ENVIROMENTAL SITE ASSESSMENT WORKPLAN

ENVIRONMENTAL ASSESSMENT OF MONUMENT DISPOSAL SITE

Prepared for:

Amerada Hess Corporation
Monument, New Mexico

Carter & Burgess, Inc.

C&B No. 92139701F

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Cover Photograph: Looking at Monument Disposal Site from Northwest

I. EXECUTIVE SUMMARY

Carter & Burgess, Inc. was retained by Amerada Hess Corporation to perform an environmental assessment at the Monument Disposal Site located approximately three miles west of Monument, New Mexico. The scope of services included the installation of three borings with conversion to wellpoints, sampling materials in abandoned drums and quantification of the materials contained in the waste pile.

On December 9 and 10, 1992, representatives of Carter & Burgess, Inc. visited the site to gather information on the physical condition of the site and contents of the waste pile. A detailed walk-over was conducted to prepare a photographic inventory of materials in the area. Twenty-six drums were identified in a segregated area and each of these was examined. Notes on the original labels were made and samples of some of the contents were collected for additional observation. Drums of obviously similar contents (such as some virgin motor oil drums) were generally not sampled. Numbers were spray-painted on the drums to enable easy identification during the clean-up process.

Three borings (B-1, B-2, and B-3) were installed to depths of 60 feet, 120 feet and 80 feet below land surface, respectively. The potential for a water-bearing zone was only detected in B-1 which was ultimately completed as monitor well MW-1. A ground water sample was collected for analysis of general parameters which were found to be within normal ranges for the region.

Most of the materials observed in the waste disposal area are nonhazardous in nature. The contents of some of the drums, primarily waste production fluids, do exhibit hazardous waste characteristics (ignitability as D001 waste) according to the Material Safety Data Sheets available.

It is recommended that Amerada Hess not only remove the waste materials for proper disposal and cap the area with native soils, but also properly dispose of the drums. The presence of the pit creates an attractive nuisance and encourages continued dumping of waste materials. As stated previously, the liquids should be disposed of as hazardous waste. The drums will need to be overpacked due to their generally deteriorated state and sent to an approved facility for disposal (most likely incineration).

This has been a modest investigation to determine if the disposal site posed a significant environmental hazard. It is possible that additional drums containing liquid could be found under the surficial waste materials and these would also require overpacking and sampling prior to transport. Additionally, some of the scrap metal, particularly the empty trash barrels, may be salvageable for sale to a metal recycling facility.

II. SITE ASSESSMENT

A. Aerial Photograph Review

Three aerial photographs of the site were obtained from the United States Geological Survey office, spanning a time period of approximately twenty years. These photographs were reviewed to provide historical information on operations at the subject site. Copies of the photographs are included in Appendix 1.

Photograph dated March 5, 1957

The subject site is visible in the upper central portion of the photograph which has an estimated scale of 1 inch = 1500 feet. The western side of the site is characterized by a darker color which appears indicative of the presence of a trench, possibly filled with a liquid. The remainder of the subject site is light-colored, indicative of the disturbance of the native soils. The immediately adjacent property appears to be undisturbed native soils. What appears to be a small upright tank battery with three light-colored tanks and a stock pond or lagoon can be observed southeast of the subject site. A production yard and camp is located northeast of the subject site. A major industrial facility, known to be Climax Chemical, is located southwest of the subject site. Climax Chemical is known to manufacture various acids. The remaining vicinity is marked with numerous small scarred areas which are believed to be indications of oil field activity.

Photograph dated January 14, 1975

The subject site is visible in the approximate center of the photograph. Given the large scale of the photograph (approximately 1 inch = 2000 feet), it is

difficult to distinguish any special features of the site. There does not appear to be a noticeable dark area, as observed in the earlier photograph. The production yard can be observed, although it is much smaller and the camp portion no longer exists. The tank battery located southeast of the subject site is still visible, although distinct features cannot be discerned. The stock tank or pond in this vicinity appears to have been filled. The Climax Chemical facility located southwest of the subject site appears to remain active. The Climax facility has undergone some changes over the years, with the addition of new structures and demolition of some structures. One noticeable change is the white area with two dark rectangular areas to the northwest of the industrial facility. This white area is known to be a stockpile of salt by-product from the industrial facility. The rectangular areas are suspected of being lagoons, although this is not known. The remaining vicinity has an increased number of scarred areas, indicating increased oil field activity in the vicinity.

Photograph dated July 2, 1978

The subject site is visible in the approximate center of the photograph. The smaller scale of this photograph (approximately 1 inch = 300 feet) allows easy identification of the site and pertinent features. What was previously observed as a dark rectangular area (trench) on the western side of the subject site appears to have been filled and is presently covered with some additional material, perhaps waste or scrap. The original scarified area appears to be covered with vegetation during this time and a new scarified area, perhaps a vehicle turning area, is observed on the north side of the subject site. The production yard to the northeast is observable in close approximation to 1992 appearance. The scale of this photograph allows observation of the remaining traces (immediately east and west) of the camp associated with this yard. Native vegetation appears to be reclaiming these

areas. The tank battery observed in the 1957 photograph (southwest of the subject site) remains in place, although it appears that one of the tanks has been removed and the remaining two tanks have been coated with dark paint. The scale of this photograph did not allow inclusion of the industrial facility to the southwest, although it is known to exist.

