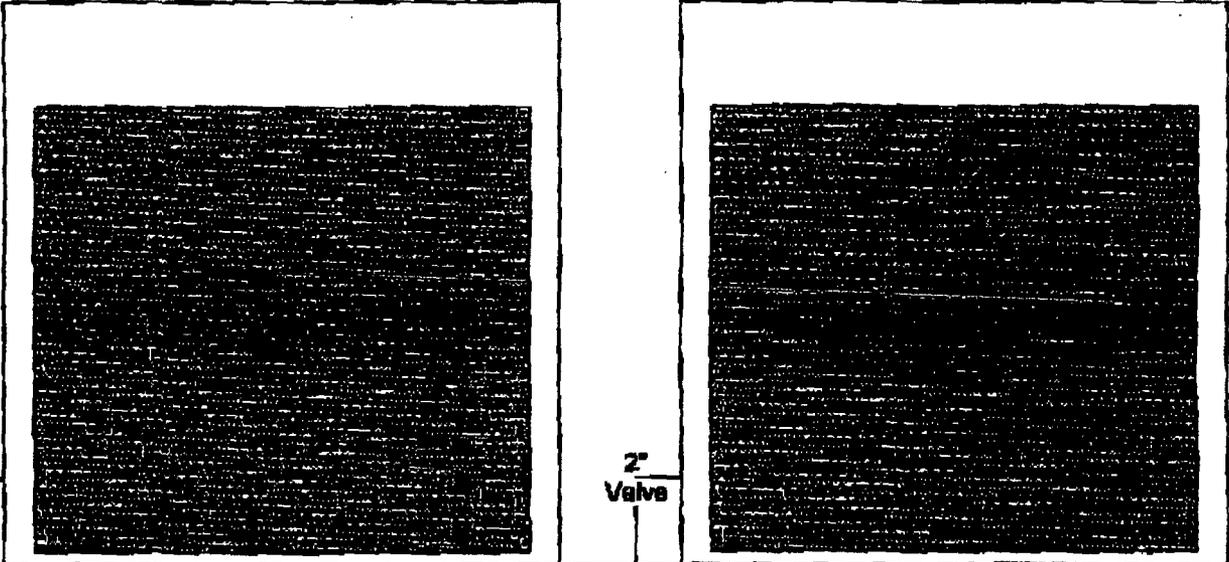
Evaporation Pond

Evaporation Pond



From Plant

Waste Water



2" Valve

2" Valve



Acids to Evaporator

Spill drain to underground recovery tank

Fiberglass tank

SITE CHARACTERISTICS

The proposed Milagro Plant site is located northwest of the central part of the San Juan Basin. The area is characterized by tertiary bedrock hill sides and mesas and Plio-Pleistocene gravel terraces along the San Juan River valley and its major tributaries.

The proposed plant site is located on alluvium at the base of Hare Canyon which is cut into Nacimiento Sandstone. The alluvium consists of silty fine sand and sand with a trace of some silt and gravel seams and thin layers. The thickness of alluvium ranges from 21 to 40 feet deep. Soils within the upper 35 feet are moderately permeable and moderately weak or collapsible. Below a depth of 35 feet, the soils exhibit moderately high strength and are less permeable low compressibility. Bedrock first encountered at the site between 21 to 39 feet deep consists of severely weathered, light brown and brown Nacimiento sandstone with siltstone seams.

There was no groundwater encountered during foundation soils investigations down to 40 feet deep.

Local groundwater in the general area of the plant exists in an unconfined sandstone aquifer in the Nacimiento formation and in an unconfined aquifer in alluvium closely associated with the San Juan River.

Figure 3 shows the location and specific conductance of wells in the Nacimiento/Animas formations in the San Juan Basin. The specific conductance of groundwater in this aquifer, at least 60 feet deep beneath the proposed plant site, is about 8300 umhos/cm. Transmissivities for the Nacimiento Formation are estimated to be as high as 100 ft²/day for the coarser and more continuous sandstones (Stone and others, 1983).

Shallow groundwater present in the alluvial valley of the San Juan River is approximately two miles downgradient, southwest, from the proposed plant site. The specific conductance measured at the closest source from this aquifer is 2900 umhos/cm (see figure 4). Transmissivities range from less than 1000 ft²/day to more than 40,000 ft²/day (Stone and others, 1983).

The saline and very saline groundwater is primarily used for stock, irrigation and domestic purposes in the Bloomfield area.

The major hydrologic influence in the Bloomfield area is the San Juan River which flows from east to west approximately two miles south of the Milagro plant site. The proposed site is at 5645 feet elevation which is approximately 160 feet above the San Juan River and outside of the 100 year flood plain.

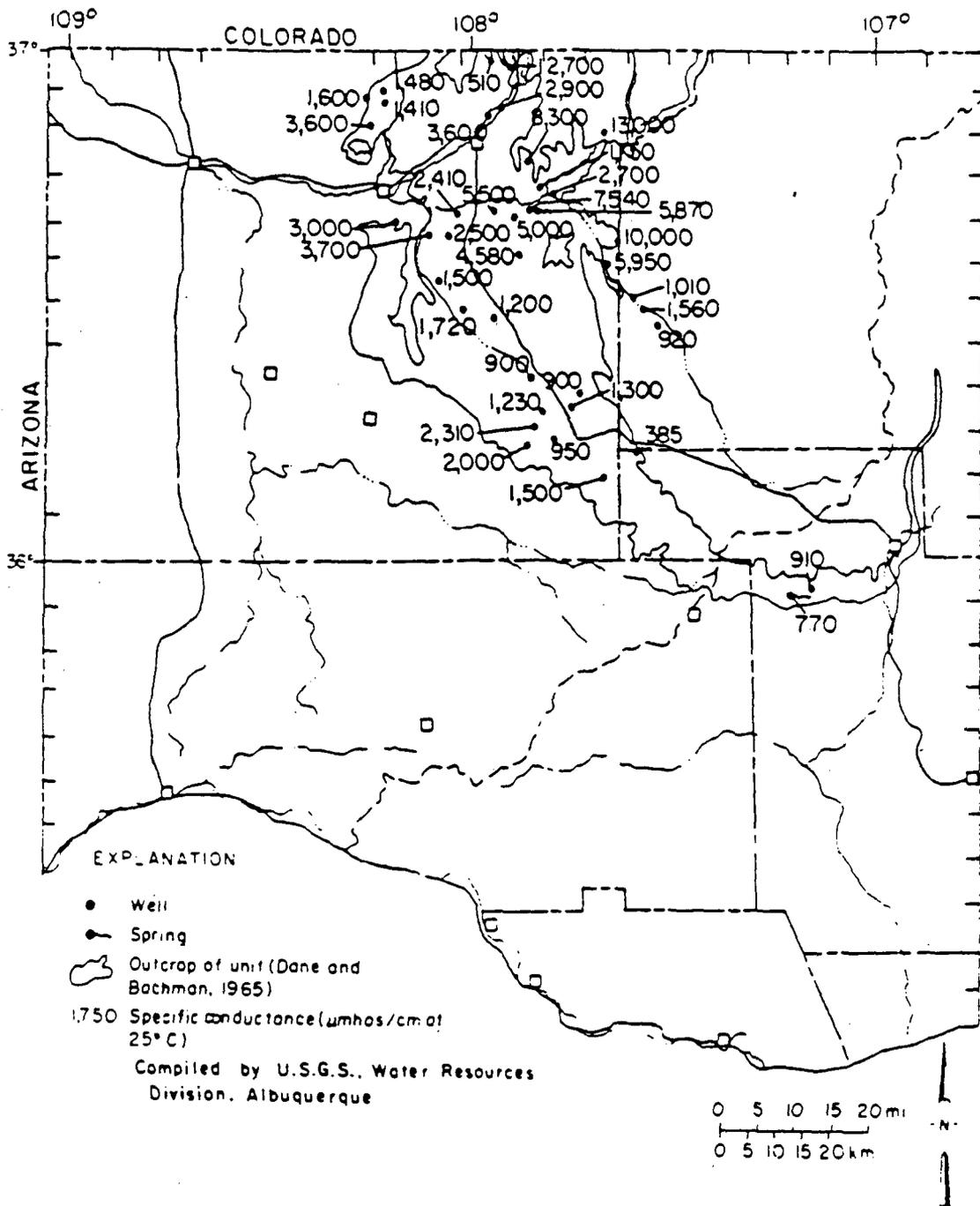


FIGURE 3

Specific Conductance from Selected Wells
and Springs in Nacimiento/Animas Formations
(Stone & Others, 1983)

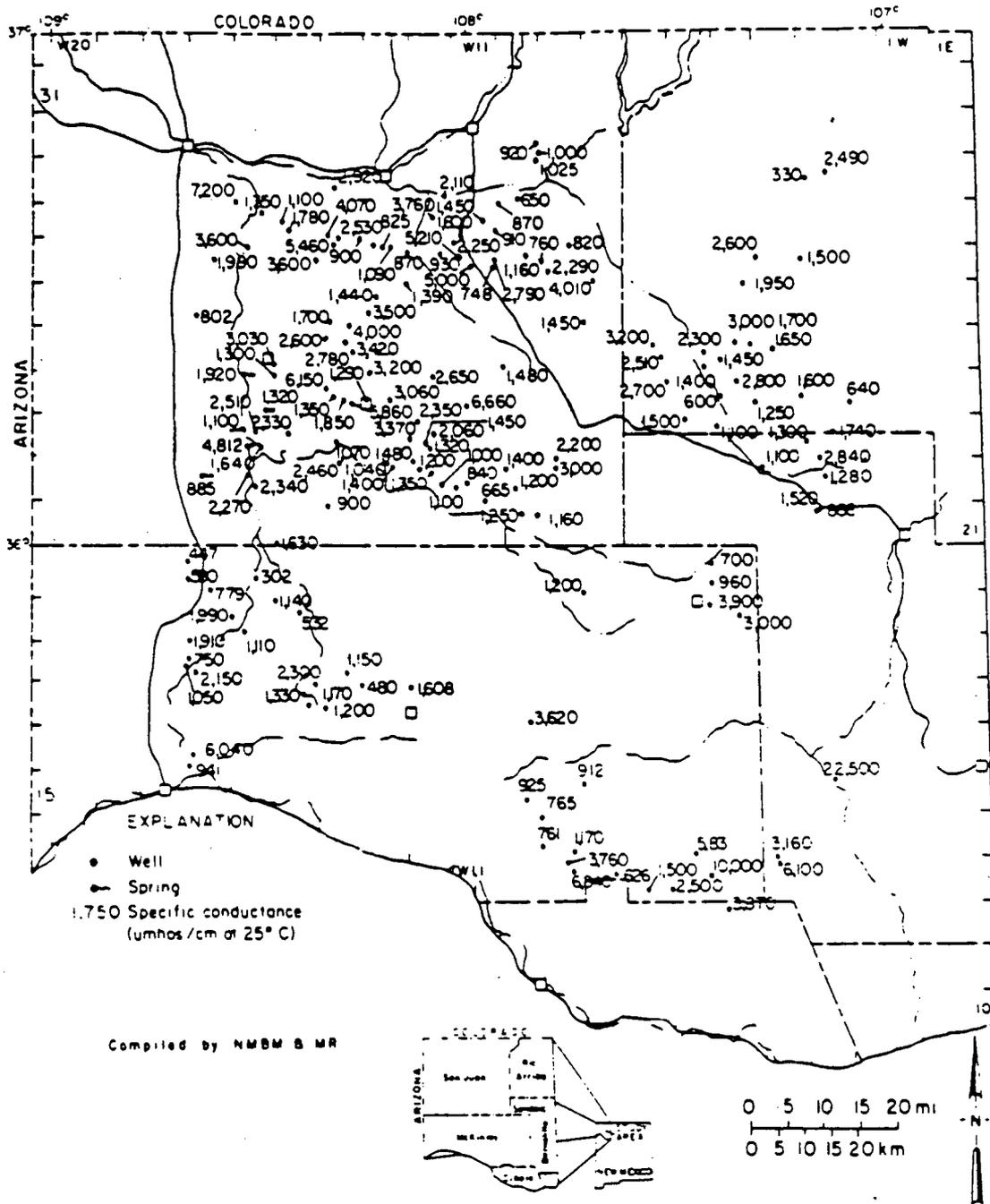


FIGURE 4

Specific Conductance from Selected Wells
and Springs in Valley Fill Deposits
(Stone and Others, 1983)

The natural ground surface topography at the proposed site is relatively flat with a gentle slope downward towards the south and west. Maximum relief is about 45 feet. A shallow ephemeral drainage passes through the area from northeast to southwest outside of the west perimeter of the proposed plant yard. Vegetation at the site consists of native juniper, desert brush and grasses that cover approximately 35% of the surface.

Williams will construct a runoff diversion ditch along the northwest perimeter of the plant site. The diversion ditch will be located to handle storm runoff from contributing areas to the north and east in Hare Canyon.

REFERENCES CITED

Fassett, J.E. and Hinds, J.S., 1971 Geology and Fuel Resources of the Fruitland Formation and Kirtland Shale of the San Juan Basin, New Mexico and Colorado, U.S.G.S. Professional Paper 676.

Sergent, Hauskins and Beckwith Consulting Geotechnical Engineers, Report for Geotechnical Investigation proposed Milagro Gas Treatment facility, June, 1990.

Stone, W.J., Lyford, F.P., Frenzel, P.F., Mizell, N.H., Padgett, E.T., 1983, Hydrology and Water Resources of San Juan Basin, New Mexico, New Mexico Bureau of Mines and Mineral Resources, Hydrologic Report 6.



telecon

Date: August 21, 1995
Time: a.m.
By: Susan Boyle
With: Chuck Peterson
of: NMED - Farmington
tel # 327-9851
About: Milagro Plant Septic System

I told Chuck that WFS was planning on setting up procedures to send its liquid lab wastes to the Bloomfield Water Treatment Plant. Only glassware rinse water would continue to be discharged into the plant's septic system. He told me that this didn't appear to be prohibited by NMED's regulations and would likely not hurt the system's bacteria.



W. WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES

P.O. Box 58900
Salt Lake City, UT 84158-0900
(801) 584-7033
FAX: (801) 584-6483

May 12, 1995

Mr. Cas Ruybalid
Bloomfield Water Plant
P.O. Box 1839
Bloomfield, New Mexico 87413

Dear Mr. Ruybalid:

Williams Field Services is requesting permission to dispose of liquid lab wastes generated at our Milagro Gas Treatment Plant at the Bloomfield Water Treatment Plant. The Milagro Plant is located at 192 County Road 4900 in Bloomfield, New Mexico. The volume of liquid waste generated by the lab is approximately 40 gallons/year. I have enclosed the laboratory chemical disposal list for your review.

As we discussed on the phone, the Milagro Plant is currently tied into a private septic system and does not discharge to the city sewer. If your facility is able to accept the lab waste, options for transportation of the waste to the water treatment plant could be explored.

Please let me know if you require any additional information or would like to visit the Milagro Plant. I can be reached by phone at (801) 584-6543 or by fax at (801) 584-7760.

Sincerely,

Leigh E. Gooding
Leigh E. Gooding, P.G.
Environmental Specialist

enclosure

cc: Gerald Smith, MIL

*Mr. Ruybalid visited
Milagro and gave
verbal approval to
process chem wastes
at Bloomfield
Water Plant.*

*FILE - 1824.0
DISCHARGE PLAN*

WILLIAMS FIELD SERVICE
MILAGRO PLANT

Chemical Disposal List

The following reagents are used during routine testing done at our laboratory facility. All of the reagents are consumed through chemical reactions and are not disposed of in a pure state. The acids and bases that are used, are chemically neutralized and all fall into the 5.0-11.3 pH range. However, after test are run DI Water is added to bring pH down to 10.0.

<u>Chemical Name</u>	<u>Approximate Disposal Amount/Year</u>
*Acid Reagent	365 gms
*Amino Acid	365 gms
*Amino Acid F	182 gms
*Citric Acid	730 gms
*Ferrover Iron	547 gms
Gallic Acid	15 gms
Hardness Indicator	60 gms
Hardness Buffer	55 gms
(1)Hydrochloric Acid .1N	3.0 L
Methanol	73 L
*Molybdate Powder	365 gms
*Molybdate Liquid	4.8 L
*Molybdate 3 Powder	180 gms
pH 7 buffer	7.8 L
pH 10 buffer	600 ml
(2)Potassium Hydroxide .2N	250 ml
(1)Sulfuric Acid 10N	5.0 L

* Diluted 25:1 with boiler and/or deionized water.

(1) Neutralized to pH of 5.0 before disposal.

(2) Neutralized to pH 10.0 before disposal.

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES 

P.O. Box 58900
Salt Lake City, UT 84158-0900
(801) 584-7033
FAX: (801) 584-6483

December 4, 1995

RECEIVED
DEC 5 1995
Environmental Bureau
Oil Conservation Division

Mr. Roger Anderson
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87504

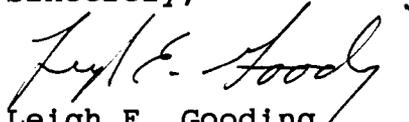
Re: Discharge Plan Renewal for Milagro Gas Treatment Plant - San Juan County

Dear Mr. Anderson:

Enclosed please find two copies of the Discharge Plan Renewal for Williams Field Services' Milagro Gas Treatment Plant located in San Juan County, New Mexico. Also enclosed, please find a check for \$50.00, payable to the New Mexico Water Quality Management Fund, to cover the application fee for the above referenced project.

If you have any questions or require additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,



Leigh E. Gooding
Sr. Environmental Specialist

enclosure

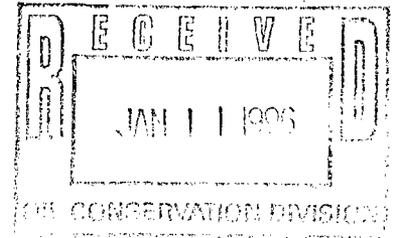
cc: Denny Foust, OCD District III Office (letter and enclosure)



United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Mexico Ecological Services Field Office
2105 Osuna NE
Albuquerque, New Mexico 87113
Phone: (505) 761-4525 Fax: (505) 761-4542



January 9, 1996

Mr. William J. Lemay
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

Dear Mr. Lemay:

This responds to the Energy, Minerals, and Natural Resources Department Oil Conservation Division's public notices dated October 11, and December 4, 1995, regarding the State of New Mexico's proposal to approve the discharge plan for the applicants listed below. We regret any inconvenience that may be caused by the late submission of these comments. Due to the federal budget impasse and subsequent furlough of employees, we were unable to submit these comments prior to the close of the 30-day comment period.

(GW-38) - New Mexico State University. The director of the physical plant has submitted an application renewal to discharge cooled geothermal water to an unlined pit in Section 23, Township 23 South, Range 2 East, Doña Ana County, New Mexico. Approximately 54,720 gallons per day of cooled geothermal water will be stored in an above ground, unlined pit.

(GW-60) - Williams Field Service. The environmental specialist has submitted an application renewal to discharge process water from the Milagro Gas Plant located in Section 12, Township 29 North, Range 11 West, San Juan County, New Mexico. Approximately 1500 gallons per day of process water will be stored in an above ground, double-lined evaporation pond equipped with a leak detection system.

During flight, migratory birds may not distinguish between an evaporation pond or lagoon from a natural waterbody. Therefore, rather than allow migratory birds access to a waterbody that may act as an attractive nuisance, the U.S. Fish and Wildlife Service (Service) recommends that the applicant demonstrate that the pond or lagoon is "bird-safe" (e.g., can meet New Mexico general water quality standards 1102B, 1102F, and 3101K or 3101L), or that the ponds and lagoons be constructed in a manner that prevents bird access (e.g., netted, fenced, enclosed in tanks, etc.).

Migratory birds that land on waterbodies with an oil sheen have the potential to contaminate their eggs during nesting season. Birkhead et al. (1973) reported that

petroleum pollutants carried to the nest on breast feathers, feet, or nesting materials caused reduced hatchability of contaminated eggs. Albers (1977) and Hoffman (1978) showed that as little as 1 to 10 microliters of crude or refined oil topically applied to eggs of various bird species was embryotoxic or teratogenic. We recommend that the Oil Conservation Division or the applicant demonstrate that the pond will have no oil sheen and continue periodic testing to characterize the water quality and determine if any bioaccumulation or ecological risks seem imminent.

Our intent is to inform and intercede before any migratory bird deaths occur as migratory birds are beneficial (e.g., they hold pest populations in check) and are protected by law. The Migratory Bird Treaty Act (MBTA) makes it unlawful for anyone at anytime or in any manner to take (i.e., pursue, hunt, take, capture, kill, transport, or possess) any migratory bird unless authorized by a permit issued by the Department of the Interior. The courts have interpreted "illegal take" to include accidental poisoning or accumulation of harmful concentrations of contaminants by migratory birds, even if the contamination event was accidental or the perpetrator was unaware of the fact that his/her actions (or failure to take action) could ultimately prove harmful to migratory birds. The liability provisions of the MBTA preclude the necessity of proving intent and permits criminal prosecution of persons, associations, partnerships, or corporations that inadvertently or intentionally kill or illegally take one or more migratory birds. Therefore, if the creation and operation of a pond or lagoon results in migratory bird deaths and the problem is not addressed, the operators may be held liable under the enforcement provisions of the MBTA. If migratory birds or other wildlife are dying around a lagoon or pond, please contact either the Service or the New Mexico Department of Game and Fish.

If you have any questions, please contact Joel D. Lusk at (505) 761-4525.

Sincerely,



Jennifer Fowler-Propst
Field Supervisor

cc:

Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Chief, New Mexico Environment Department, Surface Water Quality Bureau, Santa Fe,
New Mexico

References Cited

- Albers, P.H. 1977. *Effects of external application of fuel oil on hatchability of mallard eggs*. Pages 158-173 in *Fate and Effects of Petroleum Hydrocarbons in Marine Ecosystems and Organisms*, D.A. Wolfe, Ed., Pergamon Press, New York, New York, USA.
- Birkhead, T.R., C. Lloyd, and P. Corkhill. 1973. *Oiled seabirds successfully cleaning their plumage*. *Br Birds* 66:535-543.
- Hoffman, D.J. 1978. *Embryotoxic effects of crude oil in mallard ducks and chicks*. *Toxicology and Applied Pharmacology* 46:183-191.

AFFIDAVIT OF PUBLICATION

No. 35644

STATE OF NEW MEXICO
County of San Juan:

ROBERT LOVETT being duly sworn says: That he is the Classified Manager of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication on the following day(s):

Friday, December 15, 1995

and the cost of publication is: \$77.55



On 12-15-95 ROBERT LOVETT appeared before me, whom I know personally to be the person who signed the above document.



My Commission Expires March 21, 1998

COPY OF PUBLICATION

Legals

NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to the New Mexico Water Quality Control Commission Regulations, the following discharge plan applications have been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

(GW-60) - Williams Field Service, Leigh Gooding, Environmental Specialist, P.O. Box 58900, M.S. 10368, Salt Lake City, Utah 84158-0900, has submitted an application for renewal of their previously approved discharge plan for their Milagro Gas Plant located in Section 12, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. Approximately 1500 gallons per day of process water with a total dissolved solids concentration in excess of 2000 mg/l will be disposed of in an evaporation pond double-lined with a synthetic impervious liner with a leak detection system. Groundwater most likely to be affected by an accidental discharge is at a depth of 60 feet with a total dissolved solids concentration of approximately 5800 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-232) - El Paso Natural Gas Company, David Bays, Sr. Environmental Scientist, P.O. Box 4990, Farmington, New Mexico 87499, has submitted a discharge plan application for their Trunk "A" Compressor Station located in Section 10, Township 23 South, Range 26 East, NMPM, Eddy County, New Mexico. Approximately 181 gallons per day of produced water will be stored in an above ground, closed top steel tank prior to disposal at an OCD approved disposal site. Ground water most likely to be affected by an accidental discharge is located at a depth of approximately 50 feet with a total dissolved solids concentration of 650 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan applications may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday thru Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Request for public hearing shall set forth the reasons why a hearing shall be held. A hearing will be held if the director determines that there is significant public interest.

If no hearing is held, the Director will approve or disapprove the plan based on the information available. If a public hearing is held, the Director will approve the plan based on the information in the plan and information presented at the hearing.

GIVEN under the Seal of New Mexico Conservation Commission at Santa Fe, New Mexico, on this 11th day of October, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

/s/William J. LeMay
WILLIAM J. LEMAY, Director

SEAL

Legal No. 35644 published in The Daily Times, Farmington, New Mexico on Friday, December 15, 1995.

The Santa Fe New Mexican

Since 1849. We Read You.

NEW MEXICO ENERGY, MINERALS &
NATURAL RESOURCES

AD NUMBER: 448895

ACCOUNT: 56689

LEGAL NO: 58727

P.O. #: 96199002997

199 LINES once at \$ 79.60

Affidavits: 5.25

Tax: 5.30

Total: \$ 90.15

NOTICE OF PUBLICATION above ground, closed top
STATE OF NEW MEXICO, steel tank prior to disposal at
ENERGY, MINERALS an OGD approved disposal
AND NATURAL RE- site. Ground water most
SOURCES DEPARTMENT likely to be affected by an ac-
OIL CONSERVATION DIVI- cidental discharge is located
SION at a depth of approximately

Notice is hereby given that 50 with a total dissolved sol-
pursuant to the New Mexico ids concentration of 650
Water Quality Control Com- mg/l. The discharge plan ad-
mission Regulations, the fol- dresses how spill, leaks and
lowing discharge plan appli- other accidental discharges
cations have been submitted to the surface will be man-
to the Director of the Oil Con- aged.

ervation Division, 2040 Any interested person may
South Pacheco, Santa Fe, obtain further information
New Mexico 87505, Tele- from the Oil Conservation Di-
phone (505) 827-7131: vision and may submit writ-

(GW-60) - Williams Field Ser- ten comments to the Director
vice, Leigh Gooding, Envi- of the Oil Conservation Divi-
ronmental Specialist, P. O. sion at the address given
Box 58900, M.S. 10368, Salt above. The discharge plan
Lake City, Utah 84158-0900, applications may be viewed
has submitted an application at the above address be-
for renewal of their previ- tween 8:00 a.m. and 4:00 p.m.,
ously approved discharge Monday thru Friday. Prior to
plan for their Milagro Gas ruling on any proposed dis-
Plant located in Section 12, charge plan or its modifica-

Township 29 North, Range 11 tion, the Director of the Oil
West, NMPM, San Juan Conservation Division shall
County, New Mexico. Ap- allow at least thirty (30) days
proximately 1500 gallons per after the date of publication
day of process water with of this notice during which
total dissolved solids concen- comments may be submitted
tration in excess of 2000 mg/l to him and public hearing
will be disposed of in an eva- may be requested by any in-
poration pond double-lined terested person. Request for
with a synthetic impervious public hearing shall set forth
liner with a leak detection the reasons why a hearing
system. Groundwater most shall be held. A hearing will
likely to be affected by an ac- be held if the director deter-

cidental discharge is at a mines that there is signifi-
depth of 60 feet with a total cant public interest.
dissolved solids concentra- If no hearing is held, the Di-
tions of approximately 5800- rector will approve or disap-
mg/l. The discharge plan ad- prove the plan based on the
dresses how spill, leaks, and information available. If a
other accidental discharges public hearing is held, the Di-
to the surface will be man- rector will approve the plan
aged. based on the information in
the plan and information pre-

(GW-232) - El Paso Natural sented at the hearing.
Gas Company, David Bays, GIVEN under the Seal of
Sr. Environmental Scientist, New Mexico Conservation
P.O. Box 4990, Farmington, Commission at Santa Fe,
New Mexico, 87499, has sub- New Mexico, on this 11th day
mitted a discharge plan ap- of October, 1995.
plication for their Trunk "A" STATE OF NEW MEXICO
Compressor Station located OIL CONSERVATION DIVI-
Section 10, Township 23 SION
South, Range 26 East, WILLIAM J. LEMAY, Direc-
NMPM, Eddy County, New tion
Mexico. Approximately 181 for
gallons per day of produced legal # 58727
water will be stored in an Pub. December 14, 1995

AFFIDAVIT OF PUBLICATION

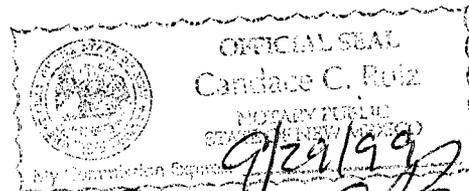
STATE OF NEW MEXICO
COUNTY OF SANTA FE

I, BETSY PERNER being first duly sworn declare and say that I am Legal Advertising Representative of THE SANTA FE NEW MEXICAN, a daily news paper published in the English language, and having a general circulation in the Counties of Santa Fe and Los Alamos, State of New Mexico and being a New paper duly qualified to publish legal notices and advertise- ments under the provisions of Chapter 167 on Session Laws of 1937; that the publication # 58727 a copy of which is hereto attached was published in said newspaper once each WEEK for ONE consecutive week(s) and that the no- tice was published in the newspaper proper and not in any supplement; the first publication being on the 14th day of DECEMBER 1995 and that the undersigned has personal knowledge of the matter and things set forth in this affida- vit.

/S/

Betsy Perner
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this
14th day of DECEMBER A.D., 1995.



Candace C. Ruiz

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES



P.O. Box 58900
Salt Lake City, UT 84158-0900
FAX: (801) 584-7780

FAX TRANSMISSION COVER SHEET
SHARED SERVICES

DATE: 12/13
TO: Chris Eustice
FAX #: (505) 827-8177
FROM: Leigh Gooding
PHONE #: (801) 584-6543
SUBJECT: Milagro - Boiler wash down
water - analytical results.

NUMBER OF PAGES TO FOLLOW: 3

SPECIAL INSTRUCTIONS: Please call

*Please call if you should have any problems or questions
regarding all or part of this transmission*

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES 

P.O. Box 58900
Salt Lake City, UT 84158-0900
(801) 584-7033
FAX: (801) 584-6483

December 13, 1995

Mr. Roger Anderson
NMOCD
2040 S. Pacheco
Santa Fe, NM 87505

RE: AUTHORIZATION TO UTILIZE EVAPORATION POND FOR WASHDOWN WATER

Dear Mr. Anderson:

Pursuant to our earlier telephone conversation when we agreed that the boiler washdown water generated at the Milagro plant could be discharged to the hydrostatic test water evaporation pond, the following offers the details you requested.

Approximately 715 barrels of water has been generated by the boiler cleanout procedure which we discussed. A representative sample of the water was collected and sent for analysis to a local Farmington, NM laboratory. The results (see attached) confirm the wastewater is non-hazardous and therefore poses no threat to human health or the environment if discharged.

Nevertheless, the water is currently being held in temporary storage tanks pending your written concurrence and authorization to discharge the water into the lined evaporation pond near the WFS Milagro plant.

WFS appreciates the NMOCD's assistance and your time in consideration of this request. Once prepared, would you please "fax" a copy of your response letter to 801-584-~~6361~~
7660.

If you need any additional information, please call me at 801-584-6361 or Leigh Gooding at 801-584-6543.

Respectfully,


Mark Harvey

Environmental Services

pc: Gerry Smith - MIL
Leigh Gooding - SLC

CDS Laboratories
75 Suttle Street
PO Box 7025
Durango, Co. 81302

Phone: (970)-247-4270
Fax : (970)-247-4277

Report Date: 12/13/95

ANALYSIS REPORT

Attn: BOB WEITZINGER
Williams Field Services
P.O. BOX 1456
BLOOMFIELD NM 87413

Our Lab #: B95-129290
Sample ID: TANKS 1-5 COMPOSITE
Date Login: 12/11/95
Date Rec'd: 12/11/95

COLLECTION INFORMATION

Date/Time/By: 12/08/95 1500
Location: MILAGRO COGN.

Lab#	Testname	Result	Units
B95-129290	Silver, TCLP	< 1	mg/l.
	Arsenic, TCLP	< 2.5	mg/L
	Barium, TCLP	< 10	mg/l.
	Cadmium, TCLP	< 0.5	mg/l.
	Chromium, TCLP	< 1	mg/L
	Mercury, TCLP	< 0.1	mg/l.
	Nitrate/Nitrite-N	12.71	mg/l.
	Lead, TCLP	< 1	mg/l.
	Reactivity based on Cyanide & Sulfide	non-reactive	
	Corrosivity toward steel	1	mpy
	non-corrosive since is	< 6.35 mpy	
	Sulfide	< 0.5	mg/l.
	Sulfate	280	mg/l.
	pH	7.02	Units.

Approved By: SD [Signature] Checked By: [Signature]

ATTN -
LEE GOODING

BOILOUT WATER NEUTRALIZATION

All boilout water has been drained from the HRSG's to the frac tanks.

A drum of acid is stationed in the spill containment area.

The air driven acid transfer pump is operable and ready for use. *DIAPHRAGM Pump.*

Riley Industrial pump is operable and ready to recirc the water in the frac tanks.

Brian Smith of Betz Water Management Company is on site and ready to supervise the acid injection. *BRIAN WILL ADJUST ACID DRAW RATE.*

Brian Smith is prepared to sample the neutralized water and determine when the acid injection will stop. *ADD 1/2 COMPUTED AMOUNTS*

* Personnel performing the transfer of the acid have been briefed as to the hazards and what to do in the event of a spill. *ACID SUIT, CHEMICAL GOGGLES, FACE SHIELD, RUBBER GLOVES, RUBBER BOOTS - RUNNING WATER EYE WASH SHOWER.*
Riley Industrial connect the recirculation pump suction and discharge lines to the tank to be neutralized.

PPE - Connect the acid transfer pump discharge line to the discharge line of the Riley pump.

PPE - Place the transfer pump suction line in the acid barrel.

Using compressed air start the acid transfer pump and transfer acid until Brian Smith has determined there is no more need for acid.

Stop the acid transfer pump.

Riley Industrial transfer the recirculation pump suction and discharge lines to the next tank to be neutralized.

Continue with this procedure until all of the frac tanks have been neutralized.

SAMPLE & ANALYZE

DRAW EQUAL SIZE SAMPLES FROM EACH OF 5 TANKS & PREPARE THREE LAB SAMPLES 250 ML, 1 LITER & 1 LITER. SEND TO LAB FOR ~~TOTAL METALS~~ *CERTIFIED TOTAL METALS - CORROSIVITY - REACTIVITY*
~~HOWEVER, SEND TO LAB FOR~~ *DE 12/5*

NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

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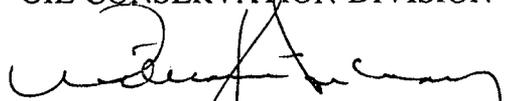
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GIVEN under the Seal of New Mexico Conservation Commission at Santa Fe, New Mexico, on this 11th day of October, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

A handwritten signature in black ink, appearing to read 'William J. Lemay', written over the printed name below.

WILLIAM J. LEMAY, Director

SEAL



MEMORANDUM OF MEETING OR CONVERSATION

OIL
CONSERVATION
DIVISION

<input type="checkbox"/> Telephone	<input checked="" type="checkbox"/> Personal	Time 1000 Am	Date 11-28-95
------------------------------------	--	-----------------	------------------

<u>Originating Party</u> CHRIS EUSTICE	<u>Other Parties</u> ROGER ANDERSON
---	--

Topic
MILAGRO GAS PLANT - Start up flush water from the boiler. (100,000 gallons)

Discussion
WFS - Leigh Gooding stated a verbal was granted by RCA I wanted to discharge the fluids to a pond. I wanted to verify this so I asked Roger.

He said he did give this authorization (verbally) to Williams w/out them having to analyze the fluids for hazardous constituents.

Conclusions or Agreements

Disposition
File

Signed

Exempt E&P Wastes

- Produced water
- Drilling fluids
- Drill cuttings
- Rigwash
- Drilling fluids and cuttings from offshore operations disposed of onshore
- Geothermal production fluids
- Hydrogen sulfide abatement wastes from geothermal energy production
- Well completion, treatment, and stimulation fluids
- Basic sediment, water, and other tank bottoms from storage facilities that hold product and exempt waste
- Accumulated materials such as hydrocarbons, solids, sands, and emulsion from production separators, fluid treating vessels, and production impoundments
- Pit sludges and contaminated bottoms from storage or disposal of exempt wastes
- Gas plant dehydration wastes, including glycol-based compounds, glycol filters, and filter media, backwash, and molecular sieves
- Workover wastes
- Cooling tower blowdown
- Gas plant sweetening wastes for sulfur removal, including amines, amine filters, amine filter media, backwash, precipitated amine sludge, iron sponge, and hydrogen sulfide scrubber liquid and sludge
- Spent filters, filter media, and backwash (assuming the filter itself is not hazardous and the residue in it is from an exempt waste stream)
- Pipe scale, hydrocarbon solids, hydrates, and other deposits removed from piping and equipment prior to transportation
- Produced sand
- Packing fluids
- Hydrocarbon-bearing soil
- Pigging wastes from gathering lines
- Wastes from subsurface gas storage and retrieval, except for the non-exempt wastes listed below
- Constituents removed from produced water before it is injected or otherwise disposed of
- Liquid hydrocarbons removed from the production stream but not from oil refining
- Gases from the production stream, such as hydrogen sulfide and carbon dioxide, and volatilized hydrocarbons

- Materials ejected from a producing well during blowdown
- Waste crude oil from primary field operations
- Light organics volatilized from exempt wastes in reserve pits, impoundments, or production equipment

Non-Exempt Wastes

- Unused fracturing fluids or acids
- Gas plant cooling tower cleaning wastes
- Painting wastes
- Waste solvents
- Oil and gas service company wastes such as empty drums, drum rinsate, sandblast media, painting wastes, spent solvents, spilled chemicals, and waste acids
- Vacuum truck and drum rinsate from trucks and drums transporting or containing non-exempt waste
- Refinery wastes
- Liquid and solid wastes generated by crude oil and tank bottom reclaimers¹
- Used equipment lubricating oils
- Waste compressor oil, filters, and blowdown
- Used hydraulic fluids
- Waste in transportation pipeline related pits
- Caustic or acid cleaners
- Boiler cleaning wastes
- Boiler refractory bricks
- Boiler scrubber fluids, sludges, and ash
- Incinerator ash
- Laboratory wastes
- Sanitary wastes
- Pesticide wastes
- Radioactive tracer wastes
- Drums, insulation, and miscellaneous solids

¹ Although non-E&P wastes generated from crude oil and tank bottom reclamation operations (e.g., waste equipment cleaning solvent) are non-exempt, residuals derived from exempt wastes (e.g., produced water separated from tank bottoms) are exempt. For a further discussion, see the Federal Register notice, "Clarification of the Regulatory Determination for Waste from the Exploration, Development, and Production of Crude Oil, Natural Gas and Geothermal Energy," March 22, 1993, Federal Register Volume 58, Pages 15284 to 15287.

FAX

DATE: 11-28-95

PAGES INCLUDING COVER SHEET 4

TO: Mr Chris Eustice

FROM: BECON CONSTRUCTION
MILAGRO COGENERATION PRC

SARWAT
TERRY WELLS

PHONE: (505) 827-8177
FAX:

PHONE: 505-632-3160
FAX: 505-632-3236

CC:

REMARKS: URGENT FOR YOUR REVIEW REPLY ASAP PLEASE COMMENT

Thanks for your help.
Sarwat

F

BETZ

Trevino, PA 19083-6783

(215)355-3300

Material Safety Data Sheet**Emergency Telephone****Health/Accident (800)877-1940****PRODUCT: BETZ PREKLEEN 346**

EFFECTIVE DATE: 02-01-95

REVISIONS TO SECTIONS: APP

PRODUCT APPLICATION: WATER-BASED CLEANER.

1) HAZARDOUS INGREDIENTS

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

POLY(OXY-ETHANEDIYL)PHENYL HYDROXY PHOSPHATE***CAS# 39464-70-5; IRRITANT;
PEL: NOT DETERMINED; TLV: NOT DETERMINED

POTASSIUM HYDROXIDE (CAUSTIC POTASH)***CAS# 1310-58-3; CORROSIVE; TOXIC (IF ORALLY INGESTED); PEL: 2.0MG/M3 (CEILING); TLV: 2.0MG/M3 (CEILING)

SODIUM NITRATE***CAS# 7631-99-4; OXIDIZER; POTENTIAL BLOOD TOXIN; PEL: NOT DETERMINED; TLV: NOT DETERMINED.

NON IONIC LINEAR POLYETHER SURFACTANT***CAS# 61702-77-0; EYE IRRITANT;
PEL: NOT DETERMINED; TLV: NOT DETERMINED

2) TYPICAL PHYSICAL DATA

PH: AS IS (APPROX.) 14.0
FT. PT. (DEG. F): > 200 SETA (CC)
VAPOR PRESSURE (mmHG): ND
VISC cps@70F: 17
EVAP RATE: < 1.00 (ETHER=1)
PHYSICAL STATE: LIQUID

ODOR: NONE
SP. GR. (70F): 1.237
VAPOR DENSITY (AIR-1): ND
% SOLUBILITY (WATER): 100.0
APPEARANCE: YELLOW
FREEZE POINT (DEG. F): 0.00

3) REACTIVITY DATA

STABLE. MAY REACT WITH STRONG OXIDIZERS. DO NOT CONTAMINATE BETZ TANK
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

MATERIAL SAFETY DATA SHEET

PRODUCT: BETZ PREKLEEN 346

4) HEALTH HAZARD EFFECTS

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE
SEVERE IRRITANT TO THE SKIN
ACUTE EYE EFFECTS ***
CORROSIVE TO THE EYES
ACUTE RESPIRATORY EFFECTS ***
MISTS/AEROSOLS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT
CHRONIC EFFECTS OF OVEREXPOSURE***
PROLONGED OR REPEATED EXPOSURES MAY CAUSE BLOOD CELL DAMAGE OR FUNCTIONAL IMPAIRMENT; PROLONGED OR REPEATED CONTACT MAY CAUSE TISSUE NECROSIS;
PROLONGED OVEREXPOSURE MAY CAUSE CNS DEPRESSION,
MEDICAL CONDITIONS ACCRAVATED ***
NOT KNOWN
SYMPTOMS OF EXPOSURE ***
CAUSES SEVERE IRRITATION, BURNS OR TISSUE ULCERATION WITH SUBSEQUENT SCARRING.
PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***
MAY BE TOXIC IF ORALLY INGESTED.

5) FIRST AID INSTRUCTIONS

SKIN CONTACT ***
REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES
EYE CONTACT***
IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT
INHALATION EXPOSURE***
REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY
INGESTION***
DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

6) SPILL, DISPOSAL AND FIRE INSTRUCTIONS

SPILL INSTRUCTIONS***
VENTILATE AREA. USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.
DISPOSAL INSTRUCTIONS****
WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS)
INCINERATE OR BURY IN APPROVED LANDFILL
FIRE EXTINGUISHING INSTRUCTIONS***
FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA:
FLOOD WITH WATER. USE OF CO2 OR FOAM MAY NOT BE EFFECTIVE.

MATERIAL SAFETY DATA SHEET

PRODUCT: BETZ PREKLEEN 346

7) SPECIAL PROTECTIVE EQUIPMENT

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR WITH SUPPLIED AIR RESPIRATORS. VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE REPLACE AS NECESSARY.

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

8) STORAGE AND HANDLING PRECAUTIONS

STORAGE INSTRUCTIONS***

KEEP CONTAINERS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS***

CONTAINS AN OXIDIZER. AVOID ALL CONTACT WITH REDUCING AGENTS, OILS, GREASES, ORGANICS AND ACIDS. CORROSIVE TO SKIN AND/OR EYES.

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

- ...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY
- ...REPORTABLE QUANTITY (RQ) FOR UNDILUTED PRODUCT:
1,330 GALLONS DUE TO POTASSIUM HYDROXIDE (CAUSTIC POTASH);
- ...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: D002-CORROSIVE (PH)
- ...DOT HAZARD/UN#/ER GUID# IS :CORROSIVE TO ALUMINUM, RQ/NA1760/#60
- ...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MAINTAINS:
NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS
- ...SARA SECTION 302 CHEMICALS:
NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS
- ...SARA SECTION 313 CHEMICALS:; SODIUM NITRATE (CAS# 7631-99-4), 2.0-5.0%
- ...SARA SECTION 312 HAZARD CLASS: IMMEDIATE (ACUTE); DELAYED (CHRONIC)
- ...MICHIGAN CRITICAL MATERIALS:
NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS
- NFPA/HMIS : HEALTH 3; FIRE 1; REACTIVITY - 0; SPECIAL - ALK ; PE - B



MEMORANDUM OF MEETING OR CONVERSATION

<input checked="" type="checkbox"/> Telephone	<input type="checkbox"/> Personal	Time 8:30 AM	Date 11-28-95
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<u>Originating Party</u> TERRY WELLS	<u>Other Parties</u> CHRIS EUSTICE - OCD
---	---

Topic
Disposal of wash water from the boiler at
WFS's Milagro Gas Plant

Discussion
Terry wanted to know what the OCD requires
to dispose of 100,000 gallons of wash water from
the boiler at the Milagro GP.

I told him a TCLP + CIR and OCD approval

Conclusions or Agreements
He stated "Salt Lake" was informed and they
would get on it.

<u>Distribution</u> File	<u>Signed</u>
-----------------------------	-------------------

OIL CONSERVATION DIVISION

2040 S, Pacheco
Santa Fe, New Mexico 87505

October 24, 1995

CERTIFIED MAILRETURN RECEIPT NO. Z-765-962-577

Ms. Leigh Gooding
Williams Field Services, Inc.
P.O. Box 58900
Salt Lake City, Utah 84158-0900

**RE: Discharge Plan Renewal
(GW-60) Milagro Gas Plant
San Juan County, New Mexico**

Dear Ms. Gooding:

On March 21, 1991, the groundwater discharge plan, GW-60 for the Williams Field Services (WFS) Milagro Gas Plant located in the SW/4, SE/4 of Section 12, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico, was approved by the Director of the Oil Conservation Division (OCD). This discharge plan was required and submitted pursuant to Water Quality Control Commission (WQCC) regulations and was approved for a period of five years. The approval will expire on March 21, 1996.

If WFS's facility continues to have potential or actual effluent or leachate discharges and they wish to continue operations, WFS must renew their discharge plan. The OCD is reviewing discharge plan submittals and renewals carefully and the review time can extend for several months. Please indicate whether WFS has made, or intend to make, any changes in the discharge system, and if so, please include these modifications in the application for renewal. Current WQCC Regulations do not allow for an expired discharge plan to receive an extension. Therefore WFS should submit the renewal application in ample time before the expiration date to allow the review process to be complete prior to expiration to avoid operating out of compliance (without an approved discharge plan).

To assist you in the preparation of the application, enclosed is an application form and a copy of the OCD's Guidelines for the Preparation of Ground Water Discharge Plans for Gas Plants and a copy of the WQCC regulations. Please submit the original and one copy to the OCD Santa Fe Office and one copy to the OCD Aztec District Office. Note that the completed and signed application must be submitted with the discharge plan renewal request.

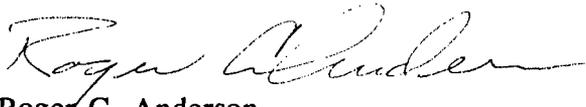
Ms. Leigh Gooding
July 31, 1995
Page 2

The discharge plan application for the Milagro Gas Plant is subject to WQCC Regulation 3-114. Every billable facility submitting a discharge plan for renewal will be assessed a fee equal to the filing fee of \$50 plus a flat fee of \$1667.50 for gas processing plants. The \$50 filing fee is to be submitted with the discharge plan renewal application and is non-refundable. The flat fee for an approved discharge plan renewal may be paid in a single payment due at the time of approval, or in equal annual installments over the duration of the discharge plan.

Please make all checks payable to: NMED-Water Quality Management and addressed to the OCD Santa Fe Office.

If WFS no longer has any actual or potential discharges please notify this office. If you have any questions, please do not hesitate to contact Chris Eustice at (505) 827-7153.

Sincerely,



Roger C. Anderson
Environmental Bureau Chief

RCA/cee
xc: OCD Aztec Office

STATE OF NEW MEXICO
ENVIRONMENT DEPARTMENT
DISTRICT I - FARMINGTON FIELD OFFICE

FACSIMILE TRANSMITTAL SHEET

DATE: 5-10-95 TIME: 3:20 PAGES: 2
(Including This Sheet)

TO: Bill Olson
OF (COMPANY/OFFICE): OLD
FAX NUMBER: 827-8177 TELEPHONE NUMBER:

FROM: David Tomke

OFFICE: NM ENVIRONMENT DEPARTMENT
DISTRICT I - FARMINGTON FIELD OFFICE
724 WEST ANIMAS
FARMINGTON, NM 87401

FAX #: (505) 326-3747 TELEPHONE #: (505) 327-9851
UST #: (505) 325-2458

COMMENTS: They are currently discharging this to an on-site
dry well and want to replace it with another dry well
due to new construction.

David

STATE OF NEW MEXICO
ENVIRONMENT DEPARTMENT
DISTRICT I - FARMINGTON FIELD OFFICE

FACSIMILE TRANSMITTAL SHEET

DATE: 5-10-95 TIME: 3:20 PAGES: 2
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UST #: (505) 325-2458

COMMENTS: They are currently discharging this to an on-site
dry well and want to replace it with another dry well
due to new construction.

David

505-632-3236 BECON CONST. MILAGRO

222 PJ1

MAY 10 '95 09:14

Becon Const Co. 632-3160 — June + secretary

WILLIAMS FIELD SERVICE
MILAGRO PLANT

Chemical Disposal List

The following reagents are used during routine testing done at our laboratory facility. All of the reagents are consumed through chemical reactions and are not disposed of in a pure state. The acids and bases that are used are chemically neutralized and all fall into the 5.0-11.3 pH range.

<u>Chemical Name</u>	<u>Approximate Disposal Amount/Year</u>
*Acid Reagent	365 gms
*Amino Acid	365 gms
*Amino Acid F	182 gms
*Citric Acid	730 gms
*Ferrover Iron	547 gms
Gallic Acid	15 gms
Hardness Indicator	60 gms
Hardness Buffer	55 gms
(1) Hydrochloric Acid .1N	3.0 L
Methanol	7.3 L
*Molybdate Powder	365 gms
*Molybdate Liquid	4.8 L
*Molybdate 3 Powder	180 gms
pH 7 buffer	7.8 L
pH 10 buffer	600 ml
(2) Potassium Hydroxide .2N	250 ml
(1) Sulfuric Acid 10N	5.0 L

- * Diluted 25:1 with boiler and/or deionized water.
- (1) Neutralized to pH of 5.0 before disposal.
- (2) Neutralized to pH 11.3 before disposal.

Date	5/10/95	# of pages	1
From	DEAD'S	Co.	
Phone #	325-3739	Fax #	
1st-11 th Fax Note	7671		

Chris Eustice

From: Denny Foust
Date sent: Monday, March 20, 1995 7:11AM
To: Chris Eustice
Subject: Registered: Denny Foust

Your message

To: Denny Foust
Subject: Williams Field Services - Milagro Gas Plant Discharge Plan Modification
Date: Tuesday, March 14, 1995 12:53PM
was accessed on
Date: Monday, March 20, 1995 7:11AM

Chris Eustice

From: Chris Eustice
To: Frank Chavez
Cc: Denny Foust
Subject: Williams Field Services - Milagro Gas Plant Discharge Plan Modification
Date: Tuesday, March 14, 1995 12:53PM
Priority: High

Please provide to me, in writing, any technical concern(s) you have about the above referenced request. The operator has qualified this request for administrative approval consideration.

Please respond by 4pm March 16, 1995. Thank you.



United States Department of the Interior

CONSERVATION DIVISION
RECEIVED

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services State Office
2105 Osuna NE
Albuquerque, New Mexico 87113
Phone: (505) 761-4525 Fax: (505) 761-4542

1995 MAR 15 PM 8 52

February 28, 1995

William J. Lemay, Director
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Dear Mr. Lemay:

This responds to your agency's public notice dated February 1, 1995, regarding the State of New Mexico's proposal to approve the discharge plan for the applicants listed below.

(GW-60) - Williams Field Services. The Environmental Specialist has submitted a discharge plan modification for their Milagro Gas Plant located discharge plan located in the SW/4 SE/4 of Section 12, Township 29 North, Range 11 West, San Juan County New Mexico. The modification includes the addition of a fourth boiler, a fourth amine train, and the installation of a cogeneration facility. The discharge will be 1500 gallons per day (gpd) to lined evaporation ponds.

If the gas plant uses "heater-treaters" or boilers with exhaust chimneys that are accessible to migratory birds (or bats), then they should be screened to prevent access and accidental death from sudden exhaust or frying. If no action is taken to avoid migratory deaths associated with heater-treaters, then Williams Field Services may be held liable under the enforcement provisions of the Migratory Bird Treaty Act (MBTA). The MBTA prohibits the kill, capture, collection, possession, purchase, sale, shipment, import or export of any migratory bird unless authorized by a permit issued by the Department of the Interior. Illegal take has been interpreted by the courts to include among other things, accidental electrocution, poisoning or accumulation of harmful levels of contaminants by migratory birds, even if the contamination event was accidental or the perpetrator was unaware of the fact that his/her actions (or failure to take action) could ultimately prove harmful to migratory birds. The strict liability provision of the MBTA precludes the necessity of proving intent and allows criminal prosecution of persons, associations, partnerships, or corporations that inadvertently or intentionally "kill or illegally take" one or more migratory birds. Therefore, the U.S. Fish and Wildlife Service (Service) recommends that some device be used that excludes migratory birds (or bats) from nesting or roosting atop or inside the heater-treater chimneys as part of this OCD permit.

The Service recommends the use of excluding devices (nets, fences, enclosed tanks) to prevent migratory bird access to the Milagro Gas Plant's evaporation ponds. We make this recommendation because the quality of the discharge water in these ponds likely poses a risk to the health of migratory birds from exposure to organic contaminants (PAHs, petroleum products). During flight, migratory birds cannot distinguish between

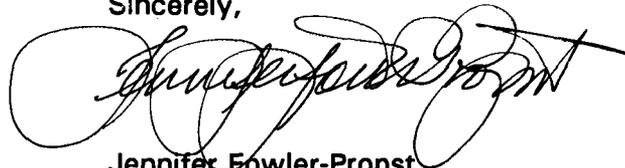
the toxic water quality of an evaporation pond from a natural waterbody. Therefore, rather than allow migratory birds access to an attractive nuisance waterbody, the Service recommends that these evaporation ponds be constructed in a manner (i.e., size) so that they can be covered with netting to restrict wildlife access.

The Service would rather work on solving the problem of migratory bird access to evaporation ponds than take enforcement actions which are expensive and disruptive to legitimate gas and oil extraction activities. These recommendations are in lieu of enforcement of the Migratory Bird Treaty Act (MBTA) which makes it unlawful for anyone at anytime or in any manner to take (i.e., pursue, hunt, take, capture, kill, transport, or possess) any migratory birds unless authorized by a permit issued by the Department of the Interior. The courts have interpreted "illegal take" to include accidental poisoning or accumulation of harmful levels of contaminants by migratory birds, even if the contamination event was accidental or the perpetrator was unaware of the fact that his/her actions (or failure to take action) could ultimately prove harmful to migratory birds. The liability provisions of the MBTA preclude the necessity of proving intent and permits criminal prosecution of persons, associations, partnerships, or corporations that inadvertently or intentionally kill or illegally take one or more migratory birds. Therefore, if no action is taken to avoid migratory bird deaths resulting from the operation of the Milagro Gas Plant evaporation ponds, the operators of such facilities may be held liable under the enforcement provisions of the MBTA.

The Service is concerned with the large number of oil and gas development activities being permitted in the Farmington Resource Area are not receiving adequate evaluation for cumulative impacts to the environment. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts result when a new project is added to an area where other projects exist or are proposed. In such a situation, although the impact associated with each discharge permit might be minor, the cumulative impact resulting from all projects being in the same general area could be greater. The OCD should address the cumulative ecological impacts of petroleum development.

Thank you for the opportunity to review and comment on this discharge plan application. If you have any questions, please contact Joel D. Lusk at (505) 761-4525.

Sincerely,

A handwritten signature in black ink, appearing to read "Jennifer Fowler-Propst", written over a large, stylized circular flourish.

Jennifer Fowler-Propst
State Supervisor

cc:

Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
District Manager, BLM, Farmington District, Farmington, New Mexico

AFFIDAVIT OF PUBLICATION

COPY OF PUBLICATION

No. 34341

STATE OF NEW MEXICO

County of San Juan:

VICKIE SHORTER being duly sworn says: That he is the Classified Manager of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication on the following day(s):

THURSDAY, FEBRUARY 9, 1995

and the cost of publication was: \$100.49

Vickie Shorter

On 2/15/95 VICKIE SHORTER appeared before me, whom I know personally to be the person who signed the above document.

Mary S. Sneed

My Commission Expires March 21, 1998.

Legals

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to the New Mexico Water Quality Control Commission Regulations, the following discharge plan applications have been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

(GW-60) - Williams Field Services, Leigh Gooding, Environmental Specialist, P.O. Box 58900, M.S. 10368, Salt Lake City, Utah 84158-0900, has submitted a request to modify their existing discharge plan for the Milagro Gas Plant located in the SW/4 SE/4, Section 12, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. This modification proposal addresses the addition of a fourth boiler, a fourth amine train and installation of a cogeneration facility. Approximately 1500 gallons per day of process wastewater will be disposed of in an evaporation pond double-lined with a synthetic impervious liner with a leak detection system. Groundwater most likely to be affected by an accidental discharge is at a depth of 60 feet with a total dissolved solids concentrations of approximately 5800 mg/l. The discharge plan addresses how spill, leaks, and other accidental discharges to the surface will be managed.

(GW-186) - Liquid Energy Corporation, Greg Lewis, Manager, Environmental and Safety, P.O. Box 4000, The Woodlands, Texas, 77387-4000, has submitted a discharge plan application for their Dagger Draw Gas Processing Plant located in the SW/4 SW/4, Section 25, Township 18 South, Range 25 East, NMPM, Eddy County, New Mexico. Approximately 2 barrel per day of produced water with a total dissolved solids concentration in excess of 2000 mg/l is stored in an above ground, closed-top steel tank prior to transport to an OCD approved off-site disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of 195 feet with a total dissolved solids concentrations of approximately 1535 mg/l. The discharge plan addresses how spill, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday thru Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Request for public hearing shall set forth the reasons why a hearing shall be held. A hearing will be held if the director determines that there is significant public interest.

If no hearing is held, the Director will approve or disapprove the plan based on the information available. If a public hearing is held, the Director will approve the plan based on the information in the plan and information presented at the hearing.

GIVEN under the Seal of New Mexico Conservation Commission at Santa Fe, New Mexico, on this 1st day of February, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

/s/ William J. LeMay
WILLIAM J. LEMAY, Director

SEAL

Legal No. 34341 published in The Daily Times, Farmington, New Mexico on Thursday, February 9, 1995.

Affidavit of Publication

No. 14983

STATE OF NEW MEXICO,

County of Eddy:

Gary D. Scott being duly sworn, says: That he is the Publisher of The Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached Legal Notice

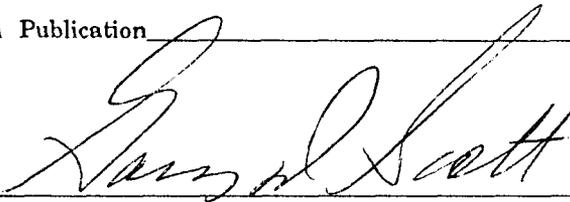
was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for 1 consecutive weeks on the same day as follows:

First Publication February 8, 1995

Second Publication _____

Third Publication _____

Fourth Publication _____



Subscribed and sworn to before me this 14th day of February 1995

Richard Ann Coars
Notary Public, Eddy County, New Mexico

My Commission expires September 23, 1996

Copy of Publication

fourth boiler, a fourth boiler, proposed di-
train and installation of a modification
cogeneration facility. Approx- the Oil Con-
imately 1500 gallons per day shall allow
of process wastewater will be days after
disposed of in an evaporation tion of the
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spill, leaks, and other acciden- if no hear-
tal discharges to the surface tector will
will be managed. provide the in-
formation.

(GW-186) Liquid Energy Corporation, Greg Lewis, Man-
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LEGAL NOTICE

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND
NATURAL RESOURCES
DEPARTMENT
OIL CONSERVATION
DIVISION

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any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the address between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any

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1995.
STATE OF
OIL
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Press, Ar
8/1995

STATE OF NEW MEXICO

County of Bernalillo

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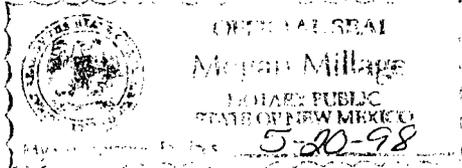
RECEIVED

MAR 08 1995

Bill Tafoya being duly sworn declares and Environmental Bureau
 Advertising manager of The Albuquerque Journal, and Oil Conservation Division
 is duly qualified to publish legal notices or advertisements within the meaning
 of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore
 has been made of assessed as court cost; that the notice, copy of which is
 hereto attached, was published in said paper in the regular daily edition,
 for 1 times, the first publication being of the 13th day
 of February, 1995, and the subsequent consecutive publications
 on _____, 1995

Bill Tafoya

Sworn and subscribed to before me, a notary Public in
 and for the County of Bernalillo and State of New
 Mexico, this 13th day of Feb. 1995



PRICE \$642.28
 Statement to come at end of month.

CLA-22-A (R-1/93) ACCOUNT NUMBER C81184

*OK to
 call*

STATE OF NEW MEXICO
 DEPARTMENT OF CONSERVATION
 DIVISION OF OIL CONSERVATION
 1000 UNIVERSITY AVENUE, N.E.
 ALBUQUERQUE, NEW MEXICO 87102
 (505) 771-3131

NOTICE TO THE PUBLIC
 The following information is being provided to the public for their information. This information is not intended to constitute an offer of insurance or any other financial product. It is intended to provide information only. The information is not intended to be used as a basis for any investment decision. The information is not intended to be used as a basis for any investment decision. The information is not intended to be used as a basis for any investment decision.

NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

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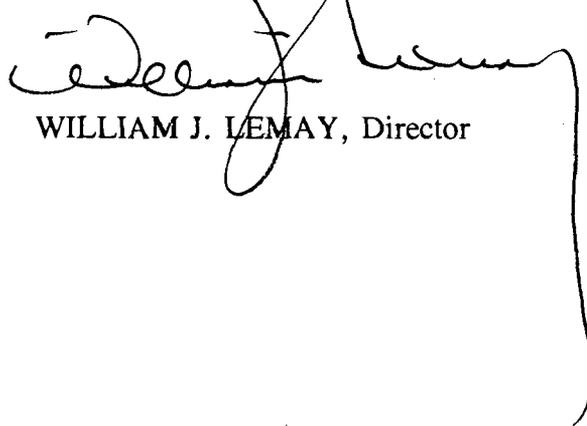
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If no hearing is held, the Director will approve or disapprove the plan based on the information available. If a public hearing is held, the Director will approve the plan based on the information in the plan and information presented at the hearing.

GIVEN under the Seal of New Mexico Conservation Commission at Santa Fe, New Mexico, on this 1st day of February, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

A handwritten signature in black ink, appearing to read 'William J. Lemay', is written over the typed name. The signature is fluid and cursive, with a long, sweeping tail that extends downwards and to the right.

WILLIAM J. LEMAY, Director

SEAL

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES 

P.O. Box 58900
Salt Lake City, UT 84158-0900
(801) 584-7033
FAX: (801) 584-6483

RECEIVED
DEC 13 1994

December 13, 1994

Mr. Rodger Anderson
New Mexico Oil Conservation Division
State Land Office Building
310 Old Santa Fe Trail
Santa Fe, New Mexico 87504

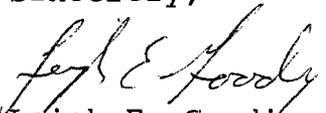
Re: Discharge Plan Update for Milagro Gas Treatment Plant GW-60
San Juan County, New Mexico

Dear Mr. Anderson:

Enclosed please find an update to the Discharge Plan for the Williams Field Services Milagro Gas Treatment Plant. The original plan was approved on March 21, 1991 (GW-60). This update addresses the addition of a fourth boiler, a fourth amine train, and the proposed installation of a cogeneration facility.

If you have any questions or require additional information, please do not hesitate to contact me at (801) 584-6543.

Sincerely,


Leigh E. Gooding, P.G.
Environmental Specialist

Attachment

**WILLIAMS FIELD SERVICES
MILAGRO GAS TREATMENT PLANT DISCHARGE PLAN UPDATE
December 1994**

I. BACKGROUND INFORMATION

On November 30, 1990, Williams Field Services (WFS) submitted a Discharge Plan for the Milagro Gas Treatment Plant to the New Mexico Oil Conservation Division (OCD) for review and approval. The plan addressed the handling, storage, and disposal of wastes generated during the process of removing CO₂ from Fruitland formation coal seam gas. The plan, GW-60, was subsequently ~~approved by OCD on March 21, 1991~~. WFS submitted a Discharge Plan Update to OCD on November 16, 1992. This update stated that four primary membrane units were to be added to the plant in 1992; however, only two primary membrane units were added. In addition the update stated that two compressors and two secondary membrane units would be added in 1993. These units were also never installed at the plant.

According to the terms of the Discharge Plan, WFS is required to notify the Director of the OCD of any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume. This update addresses existing and proposed modifications at the Milagro Plant.

II. MODIFICATIONS OF THE MILAGRO GAS TREATMENT PLANT

- A. A fourth Holman Lo-NO_x boiler was added to the plant in September 1994. No new liquid wastes are generated by the additional boiler. The added volume of boiler blow-down wastes generated by this modification are handled in accordance with the provisions listed in the original OCD Discharge Plan dated December 3, 1990.
- B. A fourth amine train is currently under construction at the plant and is scheduled to be completed by the end of 1994. The fourth amine train does not generate any new liquid wastes. Provisions for amine-train wastes (Sulfinol was replaced by Ucarsol CR 422 in the November 16, 1992 revision) are given in the original Discharge Plan and its revision. The added volume of amine-train wastes are handled in accordance with the approved Discharge Plan and its revision. The location of the fourth train is depicted in the Facility Site Plan (attached).

III PROPOSED MODIFICATIONS

WFS has applied for an air quality permit to construct a cogeneration facility which will supply electricity to the power grid and steam to the plant. The project will consist of adding two high efficiency General Electric (GE) combustion turbines that will be fueled exclusively by natural gas and two 160 million BTU/hr heat recovery steam generators (HRSG). The proposed installation of the cogeneration facility is planned to begin the first quarter of 1995. The location of the proposed cogeneration facility is depicted in the Facility Site Plan (attached).

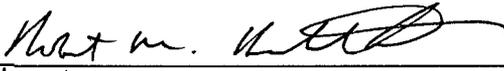
No new liquid wastes are expected to be generated by the proposed modifications. The modifications will result in an increase in the volume of used oil already generated at the facility. The skids on turbines and generators will drain to buckets to collect minor oil leaks. Catch pans will be placed beneath control valves that may leak fluids. These will be inspected daily and emptied when liquid accumulates past one third volume of the container. The liquids will either be regenerated, recycled, or disposed with the wastewater.

IV SUMMARY

No new liquid wastes will be generated by the modifications and proposed modifications at this facility. However, the modifications and proposed modifications outlined in this update will result in a significant increase in the volume of waste liquids already generated at this facility. All liquid wastes will be handled in accordance with the approved OCD Discharge Plan (GW-60) and its revision dated November 16, 1992.

V AFFIRMATION

I hereby certify that I am familiar with the information contained in and submitted with this revision and that such information is true, accurate, and complete to the best of my knowledge and belief.


Signature

Robert M. Hawksworth

December 13, 1994
Date

Director Shared Services

WILLIAMS FIELD SERVICES COMPANY 
ONE OF THE WILLIAMS COMPANIES

P.O. BOX 58900
SALT LAKE CITY, UTAH 84158-0900
801-583-8800
FAX: (801) 584-6483

November 16, 1992

RECEIVED
NOV 17 1992
OIL CONSERVATION DIV.
SANTA FE

Mr. Roger Anderson
New Mexico Oil Conservation Division
State Land Office Building
310 Old Santa Fe Trail
Santa Fe, New Mexico 87504

Re: Milagro Gas Treatment Plant Discharge Plan Update - San Juan County

Dear Mr. Anderson:

Attached please find information pertaining to modifications at the Williams Field Services Milagro Gas Treatment Plant, the original Discharge Plan for which was approved on March 21, 1991 (GW-60). The installation of four primary membrane units for CO₂ removal from coal seam gas at the Milagro Plant will not appreciably change the quality or volume of liquid wastes generated at the facility.

In addition to the primary membrane units, Williams Field Services is planning major modifications at the Milagro Plant during 1993. Consequently, I will be submitting a major revision of the existing Discharge Plan to the OCD in January, 1993, to cover these modifications.

Please call me at (801) 584-6716 if you have any questions or need additional information.

Sincerely,

Carol Revelt

Carol Revelt
Environmental Specialist

Attachment

MILAGRO GAS TREATMENT PLANT DISCHARGE PLAN UPDATE

I. BACKGROUND INFORMATION

On November 30, 1990, Williams Field Services (WFS) submitted a Discharge Plan for the Milagro Gas Treatment Plant to the New Mexico Oil Conservation Division (OCD) for review and approval. The plan addressed the handling, storage, and disposal of wastes generated during the process of removing CO₂ from Fruitland formation coal seam gas. The plan, GW-60, was subsequently approved by OCD on March 21, 1991.

According to the terms of the Discharge Plan, WFS is required to notify the Director of the OCD of any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

II. MODIFICATIONS OF THE MILAGRO GAS TREATMENT PLANT

A. ADDITIONAL CO₂ REMOVAL CAPACITY

Williams Field Services has recently constructed cement pads for the installation of four primary CO₂ removal membrane units. The attached Figures 1 and 2 show the locations of these pads within the Milagro Plant. Installation of the primary membrane units for CO₂ removal from coal seam gas will commence on November 23, 1992, and the units are expected to be in service by December 25, 1992.

The four primary membrane units, each consisting of a skid-mounted pretreat unit and a skid-mounted membrane unit, will process a total of approximately 200MMCFD of coal seam gas. The pretreat unit contains filters which will remove any potential liquid and solid impurities from the coal seam gas before it passes through the primary membrane. After pretreatment, the coal seam gas will flow through the primary membrane unit where the CO₂ concentration in the gas will be reduced from 10% to 7%. The residue gas from the primary membranes will be discharged into the station discharge line along with the coal seam gas which is being processed in the three existing amine trains.

The permeate from the primary membranes, which contains both CO₂ and methane, will be temporarily vented through a CO₂ vent stack until the New Mexico Air Quality Bureau issues air quality permits for two 7042 GL Waukesha Engines (895 HP site rated) to WFS. The air quality permit application for these compressor engines was submitted to the New Mexico Air Quality Bureau on October 9, 1992. As soon as air quality permits for these units are issued, WFS will begin installation of two compressors and two secondary membrane units. After installation is complete, the permeate gas from the primary membrane units will then be re-compressed by the new compressors and directed through the secondary membrane units where a secondary CO₂ separation will occur. The permeate from the secondary membranes will be directed to a vent stack and the residual

natural gas from the secondary membranes will be discharged into either the station fuel gas system or the suction line.

Liquid waste from the pretreat units and primary membranes will be directed to the existing inlet/outlet filter liquids tank, the contents of which will either be recycled or disposed of at a facility authorized to handle Class II wastes (See Figure 2 for the location of the tank within the Milagro plant). Since the gas flowing into the Milagro Plant has been dehydrated both at the well head and at Central Delivery Points upstream of the membranes, insignificant quantities of liquids (estimated at less than 10 gallons per day total) are expected to be generated as a result of the installation of the primary membrane units. Any solid wastes associated with the operation of the membrane system, i.e., pre-treat filter media or the membranes themselves, will be disposed of according to local, state, and federal requirements.

No new types of liquid wastes have been will be generated as a result of the recent and planned modifications at the Milagro Gas Treatment Plant.

B. REPLACE OF SULFINOL WITH UCARSOL CR 422

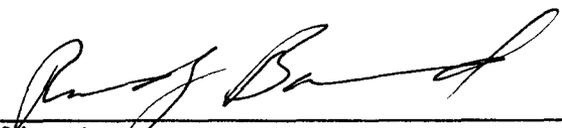
Due to energy and cost considerations, Williams Field Services has replaced the Sulfinol mixture in the three existing amine trains with Ucarsol CR 422. The material safety data sheet for this material is attached for your review. As a result of this change all minor discharges of sulfinol mentioned in the original Discharge Plan are now composed of Ucarsol CR 422.

C. FUTURE MODIFICATIONS

The above referenced air quality permit application also requests approval to retrofit the three existing boilers with low-NO_x burners and to install one additional boiler, also equipped with a low-NO_x burner. A revision to the existing Discharge Plan will be submitted to OCD in January, 1993, to cover the installation of the new boiler, two compressors, and two secondary membrane units which will occur at Milagro Plant in 1993.

III. SUMMARY

The addition of the four primary CO₂ membrane units will result in an insignificant increase in the volume of waste liquids generated at this facility. The expansion of the Milagro Plant, including the installation of an additional boiler, two compressors, and two secondary membrane units will be addressed in a major Discharge Plan modification to be submitted to the NMOCD in January, 1993.



Signature

November 16, 1992
Date

Randy Barnard
Name

Milagro Plant Manager
Title

STATE OF NEW MEXICO
County of Bernalillo ss

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND
NATURAL
RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan applications and renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-32) - Giant Refining Company, Claud Rosendale, Environmental Manager, Route 3, Box 7, Gallup, New Mexico 87301, has submitted a renewal application for its previously approved discharge plan for its Clinza Refinery located 17 miles east of Gallup, New Mexico on Interstate Highway 40. The refinery and associated waste-management facilities are located in the S/4 of Section 28, and the N 3/4 of Section 33 of Township 15 North, Range 15 West, NMPM, McKinley County, New Mexico. The refinery discharges approximately 161,000 gallons per day of process and non-process wastewater. The wastewater, with an approximate concentration of 2000 to 3000 mg/l total dissolved solids, is discharged to 11 unlined evaporation ponds with a total of 117 acres of capacity. These ponds are constructed in and of the shales of the upper Chinle Formation, which have a permeability of less than six inches per year. The uppermost ground water likely to be affected by refinery discharges is in thin localized sand lenses at depths of 30 to 65 feet, with a total dissolved solids concentration of approximately 1100 mg/l. The uppermost ground water at the site known to be areally extensive is the Sonsela Sandstone at depths from 20 to 140 feet, with a total dissolved solids concentration of approximately 800 mg/l. Ground water in localized sands and the Sonsela is confined under artesian conditions. The discharge plan application in addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-55) - Thriftway Marketing Corporation, F.L. Stark, Vice President, 710 East 20th Street, Farmington, New Mexico 87401, has submitted a discharge plan application for its Bloomfield Refinery located in the SE/4, Section 32, and SW/2 SW/4, Section 23, Township 29 North, Range 11 West, and the NE/4 NE/4, Section 9, Township 28 North, Range 11 West, NMPM, San Juan County, New Mexico. Approximately 1225 gallons per day of wastewater is disposed of in a synthetically double-lined evaporation pond equipped with leak detection. The wastewater has a total dissolved solids concentration of 1870 mg/l. Groundwater most likely to be affected by an discharge to the surface is at a depth of from 5 to 30 feet with a total dissolved solids concentration of approximately 4300 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed and also covers remediation of contaminated groundwater.

Thomas J. Smithson being duly sworn declares and says that he is National Advertising manager of the **Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for.....¹.....times, the first publication being on the.....²¹.....day

of.....^{Jan}....., 1991, and the subsequent consecutive

publications on....., 1991.

Thomas J. Smithson

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this²¹..... day of.....^{Jan}....., 1991.

PRICE.....^{\$52.25}.....

Statement to come at end of month.

CLA-22-A (R-12/91)

ACCOUNT NUMBER.....^{C 81184}.....

Maddette Curtis
12-18-93

FOA

(GW-2) - Phillips 66 Natural Gas Company, David Jetmini, Environmental Specialist, 4001 Pembroke, Odessa, Texas 79762, has submitted an application for renewal of its previously approved discharge plan for its Lee Plant located in SW/4 SE/4, Section 30, Township 17 South, Range 35 East, NMPM, Lea County, New Mexico. Approximately 47,000 gallons per day of process wastewater with a total dissolved solids concentration of approximately 5300 mg/l is disposed of in an OCD approval offsite commercial Class II disposal well. Groundwater most likely to be affected by a spill, leak and other solids concentration of approximately 600 mg/l. The discharge plan application addresses how spills, leaks and other accidental discharges to the surface will be managed and also covers remediation of contaminated groundwater.

(GW-60) - Williams Field Services, H. Spencer George, Manager, Processing Engineering, P.O. Box 10368, Salt Lake City, Utah, 84158-0900, has submitted a discharge plan application for its Milagro Plant located in the SW/4 SE/4, Section 12, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. Approximately 1500 gallons per day of process wastewater will be disposed of in synthetically double-lined evaporation basins equipped with leak detection. The total dissolved solids concentration of the wastewater will not be known until the plant begins operation. Groundwater most likely to be affected by a spill, leak and other accidental discharge to the surface is at a depth in excess of 60 feet with a total dissolved solids concentration of approximately 5800 mg/l. The discharge plan application addresses how spills, leaks and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 7th day of January, 1991.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/William J. LeMay
Director

Journal: January 21, 1991

Affidavit of Publication

STATE OF NEW MEXICO)
) ss.
COUNTY OF LEA)

Joyce Clemens being first duly sworn on oath deposes and says that he is **Adv. Director** of THE LOVINGTON DAILY LEADER, a daily newspaper of general paid circulation published in the English language at Lovington, Lea County, New Mexico; that said newspaper has been so published in such county continuously and uninterruptedly for a period in excess of Twenty-six (26) consecutive weeks next prior to the first publication of the notice hereto attached as hereinafter shown; and that said newspaper is in all things duly qualified to publish legal notices within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico.

That the notice which is hereto attached, entitled

Notice Of Publication

and number in the

..... Court of Lea County, New Mexico, was published in a regular and entire issue of THE LOVINGTON DAILY LEADER and

not in any supplement thereof, once each week on the same day of the week, for one (1)

consecutive weeks, beginning with the issue of

January 13, 1991

and ending with the issue of

January 18, 1991

LEGAL NOTICE
NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERAL AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan applications and renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P. O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-32) - Giant Refining Company, Claud Rosendale, Environmental Manager, Route 3, Box 7 Gallup, New Mexico 87301, has submitted a renewal application for its previously approved discharge plan for its Ciniza Refinery located 17 miles east of Gallup, New Mexico on Interstate Highway 40. The refinery and associated waste-management facilities are located in the S/4 of Section 28 and the N 3/4 of Section 33 of Township 15 North, Range 15 West, NMPM, McKinley County, New Mexico. The refinery discharges approximately 161,000 gallons per day of process and non-process wastewater. The wastewater, with an approximate concentration of 2000 to 3000 mg/l total dissolved solids, is discharged to 11 unlined evaporation ponds with a total of 117 acres of capacity. These ponds are constructed in and of the shales of the upper Chinle Formation, which have a permeability of less than six inches per year. The uppermost ground water likely to be affected by refinery discharges is in thin localized sand lenses at depths of 30 to 65 feet, with a total dissolved solids concentration of approximately 1100 mg/l. The uppermost ground water at the site known to be areally extensive is the Sonsela Sandstone at depths from 20 to 140 feet, with a total dissolved solids concentration of approximately 800 mg/l. Ground water in localized sands and the Sonsela is confined under artesian conditions. The discharge plan application in addresses how spills, leaks and other accidental discharges to the surface will be managed.

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(GW-2) - Phillips 66 Natural Gas Company, David Jelmini, Environmental Specialist, 4001 Penbrook, Odessa, Texas 79762, has submitted an application for renewal of its previously approved discharge plan for its Lee Plant located in SW/4 SE/4 Section 30, Township 17 South, Range 35 East, NMPM, Lea County, New Mexico. Approximately 47,000 gallon per day of process wastewater with a total dissolved solids concentration of approximately 5300 mg/l is disposed of in an OCD approval offsite commercial Class II disposal well. Groundwater most likely to be affected by a spill, leak and other accidental discharge to the surface is at a depth of 85 feet with a total dissolved solids concentration of approximately 600 mg/l. The discharge plan application addresses how spills, leaks and other accidental discharges to the surface will be managed and also covers remediation of contaminated groundwater.

(GW-60) - Williams Field Services, H. Spencer George, Manager, Processing Engineering P. O. Box 10268, Santa Fe, New Mexico 87508

Affidavit of Publication

STATE OF NEW MEXICO,
COUNTY OF MCKINLEY

Barbara Garrett being duly sworn upon oath, deposes and says:

As Legal Clerk of the Gallup Independent, a newspaper published in and having a general circulation in McKinley County, New Mexico, and in the City of Gallup, therein: that this affiant makes this affidavit based upon personal knowledge of the facts herein sworn to. That the publication, a copy of which is hereto attached was published in said newspaper during the period and time of publication and said notice was published in the newspaper proper, and not in a supplement thereof,

for One (1) Time, the first publication being on the

15th day of January, 1991 the

second publication being on the _____ day of _____,

19____ the third publication

on the _____ day of _____, 19____

and the last publication being on the _____ day of _____, 19____

That such newspaper, in which such notice or advertisement was published, is now and has been at all times material hereto, duly qualified for such purpose, and to publish legal notices and advertisements within the meaning of Chapter 12, of the statutes of the State of New Mexico, 1941 compilation

Barbara Garrett
Affiant.

Sworn and subscribed to before me this 15th day of

January, A.D., 1991
William J. Lemay
Notary Public.

My commission expires

6-22-93

LEGAL NOTICE STATE OF NEW MEXICO

NOTICE OF PUBLICATION

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 7th day of January, 1991. To be published on or before January 18, 1991.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY, Director

Legal #6450 published in the Independent January 15, 1991.

No. 27090

STATE OF NEW MEXICO,
County of San Juan:

CHRISTINE HILL being duly sworn, says: "That she is the NATIONAL AD MANAGER of The Farmington Daily Times, a daily newspaper of general circulation published in English in Farmington, said county and state, and that the hereto attached LEGAL NOTICE

was published in a regular and entire issue of the said Farmington Daily Times, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for ONE consecutive (days) (/////) on the same day as follows:

First Publication SUNDAY, JANUARY 13, 1991

Second Publication _____

Third Publication _____

Fourth Publication _____

and that payment therefore in the amount of \$ 81.66 has been made.

Christine Hill

Subscribed and sworn to before me this 14TH day of JANUARY, 1991.

Ronnie Anderson

**NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY MINERALS
AND NATURAL RESOURCES
DEPARTMENT OF OIL
CONSERVATION DIVISION**

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NOTICE OF PUBLICATION

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

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(GW-2) - Phillip 16 Natural Gas Company, David J. [redacted] Environmental Specialist, 4001 Penbrook, Odessa, Texas 79762, has submitted an application for renewal of its previously approved discharge plan for its Lee Plant located in SW/4 SE/4, Section 30, Township 17 South, Range 35 East, NMPM, Lea County, New Mexico. Approximately 47,000 gallons per day of process wastewater with a total dissolved solids concentration of approximately 5300 mg/l is disposed of in an OCD approval offsite commercial Class II disposal well. Groundwater most likely to be affected by a spill, leak and other accidental discharge to the surface is at a depth of 85 feet with a total dissolved solids concentration of approximately 600 mg/l. The discharge plan application addresses how spills, leaks and other accidental discharges to the surface will be managed and also covers remediation of contaminated groundwater.

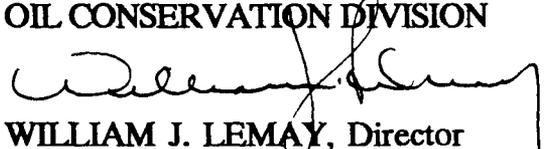
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Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

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STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


WILLIAM J. LEMAY, Director

S E A L

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

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

January 10, 1991

CERTIFIED MAIL
RETURN RECEIPT NO. P-327-278-038

Mr. H. Spencer George
Williams Field Services
P. O. Box 58900
Salt Lake City, Utah 84158-0900

RE: Discharge Plan GW-60
Milagro Plant
San Juan County, New Mexico

Dear Mr. George:

The Oil Conservation Division (OCD) has received and is in the process of reviewing the above referenced discharge plan application dated December 3, 1990. The following questions and requests for additional information are based on initial review of your application.

1. Section 2.2 states "Storage tanks will be surrounded by an earthen dike two feet high". The OCD requires berming of all tanks that contain constituents that can be harmful to fresh water and/or the environment. The bermed areas shall be large enough to hold one-third more than the volume of the largest vessel or one-third more than the total volume of all interconnected vessels contained within the berm.
2. Section 2.2, also states "Chemical storage drums, blow cases, and pumps will also have spill containment." What method of containment are you proposing?
3. Table 1 identifies a blowdown tank for the collection of water from the gas inlet separator. What is the location of this tank? Identify this tank on the plat plan (DWG No. MGL-1-P1).
4. Section 2.2 states "Significant spills and leaks..." Reportable spill quantities will be pursuant to OCD Rule 116 (enclosed).

Mr. H. Spencer George

January 10, 1991

Page -2-

5. Section 2.3 states laboratory wastes are drained to a septic tank. What is the location of the septic tank? Locate the septic tank and leach lines on the plat plan (DWG MGL-1-P1).
6. Appendix B, page 10, lists the Department of Environmental Improvement (EID) as the agency to report spills and leaks in the State of New Mexico. The EID is notified only if a spilled substance is discharged to a waterway of the U.S. For all other spills and leaks, the appropriate OCD District is to be notified.
7. Appendix C, page 3, describes the action to be taken if fluids are observed in the a leak deletion sump of an evaporation basin. In addition to the procedures stated, immediate removal of the fluids in the sump will commence.

Submission of the above requested information and/or commitments will allow review to continue. An inspection trip to the San Juan Basin by OCD staff members is tentatively scheduled for the first week in March. I will be contacting you in the near future to schedule a convenient date and time for inspection of your facility site.

If you have any questions, please do not hesitate to call me at (505) 827-5884.

Sincerely,



Roger C. Anderson
Environmental Engineer

Enclosure

RCA/sl

WILLIAMS FIELD SERVICES COMPANY OF THE WILLIAMS COMPANIES  CONSERVATION DIVISION
ONE OF THE WILLIAMS COMPANIES

'91 APR 8 AM 9 07

P.O. BOX 58900
SALT LAKE CITY, UTAH 84158-0900
801-583-8800

April 3, 1991

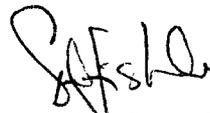
Mr. Roger Anderson
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

Dear Mr. Anderson:

The Milagro Plant started processing natural gas on Friday, March 22, 1991.

I can be reached at (801) 584-6730 if you have any questions or comments regarding this notification.

Sincerely,



Sandy Fishler
Environmental Specialist

SF/pm

0056



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

February 26, 1991

BRUCE KING
GOVERNOR

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

CERTIFIED MAIL
RETURN RECEIPT NO. P-327-278-090

Mr. H. Spencer George, Manager
Process Engineering
Williams Field Services
P. O. Box 58900
Salt Lake City, Utah 84158-0900

RE: Discharge Plan GW-60
Milagro Plant - San Juan County, New Mexico

Dear Mr. George:

The Oil Conservation Division (OCD) has received your request, dated January 24, 1991, for authorization to start-up the first process train at the above referenced facility. The start-up of this train will be for testing purposes and in compliance of Williams' contract obligations.

Pursuant to Water Quality Control Commission (WQCC) Regulation 3-106.B. and for good cause shown, you are hereby authorized to discharge at the Milagro Plant without an approved discharge plan for a period not to exceed 120 day commencing on the start-up date. Notify this office of the date of start-up.

During the 120-day period, processing of the discharge plan application will continue. Since the 120-day period can not be extended, timely submittal of any OCD-requested information will ensure that permitting is concluded prior to the expiration date.

If you have any questions, please contact David Boyer at (505) 827-5812 or Roger Anderson at (505) 827-5884.

Sincerely,


William J. LeMay, Director

WJL/RCA/si

cc: Aztec OCD Office

WILLIAMS FIELD SERVICES COMPANY
ONE OF THE WILLIAMS COMPANIES



NEW MEXICO OIL CONSERVATION DIVISION
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P.O. BOX 58900
SALT LAKE CITY, UTAH 84158-0900
801-583-8800

January 24, 1991

Mr. Roger Anderson
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87501

RE: Milagro Plant Start-up JW-60

Dear Mr. Anderson:

Williams Field Services (WFS) requests authorization for start-up of the first processing train at the Milagro Gas Plant prior to having an approved discharge plan from the NMOCD. Initial contract obligations require that one of the three processing trains be operational by February 16, 1991.

We have modified spill control measures designed for this facility as shown on the attached plot plan. Section 2.0 of the discharge plan has also been revised to describe additional spill control procedures. Revisions to the discharge plan (Section 2.0 and Appendices B&C) also address deficiencies cited in your letter dated January 10, 1991.

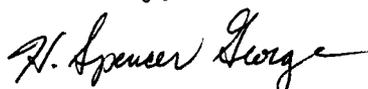
We propose the following approach to completing plant construction as committed to in our Discharge Plan dated December, 1990 and amended January 24, 1991. We have postponed pouring the cement spill containment curbs and floors in the process area until installation of the plant is complete in an effort to prevent damage to the cement from heavy construction. It will be very difficult to complete installation of Train 1 by February 16, 1991, let alone completion of cement floors and curbing. Therefore, we would like permission to start-up Train 1 without the permanent cement spill containment in the area south of the fin fans. We will provide temporary spill control around the pumps and filter in this area for Train 1. We should have the permanent spill containment in place once site conditions are more conducive (probably in April) and before we start-up Train 2.

We would like to install only one of the three evaporation basins before plant start-up. This provides 96,000 gallons storage capacity for process wastewater. The other two basins will be installed within two months of initial plant start-up and before completion and start-up of the second process train. Daily inspection of the evaporation basin will ensure that a minimum two feet of freeboard is maintained. We will pump wastewater out of the basin if the water level reaches the two foot freeboard level, although it is unlikely. The wastewater will be hauled off site to a commercial wastewater disposal facility as authorized by NMOCD.

Mr. Roger Anderson
January 24, 1991
Page Two

We would sincerely appreciate your consideration and approval of this plan which would allow WFS to meet its contract obligations while providing adequate temporary environmental protection measures. If you have questions or comments regarding this, please do not hesitate to contact me at (801) 584-6635

Sincerely,



H. Spencer George
Manager, Process Engineering

HSG/pm

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2.0 PLANT PROCESSES

2.1 Plant Effluent - Process Fluids

The Milagro Plant is a proposed facility. There are no process waste streams to measure and sample for the requested characterization. Material Safety Data Sheets for industrial chemicals used in the plant process are provided in Appendix A. Table 1 lists the sources and planned disposition of process wastes with approximations of the quantity and quality type. Within six (6) months of plant startup and normal operation or once a sufficient amount of representative waste is generated, Williams Field Services will obtain grab samples for chemical analysis as listed below. Samples will be collected directly at the source. Sampling and analytical techniques will conform with standard methods referenced in WQCC 107.B.

<u>Sample</u>	<u>Parameters</u>
Sulfinol Reclaimer Sludge Glycol Regeneration Wastewater	TDS, pH, Na, K, Ca, Mg, Cl, SO ₄ , HCO ₃ , CO ₃ , BETX, As, Ba, Cd, Cr, F, Pb, Hg, NO ₃ as N, Se
Boiler Blowdown	TDS, pH, Na, K, Ca, Mg, Cl, SO ₄ , HCO ₃ , CO ₃

The raw coal seam gas to be treated by the Milagro Plant contains no liquid hydrocarbon. Gas condensate and water that are the most likely media to contain naphthalenes and PAHs should not be generated. The additional chemicals listed in WQCC 1-101.UU and 3-103 are also not expected to be present in the process.

Water and wastewater flow is indicated on the attached plot plan. Four inch diameter schedule 40 steel pipe that is valved at each end will be used for all below ground wastewater pipelines.

2.2 Spill/Leak Prevention and Housekeeping Procedures

Processing units where leaks or spillage are most likely to occur have been equipped with spill containment consisting of cement curbs and cement floor. Drains from the spill containment areas are equipped with valves that will normally remain closed. This will allow for recovery of sulfinol and glycol product that can be regenerated. Accumulated precipitation and wastewater will be directed to the evaporation basins located west of the plant. Storage tanks will be surrounded by a dike or curb to hold one third more than the volume of the largest tank or one third more than the total volume of all interconnected tanks within the containment (eg. amine tanks). Blow cases and pumps will also have spill containment (see plot plan). Chemical storage drums will be stored inside the buildings.

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TABLE 1
SOURCES AND DISPOSITION OF
PLANT EFFLUENT AND PROCESS FLUIDS

<u>Source</u>	<u>Disposition</u>	<u>Quantity</u>	<u>Quality Type</u>	<u>Additives</u>
1. Gas Inlet Separator	Collected separately in Blowdown tank	none	high TDS water	none
2. Glycol Regeneration	Collected separately in tank	Trace	water	Triethylene Glycol
3. Sulfinol Reclaimer	Evaporation basin	60 gpd	high TDS water, amine salts	diisoprop- anolamine, sulfolane, DIPA oxazolidone
4. Boiler (emergency blowdown)	Evaporation basin	None normally, maximum 1500 gallons in emergency	high TDS water	Betz Neutra- film 463, Betz Magni form 308, Betz Balanced Polymer
5. Steam Turbines, Generators	Collected separately in drum	1/4 gpd	oil	none
6. Domestic Sewage, Sulfinol/ Boiler Water Tests	Septic Tank	360 gpd	Sewage, neutralized deactivated chemicals	none
7. Drains from Sulfinol pump building containment	Evaporation basin	Trace	amine	fugitive amine leaks
8. Drains in spill containment dikes	Evaporation basin		rainwater	fugitive leaks
9. Wash pad	Collected separately in tank	variable	water	oil, solvent, amine

The skids on steam turbines and generators will drain to buckets to collect minor oil leaks. Catch pans will be placed beneath control valves that may leak fluids. These will be inspected daily and emptied when liquid accumulates past one third volume of the container. The liquids will either be regenerated, recycled, or disposed with the wastewater.

Prior to plant operation, piping and process vessels will be tested using hydrostatic pressure up to one and a half times the design pressure. The plant will be manned 24 hours. Regular inspections will be conducted throughout the plant.

Fluids in the process vessels will be drained and/or recirculated back into the process lines and storage tanks before they are opened up for maintenance. A portable spill collection pan will be positioned beneath the vessel to trap any residual liquids.

William's corporate policy and procedure for the Controlling and Reporting of Discharges or Spills of Oil or Hazardous Substances is provided in Appendix B. Spills and leaks will be reported to the NMOCD pursuant to Rule 116 using the OCD form (see Appendix B).

A runoff diversion ditch along the northwest perimeter of the plant will minimize precipitation runoff to that which falls directly inside of the plant yard. Precipitation that is not confined by the spill dikes surrounding process areas will drain to the south and west along the general grade of the plant yard. (see plot plan)

2.3

Effluent Disposal

The disposition of process waste fluids is described in Table 1 of section 2.1. The design and construction specifications for the wastewater evaporation basin for plant process wastewaters is provided in Appendix C. Vapor condensed off the glycol regeneration process will be collected separately in a 100 bbl tank.

Used oil removed from the oil skimmer and collected in drums will be picked up by truck by an EPA registered used oil marketer or recycler. The used oil will be tested for used oil specifications [40 CFR 266.40 (e)] in advance of shipment to ensure proper use by the recycler. Mesa Oil in Albuquerque, New Mexico has serviced other facilities in the 4-corners region; however, used oil market conditions may direct our selection of a different firm. Produced water collected in the gas inlet separator tank will be hauled off site for disposal at a NMOCD authorized commercial disposal facility.

Waste mixtures from lab testing sulfinol and boiler water will be deactivated in the test procedure, are non-toxic and will have a neutral pH ranging from 5-9, suitable for disposal down the sink which drains to the septic tank and leach field.

Wastewater from the wash pad will be collected separately in a tank. Oil will be skimmed off the surface for recycling. If useable, accumulated amine would be regenerated. Wastewater that is free of hazardous waste solvents would be pumped into the evaporation basins. If a listed hazardous waste solvent is added to the wash pad tank, the tank contents will be managed as hazardous waste (this should be avoided).

RULE 116

NOTIFICATION OF FIRE, BREAKS, LEAKS, SPILLS, AND BLOWOUTS

The Division shall be notified of any fire, break, leak, spill, or blowout occurring at any injection or disposal facility or at any oil or gas drilling, producing, transporting, or processing facility in the State of New Mexico by the person operating or controlling such facility.

"Facility," for the purpose of this rule, shall include any oil or gas well, any injection or disposal well, and any drilling or workover well; any pipeline through which crude oil, condensate, casinghead or natural gas, or injection or disposal fluid (gaseous or liquid) is gathered, piped, or transported (including field flow-lines and lead-lines but not including natural gas distribution systems); any receiving tank, holding tank, or storage tank, or receiving and storing receptacle into which crude oil, condensate, injection or disposal fluid, or casinghead or natural gas is produced, received, or stored; any injection or disposal pumping or compression station including related equipment; any processing or refining plant in which crude oil, condensate, or casinghead or natural gas is processed or refined; any tank or drilling pit or slush pit associated with oil or gas well or injection or disposal well drilling operations or any tank, storage pit, or pond associated with oil or gas production or processing operations or with injection or disposal operations and containing hydrocarbons or hydrocarbon waste or residue, salt water, strong caustics or strong acids, or other deleterious chemicals or harmful contaminants.

Notification of such fire, break, leak, spill, or blowout shall be in accordance with the provisions set forth below:

1. Well Blowouts. Notification of well blowouts and/or fires shall be "immediate notification" described below. ("Well blowout" is defined as being loss of control over and subsequent eruption of any drilling or workover well, or the rupture of the casing, casinghead, or wellhead or any oil or gas well or injection or disposal well, whether active or inactive, accompanied by the sudden emission of fluids, gaseous or liquid, from the well.)
2. "Major" Breaks, Spills, or Leaks. Notification of breaks, spills, or leaks of 25 or more barrels or crude oil or condensate, or 100 barrels or more of salt water, none of which reached a watercourse or enters a stream or lake, breaks, spills, or leaks in which one or more barrels of crude oil or condensate or 25 barrels or more of salt water does reach a watercourse or enters a stream or lake; and breaks, spills, or leaks of hydrocarbons or hydrocarbon waste or residue, salt water, strong caustics or strong acids, gases, or other deleterious chemicals or harmful contaminants of any magnitude which may with reasonable probability endanger human health or result in substantial damage to property, shall be "immediate notification" described below.

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3. "Minor" Breaks, Spills, or Leaks. Notification of breaks, spills, or leaks of 5 barrels or more but less than 25 barrels of crude oil or condensate, or 25 barrels or more but less than 100 barrels of salt water, none of which reaches a watercourse or enters a stream or lake, shall be "subsequent notification" described below.
4. Gas Leaks and Gas Line Breaks. Notification of gas leaks from any source or of gas pipeline breaks in which natural or casinghead gas of any quantity has escaped or is escaping which may with reasonable probability endanger human health or result in substantial damage to property shall be "immediate notification" described below. Notification of gas pipeline breaks or leaks in which the loss is estimated to be 1000 or more MCF of natural or casinghead gas but in which there is no danger to human health nor of substantial damage to property shall be "subsequent notification" described below.
5. Tank Fires. Notification of fires in tanks or other receptacles caused by lightning or any other cause, if the loss is, or it appears that the loss will be, 25 or more barrels of crude oil or condensate, or fires which may with reasonable probability endanger human health or result in substantial damage to property, shall be "immediate notification" as described below. If the loss is, or it appears that the loss will be at least 5 barrels but less than 25 barrels, notification shall be "subsequent notification" described below.
6. Drilling Pits, Slush Pits, and Storage Pits and Ponds. Notification of breaks and spills from any drilling pit, slush pit, or storage pit or pond in which any hydrocarbon or hydrocarbon waste or residue, strong caustic or strong acid, or other deleterious chemical or harmful contaminant endangers human health or does substantial surface damage, or reaches a watercourse or enters a stream or lake in such quantity as may with reasonable probability endanger human health or result in substantial damage to such watercourse, stream, or lake, or the contents thereof, shall be "immediate notification" as described below. Notification of breaks or spills of such magnitude as to not endanger human health, cause substantial surface damage, or result in substantial damage to any watercourse, stream, or lake, or the contents thereof, shall be "subsequent notification" described below, provided however, no notification shall be required where there is no threat of any damage resulting from the break or spill.

IMMEDIATE NOTIFICATION. "Immediate Notification" shall be as soon as possible after discovery and shall be either in person or by telephone to the district office of the Division district in which the incident occurs, or if the incident occurs after normal business hours, to the District Supervisor, the Oil and Gas Inspector, or the Deputy Oil and Gas Inspector. A complete written report ("Subsequent Notification") of the incident shall also be submitted in duplicate to the appropriate district office of the Division within ten days after discovery of the incident.

SUBSEQUENT NOTIFICATION. "Subsequent Notification" shall be a complete written report of the incident and shall be submitted in duplicate to the district office of the Division district in which the incident occurred within ten days after discovery of the incident.

CONTENT OF NOTIFICATION. All reports of fires, breaks, leaks, spills, or blowouts, whether verbal or written, shall identify the location of the incident by quarter-quarter, section, township, and range, and by distance and direction from the nearest town or prominent landmark so that the exact site of the incident can be readily located on the ground. The report shall specify the nature and quantity of the loss and also the general conditions prevailing in the area, including precipitation, temperature, and soil conditions. The report shall also detail the measures that have been taken and are being taken to remedy the situation reported.

WATERCOURSE, for the purpose of this rule, is defined as any lake-bed or gully, draw, stream bed, wash, arroyo, or natural or man-made channel through which water flows or has flowed.

GENERAL DESCRIPTION OF WASTEWATER EVAPORATION BASINS

1. Facilities Description:

A series of three (3) 99' diameter evaporation tanks with conical bottoms will be utilized for storage/disposal of process water and storm runoff from spill containment areas. The tanks will be at subgrade to allow gravity flow into the cells. The tank sidewalls will be constructed of heavy gauge galvanized corrugated steel. The primary and secondary liners will be flexible membrane material which is resistant to hydrocarbons, salts, and acidic and alkaline solutions. The leak detection system will be a HDPE drainage net material sandwiched between the liners. The drainage net will collect any fluid which may penetrate the primary liner and convey it to a small sump from which an underdrain will carry it to a PVC inspection well.

2. Technical Information:

Type and Volume of Effluents Stored -

Plant Effluent and Process Fluids - 1500 gpd (see Table 1 for description).

Storm Runoff From Spill Containment Areas -
7,500 ft² (approx.) containment area * .63 ft precip./yr =
4,725 ft³/yr

Evaporative Surface Area: 23,093 ft²

The required surface area is 19,727 ft². This was calculated as shown in Exhibit 1 and includes a 20% safety factor. The total combined surface area of the three tanks is 23,093 ft².

Volume - 288,000 gallons

The storage volume was determined by the shortest available steel sidewall (44") minus the two feet of required freeboard, multiplied by the evaporative surface area. The adequacy of the storage volume was checked by running it through a computer program written to determine monthly water balances (see Exhibit 2 for computer printout).

The monthly precipitation and evaporation data used to determine monthly water balances are provided in Exhibit 3.

Depth - Storage Depth 20" + Freeboard 24" = Total Depth 44"

Slope of Pond Sides - The cells will have vertical corrugated steel sidewalls.

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TABLE 1
 SOURCES OF PLANT EFFLUENT AND PROCESS FLUIDS
 STORED IN BASINS

<u>Source</u>	<u>Quantity</u>	<u>Quality Type</u>	<u>Additives</u>
1. Sulfinol Reclaimer	60 gpd	high TDS water, amine salts	diisoprop- anolamine, sulfolane, DIPA oxazolidone
2. Boiler (emergency blowdown)	None normally, maximum 1500 gallons in emergency	high TDS water	Betz Neutrafilm 463, Betz Magniform 308, Betz Balanced Polymer
3. Drains from Sulfinol pump building containment	Trace	amine	fugitive amine leaks
4. Drains in spill containment dikes		rainwater	fugitive leaks

Subgrade Description - The sub-grade material will be silty fine sand and sand. The sub-grade will be graded at 1% slope to the center and will be smooth, compacted and free of debris which could rupture the liner. In addition, the design calls for a 10 oz. geotextile material between the soil and secondary liner, as a barrier to reduce the risk of damage to the liner. (see Exhibit 4 for information on the geotextile material).

Liner Type and Thickness - The primary and secondary liners will be Seaman Corp's XR-5 flexible membrane liner. The liner thickness is 30 mil.

Compatibility of Liner and Effluents - XR-5 is a chemical, oil, and high temperature resistant geomembrane material designed for use in municipal industrial waste pits and ponds. For the manufacturer's specification and sulfinol compatibility test results, refer to Exhibit 5 and 6 respectively.

Installation Method - The primary and secondary liners will be fabricated in the factory in a one-piece, polar cap design with 2" factory thermal heat sealed seams. The geotextile wall buffer material, primary liner, HDPE drainage net and secondary liner will all be secured to the top edge of the steel sidewalls by a continuous top angle which also serves as a wind girder. See Exhibits 7 and 8 for an illustration and explanation of the liner installation in a tank.

Leak Detection Method - HDPE drainage net will be sandwiched between the primary and secondary liners to collect any fluid which may break through the primary liner. The drainage net will convey the fluid into a small sump from which it will drain to a 2" diameter schedule 40 PVC inspection well. See Exhibit 8 for an illustration of the lining and leak detection system.

Freeboard - 24 inches

Runoff/Runon Protection - A one foot high berm with 1:1 side slopes will be constructed around the upgradient half of each cell to divert surface runoff from entering the cells.

Venting of Gas - In order to prevent the possibility of gas accumulating beneath the liner, the cells will be conical shaped with a minimum 1% slope to the outside. Any gas beneath the liner will be vented via geotextile buffer material between the soil and secondary liner.

Leak Detection and Plans for Corrective Action - The leak detection wells will be inspected weekly and an inspection log book kept up to date. If any leaks are detected, the fluid will immediately be removed from the sump. A grab sample of the fluid will be sent to a certified laboratory for analysis. The New Mexico Oil Conservation Division will be notified of all leaks within one work day of discovery.

Should a leak occur, the valve to the leaking cell will be closed and all fluids will be diverted to the remaining two cells. If necessary, there is more than adequate storage capacity to pump the fluid from the damaged tank into the other two cells. If the leak can be found and is repairable in place, it will be repaired. If the source of the leak cannot be determined or repaired, the primary liner can easily be removed and a new liner placed in the cell. Once repairs are completed, the fluids removed from the cell will be pumped back into it so that the fluid level in the cells is equal.

Fences and Signs - The entire plant area is surrounded by a fence to keep unauthorized persons, livestock and wildlife from entering the facilities. In addition, an approximately 5'6" high fence will surround the cells as a safety precaution (see Exhibit 9, Detail "C" for a typical fence design).

A sign not less than 12" x 24" with lettering of not less than 2" will be posted at the entrance to the fenced evaporation cell area (see Exhibit 10).

EXHIBIT 1

Milagro Plant Evaporation Pond - Area Calculation

Given: Evaporation Rate = 5.25'/yr
 Precipitation Rate = .51'/yr
 Process Inflow Rate = $1500 \text{ gpd} * 365 \text{ days/yr} \div 7.48 \text{ gals/ft}^3 = 73,195 \text{ ft}^3/\text{yr}$
 Surface Area Runoff = $7,500 \text{ ft}^2 * .63 \text{ ft/yr} = 4,725 \text{ ft}^3/\text{yr}$
 Total Inflow = 77,920 ft³/yr

Assumption: * Inflow does not include oil which would interfere with evaporation
 * No outflow, Total containment

Net Evapor-
ation rate: = $5.25'/\text{yr} - .51'/\text{yr} = 4.74'/\text{yr}$

Evaporation
Area: = $\frac{77,920 \text{ ft}^3/\text{yr}}{4.74 \text{ ft/yr}} = 16,439 \text{ ft}^2 * 1.20 \text{ (safety factor)} = 19,727 \text{ ft}^2$

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC
Specialty Chemicals Division

MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 07/23/91

Union Carbide urges each customer or recipient of this MSDS to study carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to the use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material of the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

I. IDENTIFICATION

PRODUCT NAME: UCARSOL CR Solvent 422

CHEMICAL NAME:

Alkanolamine Formulation

CHEMICAL FAMILY: Alkanolamines

FORMULA: Trade Secret

MOLECULAR WEIGHT: Mixture

SYNONYMS: None

and Not applicable

CAS NAME: Not applicable (Mixture)

II. PHYSICAL DATA (Determined on typical material)

BOILING POINT, 760 mm Hg: 189.10 C (372.38 F)
SPECIFIC GRAVITY(H₂O =1): 1.010 at 20 C
FREEZING POINT: POUR POINT: -56 C (-68 F) ← good.
VAPOR PRESSURE AT 20°C: 0.251 mm Hg
VAPOR DENSITY (air = 1): 3.95
EVAPORATION RATE
(Butyl Acetate = 1): 0.03
SOLUBILITY IN WATER by wt: 100 at 20 C
APPEARANCE AND ODOR: Transparent colorless liquid; amine odor.

Copyright 1991 Union Carbide Chemicals & Plastics Technology Corporation
UNION CARBIDE is a trademark of Union Carbide Corporation.
UCARSOL is a trademark of Union Carbide Chemicals & Plastics Tech. Corp.
EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.
Specialty Chemicals Division
39 Old Ridgebury Road, Danbury, CT. 06817-0001

PRODUCT NAME: UCARSOL CR Solvent 422

P.2

 III. INGREDIENTS

<u>ATLANTAL</u>	<u>3</u>	<u>TLV (Units)</u>	<u>Hazard</u>
Trade Secret Mixture	100	See Section V	See Section V

 IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):
 198 F (92.2 C), Pensky-Martens Closed Cup ASTM D 93
 225 F (107.2 C), Cleveland Open Cup ASTM D 92

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined
 UPPER: Not determined

EXTINGUISHING MEDIA:

Apply alcohol-type or all-purpose-type foam by manufacturer's recommended techniques for large fires. Use CO2 or dry chemical media for small fires.

SPECIAL FIRE FIGHTING PROCEDURES:

Use self-contained breathing apparatus and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

During a fire, oxides of nitrogen may be produced.

 V. HEALTH HAZARD DATA

EXPOSURE LIMIT(S):

None established by OSHA or ACGIH.

EFFECTS OF SINGLE OVEREXPOSURE

SWALLOWING:

Moderately toxic. May cause severe irritation and possibly chemical burns of the mouth, throat, esophagus, and stomach. There may be swelling or ulceration with pain in the mouth, throat, chest and abdomen, nausea, vomiting, diarrhea, dizziness, drowsiness, faintness, thirst, weakness, circulatory collapse, and coma. Aspiration into the lungs may occur during swallowing or vomiting, resulting in lung injury.

SKIN ABSORPTION:

Moderately toxic. Prolonged and widespread contact may lead to the absorption of potentially harmful amounts of material.

INHALATION:

Causes irritation of the respiratory tract, experienced as nasal discomfort and discharge, with chest pain and coughing.

PRODUCT NAME: UCARSOL CR Solvent 422

SKIN CONTACT:

Skin contact may cause slight irritation with itching and local redness. Prolonged contact will cause local discomfort or pain, excess redness and swelling, and possibly local skin corrosion with bleeding into the inflamed areas.

EYE CONTACT:

Liquid causes severe irritation, experienced as discomfort or pain, excessive blinking and tear production, marked excess redness and swelling of the conjunctiva, and chemical burns of the eye. Vapor may cause temporary disturbance of vision. (See "Notes to Physician.")

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Because of its irritating properties, this material may aggravate an existing dermatitis.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

Contains amines which may react with nitrites to form nitrosamines. Some nitrosamines have been shown to be carcinogenic in laboratory animals. A component in this product was not mutagenic in an Ames test.

OTHER EFFECTS OF OVEREXPOSURE:

Skin contact may cause sensitization and an allergic skin reaction. Repeated exposure may cause sensitization of the respiratory tract and the development of an asthmatic reaction on further exposures.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

If patient is fully conscious, give two glasses of water or milk at once. Do not induce vomiting. Obtain medical attention without delay.

SKIN:

Immediately remove contaminated clothing and shoes. Wash skin thoroughly with soap and water for at least 15 minutes. Obtain medical attention without delay. Wash clothing before reuse. Discard shoes.

INHALATION:

Remove to fresh air. Obtain medical attention if symptoms persist.

EYES:

Immediately flush eyes thoroughly with water and continue washing for at least 15 minutes. Obtain medical attention, preferably from an ophthalmologist, as soon as possible.

NOTES TO PHYSICIAN:

- * The hazards from this material arise mainly from its irritant and corrosive properties on the skin and mucosae.
- * There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

Due to the moderately severe irritant and corrosive effects of the material, swallowing the undiluted liquid could lead to perforation of the esophagus or stomach, and the resultant complications thereof. If it is considered necessary to evacuate the stomach contents, this should be undertaken by means least likely to cause aspiration (e.g., gastric lavage in the presence of endotracheal intubation). Care should be taken to avoid perforation of any acutely inflamed or ulcerated areas. Exposure to the vapor may cause minor transient edema of the corneal epithelium. This condition, referred to as "glauropsia," "blue haze," or "blue-gray haze," produces a blurring of vision against a general bluish haze and the appearance of halos around bright objects. The effect disappears spontaneously within a few hours of the end of an exposure, and leaves no sequelae. Although not detrimental to the eye per se, glauropsia predisposes an affected individual to physical accidents and reduces the ability to undertake skilled tasks such as driving a motorized vehicle.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

WARNING: Do not mix this product with nitrites or other nitrosating agents because nitrosamines may be formed. Nitrosamines may cause cancer.

INCOMPATIBILITY (materials to avoid):

Avoid strong acids and strong oxidizing agents.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce nitrogen oxides, carbon monoxide, and/or carbon dioxide.

Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant.

Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Wear suitable protective equipment, especially eye protection. Collect for disposal.

WASTE DISPOSAL METHOD:

It is recommended that disposal of this material be performed by incineration, biological treatment or by other means in full compliance with Federal, State and local regulations.

PRODUCT NAME: UCARSOL CR Solvent 422

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

Use self-contained breathing apparatus in high vapor concentrations.

VENTILATION:

This product should be handled within covered equipment, in which case general (mechanical) room ventilation is recommended at points where vapors can be expected to escape to the workplace air.

PROTECTIVE GLOVES:

Rubber

EYE PROTECTION:

Safety goggles

OTHER PROTECTIVE EQUIPMENT:

Emergency bath, safety shower, and chemical apron

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

DANGER: HARMFUL OR FATAL IF SWALLOWED.

CAUSES EYE AND SKIN BURNS.

CORROSIVE IF SWALLOWED.

HARMFUL IF ABSORBED THROUGH SKIN.

MAY CAUSE ASTHMATIC REACTION AND ALLERGIC SKIN REACTION.

COMBUSTIBLE.

ASPIRATION MAY CAUSE LUNG DAMAGE.

MAY CAUSE RESPIRATORY SYSTEM DAMAGE.

VAPOR MAY CAUSE TEMPORARY BLURRING OF VISION.

Do not swallow.

Do not get in eyes, on skin, on clothing

Avoid breathing vapor.

Keep away from heat and flame.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

Do not add nitrites or other nitrosating agents. A nitrosamine,

which may cause cancer, may be formed.

FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS:

DISPOSAL: Laboratory tests indicate that, in highly dilute solution, this product should be biodegradable in a biological waste water treatment system.

WARNING: Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions.

Use of this product in elevated-temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions. Further information is available in a technical bulletin entitled "Ignition Hazards of Organic Chemical Vapors."

X. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

FEDERAL EPA

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

**** NONE ****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

****NONE****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

**** NONE ****

STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains no levels of listed substances, which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute.

PRODUCT NAME: UCARSOL CR Solvent 422

MASSACHUSETTS 105 CMR 670.000 Right-To-Know, Substance List (MSL)
 Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must
 be identified when present in products.

Components present in this product at a level which could require
 reporting under the statute are:

HAZARDOUS SUBSTANCES (-> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
1kanolamine	Trade Secret	30.00

Massachusetts Trade Secret Number
 Application Being Submitted

PENNSYLVANIA Right-To-Know, Hazardous Substance List
 Hazardous Substances and Special Hazardous Substances on the List must be
 identified when present in products.

Components present in this product at a level which could require
 reporting under the statute are:

HAZARDOUS SUBSTANCES (-> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
1kanolamine	Trade Secret	30.00

TSCA INVENTORY STATUS

The ingredients of this product are on the TSCA inventory.

CALIFORNIA RULE 443.1 VOC'S:

Volatiles = substances with a vapor pressure of $\rightarrow 0.5$ mmHg at 104 C (219.2 F).

This product contains:

1008.23 g/liter VOC

1008.23 g/liter of Material less Exempted Compounds

OTHER REGULATORY INFORMATION:

EPA Hazard Categories: Immediate Health, Delayed Health

NOTE ----

The opinions expressed are those of qualified experts within Union Carbide.
 We believe that the information contained is current as of the date of
 this Material Safety Data Sheet. Since the use of this information and of
 these opinions and the conditions of the use of the product are not within
 the control of Union Carbide, it is the user's obligation to
 determine the conditions of safe use of the product.

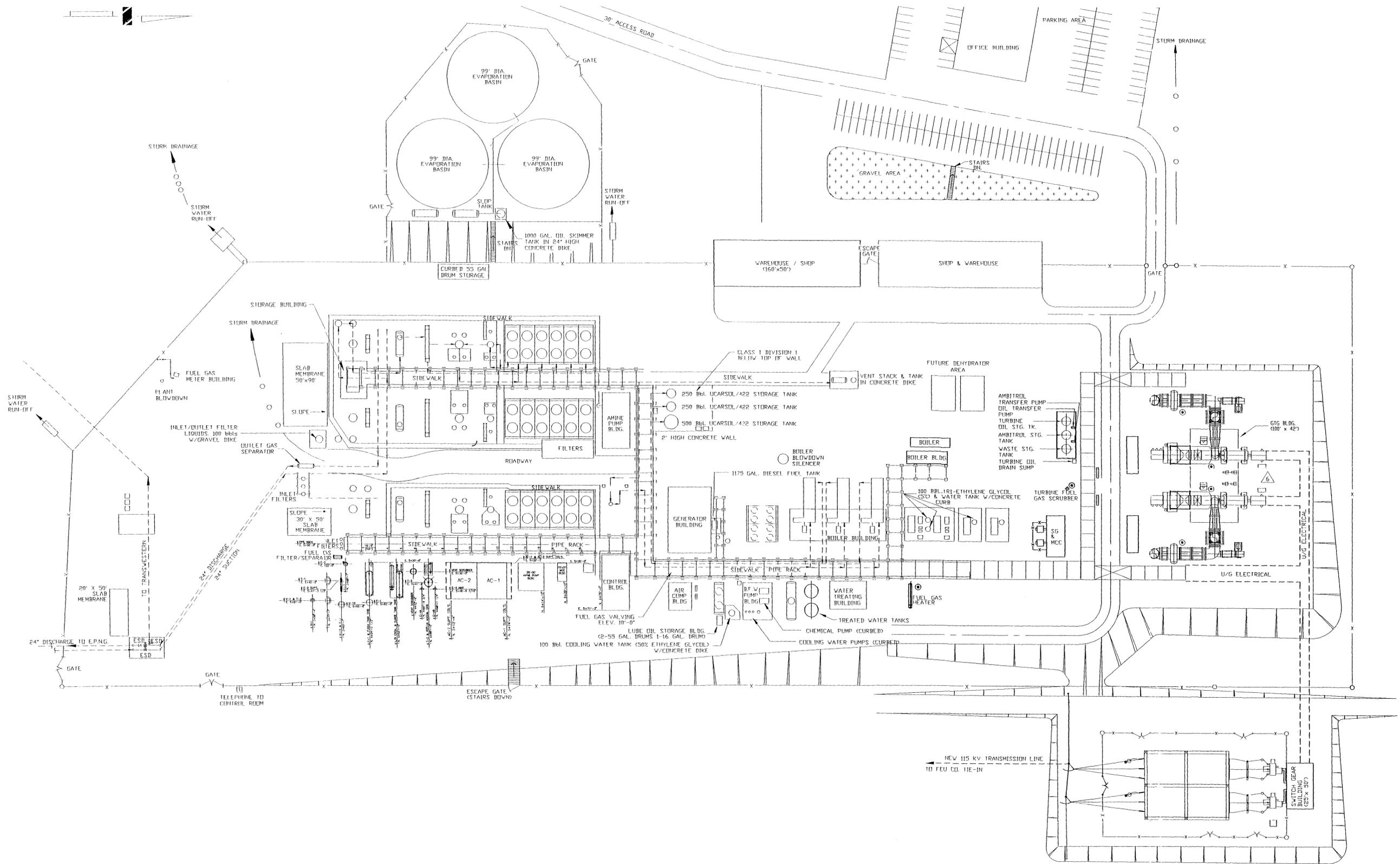
Date: 01/15/91

Revision Date: 07/31/91

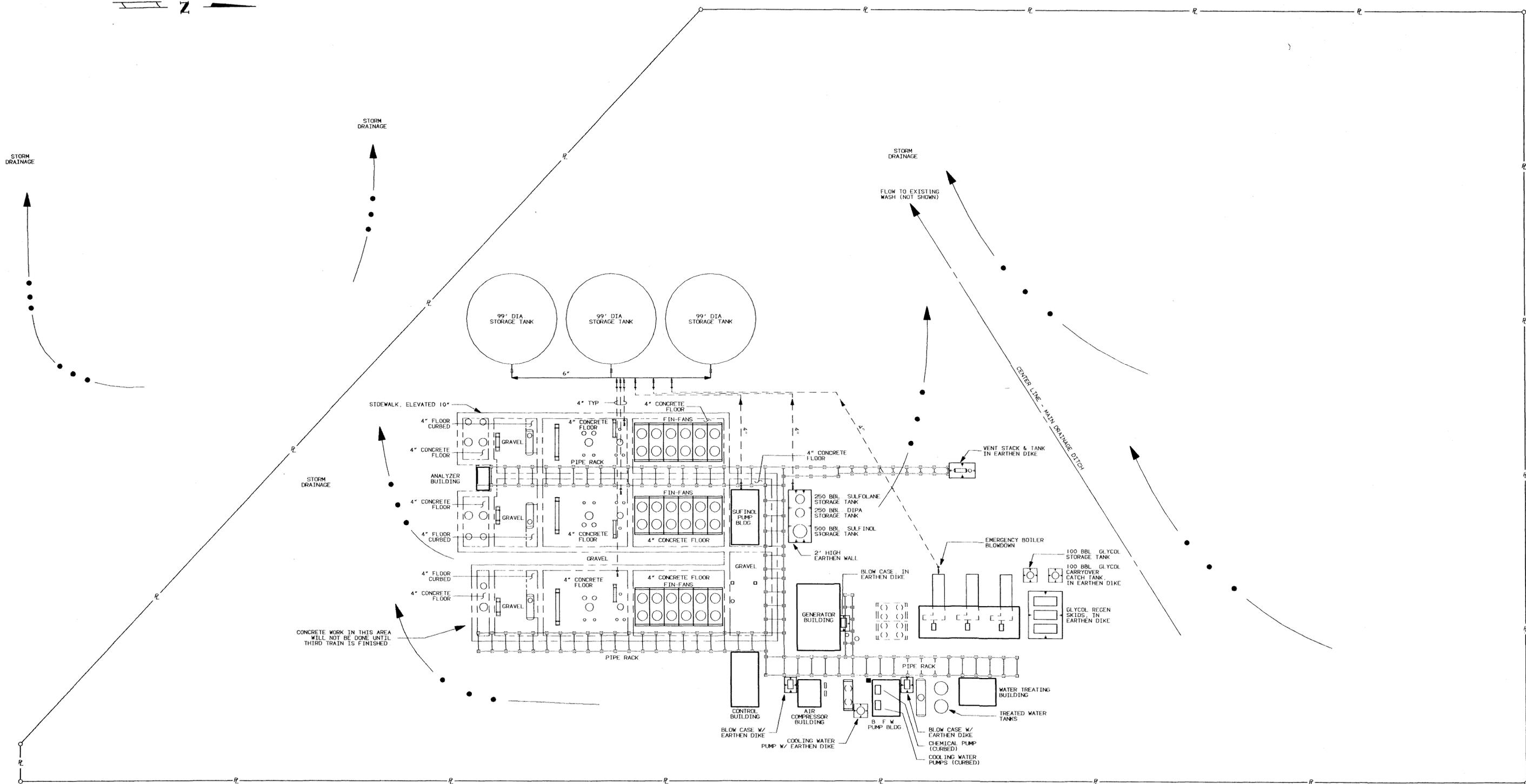
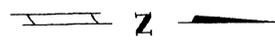
PRODUCT: 56546

FORM NUMBER: B0737

Printed in USA



LEGEND		REFERENCE DRAWINGS		REVISIONS		DRAFTING		BY		DATE		WILLIAMS FIELD SERVICES ONE OF THE WILLIAMS COMPANIES	
				6	7-18-94	PHL	REVISED CO-GENERATION PLANT	---	RR	DRAWN	PHL	9-4-90	MILAGRO GAS CONDITIONING PLANT PLOT PLAN SAN JUAN COUNTY, NEW MEXICO
				5	3-31-93	CFP	ADDED PROPOSED PLANT OFFICE BLDG.	---		CHECKED	JG	9-21-90	
				4	11-5-92	PHL	ADDED FOURTH TRAIN	---		APPROVED	KWB	12-10-90	
				3	7-13-92	PHL	REVISED PER FIELD AS-BUILT	---					
				2	6-25-92	PHL	REVISED PER FIELD AS-BUILT	---	HLB				SCALE: 1"=50' W.D. NO. ---
				1	9-21-90	PHL	ISSUED FOR APPLICATION	---	RR				
										ENGINEERING			DWG. NO. MLG-1-P1
										PRJ. APPROVED			REV. 6



										DRAFTING BY DATE DRAWN FM 9-4-90 CHECKED JG 9-21-90 APPROVED ENGINEERING BY DATE C & S REVIEW PROJ. APPROVED			WILLIAMS FIELD SERVICES COMPANY <small>ONE OF THE WILLIAMS COMPANIES</small> MILAGRO GAS CONDITIONING PLANT PLOT PLAN SAN JUAN COUNTY, NEW MEXICO			SCALE 1" = 50' W.O. NO.			DWG. NO. MLG-1-P1 REV. 1										
LEGEND										REFERENCE DRAWINGS										REVISIONS									
DWG. NO.	TITLE	DWG. NO.	TITLE	NO.	DATE	BY	DESCRIPTION	W.O. NO.	APP.	NO.	DATE	BY	DESCRIPTION	W.O. NO.	APP.														

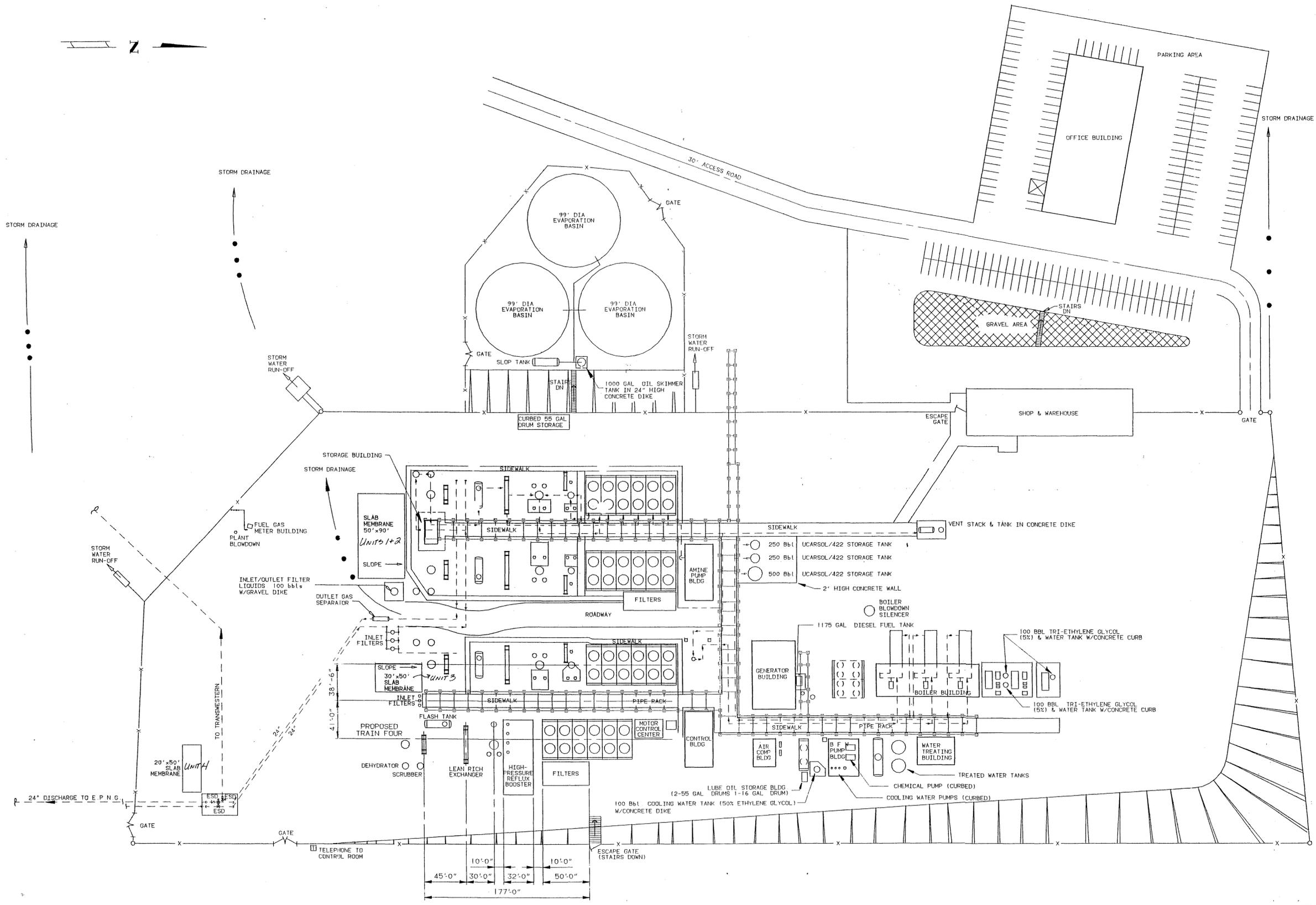


FIGURE 2

PRELIMINARY

WILLIAMS FIELD SERVICES COMPANY
ONE OF THE WILLIAMS COMPANIES

MILAGRO GAS CONDITIONING PLANT
PLOT PLAN

SAN JUAN COUNTY, NEW MEXICO

PS.MLG - P1

DRAFTING	BY	DATE
DRAWN	PHL	9-4-90
CHECKED	JG	9-21-90
APPROVED		
ENGINEERING	BY	DATE
C & S REVIEW		
PRGJ APPROVED		

SCALE 1" = 50'
W O NO

DWG. NO. MLG-1-P1

REV. 4

NO	DATE	BY	DESCRIPTION
4	11-5-90	PLW	ADDED FOURTH TRAIN
3	7-13-90	PLW	REVISED PER FIELD AS-BUILT
2	6-25-90	PLW	REVISED PER FIELD AS-BUILT
1	9-21-90	PLW	ISSUED FOR APPLICATION

DWG NO	TITLE	DWG NO	TITLE	NO	DATE	BY	DESCRIPTION	W O NO	APP NO	DATE	BY	DESCRIPTION	W O NO	APP NO

LEGEND

REFERENCE DRAWINGS

REVISIONS

RECEIVED

DEC 07 1990

OIL CONSERVATION DIV.
SANTA FE

**DISCHARGE PLAN
FOR THE PROPOSED
MILAGRO GAS
TREATMENT PLANT**

Williams Field Services

December 1990

2.0 PLANT PROCESSES

2.1 Plant Effluent - Process Fluids

The Milagro Plant is a proposed facility. There are no process waste streams to measure and sample for the requested characterization. Material Safety Data Sheets for industrial chemicals used in the plant process are provided in Appendix A. Table 1 lists the sources and planned disposition of process wastes with approximations of the quantity and quality type. Within six (6) months of plant startup and normal operation or once a sufficient amount of representative waste is generated, Williams Field Services will obtain grab samples for chemical analysis as listed below. Samples will be collected directly at the source. Sampling and analytical techniques will conform with standard methods referenced in WQCC 107.B.

<u>Sample</u>	<u>Parameters</u>
Sulfinol Reclaimer Sludge Glycol Regeneration Wastewater	TDS, pH, Na, K, Ca, Mg, Cl, SO ₄ , HCO ₃ , CO ₃ , BETX, As, Ba, Cd, Cr, F, Pb, Hg, NO ₃ as N, Se
Boiler Blowdown	TDS, pH, Na, K, Ca, Mg, Cl, SO ₄ , HCO ₃ , CO ₃

The raw coal seam gas to be treated by the Milagro Plant contains no liquid hydrocarbon. Gas condensate and water that are the most likely media to contain naphthalenes and PAHs should not be generated. The additional chemicals listed in WQCC 1-101.UU and 3-103 are also not expected to be present in the process.

Water and wastewater flow is indicated on the attached plot plan. Four inch diameter schedule 80 steel pipe that is valved at each end will be used for all below ground wastewater pipelines.

2.2 Spill/Leak Prevention and Housekeeping Procedures

Processing units where leaks or spillage are most likely to occur have been equipped with spill containment consisting of cement curbs and cement floor. Storage tanks will be surrounded by an earthen dike two feet high. Drains from the spill containment areas and sulfinol pump building are equipped with valves that will normally remain closed. This will allow for recovery of sulfinol and glycol product that can be regenerated. Accumulated precipitation and wastewater will be directed to the evaporation basin located west of the plant. Chemical storage drums, blow cases, and pumps will also have spill containment.

The skids on steam turbines and generators will drain to buckets to collect minor oil leaks. Oil will be accumulated in drums for recycling by a permitted used oil recycler.

TABLE 1
 SOURCES AND DISPOSITION OF
 PLANT EFFLUENT AND PROCESS FLUIDS

Source	Disposition	Quantity	Quality Type	Additives
1. Gas Inlet Separator	Collected separately in Blowdown tank	none	high TDS water	None
2. Glycol Regeneration	Collected separately in tank	Trace	water	Triethylene Glycol
3. Sulfinol Reclaimer	evaporation basin	60 gpd	high TDS water, amine salts	diisoprop- anolamine, sulfolane
4. Boiler (emergency blowdown)	evaporation basin	None normally, maximum 1500 gallons in emergency	high TDS water	Betz Neu- trafilm 463, Betz Magni form 308, Betz Balanced Polymer
5. Steam Turbines, Generators	Collected separately in drum	1/4 gpd	oil	None
6. Domestic Sewage, Sulfinol/ Boiler Water Tests	Septic Tank	360 gpd	Sewage, neutralized deactivated chemicals	None
7. Drains in Sulfinol pump building	evaporation basin	Trace	amine	fugitive amine leaks
8. Drains in spill containment dikes (25,500 sf area)	evaporation basin		rainwater	fugitive leaks

Prior to plant operation, piping and process vessels will be tested using hydrostatic pressure up to one and a half times the design pressure. The plant will be manned 24 hours. Regular inspections will be conducted throughout the plant.

William's corporate policy and procedure for the Controlling and Reporting of Discharges or Spills of Oil or Hazardous Substances is provided in Appendix B. Significant Spills and leaks will be reported to the NMOCD using the OCD form (see Appendix B).

A runoff diversion ditch along the northwest perimeter of the plant will minimize precipitation runoff to that which falls directly inside of the plant yard. Precipitation that is not confined by the spill dikes surrounding process areas will drain to the south and west along the general grade of the plant yard. (see plot plan)

2.3 Effluent Disposal

The disposition of process waste fluids is described in Table 1 of section 2.1. The design and construction specifications for the wastewater evaporation basin for plant process wastewaters is provided in Appendix C. Vapor condensed off the glycol regeneration process will be collected separately in a 100 bbl open top tank and allowed to evaporate.

Used oil collected in drums will be picked up by truck by an EPA registered used oil marketer or recycler. The used oil will be tested for used oil specifications [40 CFR 266.40 (e)] in advance of shipment to ensure proper use by the recycler. Mesa Oil in Albuquerque, New Mexico has serviced other facilities in the 4-corners region; however, used oil market conditions may direct our selection of a different firm. Produced water collected in the gas inlet separator tank will be hauled off site for disposal at an authorized commercial disposal facility.

Waste mixtures from lab testing sulfinol and boiler water will be deactivated in the test procedure, are non-toxic and will have a neutral pH ranging from 5-9, suitable for disposal down the sink draining to the septic tank. Sewage wastewater pumped from the septic tank will be hauled by truck to the city of Bloomfield Sewage Disposal Plant.

SITE CHARACTERISTICS

The proposed Milagro Plant site is located northwest of the central part of the San Juan Basin. The area is characterized by tertiary bedrock hill sides and mesas and Plio-Pleistocene gravel terraces along the San Juan River valley and its major tributaries.

The proposed plant site is located on alluvium at the base of Hare Canyon which is cut into Nacimiento Sandstone. The alluvium consists of silty fine sand and sand with a trace of some silt and gravel seams and thin layers. The thickness of alluvium ranges from 21 to 40 feet deep. Soils within the upper 35 feet are moderately permeable and moderately weak or collapsible. Below a depth of 35 feet, the soils exhibit moderately high strength and are less permeable low compressibility. Bedrock first encountered at the site between 21 to 39 feet deep consists of severely weathered, light brown and brown Nacimiento sandstone with siltstone seams.

There was no groundwater encountered during foundation soils investigations down to 40 feet deep.

Local groundwater in the general area of the plant exists in an unconfined sandstone aquifer in the Nacimiento formation and in an unconfined aquifer in alluvium closely associated with the San Juan River.

Figure 3 shows the location and specific conductance of wells in the Nacimiento/Animas formations in the San Juan Basin. The specific conductance of groundwater in this aquifer, at least 60 feet deep beneath the proposed plant site, is about 8300 umhos/cm. Transmissivities for the Nacimiento Formation are estimated to be as high as 100 ft²/day for the coarser and more continuous sandstones (Stone and others, 1983).

Shallow groundwater present in the alluvial valley of the San Juan River is approximately two miles downgradient, southwest, from the proposed plant site. The specific conductance measured at the closest source from this aquifer is 2900 umhgs/cm (see figure 4). Transmissivities range from less than 1000 ft²/day to more than 40,000 ft²/day (Stone and others, 1983).

The saline and very saline groundwater is primarily used for stock, irrigation and domestic purposes in the Bloomfield area.

The major hydrologic influence in the Bloomfield area is the San Juan River which flows from east to west approximately two miles south of the Milagro plant site. The proposed site is at 5645 feet elevation which is approximately 160 feet above the San Juan River and outside of the 100 year flood plain.

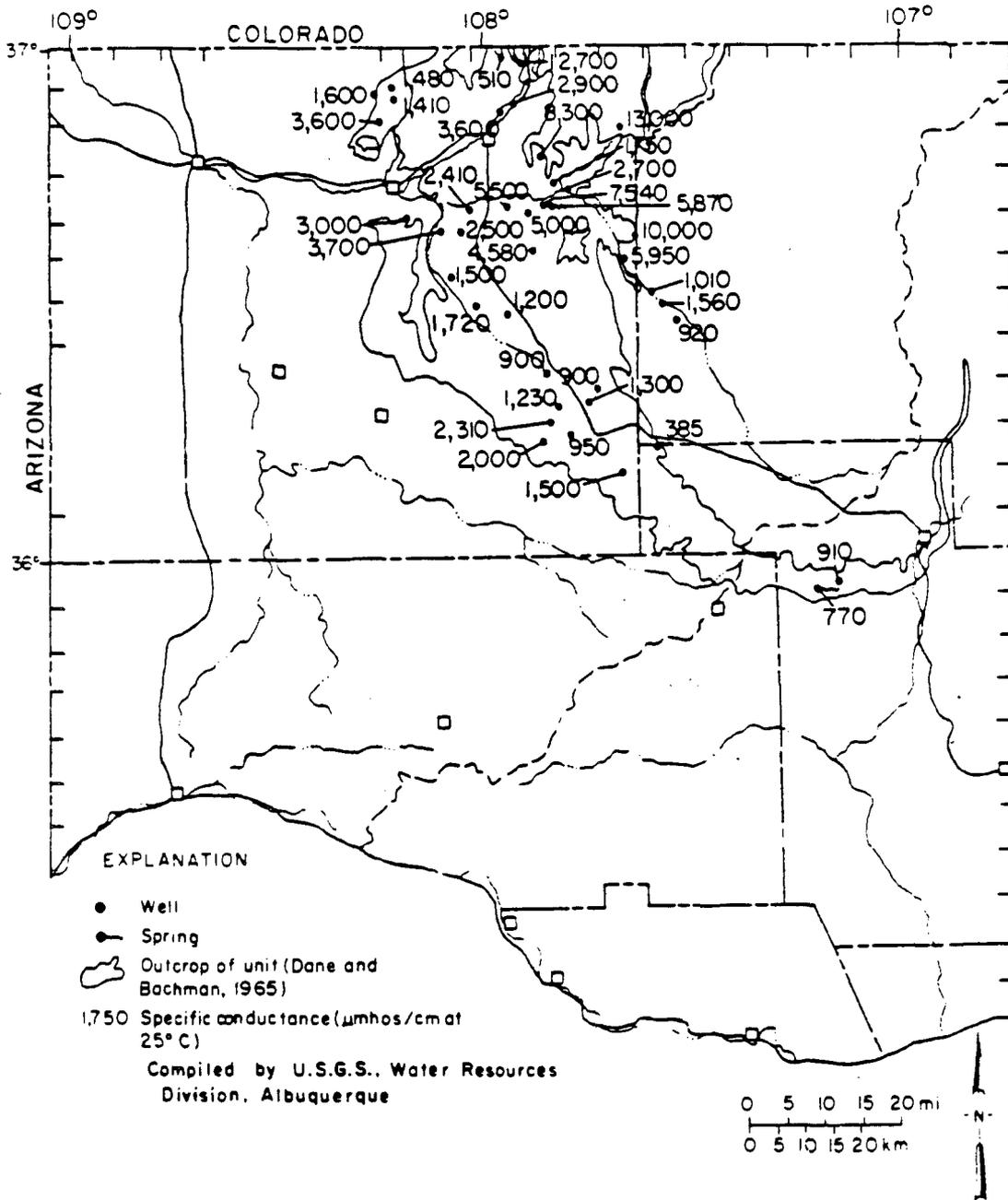


FIGURE 3

Specific Conductance from Selected Wells
and Springs in Nacimiento/Animas Formations
(Stone & Others, 1983)

The natural ground surface topography at the proposed site is relatively flat with a gentle slope downward towards the south and west. Maximum relief is about 45 feet. A shallow ephemeral drainage passes through the area from northeast to southwest outside of the west perimeter of the proposed plant yard. Vegetation at the site consists of native juniper, desert brush and grasses that cover approximately 35% of the surface.

Williams will construct a runoff diversion ditch along the northwest perimeter of the plant site. The diversion ditch will be located to handle storm runoff from contributing areas to the north and east in Hare Canyon.

4.0

REFERENCES CITED

Fassett, J.E. and Hinds, J.S., 1971 Geology and Fuel Resources of the Fruitland Formation and Kirtland Shale of the San Juan Basin, New Mexico and Colorado, U.S.G.S. Professional Paper 676.

Sergent, Hauskins and Beckwith Consulting Geotechnical Engineers, Report for Geotechnical Investigation proposed Milagro Gas Treatment facility, June, 1990.

Stone, W.J., Lyford, F.P., Frenzel, P.F., Mizell, N.H., Padgett, E.T., 1983, Hydrology and Water Resources of San Juan Basin, New Mexico, New Mexico Bureau of Mines and Mineral Resources, Hydrologic Report 6.

APPENDIX A
MATERIAL SAFETY
DATA SHEETS



MATERIAL SAFETY DATA SHEET

97367 (4-85)

MSDS NUMBER ▶ 5,620-6

PAGE 1

24 HOUR EMERGENCY ASSISTANCE			GENERAL MSDS ASSISTANCE		
SHELL: 713-473-9461 CHEMTREC: 800-424-9300			SHELL: 713-241-4819		
ACUTE HEALTH * + 2	FIRE 1	REACTIVITY 1	HAZARD RATING ▶	LEAST - 0 HIGH - 3	SLIGHT - 1 EXTREME - 4
*For acute and chronic health effects refer to the discussion in Section III					 <p>BE SAFE READ OUR PRODUCT SAFETY INFORMATION ... AND PASS IT ON <small>(PRODUCT LIABILITY LAW REQUIRES IT)</small></p>

SECTION I	NAME
PRODUCT ▶	SULFOLANE-W
CHEMICAL NAME ▶	TETRAHYDROTHIOPHENE-1, 1- DIOXIDE
CHEMICAL FAMILY ▶	HYDROCARBON
SHELL CODE ▶	32366

SECTION II-A		PRODUCT/INGREDIENT	
NO.	COMPOSITION	CAS NUMBER	PERCENT
P	SULFOLANE-W	MIXTURE	100
1	SULFOLANE	126-33-0	97
2	WATER	7732-18-5	3

SECTION II-B				ACUTE TOXICITY DATA		
NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50			
P	1.5 G/KG (RAT)	>3.0 G/KG (RABBIT)	>12000 MG/CU.M (4 HR) (RAT)			

BASED UPON DATA AVAILABLE TO SHELL, COMPONENT 2 IN THIS PRODUCT ARE NOT HAZARDOUS UNDER OSHA HAZARD COMMUNICATION (29 CFR 1910.1200).

SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT
MILDLY IRRITATING TO THE EYES.

SKIN CONTACT
MILDLY IRRITATING TO THE SKIN.

INHALATION
MODERATELY TOXIC AND MAY BE HARMFUL IF INHALED; MAY PRODUCE LUNG DAMAGE AT HIGH DOSES.

INGESTION
MAY PRODUCE CENTRAL NERVOUS SYSTEM STIMULATION, FOLLOWED BY DEPRESSION.

SIGNS AND SYMPTOMS
EARLY TO MODERATE CNS (CENTRAL NERVOUS SYSTEM) DEPRESSION MAY BE EVIDENCED BY GIDDINESS, HEADACHE, DIZZINESS AND NAUSEA; IN EXTREME CASES, UNCONSCIOUSNESS AND DEATH MAY OCCUR.

AGGRAVATED MEDICAL CONDITIONS
 PREEXISTING (EYE/SKIN/RESPIRATORY) DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO EYE, SKIN, LUNG.

SECTION IV OCCUPATIONAL EXPOSURE LIMITS

NO.	OSHA PEL/TWA	OSHA PEL/CEILING	ACGIH TLV/TWA	ACGIH TLV/STEL	OTHER
-----	--------------	------------------	---------------	----------------	-------

NONE ESTABLISHED

SECTION V EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT
 FLUSH EYES WITH PLENTY OF WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

SKIN CONTACT
 IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER FOR 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. GET MEDICAL ATTENTION. DO NOT REUSE CLOTHING OR SHOES UNTIL THOROUGHLY CLEANED.

INHALATION
 REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

INGESTION
 DO NOT GIVE LIQUIDS IF VICTIM IS UNCONSCIOUS OR VERY DROWSY. OTHERWISE, GIVE NO MORE THAN 2 GLASSES OF WATER AND INDUCE VOMITING BY GIVING 30CC (2 TABLESPOONS) SYRUP OF IPECAC.* IF IPECAC IS UNAVAILABLE, GIVE 2 GLASSES OF WATER AND INDUCE VOMITING BY TOUCHING FINGER TO BACK OF VICTIM'S THROAT. KEEP VICTIM'S HEAD BELOW HIPS WHILE VOMITING. GET MEDICAL ATTENTION.

NOTE TO PHYSICIAN
 IF VICTIM IS A CHILD, GIVE NO MORE THAN 1 GLASS OF WATER AND 15CC (1 TABLESPOON) SYRUP OF IPECAC. IF SYMPTOMS SUCH AS LOSS OF GAG REFLEX, CONVULSIONS OR UNCONSCIOUSNESS OCCUR BEFORE EMESIS, GASTRIC LAVAGE SHOULD BE CONSIDERED FOLLOWING INTUBATION WITH A CUFFED ENDOTRACHEAL TUBE.

SECTION VI SUPPLEMENTAL HEALTH INFORMATION

SULFOLANE IS NEITHER A DERMAL SENSITIZER NOR IRRITANT IN THE GUINEA PIG, BUT IT CAUSES EYE INJURIES IN RABBITS.

THIS COMPOUND WAS NOT MUTAGENIC IN RAT LIVER CHROMOSOME ASSAY NOR IN A SISTER CHROMATID EXCHANGE ASSAY. IN SEPARATE MOUSE LYMPHOMA FORWARD MUTATIONAL ASSAY THE INVESTIGATORS CONCLUDED THAT SULFOLANE WAS MUTAGENIC IN THAT SYSTEM.

SUB-CHRONIC INHALATION EXPOSURE TO SULFOLANE HAS RESULTED IN REDUCED WHITE BLOOD CELL COUNT IN RAT AND MONKEYS.

SOME STUDIES HAVE INDICATED ACUTE EXPOSURE TO SULFOLANE MAY CAUSE ALTERATIONS IN STOMACH, INTESTINES, LUNG AND LIVER FOLLOWING INGESTION; AND LUNG AND LIVER INFLAMATION FOLLOWING INHALATION.

SECTION VII PHYSICAL DATA

BOILING POINT: 550
 (DEG F)

SPECIFIC GRAVITY: 1.3
 (H2O=1)

VAPOR PRESSURE: 0.01 @68 DEG F
 (MM HG)

PRODUCT NAME: SULFOLANE-W

MSDS 5,820-6
PAGE 3

MELTING POINT: 47
(DEG F)

SOLUBILITY: MISCIBLE
(IN WATER)

VAPOR DENSITY: 4.2
(AIR=1)

EVAPORATION RATE (N-BUTYL ACETATE = 1):

APPEARANCE AND ODOR:
SLIGHT VISCOUS LIQUID ABOVE 30 DEG F. SULFIDE ODDR

SECTION VIII FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD:
320 DEG F (PMCC)

FLAMMABLE LIMITS /% VOLUME IN AIR
LOWER: UPPER:

EXTINGUISHING MEDIA
USE WATER FOG, "ALCOHOL" FOAM, DRY CHEMICAL OR CO2.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS
DO NOT ENTER CONFINED FIRE SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT INCLUDING A NIOSH APPROVED SELF-CONTAINED BREATHING APPARTUS. COOL FIRE-EXPOSED CONTAINERS WITH WATER. IN THE CASE OF LARGE FIRES, ALSO COOL SURROUNDING EQUIPMENT AND STRUCTURES WITH WATER.

UNUSUAL FIRE AND EXPLOSION HAZARDS
SULFUR OXIDES, WHICH ARE CORROSIVE AND TOXIC, MAY BE RELEASED UPON COMBUSTION.

SECTION IX REACTIVITY

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS AND MATERIALS TO AVOID:
AVOID HEAT, OPEN FLAMES AND CONTACT WITH STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS
DECOMPOSES SLOWLY ABOVE 420 DEG F TO RELEASE SULFUR OXIDE. CARBON MONOXIDE, SULFUR DIOXIDE AND UNIDENTIFIED ORGANICS WILL BE RELEASED WITH COMBUSTION.

SECTION X EMPLOYEE PROTECTION

RESPIRATORY PROTECTION
USE A NIDSH-APPROVED RESPIRATOR AS REQUIRED TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134, USE EITHER AN ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR ORGANIC VAPORS.

PROTECTIVE CLOTHING
WEAR IMPERVIOUS GLOVES AND OTHER PROTECTIVE CLOTHING AS REQUIRED TO PREVENT SKIN CONTACT. WEAR CHEMICAL GOGGLES TO PREVENT SPLASHING INTO THE EYES.

ADDITIONAL PROTECTIVE MEASURES
USE VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS.

SECTION XI 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. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE. *** SMALL SPILLS *** TAKE UP WITH AN ABSORBENT MATERIAL AND DISPOSE OF PROPERLY.

SECTION XII SPECIAL PRECAUTIONS

STORE IN A COOL, DRY PLACE WITH ADEQUATE VENTILATION. KEEP AWAY FROM OPEN FLAMES AND HIGH TEMPERATURES.

MINIMIZE SKIN CONTACT. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING OR USING TOILET FACILITIES. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE. PROPERLY DISPOSE OF CONTAMINATED LEATHER ARTICLES, INCLUDING SHOES, THAT CANNOT BE DECONTAMINATED.

SECTION XIII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION:
NOT HAZARDOUS BY D.O.T. REGULATIONS

SECTION XIV OTHER REGULATORY CONTROLS

THE COMPONENTS OF THIS PRODUCT ARE LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES. IN ACCORDANCE WITH SARA TITLE III, SECTION 313, THE EDS SHOULD ALWAYS BE COPIED AND SENT WITH THE MSDS.

SECTION XV SPECIAL NOTES

SECTION XI - ENVIRONMENTAL PROTECTION HAS BEEN REVISED. THE INFORMATION IN THE "WASTE DISPOSAL" AND "ENVIRONMENT PROTECTION" HAS BEEN REMOVED AND INCLUDED IN THE ATTACHED ENVIRONMENTAL DATA SHEET. IN ACCORDANCE WITH SARA TITLE III, SECTION 313, THE EDS SHOULD ALWAYS BE COPIED AND SENT WITH THE MSDS.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

DATE PREPARED: NOVEMBER 03, 1988

J. C. WILLETT

BE SAFE

READ OUR PRODUCT
SAFETY INFORMATION ... AND PASS IT ON
(PRODUCT LIABILITY LAW
REQUIRES IT)

SHELL OIL COMPANY
PRODUCT SAFETY AND COMPLIANCE
P. O. BOX 4320
HOUSTON, TX 77210



ENVIRONMENTAL DATA SHEET

EDS NUMBER ▶ 5,620

PAGE 1

97449 (9-87)

PRODUCT ▶	SULFOLANE-W
PRODUCT CODE ▶	32366

SECTION I		PRODUCT/COMPOSITION	
NO.	COMPONENT	CAS NUMBER	PERCENT
P	SULFOLANE-W	MIXTURE	100
1	SULFOLANE	126-33-0	97
2	WATER	7732-18-5	3

SECTION II		SARA TITLE III INFORMATION			
NO.	EHS RQ (LBS) (*1)	EHS TPQ (LBS) (*2)	SEC 313 (*3)	313 CATEGORY (*4)	311/312 CATEGORIES (*5)

BASED ON THE DATA AVAILABLE TO SHELL, THIS PRODUCT IS NOT REGULATED BY SARA, TITLE III.

FOOTNOTES

- *1 = REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SEC.302
- *2 = THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
- *3 = TOXIC CHEMICAL, SEC 313
- *4 = CATEGORY AS REQUIRED BY SEC 313 (40 CFR 372.65 C), MUST BE USED ON TOXIC RELEASE INVENTORY FORM
- *5 = HAZARD CATEGORY FOR SARA SEC. 311/312 REPORTING

HEALTH	H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD	H-2 = DELAYED (CHRONIC) HEALTH HAZARD
PHYSICAL	P-3 = FIRE HAZARD	P-4 = SUDDEN RELEASE OF PRESSURE HAZARD
	P-5 = REACTIVE HAZARD	

SECTION III ENVIRONMENTAL RELEASE INFORMATION

SECTION IV RCRA INFORMATION

DISPOSE OF IN AN APPROPRIATE DISPOSAL FACILITY IN COMPLIANCE WITH LOCAL REGULATIONS.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

DATE PREPARED: JANUARY 24, 1989

SHELL OIL COMPANY
ENVIRONMENTAL AFFAIRS
P. O. BOX 4320
HOUSTON, TX 77210

FOR ADDITIONAL INFORMATION ON THIS ENVIRONMENTAL DATA PLEASE CALL
(713) 241-2252

FOR EMERGENCY ASSISTANCE PLEASE CALL
SHELL: (713) 473-9461
CHEMTREC: (800) 424-9300

REQUESTED FOR:

20707209
NORTHWEST PIPELINE
295 CHIPETA WAY
PO BOX 8900
SALT LK CTY UT 84108

ORDER NO:
PROD NO: 04203826

Dow is Manufacturer

VAN WATERS & ROGERS INC., SUBSIDIARY OF UNIVAR
1600 NORTON BLDG. SEATTLE, WA 98104-1564 (408) 435-8700

-----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800)424-9300

-----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

-----PRODUCT IDENTIFICATION-----

PRODUCT NAME: DIISOPROPANLAMINE CAS NO.: 110-97-4
COMMON NAMES/SYNONYMS: NONE VW&R CODE: T1600001

FORMULA: C6 H15 NO2 DATE ISSUED: 08/89
HAZARD RATING (NFPA 704 CRITERIA) SUPERCEDES: 10/87

HEALTH: 2 HAZARD RATING SCALE:
FIRE: 1 0=MINIMAL 3=SERIOUS
REACTIVITY: 0 1=SLIGHT 4=SEVERE
SPECIAL: NONE 2=MODERATE

-----HAZARDOUS INGREDIENTS-----

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, PPM			HAZARD
			OSHA PEL	ACGIH TLV	OTHER LIMIT	
DIISOPROPANLAMINE	000110-97-4	99	NONE	NONE	NONE	NONE

-----PHYSICAL PROPERTIES-----

BOILING POINT, DEG F: 480 VAPOR PRESSURE, MM HG/20 DEG C: NIL
MELTING POINT, DEG F: 111 VAPOR DENSITY (AIR=1): NOT DETERMINED
SPECIFIC GRAVITY (WATER=1): 1.0 WATER SOLUBILITY, %: COMPLETE
APPEARANCE AND ODOR: SLIGHT AMMONIA ODOR, WHITE SOLID
EVAPORATION RATE (BUTYL ACETATE=1): N/D

-----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING. DESTROY LEATHER ARTICLES.

PROD: 04203826 14:02:54 01 NOV 1989 CUST: 20707209 INVOICE:

DIISOPROPANOLAMINE

REVISION OF: 09-02-89

IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

-----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: IRRITATION FROM VAPORS AT HIGHER TEMPERATURES.

EYE CONTACT: VAPORS MAY IRRITATE THE EYES. LIQUID AND MISTS MAY SEVERELY IRRITATE OR DAMAGE THE EYES.

SKIN CONTACT: PROLONGED OR REPEATED EXPOSURE MAY CAUSE IRRITATION OR EVEN BURN.

SWALLOWED: SMALL AMOUNTS NOT LIKELY TO CAUSE PROBLEMS. LARGER AMOUNTS WILL CAUSE INJURY.

CHRONIC EFFECTS OF EXPOSURE: PROLONGED OR REPEATED OVEREXPOSURE MAY RESULT IN DELAYED KIDNEY DAMAGE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

-----TOXICITY DATA-----

ORAL: RAT LD50 = 2000 - 4000 MG/KG

DERMAL: NOT DETERMINED

INHALATION: NOT DETERMINED

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

-----PERSONAL PROTECTION-----

VENTILATION: GENERAL ROOM VENTILATION.

RESPIRATORY PROTECTION: A RESPIRATOR IS NORMALLY NOT REQUIRED IF THIS PRODUCT IS USED WITH ADEQUATE VENTILATION.

EYE PROTECTION: CHEMICAL GOGGLES. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, RUBBER BOOTS, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

-----FIRE AND EXPLOSION INFORMATION-----

FLASH POINT, DEG F: 276

FLAMMABLE LIMITS IN AIR, %

METHOD USED: SETAFLASH

LOWER: N/A UPPER: N/D

EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOL FOAM.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

-----HAZARDOUS REACTIVITY-----

PROD: 04203826 14:02:54 01 NOV 1989 CUST: 20707209 INVOICE:

DIISOPROPANOLAMINE

REVISION OF: 09-02-89

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NONE

MATERIALS TO AVOID: AVOID CONTACT WITH SODIUM NITRITE OR OTHER
NITROSING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE,
CARBON DIOXIDE AND NITROGEN OXIDES.

-----SPILL, LEAK, AND DISPOSAL PROCEDURES-----

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING
RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED
BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR
RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-
PURIFYING CARTRIDGE RESPIRATOR EQUIPPED WITH PARTICULATE FILTERS MAY BE
SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. FOR SMALL
SPILLS, SWEEP UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR
LARGE SPILLS, SHOVEL INTO DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF
SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING,
AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: 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.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE
SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

-----SPECIAL PRECAUTIONS-----

STORAGE AND HANDLING PRECAUTIONS: STORE IN A DRY, WELL-VENTILATED
PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP CONTAINER TIGHTLY CLOSED
WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH
THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: NONE.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL
RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND
HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (408)435-8700

-----NOTICE-----

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TROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER
THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS
SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF
THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICA-
TION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS
INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT
RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER
PROCESS.

-----REVISION-----

P1600001

MATERIAL SAFETY DATA SHEET

PG 4

DIISOPROPANOLAMINE

REVISION OF: 09-02-89

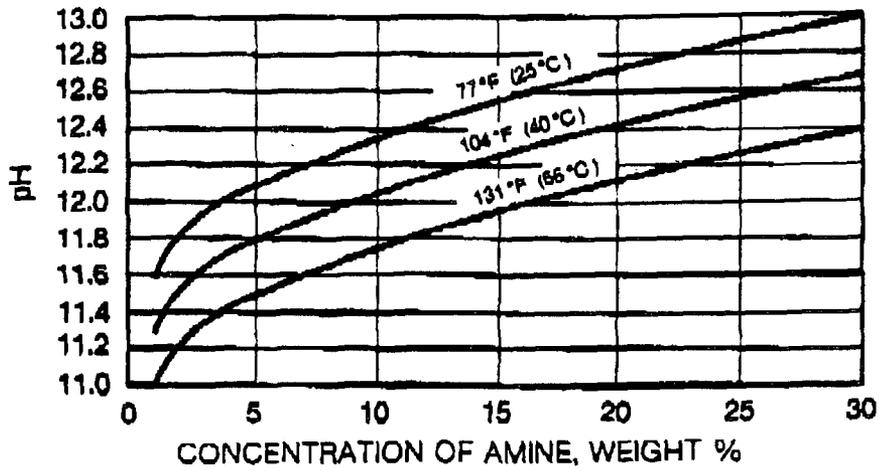
09/89: CHANGED HEADING AND CONTACT INFORMATION.

**** END OF MSDS ****

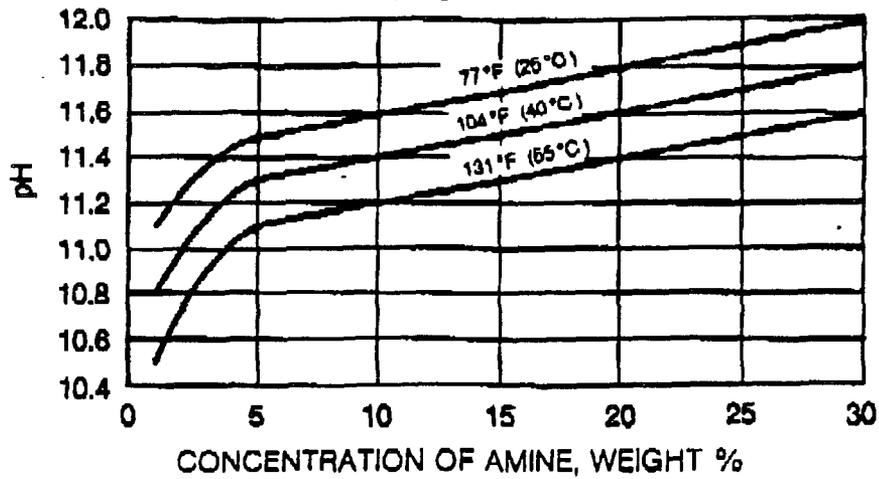
PRG0: 04203826 14:02:54 01 NOV 1989 CUST: 20707209 INVOICE:

pH Values of Aqueous Isopropanolamines

Monoisopropanolamine



Diisopropanolamine



MAIL TO:

20070702
NORTHWEST PIPELINE
3M W HWY 374 STAR RT 2

ORDER NO: 209000134
PROD NO: 04764856

GREEN RIVER WY 82901
ATTN:

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

-----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC
(800) 424-9300.

-----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

-----PRODUCT IDENTIFICATION-----

PRODUCT NAME: TRIETHYLENE GLYCOL
COMMON NAMES/SYNONYMS:
TRIETHYLENE GLYCOL; TEG

CAS NO.: 112-27-6
VW&R CODE: T1255

FORMULA: C6 H14 O4
HAZARD RATING (NFPA 325M)
HEALTH: 1
FIRE: 1
REACTIVITY: 0
SPECIAL: NONE

DATE ISSUED: 08/87
SUPERCEDES: 02/86
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

-----HAZARDOUS INGREDIENTS-----

COMPONENT	%	EXPOSURE LIMITS, PPM			HAZARD
		OSHA PEL	ACGIH TLV	OTHER LIMIT	
TRIETHYLENE GLYCOL	>99	NONE	NONE	NONE	NONE

-----PHYSICAL PROPERTIES-----

BOILING POINT, DEG F: 546 VAPOR PRESSURE, MM HG/20 DEG C: NIL
MELTING POINT, DEG F: N/A VAPOR DENSITY (AIR=1): 5.2
SPECIFIC GRAVITY (WATER=1): 1.1 WATER SOLUBILITY, %: 100
APPEARANCE AND ODOR: EVAPORATION RATE (BUTYL ACETATE=1): <1
COLORLESS LIQUID; MILD ODOR

-----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

TRIETHYLENE GLYCOL VW&R

REVISION OF: 07-21-87

IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

-----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: NONE CURRENTLY KNOWN.

EYE CONTACT: LIQUID AND MIST MAY IRRITATE THE EYES.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS. A SINGLE PROLONGED EXPOSURE IS NOT LIKELY TO RESULT IN THE ABSORPTION OF HARMFUL AMOUNTS. MAY CAUSE A MORE SEVERE RESPONSE IF THE SKIN IS ABRADED. SKIN SENSITIVATION TESTING IN 25 HUMAN VOLUNTEERS DID NOT FIND ANY SENSITIVATION TO OCCUR.

SWALLOWED: SWALLOWING LARGE QUANTITIES MAY CAUSE NAUSEA AND VOMITING AND MAY CAUSE INJURY. THE TRIETHYLENE GLYCOL PRODUCED BY SOME MANUFACTURERS MAY CONTAIN SMALL AMOUNTS OF DIETHYLENE GLYCOL, IN WHICH CASE SWALLOWING MAY PRODUCE CNS DEPRESSION AND KIDNEY DAMAGE, WHICH MAY BE FATAL, AND LIVER DAMAGE.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: PRE-EXISTING EYE, SKIN, AND RESPIRATORY DISORDERS OR IMPAIRED LIVER AND KIDNEY FUNCTION.

-----TOXICITY DATA-----

ORAL: RAT LD50 = 17 G/KG; HUMAN LDLO = 5000 MG/KG

DERMAL: NO DATA FOUND

INHALATION: NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

-----PERSONAL PROTECTION-----

VENTILATION: GENERAL ROOM VENTILATION.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE MISTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CART-RIDGE RESPIRATOR WITH PARTICULATE FILTERS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, AND GLOVES.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

-----FIRE AND EXPLOSION INFORMATION-----

FLASH POINT, DEG F: 350

FLAMMABLE LIMITS IN AIR, %

PROD: 04764856 23:04:27 05 MAY 1988 CUST: 20070702 INVOICE: 209000134

TRIETHYLENE GLYCOL VW&R

REVISION OF: 07-21-87

METHOD USED: PMCC LOWER: 0.9 UPPER: 9.2
EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL OR CO2.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

-----HAZARDOUS REACTIVITY-----

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: EXCESSIVE HEAT. WILL IGNITE IN AIR AT 700 DEG F.
MATERIALS TO AVOID: OXIDIZERS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE OR CARBON DIOXIDE.

-----SPILL, LEAK, AND DISPOSAL PROCEDURES-----

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR PARTICULATES MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE SORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOILS.

COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: 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.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

-----SPECIAL PRECAUTIONS-----

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)447-5911

-----NOTICE-----

VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN.

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMA-

TRIETHYLENE GLYCOL VW&R

REVISION OF: 07-21-87

ION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&R'S CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

-----REVISION-----

08/87: CORRECTED NFPA REFERENCE. EXPANDED HAZARDS OF EYE AND SKIN CONTACT AND SWALLOWING. EXPANDED AGGRAVATED MEDICAL CONDITIONS. REVISED PERSONAL PROTECTION, SPILL AND LEAK PROCEDURES AND HANDLING ADVICE.

***** END OF MSDS *****

PROD: 04764856 23:04:27 05 MAY 1988 CUST: 20070702 INVOICE: 209000134

M A T E R I A L S A F E T Y D A T A S H E E T P A G E : 1
 DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 11 JUN 79

PRODUCT CODE: 07656

PRODUCT NAME: AMBITROL (R) FL COOLANT

MSD: 0584

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS)	:	%	:
ETHYLENE GLYCOL MIX	:	50	:
INHIBITORS	:	1	:
D. I. WATER	:	49	:
DYE	:		:

SECTION 1

PHYSICAL DATA

BOILING POINT: 229F, 109C : SOL. IN WATER: COMPLETELY MISCIBLE
 VAP PRESS: APPROX. 2.5 MMHG @ 20C : SP. GRAVITY: 1.084 @ 60/60F, 16C
 VAP DENSITY (AIR=1): NOT APPLIC. : % VOLATILE BY VOL: APPROX. 99%

APPEARANCE AND ODOR: RED LIQUID

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE : FLAMMABLE LIMITS
 METHOD USED: ---- : LFL: NOT APPLIC. UFL: NOT APPLIC.

EXTINGUISHING MEDIA: NON-COMBUSTIBLE.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: NONE

SECTION 3

REACTIVITY DATA

STABILITY: ----

INCOMPATIBILITY: OXIDIZING MATERIAL

HAZARDOUS DECOMPOSITION PRODUCTS: ----

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): SMALL SPILLS:
 COVER WITH ABSORBENT MATERIAL, SOAK UP AND SWEEP INTO A DRUM.
 LARGE SPILLS: DIKE AROUND SPILL AND PUMP INTO SUITABLE CONTAINERS.

(CONTINUED ON PAGE 2)

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 11 JUN 79
PRODUCT (CONT'D): AMBITROL (R) FL COOLANT

PRODUCT CODE: 07666
MSD: 0584

SECTION 4 SPILL, LEAK, AND DISPOSAL PROCEDURES (CONTINUED)

DISPOSAL METHOD: REPROCESS OR BURN IN PROPER INCINERATOR IN ACCORDANCE WITH LOCAL REGULATIONS.

SECTION 5 HEALTH HAZARD DATA

INGESTION: LOW SINGLE DOSE ORAL TOXICITY FOR ANIMALS. ETHYLENE GLYCOL IS MODERATELY TOXIC FOR HUMANS.

EYE CONTACT: UP TO MILD TRANSIENT IRRITATION, BUT NO CORNEAL INJURY EXPECTED.

SKIN CONTACT: PROLONGED CONTACT: SLIGHT IRRITATION; REPEATED EXPOSURE MAY CAUSE UP TO MODERATE IRRITATION, EVEN A BURN.

SKIN ABSORPTION: NOT LIKELY TO BE ABSORBED IN TOXIC AMOUNTS. LOW IN TOXICITY BY THIS ROUTE.

INHALATION: ACGIH TLV FOR ETHYLENE GLYCOL IS 100 PPM (1978) AS VAPOR, 10 MG/M3 AS MIST.

EFFECTS OF OVEREXPOSURE: NOT KNOWN.

SECTION 6 FIRST AID

EYES: IRRIGATION OF THE EYE IMMEDIATELY WITH WATER FOR FIVE MINUTES IS GOOD SAFETY PRACTICE.

SKIN: IN CASE OF CONTACT, IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. CALL A PHYSICIAN. WASH CLOTHING BEFORE REUSE. DESTROY CONTAMINATED SHOES.

INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. CONSULT MEDICAL PERSONNEL.

INGESTION: IF SWALLOWED, INDUCE VOMITING IMMEDIATELY BY GIVING TWO GLASSES OF WATER AND STICKING FINGER DOWN THROAT. CALL A PHYSICIAN.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE MILD IRRITATION. STAIN FOR EVIDENCE OF CORNEAL INJURY.

SKIN: MAY CAUSE MODERATE IRRITATION. WITH REPEATED CONTACT MAY CAUSE BURN. IF RASH IS PRESENT, TREAT AS ANY CONTACT DERMATITIS. IF BURN IS PRESENT, TREAT AS ANY THERMAL BURN.

RESPIRATORY: INJURY IS UNLIKELY.

ORAL: MODERATELY TOXIC.

SYSTEMIC: WITH ACUTE ETHYLENE GLYCOL OVEREXPOSURE (ORAL) ETHANOL

(CONTINUED ON PAGE 3)

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 11 JUN 79
PRODUCT (CONT'D): AMBITROL (R) FL COOLANT

PRODUCT CODE: 07666
MSD: 0584

SECTION 6 FIRST AID (CONTINUED)

NOTE TO PHYSICIAN: (CONTINUED)

ADMINISTRATION MAY BE INDICATED (SEE TOX OF DRUGS AND CHEMICALS -
DEICHMANN AND GERARD, P. 258). KIDNEY MAY BE TARGET ORGAN WITH
OVEREXPOSURE. TREATMENT BASED ON THE SOUND JUDGMENT OF THE PHYSICIAN
AND THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7 SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF VAPORS OR MISTS OF ETHYLENE
GLYCOL TO SUGGESTED GUIDE.

RESPIRATORY PROTECTION: NONE NORMALLY NEEDED. NIOSH APPROVED RESPIRATORY
PROTECTION REQUIRED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL.

PROTECTIVE CLOTHING: CLEAN, BODY-COVERING CLOTHING.

EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS.

SECTION 8 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: AVOID SKIN AND EYE
CONTACT. AVOID BREATHING VAPORS OR MISTS.

ADDITIONAL INFORMATION: REVISIONS 6/11/79 --- EXTINGUISHING MEDIA,
INGESTION, EYE CONTACT, SKIN CONTACT, INHALATION, FIRST AID
PROCEDURES, NOTE TO PHYSICIAN, VENTILATION, RESPIRATORY PROTECTION,
PROTECTIVE CLOTHING, CENTIGRADE TEMPS ADDED.

LAST PAGE

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

CONSULT THE DOW CHEMICAL COMPANY FOR FURTHER INFORMATION.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY,
EXPRESSED OR IMPLIED, IS MADE.

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4636 SOMERTON ROAD TREVOSE, PA. 19047

BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT :MAGNI-FORM 305

EFFECTIVE DATE 10-31-88

PRINTED: 12/15/8

PRODUCT APPLICATION : WATER BASED DISSOLVED OXYGEN SCAVENGER/METAL PASSIVATOR.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

METHOXYPROPYLAMINE, 3-*** (MOPA) CAS#5332-73-0; FLAMMABLE LIQUID; CORROSIVE;
PEL:NONE; TLV:NONE.

HYDROQUINONE*** (1,4-BENZENEDIOL); CAS#123-31-9; POTENTIAL SKIN SENSITIZER;
EYE IRRITANT; TOXIC (ORAL INGESTION); PEL:2MG/M3; TLV:2MG/M3.

DIETHYLAMINOETHANOL*** (DEAE); CAS#100-37-8; COMBUSTIBLE LIQUID; IRRITANT (EYE
AND SKIN); PEL:10PPM (SKIN); TLV:10PPM (SKIN).

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 11.0	ODOR: MILD
FL.PT.(DEG.F):	200 SETA(CC)	SP.GR.(70F)OR DENSITY: 1.007
VAPOR PRESSURE(mmHG):	20	VAPOR DENSITY(AIR=1): 1
VISC cps70F:	6.5	%SOLUBILITY(WATER): 100
EVAP.RATE: ND	WATER=1	APPEARANCE: BROWN
PHYSICAL STATE:	LIQUID	FREEZE POINT(DEG.F): 18

-----SECTION 3-----REACTIVITY DATA-----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: MAGNI-FORM 305

EFFECTIVE DATE 10-31-88

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SEVERE IRRITANT TO THE SKIN.ABSORBED BY SKIN.SKIN SENSITIZER.

ACUTE EYE EFFECTS ***

CORROSIVE TO THE EYES

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

VAPORS,GASES,MISTS AND/OR AEROSOLS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT. PROLONGED EXPOSURE MAY CAUSE DIZZINESS AND HEADACHE.

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED OVEREXPOSURES MAY CAUSE NERVOUS SYSTEM TOXICITY,AND MAY CAUSE BLOOD CELL DAMAGE OR IMPAIR BLOOD CELL FUNCTION.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

INHALATION MAY CAUSE IRRITATION OF MUCOUS MEMBRANES AND RESPIRATORY TRACT; SKIN CONTACT CAUSES SEVERE IRRITATION OR BURNS.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***

MAY BE TOXIC IF ORALLY INGESTED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CLOTHING.WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER FOR 15 MIN.IMMEDIATELY CONTACT PHYSICIAN

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA.APPLY NECESSARY FIRST AID TREATMENT.IMMEDIATELY CONTACT A PHYSICIAN.

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS. FLUSH AREA WITH WATER.WET AREA MAY BE SLIPPERY.IF SO,SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).

DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: MAGNI-FORM 305

EFFECTIVE DATE 10-31-88

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS. VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

GAUNTLET-TYPE NEOPRENE GLOVES, CHEMICAL RESISTANT APRON WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES. FACE SHIELD

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING. IF FROZEN, THAW COMPLETELY AND MIX THOROUGHLY PRIOR TO USE

HANDLING INSTRUCTIONS***

IMMEDIATELY REMOVE CONTAMINATED CLOTHING, WASH BEFORE REUSE ALKALINE. DO NOT MIX WITH ACIDIC MATERIAL.

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD

HAROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

2.6GAL (HYDROQUINONE)

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD CLASSIFICATION: NOT APPLICABLE

...DOT SHIPPING DESIGNATION IS: NOT APPLICABLE

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 302 CHEMICALS: HYDROQUINONE(123-31-9) 2.0-5.0% ;

...SARA SECTION 313 CHEMICALS: HYDROQUINONE(123-31-9) , 2.0-5.0% ;

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

...MICHIGAN CRITICAL MATERIALS: HYDROQUINONE(123-31-9) ;

NFPA/HMIS : HEALTH - 3 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - D

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BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT :NEUTRAFILM 463

EFFECTIVE DATE 10-31-88

PRINTED: 12/15/8

PRODUCT APPLICATION : WATER BASED CONDENSATE CORROSION INHIBITOR.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

OCTADECYLAMINE ACETATE***CAS#2190-04-7;CORROSIVE(EYES);IRRITANT(SKIN);
PEL:NONE;TLV:NONE.

MORPHOLINE***CAS#110-91-8;FLAMMABLE LIQUID;CORROSIVE;TOXIC;POTENTIAL LIVER
AND KIDNEY TOXIN;PEL:20PPM(SKIN);TLV:20PPM(SKIN).

OCTADECYLAMINE***CAS#124-30-1;CORROSIVE;ABSORBED BY SKIN;PEL/TLV:NONE.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 10.3	ODOR: AMINE
FL.PT.(DEG.F):	200 SETA(CC)	SP.GR.(70F)OR DENSITY: 0.999
VAPOR PRESSURE(mmHG):	ND	VAPOR DENSITY(AIR=1): ND
VISC cps70F:	300	%SOLUBILITY(WATER): 25
EVAP.RATE: 1	ETHER=1	APPEARANCE: WHITE
PHYSICAL STATE:	DISPERSION	FREEZE POINT(DEG.F): 30

-----SECTION 3-----REACTIVITY DATA-----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

PRODUCT: NEUTRAFILM 463

EFFECTIVE DATE 10-31-88

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE
 MODERATELY IRRITATING TO THE SKIN.ABSORBED BY SKIN
 ACUTE EYE EFFECTS ***
 SEVERE IRRITANT TO THE EYES, POSSIBLY CORROSIVE
 ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE
 VAPORS,GASES,MISTS OR AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY
 TRACT.PROLONGED EXPOSURE MAY CAUSE DIZZINESS AND HEADACHE.
 CHRONIC EFFECTS OF OVEREXPOSURE***
 PROLONGED OR REPEATED EXPOSURES MAY CAUSE LIVER AND KIDNEY TOXICITY.
 MEDICAL CONDITIONS AGGRAVATED ***
 NOT KNOWN

SYMPTOMS OF EXPOSURE ***

INHALATION MAY CAUSE LIGHTHEADEDNESS,SLURRED SPEECH,NAUSEA AND
 VOMITING(PULMONARY EDEMA MAY RESULT);SKIN CONTACT CAN CAUSE SEVERE
 IRRITATION OR BURNS.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***
 MAY BE TOXIC IF ABSORBED THROUGH SKIN.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF
 SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A
 PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE
 FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
 DILUTE CONTENTS OF STOMACH.INDUCE VOMITING BY ONE OF THE STANDARD
 METHODS.IMMEDIATELY CONTACT A PHYSICIAN

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB
 ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE
 CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL,
 SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
 FLUSH AREA WITH WATER.WET AREA MAY BE SLIPPERY.IF SO,SPREAD
 SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY
 SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A
 PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT
 PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING
 APPARATUS(FULL FACE-PIECE TYPE).
 DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER.FOAM OR WATER CREATE A SLIPPERY
 CONDITION.SPREAD SAND OR GRIT

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: NEUTRAFILM 463

EFFECTIVE DATE 10-31-88

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS. VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

GAUNTLET-TYPE RUBBER GLOVES,CHEMICAL RESISTANT APRON WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES.FACE SHIELD

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS***

IMMEDIATELY REMOVE CONTAMINATED CLOTHING,WASH BEFORE REUSE

NORMAL CHEMICAL HANDLING

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD
HAROLD M. HERSH (ENVIROMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY
...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:
TREAT AS OIL SPILL

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD CLASSIFICATION: NOT APPLICABLE

...DOT SHIPPING DESIGNATION IS: NOT APPLICABLE

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 313 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)
...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
NFPA/HMIS : HEALTH - 2 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - D

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BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT :B.P.7400 SERIES 7408B

EFFECTIVE DATE 10-31-88
PRINTED: 12/15/8

PRODUCT APPLICATION : WATER BASED INTERNAL BOILER TREATMENT CHEMICAL.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

ETHYLENEDIAMINE TETRAACETIC ACID, TETRASODIUM SALT*** (EDTA.4NA); CAS#64-02-8; IRRITANT(SKIN); CORROSIVE(EYES); PEL:NONE; TLV:NONE.

SODIUM HYDROXIDE*** (CAUSTIC SODA); CAS#1310-73-2; CORROSIVE; TOXIC IF ORALLY INGESTED; PEL:2.0MG/M3; TLV:2.0MG/M3 (CEILING).

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 13.0	ODOR: NONE
FL.PT.(DEG.F):	200 SETA(CC)	SP.GR.(70F)OR DENSITY: 1.126
VAPOR PRESSURE(mmHG):	18	VAPOR DENSITY(AIR=1): 1
VISC cps70F:	23	%SOLUBILITY(WATER): 100
EVAP.RATE: 1 ETHER=1		APPEARANCE: YELLOW
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): 26

-----SECTION 3-----REACTIVITY DATA-----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

PRODUCT: B.P.7400 SERIES 7408B

EFFECTIVE DATE 10-31-88

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS ***

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS ***

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED CONTACT MAY CAUSE PRIMARY IRRITANT DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

MAY CAUSE REDNESS OR ITCHING OF SKIN.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***

MAY BE TOXIC IF ORALLY INGESTED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.

FLUSH AREA WITH WATER.WET AREA MAY BE SLIPPERY.IF SO,SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).

DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: B.P.7400 SERIES 7408B EFFECTIVE DATE 10-31-88

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING.IF FROZEN,THAW COMPLETELY AND MIX

THOROUGHLY PRIOR TO USE

HANDLING INSTRUCTIONS***

IMMEDIATELY REMOVE CONTAMINATED CLOTHING,WASH BEFORE REUSE

NORMAL CHEMICAL HANDLING

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD

HAROLD M. HERSH (ENVIROMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

10664 GAL (SODIUM HYDROXIDE)

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: D002=CORROSIVE

...DOT HAZARD CLASSIFICATION: NOT APPLICABLE

...DOT SHIPPING DESIGNATION IS: NOT APPLICABLE

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 313 CHEMICALS: SODIUM HYDROXIDE(1310-73-2) , 0.1-1.0% ;

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

NFFPA/HMIS : HEALTH - 2 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - ALK ; PE - B

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED: 01/12/89

***** I. PRODUCT IDENTIFICATION *****
MOBIL RARUS 427

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: COMPRESSOR OIL PRODUCT TECHNICAL INFORMATION: (800) 662-4525

***** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES *****

APPEARANCE: ASTM 4.0 LIQUID ODOR: MILD PH: NA
VISCOSITY AT 100 F, SUS: 527.0 AT 40 C, CS: 101.3
VISCOSITY AT 210 F, SUS: 65.0 AT 100 C, CS: 11.3
FLASH POINT F(C): > 450(232) (ASTM D-92)
MELTING POINT F(C): NA POUR POINT F(C): 20(-7)
BOILING POINT F(C): > 600(316)
RELATIVE DENSITY, 15/4 C: 0.88 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 EXPOSURE LIMITS SOURCES
(APPROX) MG/M3 PPM (AND NOTES)
POTENTIALLY HAZARDOUS INGREDIENTS:
NONE

OTHER INGREDIENTS:
REFINED MINERAL OILS >95
ADDITIVES AND/OR OTHER INGREDIENTS. < 5

SEE SECTION XII FOR COMPONENT REGULATORY INFORMATION.

SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, O=OSHA, S=SUPPLIER
NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

***** IV. HEALTH HAZARD DATA *****

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---
THRESHOLD LIMIT VALUE: 5.00 MG/M3 SUGGESTED FOR OIL MIST
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): > 450(232) (ASTM D-92)

FLAMMABLE LIMITS. LEL: .6 UEL: 7.0

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

SPECIAL FIRE FIGHTING PROCEDURES: WATER OR FOAM MAY CAUSE FROTHING.

USE WATER TO KEEP FIRE EXPOSED CONTAINERS COOL. WATER SPRAY MAY BE

USED TO FLUSH SPILLS AWAY FROM EXPOSURE. FOR FIRES IN ENCLOSED

AREAS, FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.

PREVENT RUNOFF FROM FIRE CONTROL OR DILUTION FROM ENTERING STREAMS

OR DRINKING WATER SUPPLY.

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 TOXICOLOGY---

ORAL TOXICITY (RATS): LD50: > 5 G/KG SLIGHTLY TOXIC (ESTIMATED) ---
BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG 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. ---BASED ON
TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. ---BASED ON
TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

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.

---CHRONIC TOXICOLOGY (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.

***** XII. REGULATORY INFORMATION *****
GOVERNMENTAL INVENTORY STATUS: ALL COMPONENTS REGISTERED IN ACCORDANCE WITH TSCA.

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 29 CFR 1910.1200 AND DETERMINED NOT TO BE HAZARDOUS.

COMPONENTS OF THIS PRODUCT MEET FDA REGULATIONS: PRODUCT IS NOT INTENDED FOR FOOD CONTACT APPLICATION.

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.

THIS PRODUCT HAS BEEN USDA APPROVED UNDER THE FOLLOWING CATEGORY: H2 - LUBRICANTS WITH NO FOOD CONTACT

U.S. SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III: THIS PRODUCT CONTAINS NO "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (302) REPORTABLE HAZARD CATEGORIES: NONE

THIS PRODUCT CONTAINS NO CHEMICALS REPORTABLE UNDER SARA (313) TOXIC RELEASE PROGRAM.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
*** NO REPORTABLE INGREDIENTS ***		

--- 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 = MI 293,
16 = FL RTK, 17 = PA RTK, 18 = CA P65.

--- NTP, IARC, AND OSHA INCLUDE CARCINOGENIC LISTINGS ---

NOTE: MOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBS.

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: MTL314050) MCN: , MHC: 1* 1* NA 0* 0*,
MPPEC: C, PPEC: A, US87-793 APPROVE 09/26/88

**APPENDIX B
SPILL CONTROL
AND NOTIFICATION
PROCEDURES**



Manual Policy and Procedure		
Section Operating & Maint.	Tab 10	Document No. 12.10.020
Effective Date JUL 07 1989	Issue No. 5	Page No. 1 Of 10

Subject or Title
DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling and Reporting of

A. PURPOSE AND SCOPE

- *A.1 To establish the policy and procedure for preventing, controlling, and reporting of spills or discharges of oil or hazardous substances to the environment in accordance with Company practices and federal, state, and local requirements, including Title 40 of the Code of Federal Regulations - Part 112 (Oil Pollution Prevention).
- *A.2 The spill prevention and control requirements in this Policy and Procedure are Federally mandated guidelines for oil pollution prevention. The Company policy is to also apply these standards, where appropriate, to facilities containing hazardous substances. This is a discretionary application of the standards; however, variations from the standards should be approved by the Area Manager.

B. CONTENTS

C. POLICY

- C.1 General
- C.2 Bulk Storage Tanks
- C.3 Facility Drainage
- C.4 Transfer Operations, Pumping, and In-Plant Process
- C.5 Facility Tank Car and Tank Truck Loading/Unloading Rack

D. PROCEDURE

- D.1 Identifying, Containing and Initial Reporting of a Discharge or Spill of a Hazardous or Toxic Substance
- D.2 Submitting Written Notification of a Discharge or Spill

ATTACHMENT A: Discharge or Spill Containment Procedures and Materials
 ATTACHMENT B: Contractors Available for Discharge or Spill Containment
 ATTACHMENT C: Agencies Requiring Notification

C. POLICY

C.1 GENERAL

- *C.1.1 All Company facilities which could discharge or spill oil or hazardous substances which may affect natural resources or present an imminent and substantial danger to the public health or welfare including, but not limited to fish, shellfish, wildlife, shorelines, and beaches are subject to the provisions of this document.
- **C.1.2 Hazardous Substance, for purposes of this procedure, is defined as any chemical or material that has or should have a Material Safety Data Sheet (MSDS); however, hazardous substances are further defined by the following environmental statutes:
 - a. Section 101 (N) and Section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);
 - b. Section 307(a) and Section 311 (b)(2)(A) of the Clean Water Act;
 - c. Section 3001 of the Solid Waste Act (excluding items suspended by Congress);
 - d. Section 112 of the Clean Air Act;
 - e. Section 7 of the Toxic Substance Control Act;

*Revised
 **Added

Supersedes Division Policy and Procedure 12.10.020 dated October 10, 1985

Approval (Page 1 Only) <i>[Signature]</i>	Approval (Page 1 Only) <i>Barrie B-M Culligan</i>	Approval (Page 1 Only) <i>[Signature]</i> <i>EC England</i>
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Subject or Title
DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling and Reporting of

The term hazardous substance does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance in the first sentence of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).

****C.1.3** Oil, for the purpose of this document, means oil of any kind or in any form, including but not limited to petroleum, fuel oil, Y grade, mixed products, sludge, oil refuse, and oil mixed with wastes other than dredged spoil (earth and rock). LPG (propane, butane, ethane) are not considered to be oil.

***C.1.4** Facilities which could discharge or spill oil or hazardous substances into a watercourse must comply with the required federal, state, or local laws and regulations. A discharge includes but is not limited to any spilling, leaking, pumping, pouring, emitting, emptying, or dumping. A watercourse is any perennial or intermittent river, stream, gully, wash, lake, or standing body of water capable of collecting or transporting an oil or hazardous substance.

***C.1.5** Facilities which are subject to the requirements stated in this policy are as follows:

a. Non-Transportation Related Facilities

- (1) Storage or drip tanks and other aboveground containers (excluding pressurized or inline process vessels) having a capacity in excess of 660 gallons for each single container or an aggregate capacity of 1,321 gallons or more for multiple containers.
- (2) Underground storage facilities having a total capacity in excess of 42,000 gallons.

b. Transportation Related Facilities

- (1) All vehicles, pipeline facilities, loading/unloading facilities, and other mobile facilities which transport oil or hazardous substances.

****C.1.6** Each Northwest Pipeline location which has facilities subject to paragraph C.1.1 shall have a site specific Spill Prevention Control and Countermeasure Plan (SPCC Plan) which identifies all facilities subject to 40 CFR 112. The plan will also identify all hazardous substance storage vessels at the facility and the spill prevention measures in place to control discharges or spills.

C.1.7 The District Superintendent is responsible for spill prevention. These duties include, but are not limited to, the following:

- a. Instructing personnel in the operation and maintenance of equipment to prevent the discharge of oil.
- b. Conducting briefings for operating personnel in sufficient intervals to assure adequate understanding of the Spill Plan at that facility. Briefings should highlight and describe known discharges or spills, and recently developed precautionary measures.

***C.1.8** Each individual facility should be inspected, at least annually, by the District Superintendent or designee to determine the potential for discharges or spills of oil or hazardous substances. These inspection reports must be retained for three years. All facilities which have the potential for discharging or spilling oil or hazardous substances into a watercourse are required to have the following preventive measures:

*Revised
**Added

Supersedes Division Policy and Procedure 12.10.020 dated October 10, 1985

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DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling and Reporting of

- a. Examination of all tanks, valves and fittings, at least annually, to determine any maintenance requirements.
- b. All tank batteries should, as far as practical, have a secondary means of containment for the entire contents of the largest single tank plus sufficient freeboard in the containment facility to allow for precipitation.
- c. A careful monitoring and inspection program to prevent accidental spills or discharges into watercourses. This includes regular inspection for faulty systems and monitoring line valves and liquid pipelines for leaks or blowouts.

C.1.9 Any field drainage ditches, road ditches, traps, sumps, or skimmers should be inspected at regularly scheduled intervals for accumulation of liquid hydrocarbons or other hazardous substances which may have escaped from small leaks. Any such accumulations should be removed.

C.2 BULK STORAGE TANKS

- *C.2.1 A tank should not be used for storage of oil or hazardous substances unless the material and construction of the tank is compatible with the material stored and conditions of storage such as pressure and temperature. Buried storage tanks must be protected from corrosion by coatings, cathodic protection, or other methods compatible with local soil conditions. Aboveground tanks should be subject to visual inspection for system integrity.
- **C.2.2 The District Superintendent should evaluate level monitoring requirements to prevent tank overflow.
- *C.2.3 Leaks which result in loss of oil or hazardous substances from tank seams, gaskets, rivets and bolts sufficiently large to cause accumulation of oil or hazardous substances in diked areas should be promptly corrected.
- *C.2.4 Mobile or portable oil or hazardous substances storage tanks should be positioned or located to prevent the contents from reaching a watercourse. The mobile facilities should be located so their support structure will not be undermined by periodic flooding or washout.

C.3 FACILITY DRAINAGE

- C.3.1 Provisions should be made for drainage from diked storage areas where necessary in areas with high precipitation levels. Drainage from dike areas should be restrained by valves or other means to prevent a discharge or spill. Diked areas should be emptied by pumps or ejectors which are manually activated. Valves used for the drainage of diked areas should be of manual design.
- *C.3.2 Rain water may be drained from diked areas providing drainage water does not contain oil or hazardous substances that may cause a harmful discharge. Drain valves must be closed following drainage of diked areas.
- *C.3.3 When possible, plant drainage systems from undiked areas should flow into ponds, lagoons, or catchment basins designed to retain oil or hazardous substances or return the substances to the facility. Any plant drainage system which is not designed to allow flow into ponds, lagoons, or catchment basins should be equipped with a diversion system that could, in the event of a discharge or spill, contain the oil or hazardous substances on the Site.
- *C.3.4 The principal means of containing discharges or spills is the use of dikes which are constructed wherever regulated quantities of oil or hazardous substances have the

*Revised
**Added

Supersedes Division Policy and Procedure 12.10.020 dated October 10, 1985

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potential of reaching a watercourse. The construction of dikes must meet the following requirements:

- a. Capacity must be at least equivalent to the storage capacity of the largest tank of the battery plus sufficient freeboard to allow for precipitation, or displacement by foreign materials.
- b. Small dikes for temporary containment should be constructed at valves where leaking of oil or hazardous substances develops.
- c. Any dike three feet or higher should have a minimum cross section of two feet at the top.

Other means of containment or spill control include, but are not limited to:

- a. Berms or retaining walls;
- b. Curbing;
- c. Culverting, gutters, or other drainage systems;
- d. Weirs, booms, or other barriers;
- e. Spill diversion ponds or retention ponds;
- f. Sorbent materials

C.4 TRANSFER OPERATIONS, PUMPING, AND IN-PLANT PROCESS

- *C.4.1 Aboveground valves and pipelines should be examined regularly by operating personnel to determine whether there are significant leaks from flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, valve locks, and metal surfaces.

C.5 FACILITY TANK CAR AND TANK TRUCK LOADING/UNLOADING RACK

- C.5.1 Rack area drainage which does not flow into a catchment basin or treatment facility designed to handle spills should have a quick drainage system for use in tank truck loading and unloading areas. The containment system should have a maximum capacity of any single compartment of a tank car or truck loaded or unloaded in the plant.
- *C.5.2 Aboveground piping that has potential for damage by vehicles entering the Site should be protected by logically placed warning signs or by concrete-filled pipe barriers.
- *C.5.3 Loading and unloading areas should be provided with an interlocked warning light, grounding shutdown, physical barrier system, or warning signs to prevent vehicular departure before complete disconnect of flexible or fixed transfer lines. All drains and outlets of any tank car or truck should be closely examined for leakage prior to filling and departure. All drains and outlets which may allow leakage should be tightened, adjusted, or replaced to prevent liquid leakage while in transit.

D. PROCEDURE

- *D.1 IDENTIFYING, CONTAINING AND INITIAL REPORTING OF A DISCHARGE OR SPILL OF OIL OR HAZARDOUS SUBSTANCE

Any Employee

- *D.1.1 Upon noticing a discharge or spill of an oil or hazardous substance in any quantity initiates immediate containment procedures and notifies District Superintendent.

NOTE: Refer to Attachment A for containment procedures.

*Revised
**Added

Supersedes Division Policy and Procedure 12.10.020 dated October 10, 1985

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District Superintendent

- D.1.2 Contacts Gas Dispatch and Area Manager immediately by telephone and provides the following information:
- a. Name of company facility and/or location of facility and nature of discharge or spill
 - b. Description and quantity of substance discharged
 - c. Name, title, and telephone number of person initially reporting the discharge or spill and person reporting to Gas Dispatch
 - d. Action taken or being taken to mitigate and correct discharge or spill
 - e. Water bodies or streams involved
 - f. Time and duration of discharge or spill
 - g. Outside involvement during discharge or spill (public government agencies, etc.)

Gas Dispatch Personnel

- *D.1.3 Advises the responsible Area Manager and Environmental Services departments immediately by telephone concerning the incident including any incidents reported by persons not employed with the Company.

NOTE: If Gas Dispatch is contacted by a person not employed with the Company, the necessary information is obtained as indicated in D.1.2 and the Area Manager and Environmental Services are immediately contacted to begin containment, reporting and clean-up of the discharge or spill.

- *D.1.4 If Environmental Services cannot be contacted, notifies Barry Swartz, Director, Transmission Services.

Area Manager

- D.1.5 Coordinates containment and clean-up of discharge or spill with the District Superintendent.
- D.1.6 If the discharge or spill is too large for Company personnel to contain, contacts qualified local contractors for assistance. See Attachment B.
- D.1.7 Advises Environmental Services by telephone if emergency containment or clean-up assistance from a state agency or a response team from the U.S. Coast Guard is required.

Environmental Services

- **D.1.8 Contacts Legal Department (and Right-of-Way Department, if appropriate) and assesses reporting requirements to state and federal agencies.
- **D.1.9 Makes appropriate contacts with U.S. Coast Guard and state agencies when necessary.
- **D.1.10 If spill is significant, dispatches Environmental Specialist to scene to oversee cleanup and reporting responsibilities.

*Revised
**Added

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D.2 SUBMITTING WRITTEN NOTIFICATION OF A DISCHARGE OR SPILL

District Superintendent

D.2.1 Completes a written description of the incident as soon as possible after initial notification is given, which should include the following:

- a. Time and date of discharge or spill
- b. Facility name and/or spill location
- c. Type of material spilled
- d. Quantity of material spilled
- e. Area affected
- f. Cause of spill
- g. Special circumstances
- h. Corrective measures taken
- i. Description of repairs made
- j. Preventative measures taken to prevent recurrence.

D.2.2 Forwards the completed report to Environmental Services and a copy to Legal departments. Retains a copy for future reference.

NOTE: Environmental Services, in coordination with the Legal Department, submits written reports to government agencies.

*Revised
**Added

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ATTACHMENT A

Discharge or Spill Containment Procedures and Materials

Type of Facility where the Discharge or Spill occurs	Containment Procedures	Material Used for Containment
A. Oil Pipeline (as defined in C.1.3)	<ol style="list-style-type: none"> 1. Closes appropriate block valves. 2. Contains discharge or spill by: ditching covering, applying sorbents, constructing 3. If burning is required, obtains approval from the appropriate state air quality control government agencies before burning. 	<ol style="list-style-type: none"> 1. Straw 2. Loose Earth 3. Oil Sorbent - 3M Brand 4. Plain Wood Chips 5. Sorb - Oil Chips - Banta Co. 6. Sorb - Oil Swabs - Banta, Co. 7. Sorb - Oil Mats - Banta Co.
B. Vehicle	<ol style="list-style-type: none"> 1. Contains discharge or spill by: ditching covering surface with dirt, constructing earthen dams, applying sorbents, or burning. 2. Notifies immediately the Compliance and Safety Department and if there is any imminent danger to local residents notifies immediately the highway patrol or local police officials. 3. If burning is required, obtains approval from the appropriate state air quality control government agencies before burning. <p>**NOTE: Any vehicle carrying any hazardous or toxic substance will carry a shovel or other ditching device to contain a spill. If the vehicle has sufficient room, sorbent materials should also be carried.</p>	
C. Bulk Storage Tanks or any other Facilities	<ol style="list-style-type: none"> 1. Contains discharge or spill by: ditching, covering, applying sorbents, constructing an earthen dam, or burning. 2. If burning is required, obtains approval from the appropriate state air quality control government agencies before burning. 	

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**Added

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DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling and Reporting of

ATTACHMENT B

*Contractors Available for Discharge or Spill Containment

COLORADO		
Contractor Name	Address	Telephone Number
G. R. Spencer Contractors	2200 East 114th Avenue, Suite 209 Thornton, CO 80233	303-484-2616
Ecology and Environment, Inc. (Mike Peceny)	1776 South Jackson Street Denver, CO 80210	303-757-4984
John Bunning Transfer	2473 Commerce Blvd. Grand Junction, CO 80505	303-245-5631
Smith Welding and Construction Company, Inc.	P.O. Box 1834 880 25 Road Grand Junction, CO 81502	303-242-4306
Western Engineers, Inc.	2150 U.S. 6 and 50 Grand Junction, CO 81505	303 242-5202
W. C. Streigel, Inc.	P.O. Box 860 17030 State Hwy 64 Rangely, CO 81648	303-675-8444 303-675-8749

IDAHO		
Contractor Name	Address	Telephone Number
Envirosafe Services of Idaho	1602 West Franklin Boise, Idaho	208-384-1500

NEW MEXICO		
Contractor Name	Address	Telephone Number
Four-Four (Burney Strunk)	P.O. Box 821 Farmington, NM 87401	505-327-6041 505-632-2680 (eves.)
Four-Way Co., Inc.	4816 East Main Farmington, NM 87401	505-327-0401
P & A Construction	Bloomfield, NM	505-632-8061
Rosenbaum Construction	Box 2308 Aztec Highway Farmington, NM 87401	505-325-6367

OREGON		
Contractor Name	Address	Telephone Number
Pegasus Waste Management	30250 S.W. Parkway Avenue Wilsonville, OR 97070	503-682-5802
Riedel Environmental Services, Inc. Portland, OR 97203	Foor of N. Portsmouts Emergency: 800-334-0004	503-286-4656 Available for all NWP locations)

*Revised
**Added

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DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling and Reporting of

ATTACHMENT C

Agencies Requiring Notification

State of Colorado
 Water Quality Control Division (business hours) 1-303-331-4570
 (night) 1-303-370-9395

State of Idaho
 State Emergency Services Division 1-800-632-8000
 Emergency and Poison Control Center (Outside Idaho) 1-208-334-2241

State of New Mexico
 Department of Environmental Improvement 1-505-827-9329

State of Oregon
 Emergency Services Division 1-800-452-0311
 (Outside Oregon). 1-503-378-4124

State of Utah
 Environmental Health - Emergency Response (24 hour). 1-801-538-6333

State of Washington
 Department of Ecology (24 hour). 1-206-753-2353

State of Wyoming
 Water Quality Div. - Dept. of Environmental Quality . (24 hour) . 1-307-777-7781

United States Coast Guard 1-800-424-8802

****NOTE:** If a spill or discharge is the result of a vehicular accident the Highway Patrol or local police officials should be immediately notified. If imminent danger to local residents exists, state and/or local agencies; and available Company personnel should be used to notify the residents immediately.

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 **Added

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DISCHARGES OR SPILLS OF OIL OR HAZARDOUS SUBSTANCES; Preventing, Controlling and Reporting of

ATTACHMENT B (Continued)

Contractors Available for Discharge or Spill Containment

UTAH		
Contractor Name	Address	Telephone Number
A. L. Berna Construction	P.O. Box 8 Moab, UT 84532	801-259-5361
JBCO	Wagner Subdivision Moab, UT 84532	801-259-5316 801-259-8952
North American Environmental, Inc. (PCB Cleanup Work)	P.O. Box 1181 Bldg. G-9, Freeport Center Clearfield, UT 84016	801-776-0878
Ted Miller Company	3809 South 300 West Salt Lake City, UT 84115	801-268-1093

WASHINGTON		
Contractor Name	Address	Telephone Number
CES ChemPro, Inc.	3400 East Marginal Ways Seattle, WA 98134	206-682-4849 Emergency Phone Number
North American Environmental, Inc.	2432 East 11th Street Tacoma, WA 98421	206-272-9988
Northwest Enviroservice	P.O. Box 24443 Seattle, WA	206-622-1090
Oil Spill Service, Inc.	P.O. Box 548 Kirkland, WA 98033	206-823-6500

WYOMING		
Contractor Name	Address	Telephone Number
Eiden Construction & Roustabout Service	Marbleton, WY	307-276-3413
Flint Engineering and Const. Co. (Mike Kovern)	Box 807 Evanston, WY 82930	307-789-9396
Martin's Roustabout	Big Piney, WY (Martin Douglas)	307-276-3625 or 307-276-3626
Persh's Water Service	Big Piney, WY (Persh Puntaney)	307-276-3210
Skyline Construction	Big Piney, WY (Rod Bennett)	307-276-3383

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**State of New Mexico
Energy and Minerals Department**

**OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504**

NOTIFICATION OF FIRE, BREAKS, SPILLS, LEAKS, AND BLOWOUTS

Name of Operator				Address			
Report of	Fire	Break	Spill	Leak	Blowout	Other*	
Type of Facility	Drig Well	Prod Well	Tank Btty	Pipe Line	Gaso Pint	Oil Rfy	Other*
Name of Facility							
Location of Facility (Quarter/Quarter Section or Footage Description)				Sec.	Twp.	Rge.	County
Distance and Direction From Nearest Town or Prominent Landmark							
Date and Hour of Occurrence				Date and Hour of Discovery			
Was Immediate Notice Given?	Yes	No	Not Required	If Yes, To Whom			
By Whom				Date and Hour			
Type of Fluid Lost				Quantity of Loss	_____ BO _____ BW	Volume Recovered	_____ BO _____ BW
Did Any Fluids Reach a Watercourse?	Yes	No	Quantity				
If Yes, Describe Fully**							
Describe Cause of Problem and Remedial Action Taken**							
Describe Area Affected and Cleanup Action Taken**							
Description of Area	Farming	Grazing	Urban	Other*			
Surface Conditions	Sandy	Sandy Loam	Clay	Rocky	Wet	Dry	Snow
Describe General Conditions Prevailing (Temperature, Precipitation, Etc.)**							
I Hereby Certify That the Information Above Is True and Complete to the Best of My Knowledge and Belief							
Signed		Title			Date		

*Specify

**Attach Additional Sheets if Necessary

**APPENDIX C
WASTEWATER
EVAPORATION
BASINS**

GENERAL DESCRIPTION OF WASTEWATER EVAPORATION BASINS

1. Facilities Description:

A series of three (3) 99' diameter evaporation tanks with conical bottoms will be utilized for storage/disposal of process water and storm runoff from spill containment areas. The tank will be at subgrade to allow gravity flow into the cells. The tanks sidewalls will be constructed of heavy gauge galvanized corrugated steel. The primary and secondary liners will be flexible membrane material which is resistant to hydrocarbons, salts, and acidic and alkaline solutions. The leak detection system will be a HDPE drainage net material sandwiched between the liners. The drainage net will collect any fluid which may penetrate the primary liner and convey it to a small sump from which an underdrain will carry it to a PVC inspection well.

2. Technical Information:

Type and Volume of Effluents Stored -

Plant Effluent and Process Fluids - 1500 gpd (see Table 1 for description).

Storm Runoff From Spill Containment Areas -
25,500 ft² containment area * .63 ft precip./yr = 16,065 ft³/yr

Evaporative Surface Area: 23,093 ft²

The required surface area is 22,597 ft². This was calculated as shown in Exhibit 1 and includes a 20% safety factor. The total combined surface area of the three tanks is 23,093 ft².

Volume - 288,000 gallons

The storage volume was determined by the shortest available steel sidewall (44") minus the two feet of required freeboard, multiplied by the evaporative surface area. The adequacy of the storage volume was checked by running it through a computer program written to determine monthly water balances (see Exhibit 2 for computer printout).

The monthly precipitation and evaporation data used to determine monthly water balances are provided in Exhibit 3.

Depth - Storage Depth 20" + Freeboard 24" = Total Depth 44"

Slope of Pond Sides - The cells will have vertical corrugated steel sidewalls.

TABLE 1
 SOURCES OF PLANT EFFLUENT AND PROCESS FLUIDS
 STORED IN BASINS

	<u>Source</u>	<u>Quantity</u>	<u>Quality Type</u>	<u>Additives</u>
1.	Sulfinol Reclaimer	60 gpd	high TDS water, amine salts	diisoprop- anolamine, sulfolane
2.	Boiler (emergency blowdown)	None normally, maximum 1500 gallons in emergency	high TDS water	Betz Neutra- film 463, Betz Magni form 308, Betz Balanced Polymer
3.	Drains in Sulfinol pump building	Trace	amine	fugitive amine leaks
4.	Drains in spill containment dikes (25,500 sf area)		rainwater	fugitive leaks

Subgrade Description - The sub-grade material will be silty fine sand and sand. The sub-grade will be graded at 1% slope to the center and will be smooth, compacted and free of debris which could rupture the liner. In addition, the design calls for a 10 oz. geotextile material between the soil and secondary liner, as a barrier to reduce the risk of damage to the liner. (see Exhibit 4 for information on the geotextile material).

Liner Type and Thickness - The primary and secondary liners will be Seaman Corp's XR-5 flexible membrane liner. The liner thickness is 30 mil.

Compatibility of Liner and Effluents - XR-5 is a chemical, oil, and high temperature resistant geomembrane material designed for use in municipal industrial waste pits and ponds. For the manufacturer's specifications and sulfinol compatibility test results, refer to Exhibit 5 and 6 respectively.

Installation Method - The primary and secondary liners will be fabricated in the factory in a one-piece, polar cap design with 2" factory thermal heat sealed seams. The geotextile wall buffer material, primary liner, HDPE drainage net and secondary liner will all be secured to the top edge of the steel sidewalls by a continuous top angle which also serves as a wind girder. See Exhibits 7 and 8 for an illustration and explanation of the liner installation in a tank.

Leak Detection Method - HDPE drainage net will be sandwiched between the primary and secondary liners to collect any fluid which may break through the primary liner. The drainage net will convey the fluid into a small sump from which it will drain to a 2" diameter schedule 40 PVC inspection well. See Exhibit 8 for an illustration of the lining and leak detection system.

Freeboard - 24 inches

Runoff/Runon Protection - A one foot high berm with 1:1 side slopes will be constructed around the upgradient half of each cell to divert surface runoff from entering the cells.

Venting of Gas - In order to prevent the possibility of gas accumulating beneath the liner, the cells will be conical shaped with a minimum 1% slope to the outside. Any gas beneath the liner will be vented via the geotextile buffer material between the soil and secondary liner.

Leak Detection and Plans for Corrective Action - The leak detection wells will be inspected weekly and an inspection log book kept up to date. If any leaks are detected, a grab sample of the fluid will be sent to a certified laboratory for analysis. The New Mexico Oil Conservation Division will be notified of all leaks within one work day of discovery.

Should a leak occur, the valve to the leaking cell will be closed and all fluids will be diverted to the remaining two cells. If necessary, there is more than adequate storage capacity to pump the fluid from the damaged tank into the other two cells. If the leak can be found and is repairable in place, it will be repaired. If the source of the leak cannot be determined or repaired, the primary liner can easily be removed and a new liner placed in the cell. Once repairs are completed, the fluids removed from the cell will be pumped back into it so that the fluid level in the cells is equal.

Fences and Signs - The entire plant area is surrounded by a fence to keep unauthorized persons, livestock and wildlife from entering the facilities. In addition, an approximately 5'6" high fence will surround the cells as a safety precaution (see Exhibit 9, Detail "C" for a typical fence design).

A sign not less than 12" x 24" with lettering of not less than 2" will be posted at the entrance to the fenced evaporative cell area (see Exhibit 10).

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EXHIBIT 1

Milagro Plant Evaporation Pond - Area Calculation

Given: Evaporation Rate = 5.25'/yr
Precipitation Rate = .51'/yr
Process Inflow Rate = $1500 \text{ gpd} * 365 \text{ days/yr} \div 7.48 \text{ gals/ft}^3 = 73,195 \text{ ft}^3/\text{yr}$
Surface Area Runoff = $25,500 \text{ ft}^2 * .63 \text{ ft/yr} = 16,065 \text{ ft}^3/\text{yr}$
Total Inflow = $89,260 \text{ ft}^3/\text{yr}$

Assumption: * Inflow does not include oil which would interfere with evaporation
* No outflow, Total containment

Net Evaporation rate: $= 5.25'/\text{yr} - .51'/\text{yr} = 4.74'/\text{yr}$

Evaporative Area: $= \frac{89,260 \text{ ft}^3/\text{yr}}{4.74 \text{ ft/yr}} = 18,831 \text{ ft}^2 * 1.20 \text{ (safety factor)} = 22,597 \text{ ft}^2$

EXHIBIT 2

MILAGRO GAS TREATMENT PLANT EVAPORATION CELLS-WATER BALANCE

WATER BALANCE (GALS)

GALLONS INFLOW/DAY = 1500
 TOTAL PIT CAPACITY (GALS) = 287894
 PIT SURFACE AREA (FT2) = 23093
 SURFACE RUNOFF AREA (FT2) = 25500

MONTH	CARRYOVER	INFLOW	PRECIP	EVAP	BALANCE
1	0	46500	13933.23	0	60433.24
2	60433.24	42000	14539.03	0	116972.3
3	116972.3	46500	10904.27	0	174376.5
4	174376.5	45000	12115.86	93277.25	138215.1
5	138215.1	46500	9995.581	158916.8	35793.91
6	35793.91	45000	6057.928	162371.5	0
7	0	46500	17870.89	157189.4	0
8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77
12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4
2	175133.4	42000	14539.03	0	231672.5
3	231672.5	46500	10904.27	0	289076.7
4	289076.7	45000	12115.86	93277.25	252915.3
5	252915.3	46500	9995.581	158916.8	150494.1
6	150494.1	45000	6057.928	162371.5	39180.53
7	39180.53	46500	17870.89	157189.4	0
8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77
12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4
2	175133.4	42000	14539.03	0	231672.5
3	231672.5	46500	10904.27	0	289076.7
4	289076.7	45000	12115.86	93277.25	252915.3
5	252915.3	46500	9995.581	158916.8	150494.1
6	150494.1	45000	6057.928	162371.5	39180.53
7	39180.53	46500	17870.89	157189.4	0
8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77
12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4
2	175133.4	42000	14539.03	0	231672.5
3	231672.5	46500	10904.27	0	289076.7
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7	39180.53	46500	17870.89	157189.4	0
8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77
12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4
2	175133.4	42000	14539.03	0	231672.5
3	231672.5	46500	10904.27	0	289076.7
4	289076.7	45000	12115.86	93277.25	252915.3
5	252915.3	46500	9995.581	158916.8	150494.1
6	150494.1	45000	6057.928	162371.5	39180.53
7	39180.53	46500	17870.89	157189.4	0
8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77

12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4
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8	0	46500	27563.57	124369.7	0
9	0	45000	22717.23	127824.4	0
10	0	46500	23625.92	79458.4	0
11	0	45000	10298.48	3454.713	51843.77
12	51843.77	46500	16356.4	0	114700.2
1	114700.2	46500	13933.23	0	175133.4

EXHIBIT 3

Milagro Gas Treatment Plant Evaporation Cells Precipitation and Evaporation Data

	<u>Potential Evaporation (in) (1)</u>	<u>Precipitation (in) (2)</u>
January	0.0	.46
February	0.0	.48
March	0.0	.36
April	6.5	.40
May	11.0	.33
June	11.3	.20
July	10.9	.59
August	8.63	.91
September	8.90	.75
October	5.50	.78
November	0.25	.34
December	0.0	.54

(1) Evaporation data was provided by the Bureau of Reclamation from data collected at Navajo Dam, New Mexico from January - December 1989.

(2) Precipitation data is from the Farmington, New Mexico weather station and is an average of monthly precipitation from 1931-1978.

EXHIBIT 4

MILAGRO GAS TREATMENT PLANT EVAPORATION CELLS-GEOTEXTILE SPECIFICATIONS

ENV-1016-01 Geotextile

ENV-1016-01 is a nonwoven fabric composed of polypropylene filaments which are formed into a stable network such that the filaments retain their relative position. The fabric is inert to biological degradation and naturally encountered chemicals, alkalies, and acids. ENV-1016-01 conforms to the typical property values listed in the following table.

<u>Fabric Property</u>	<u>Unit</u>	<u>Test Method</u>	<u>Typical Value</u>
Weight	oz/sy	ASTM D-3776-79	10.0
Thickness	mils	ASTM D-1777-64	120
Grab Tensile Strength	lb	ASTM D-4632-86 (2)	285
Grab Tensile Elongation	%	ASTM D-4632-86	50
Puncture Strength	lb	ASTM D-3787-80 (3)	130
Burst Strength	psi	ASTM D-3786-80a (4)	425
Trapezoid Tear Strength	lb	ASTM D-4533-85	120
Water Permeability, k	cm/sec	ASTM D-4491-85 (5)	0.4
Water Flow Rate	gpm/sf	ASTM D-4491-85 (5)	100

(1) The values listed are typical values. Contact the Environetics Technical Department for minimum certifiable values.

(2) Using constant rate of extension (CRE), machine at 12±, 1/2-inch/minute, as per Section 6.1.

(3) Tension testing machine with ring clamp; steel ball replaced with a 5/16-inch diameter solid steel cylinder centered within the ring clamp; (F).

(4) Hydraulic Diaphragm Bursting Tester.

(5) 5cm Constant Head Test Method.

EXHIBIT 5

MILAGRO GAS TREATMENT PLANT EVAPORATION CELLS
PRIMARY AND SECONDARY LINER MANUFACTURERS SPECIFICATIONS

XR-5[®]

Chemical, Oil and High Temperature Resistant Geomembrane



Seaman Corporation

INDUSTRIAL FABRIC DIVISION

1000 Venture Blvd.
Wooster, Ohio 44691

SEAMAN CORPORATION XR-5[®] CHEMICAL RESISTANT GEOMEMBRANE

PRODUCT FEATURES

1. POLYESTER –

Better chemical resistance, exceptional dimensional stability, longer life than nylon, non hydroscopic, lower elongation.

2. POLY-R[®] WEAVE –

Lower elongation, good tear resistance, lower stretch helps adhesion, seam strength, dead load.

3. POLYMER COATING –

Excellent chemical and oil resistance – no plasticizers to migrate or extract – high temperature performance, up to 220°F.

Flexibility over the years – dielectrically and heat sealable with ease, excellent abrasion resistance.

4. COATED FABRIC –

Chemical and mechanical adhesion, no wicking, low water absorption.

5. EASE OF FIELD REPAIR –

Can be patched with portable heat gun.

XR-5[®] FLUID RESISTANCE

The data below is the result of laboratory tests and is intended to serve only as a guide. No performance warranty is intended or implied. The degree of chemical attack on any material is governed by the conditions under which it is exposed. Exposure time, temperature, and size of the area of exposure usually varies considerably in application, therefore, this table is given and accepted at the user's risk. Confirmation of the validity and suitability in specific cases should be obtained.

When considering XR-5 for specific applications, it is suggested that a sample be tested in actual service before specification. Where impractical, tests should be devised which simulate actual service conditions as closely as possible.

EXPOSURE	RATING	EXPOSURE	RATING
Acetic Acid (5%)	B	Kerosene	A
Acetic Acid (50%)	C	Magnesium Chloride	T
Ammonium Phosphate	T	Magnesium Hydroxide	T
Ammonium Sulfate	T	Methyl Alcohol	A
Antifreeze (ethylene glycol)	A	Methyl Ethyl Ketone	X
Animal Oil	A	Mineral Spirits	A
Aqua Regia	X	Naptha	A
ASTM Fuel A	A	Nitric Acid (5%)	B
ASTM Oil #2	A	Nitric Acid (50%)	C
Benzene	X	Perchloroethylene	C
Calcium Chloride Solutions	T	Phenol	X
Calcium Hydroxide	T	Phenol Formaldehyde	B
20% Chlorine Solution	A	Phosphoric Acid (50%)	A
Clorox	A	Phosphoric Acid (100%)	C
Conc. Ammonium Hydroxide	A	Phthalate Plasticizer	C
Corn Oil	A	Potassium Chloride	T
Crude Oil	A	Potassium Sulphate	T
Diesel Fuel	A	Raw Linseed Oil	A
Ethyl Acetate	C	SAE-30 Oil	A
Ethyl Alcohol	A	Salt Water (25%)	B
Fertilizer Solution	A	Sea Water	A
#2 Fuel Oil	A	Sodium Acetate Solutions	T
#6 Fuel Oil	A	Sodium Bisulfite Solution	T
Furfural	X	Sodium Hydroxide (60%)	A
Gasoline	B	Sodium Phosphate	T
Glycerin	A	Sulphuric Acid (50%)	A
Hydraulic Fluid	A	50% Tanic Acid	A
Hydrocarbon Type II	C	Toluene	C
Hydrochloric Acid (50%)	A	Transformer Oil	A
Hydrofluoric Acid (5%)	A	Turpentine	A
Hydrofluoric Acid (50%)	A	Urea Formaldehyde	A
Hydrofluosilicic Acid (30%)	A	Vegetable Oil	A
Isopropyl Alcohol	T	Water (200°F.)	A
Ivory Soap	A	Xylene	X
JP-4 Jet Fuel	A	Zinc Chloride	T

Ratings are based on visual and physical examination of samples after removal from the test chemical after the samples of Black XR-5 were immersed for 28 days at room temperature. Results represent ability of material to retain its performance properties when in contact with the indicated chemical.

RATING KEY:

- A – Fluid has little or no effect
- B – Fluid has minor to moderate effect
- C – Fluid has severe effect
- T – No data – likely to be acceptable
- X – No data – not likely to be acceptable

Perhaps a more meaningful test is determination of the permeability or diffusion rate of the liquid chemical through the coated fabric. The permeability of Style 8130 XR-5, 30 Mil Hypalon laminate, and 30 Mil CPE laminate to various chemicals was determined by the ASTM D814-55 inverted cup method. All tests were run at room temperature and results are shown in the table.

COMPARATIVE CHEMICAL PERMEABILITY DATA
Tested According to ASTM D814-55 Inverted Cup Method

Chemical	8130 XR-5 Black		30 Mil Hypalon Laminate		30 Mil CPE Laminate	
	Fl. oz./ft. ² / 24 hours	Gal./Acre/ 24 hours	Fl. oz./ft. ² / 24 hours	Gal./Acre/ 24 hours	Fl. oz./ft. ² / 24 hours	Gal./Acre/ 24 hours
Kerosene	0.0134	4.6	0.147	50.0	0.223	75.8
Hi-Test Gas	0.184	62.5	1.51	513.8	2.280	776.0
Ohio Crude Oil	0.003	1.1	0.014	4.7	0.010	3.5
Low-Test Gas	0.523	178.0	-	3000.0*	-	3000.0
Raw Linseed Oil	0.001	0.34	0.006	2.0	0.008	2.7
Ethyl Alcohol	0.021	7.2	0.073	24.8	-	3000.0*
Naphtha	0.0369	12.6	0.376	127.9	0.096	32.6
Perchloroethylene	1.797	611.0	-	3000.0*	-	3000.0*
Hydraulic Fluid	0.0006	0.21	0.009	3.3	1.110	378.0
100% Phosphoric Acid	0.320	108.9	Not available	Not available	Not available	Not available
50% Phosphoric Acid	0.023	7.8	Not available	Not available	Not available	Not available

* Fluid totally diffused after seven days

Using the same test procedure, the water permeability of Style 8130 XR-5* versus a comparable Hypalon and CPE laminate was determined.

	Water Permeability	
	Fl. oz./ft. ² /24 hours	Gal/acre/24 hours
Style 8130 XR-5 Black	0.0086	3.0
Hypalon laminate	0.0079	2.7
CPE laminate	0.34	114.0

Style 8130 XR-5 Black Seam Strength After Immersion

Two pieces of Style 8130 were heat sealed together (seam width 1 inch overlap) and formed into a bag. Various oils and chemicals were placed in the bags so that the seam area was entirely covered. After 28 days at R.T., the chemicals were removed and one inch strips were cut across the seam and the breaking strengths immediately determined. Results are listed below.

Chemical	Seam Strength
None	340 lbs. fabric break – No Seam Failure
Kerosene	355 lbs. fabric break – No Seam Failure
Ohio Crude Oil	320 lbs. fabric break – No Seam Failure
Hydraulic Fluid	385 lbs. fabric break – No Seam Failure
Toluol	0 lbs. fabric delaminate
Naphtha	380 lbs. fabric break – No Seam Failure
Perchloroethylene	390 lbs. fabric break – No Seam Failure

Even though 1 inch overlap seam is used in the tests to study the accelerated effects, it is very important that XR-5 is used with a minimum of 2 inch overlap seams in actual application. In some cases where temperatures exceed 160°F and application demands extremely high seam load it may be necessary to use a wider width seam.

30 DAY SOIL BURIAL TEST

The samples were weighed, then placed on a 4-inch bed of active, compacted soil and covered with a 1-inch layer, of loosely packed soil. After 30 days in a chamber maintained at 85°F. to 90°F., and 90% relative humidity, the samples were recovered, rinsed with water, air dried and reweighed for % weight loss determination.

Sample	30 Day Soil Burial			
	Weight (gms)		Weight Loss (gms)	% Weight Loss
	Before Soil Burial	After 30 days Soil Burial		
8130 XR-5	39.50	39.40	0.1	0.25
DC-7 Black				

Accelerated Weathering Test

XR-5 has been tested in the carbon arc weatherometer for over 8000 hours of exposure. The sample showed no loss in flexibility and no significant color change. Based on field experience of Seaman Corporation vinyls and similar weatherometer exposure tests, XR-5 should have an outdoor weathering life significantly longer than vinyls, particularly in tropical or subtropical applications.

Summary

XR-5 is a proprietary polymeric alloy. Extensive laboratory tests have been performed in the past 8 years to determine the true chemical resistant characteristics of this compound. These tests were compared with other well-known chemical resistant materials to get a relative measure of the quality of XR-5. In addition, over 20,000,000 sq. ft. of XR-5 are currently in application. This test data may be modified as further research data and field experience are obtained.

As can be seen from the presented data, XR-5 shows superior over-all chemical resistance. Added to the chemical resistant qualities of the compound is Seaman Corporation's Poly-R base fabric which has excellent chemical resistance, as well as very high tear strengths. Seaman Corporation's unique coating system along with specially compounded adhesive systems gives a true chemical bond between the coating and the fibers, preventing delamination failures and wicking of chemicals in the yarns.

XR-5 also has the advantage of fabrication ease. This material can be seamed with high frequency or thermal welding equipment.

As can be noted from the physical specifications, XR-5 has cold weather performance limitations. This must be considered in any anticipated applications.

All technical information published in the brochure refers to the Black XR-5; other colors may not have the same chemical resistance as the black. If a color other than black is required, we suggest you check with Seaman Corporation as to the compatibility and resistance to that particular chemical environment.

Before utilizing XR-5 in any applications, all of the presented data should be studied carefully, particularly the permeability information. Contact your Seaman Corporation representative or Seaman Corporation Sales office if there is any question concerning a particular application. If a chemical is not listed in the test results, the Seaman Corporation customer should perform immersion tests with subsequent testing by the Seaman Corporation laboratory.

MEMBRANE LINER SPECIFICATIONS SUPPORTED ELASTOMERIC FLEXIBLE

Material supplied under these specifications should be first quality products as designed and manufactured specifically for this application and demonstrated to be suitable and durable for this purpose. A minimum of 100,000 square feet of this material should be installed for lining hydraulic structures for proven material experience.

The liner material is to be a coated fabric. The base fabric to be a suitable strength polyester filament yarns and the coating shall be of a suitable polymer like elasticized PVC which is resistant to wastewater, brine solutions, oils and sunlight. The coated fabric should be dielectrically sealable and heat sealable.

Liner fabric should have good appearance qualities and be free of defects such as holes (including pinholes), tears, modules, delamination, blisters or any other defects that may affect its serviceability. Edges shall be free of nicks and cuts visible to the naked eye. Pinholes shall be patched in accordance with the approved procedure (available from the manufacturer).

Coated fabric shall meet the following specification:

8130 XR-5 ⁺ Property	Test Method	Requirement
1. Thickness	ASTM 751	30 ± 2 mil 0.030 to 0.034 in.
2. Weight	ASTM D-751	30.0 ± 2 oz./sq. yd.
3. Tear Strength	ASTM D-751	125 lbs./125 lbs.
4. Breaking Strength	ASTM-D-751 Grab Tensile	475 lbs./425 lbs.
5. Low Temperature	ASTM-D-2136 4 hrs. — 1/8" mandrel	—30°F. No cracking
6. Dimensional Stability (each direction)	ASTM-D-1204 212°F. — 1 hr.	2% max.
7. Hydrostatic Resistance	ASTM-D-751 Method A	500 psi (min.).
8. Blocking Resistance 180°F.	Method 5872 Fed. Std. 191a	#2 Rating Max.
9. Adhesion — Ply. lbs./in. of width	ASTM-D-413 2" per min.	9 lbs./in. (min.) On film tearing bond
10. Adhesion — heat sealed seam lbs./in. of width	ASTM-D-751	10 lbs./in. (min.)
11. Dead Load Seam shear strength	(Mil-T-43211[GL]) Para. 4.4.4 (4 hours) 2" overlap seam	Must withstand 210 lbs./in. @ 70°F. 105 lbs./in. @ 160°F.
12. Abrasion Resistance (Taber Method)	Method 5306 Fed. Std. 191a H-18 Wheel 1000 gm. load	2000 cycles before fabric exposure 50 mg./100 cycles max. wt. loss
13. Weathering Resistance	Carbon-Arc Atlas Weather-o-meter	8000 hrs. No appreciable changes or stiffening or cracking of coating
14. Water Absorption	ASTM-D-471 7 days	5% max. @ 70°F. 12% max. @ 212°F.
15. Wicking	Shelter-Rite procedure (copy attached)	1/8" max.
16. Puncture Resistance	FTMS 101B Method 2031	350 lbs.

**8430 XR-5:
Property**

Property	Test Method	Requirement
1. Thickness	ASTM-751	30 ± 2 mil. 0.030 to 0.034 in.
2. Weight	ASTM D-751	30.0 ± 2 oz./sq. yd.
3. Tear Strength	ASTM D-751	60 lbs./60 lbs.
4. Breaking Strength	ASTM-D-751 Grab Tensile	375 lbs./350 lbs.
5. Low Temperature	ASTM-D-2136 4 hrs. - 1/8" mandrel	-30°F. No cracking
6. Dimensional Stability (each direction)	ASTM-D-1204 212°F. - 1 hr.	2% max.
7. Hydrostatic Resistance	ASTM-D-751 Method A	500 psi (min.)
8. Blocking Resistance 180°F.	Method 5872 Fed. Std. 191a	#2 Rating max.
9. Adhesion - Ply. lbs./in. of width	ASTM-D-413 2" per min.	9 lbs./in. (min.) On film tearing bond
10. Adhesion - heat sealed seam lbs./in. of width	ASTM D-751	10 lbs./in. (min.)
11. Dead Load Seam shear strength	(Mil-T-43211[GL]) Para. 4.4.4 (4 hours)	Must withstand 106 lbs./in. @ 70°F. 53 lbs./in. @ 160°F.
12. Abrasion Resistance (Taber Method)	Method 5306 Fed. Std. 191a H-18 Wheel 1000 gm. load	2000 cycles before fabric exposure 50 mg./100 cycles max. wt. loss
13. Weathering Resistance	Carbon-Arc Atlas Weather-o-meter	8000 hrs. No appreciable changes or stiffening or cracking of coating
14. Water Absorption	ASTM-D-471 7 days	5% max. @ 70°F. 12% max. @ 212°F.
15. Wicking	Shelter-Rite procedure (copy attached)	1/8" max.
16. Puncture Resistance	FTMS 101B Method 2031	300 lbs.

EXHIBIT 6

MILAGRO GAS TREATMENT PLANT EVAPORATION CELLS
MANUFACTURERS SULFINOL COMPATIBILITY TEST RESULTS

 **Seaman Corporation**
INDUSTRIAL FABRIC DIVISION

Research and Development Dept.
4510 Crown Hill Dr.
Millersburg, OH 44654
216/674-2015

October 14, 1986

CUSTOMER: Shell Western E&P Inc.

REQUEST: #1215

SUBJECT: XR-5 8130 Chemical Compatibility to Sulfinol Diisopropanolamine
Solution, 28 Day Immersion

Samples of 8130 XR-5[®] DC-7 Black were immersed in sulfinol
solution for 14 days and 28 days at room temperature by Shell
Western E&P Inc. and sent to us for testing.

COMMENTS: After 28 days the fabric samples remained flexible and appear to
be satisfactory with no apparent degradation of the coating and
no significant loss of tensile strength.

A properly fabricated liner of 8130 XR-5[®] would be suitable for
the application.

Bala Venkataraman
Vice President
Research & Development

Original: Felon Wilson
cc: Cheryl/lab/file

Attach: Test Results

Seaman Corporation
Millersburg, Ohio

Report of Test
9/24/86

CUSTOMER: Shell Western E&P Inc.

REQUEST: #1215

RESULTS: 14 DAY IMMERSION AT ROOM TEMPERATURE 8130 XR-5^o
SUFINOL DIISOPROPANOLAMINE

TRAPEZOID TEAR
Method 5136

Warp	Fill
31	53
33	47
30	47
31 lbs.	49 lbs.

STRIP TENSILE
Method 5102

Warp	Fill
365	385
370	375
380	360
372 lbs./in.	373 lbs./in.

RESULTS: 29 DAY IMMERSION AT ROOM TEMPERATURE 8130 XR-5^o
10/14/86 SULFINOL DIISOPROPANOLAMINE

TRAPEZOID TEAR
Method 5136

Warp	Fill
41	54
38	52
37	57
39 lbs.	54 lbs.

STRIP TENSILE
Method 5102

Warp	Fill
365	380
355	375
360	340
360 lbs./in.	365 lbs./in.

Bala Venkataraman
Vice President
Research & Development

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

MSD: 000072 Page: 1

DIPA
PRODUCT NAME: DIISOPROSPANOLAMINE - COMMERCIAL GRADE

Effective Date: 09/25/78 Date Printed: 10/16/85 Product Code: 21326

1. INGREDIENTS:

Diisopropanolamine, minimum 99%

2. PHYSICAL DATA:BOILING POINT: 486F 5mm hg
VAP PRESS: < 0.1 mmHg @ 20C
VAP DENSITY:
SOL. IN WATER: Completely miscible.
SP. GRAVITY: 1.0 30/4C
APPEARANCE: White solid.
ODOR: Slightly ammoniacal odor.**3. FIRE AND EXPLOSION HAZARD DATA:**FLASH POINT: 280F
METHOD USED: PMCCFLAMMABLE LIMITS
LFL:
UFL:

EXTINGUISHING MEDIA: Water fog, alcohol foam.

FIRE & EXPLOSION HAZARDS: Not available.

FIRE-FIGHTING EQUIPMENT: Not available.

(Continued on Page 2)

(R) Indicates a trademark of The Dow Chemical Company

SHELL OIL COMPANY
 SHELL CHEMICAL COMPANY
 SHELL DEVELOPMENT COMPANY
 SHELL PIPE LINE CORPORATION



MATERIAL SAFETY DATA SHEET

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or of state or federal grounds for legal action.

SECTION I

MANUFACTURER'S NAME Shell Chemical Company		EMERGENCY TELEPHONE NO. 713-473-2461
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 2463, Houston, Texas 77001		
CHEMICAL NAME AND SYNONYMS Chemical Blend		TRADE NAME [REDACTED]
FORMULA		

SECTION II HAZARDOUS INGREDIENTS*

COMPOSITION	%	SPECIES	LC50		CONCENTRATION	TEST
			ORAL	DERMAL		
PIGMENTS						
CATALYST						
VEHICLE						
SOLVENTS						
ADDITIVES						
OTHERS	Typical Mixture					Rabbit
Diisopropanolamine	35					
Sulfolane V	50	Rat	5,000 mg/kg	2.8 gm/kg		
Water	15					

SECTION III PHYSICAL DATA

BOILING POINT (°F) Range	212-550	SPECIFIC GRAVITY (H ₂ O=1) at 68°F	1.1
VAPOR PRESSURE (mmHg) at 68°F	3	PERCENT VOLATILE BY VOLUME (%)	15
VAPOR DENSITY (AIR=1)	3.9	EVAPORATION RATE (H ₂ O=1)	
SOLUBILITY IN WATER	Appreciable		
APPEARANCE AND ODOR	Slightly viscous fluid, mild odor		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LC ₅₀	LD ₅₀
Ca 260°F C.O.C.			
EXTINGUISHING MEDIA			
Dry Chemical, Foam, CO₂			
SPECIAL FIRE FIGHTING PROCEDURES			
ADDITIONAL FIRE AND EXPLOSION HAZARDS			
Releases SO₂ on combustion			

EXHIBIT 7

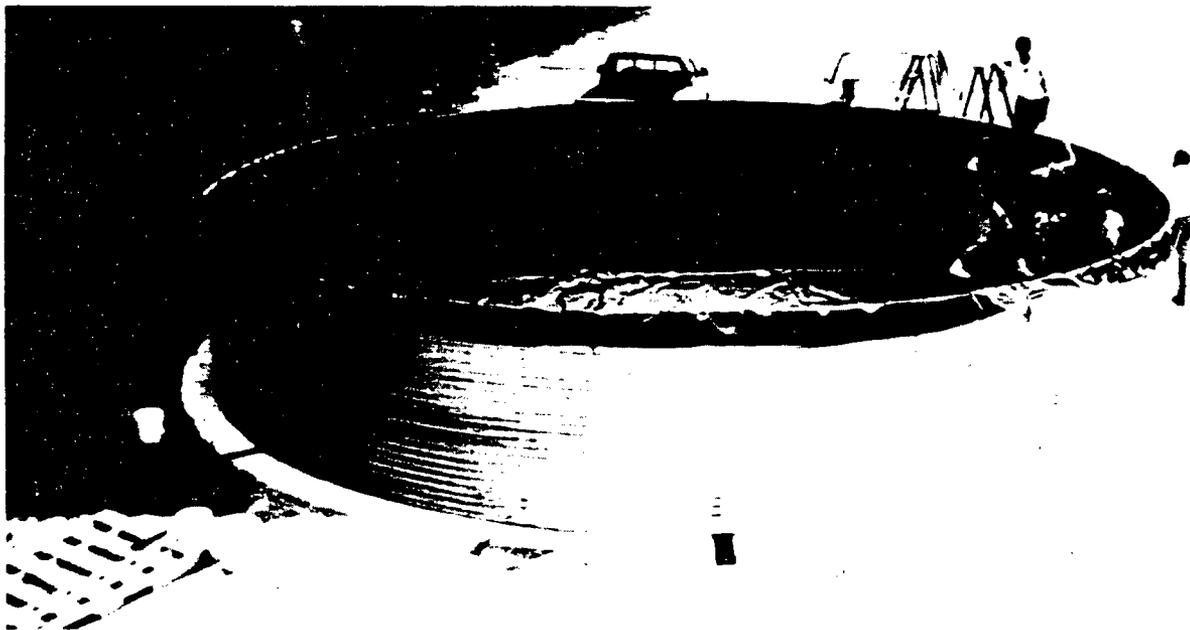
MILAGRO GAS TREATMENT PLANT EVAPORATION CELLS TANK DESIGN AND CONSTRUCTION

Environetics Porta Tank System

The patented* Porta Tank system is a unique component tank system designed for easy installation in a wide range of demanding applications. This

revolutionary design provides safe, low cost storage for all types of liquids: potable water, sewage, chemical solutions, even hazardous waste! The modular

design allows the versatile Porta Tank system to be assembled quickly and easily with basic hand tools and minimal site preparation.



Modular Construction

Porta Tank utilizes pre-drilled galvanized steel wall sections that bolt together on-site for maximum transportability. Most of our tanks ship in the space of a single wall panel... 9'-9" long by 2'-9" wide. Corrugated wall sheets are rolled to the precise tank diameter, color coded by gauge and nested on a single pallet for shipment. Mill rolled, galvanized top and base angles provide additional structural reinforcement against wind loads and settling. This combination of industry proven components provides quick and easy construction at the lowest cost per gallon in the industry.

Industrial Fabric Buffer

To ensure high security liquid storage, Environetics protects the liquid containment liner from harm with a patented total isolation buffer. The high-tech non-woven polypropylene buffer material maintains 100 mils of distance between the reinforced liner and the tank walls. The fabric buffer also provides a base for the reinforced thermoplastic liner and the steel walls to rest on. This barrier reduces the risk of leaks by isolating the liner from sharp objects and abrasive actions.

* U. S. Patent No. 4,860,916

20 Year Tank Life...

Porta Tank is constructed from durable industrial thermoplastic materials and heavy gauge galvanized steel wall sections. These durable materials have been field proven for over twenty years in highly reliable liquid containment applications.

The double lined Porta Tank II system is available with optional electronic leak detection sensors to guarantee security for critical liquid containment applications. Please contact Environetics for additional information concerning the double lined Porta Tank II system or any other specific applications.

Environetics offers a wide range of pre-engineered sizes for any need. Twelve standard pre-fabricated tanks ranging in capacity from 6,500 to 485,000 gallons... or custom sizes for your specific application.

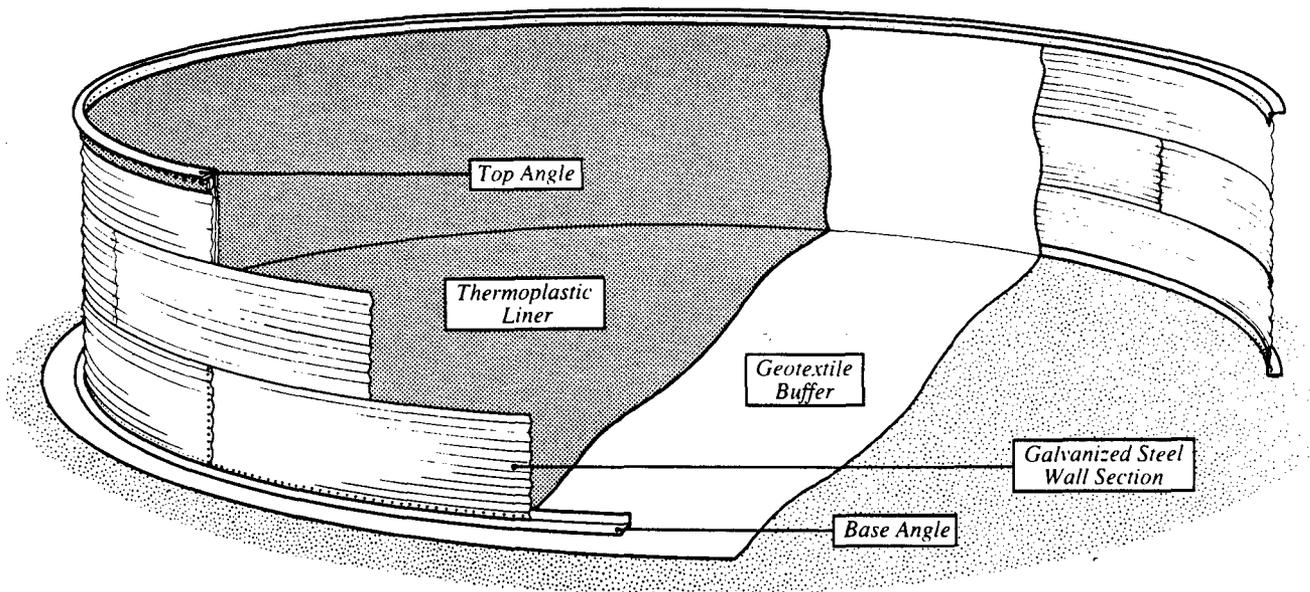
Porta Tank Features

1. Only "Buffered" Tank Design

The exclusive buffered design protects the tank liner membrane from the galvanized steel wall structure and from irregular

surfaces beneath the tank structure. This bottom buffer also significantly reduces wall settling problems without requiring the construction of a

concrete tank foundation. Using the Porta Tank system will reduce installation time and material costs, therefore lowering the overall cost of your installation.



2. Versatile Liner

Environetics' wide selection of tank liner materials safely hold most industrial liquids. Liner systems can be ordered for secondary containment of hazardous liquids. Biological liners have been proven for over 20 years in field applications.

3. Tough Construction

Heavy gauge steel wall sections (similar to road culvert design) are hot-dip galvanized to provide years of service. Chemical-resistant reinforced membrane materials are used for the liquid storage liners.

4. Low Cost

High strength galvanized corrugated steel is durable and economical. Industrial thermoplastic liners feature maximum economy and extended service life.

5. Quick Installation

A six man crew can erect up to a 100,000 gallon Porta Tank in only one day (less than one-third of the time required for a welded tank) using ordinary hand tools. Pipes and drains can be easily connected in a variety of ways. Light-weight components provide easy transportation to the construction site by two men.

6. Easy Site Preparation

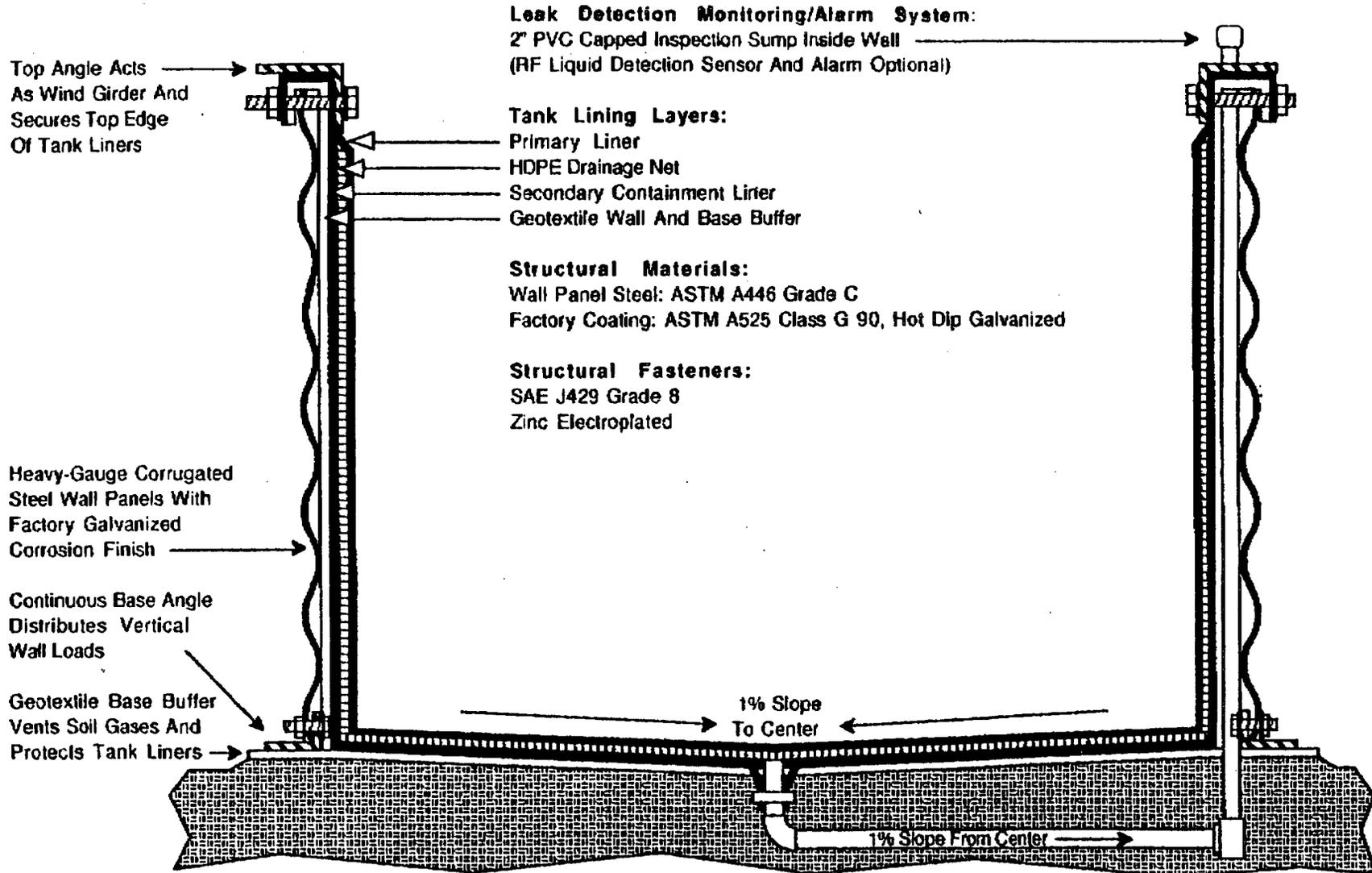
The Porta Tank can be assembled on almost any firm, level surface. Simply level the ground smooth, then remove any sharp objects.

7. Re-locatable

Rapidly disassembles into 9'-9" x 2'-9" sections for easy handling. The Porta Tank leaves no on-site materials after relocation.

8. Easy to Ship

Porta Tank shipping packages take up very little space. A 26,000 gallon tank is shipped on a single pallet that will fit into a standard van. Larger tanks are shipped in a similar fashion.



Porta Tank Section With Secondary Containment System

Not To Scale

Site Preparation Notes:

1. Soil should be free of obvious sharp objects which could penetrate liner.
2. Soil should be graded to $\pm 1/2"$ across perimeter of tank wall and compacted to 95% of dry density.
3. Foundations should be checked for soil bearing capacity prior to installation.



ENVIRONETICS, INC.

1201 Commerce Street SK# 901113-2
 Lockport, Illinois 60441 Date: 11/13/90
 Tel: (815) 838-8331 Drawn By: SJW
 Fax: (815) 838-8336 Scale: NTS

WILLIAMS FIELD SERVICES
MILAGRO GAS TREATMENT PLANT
SE 1/4 SEC. 12, T-29-N, R-11-W
(801) 584-6949

EXHIBIT 10

Sign at Facility