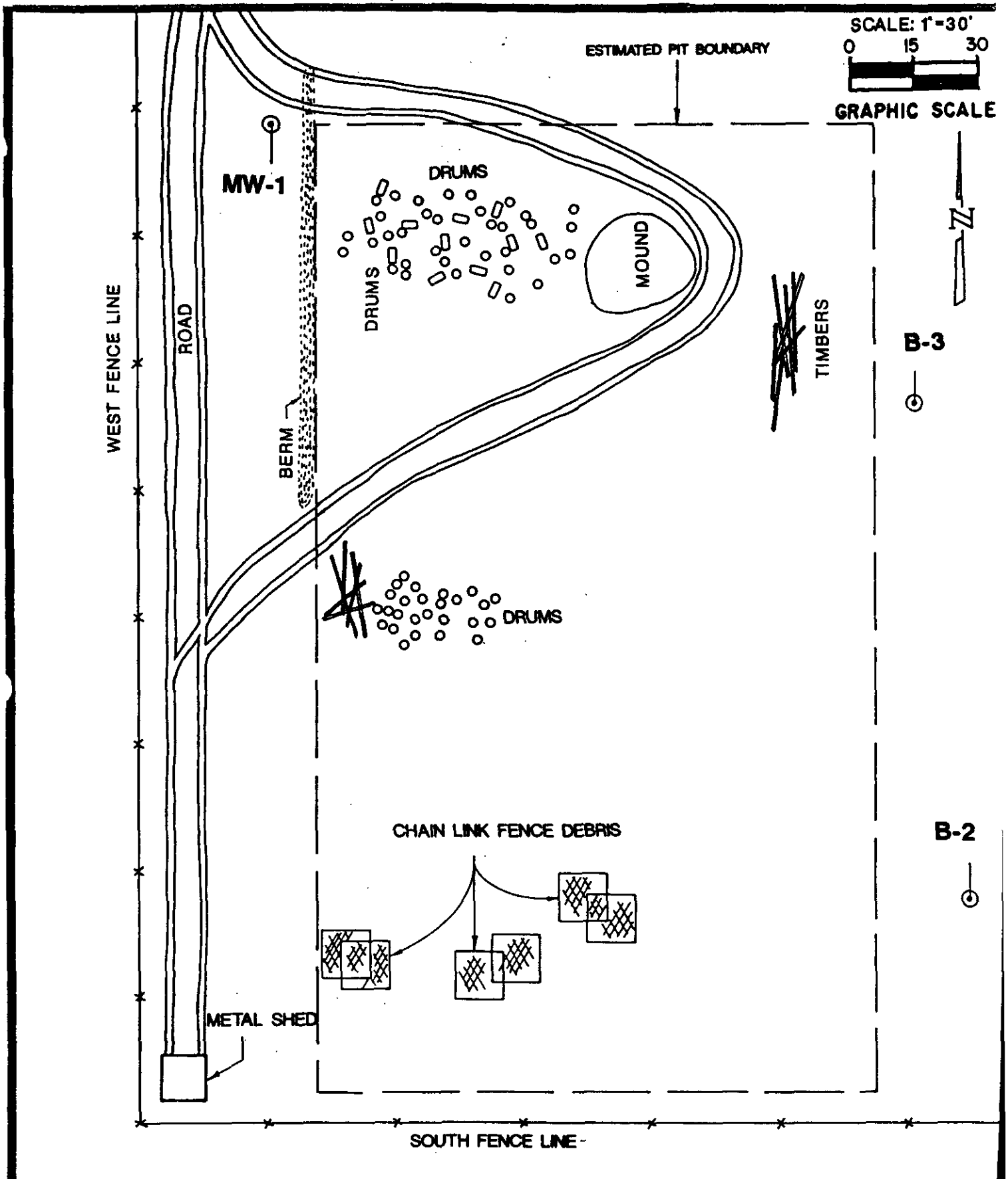
In summary, it can be observed from the historical aerial photographs that the subject site has been in existence since the mid-1950's and appears to have been used for the disposal of oil field waste materials. The surrounding vicinity has been involved in oil field production as evidenced by the presence of the production yard and camp, the tank battery and numerous scarified exploration areas. The Climax Chemical acid manufacturing facility located southwest of the subject site has also been in place since the mid-1950's.

B. Site Reconnaissance

Carter & Burgess, Inc. personnel visited the site on December 9 and 10, 1992. A brief walk-over inspection of the waste disposal area was performed to assess the need for safety gear, to determine how best to proceed with characterizing the site and to select the best locations for installation of the soil borings. It was determined from the walk-over that standard work clothing would provide adequate protection for most of the site activities. Tyvek coveralls, latex inner gloves and butyl rubber exterior gloves were selected for splash protection during the collection of samples from the abandoned drums.

After the brief walk-over, a detailed walk-over was conducted to provide an inventory of the visible contents of the waste pile. The inventory was recorded photographically. A copy of the photographic record is contained

in Appendix 2 for reference. A site map which graphically represents the subject site is included on the following page.



CARTER & BURGESS, INC.
ENGINEERS · PLANNERS · SURVEYORS
7950 ELMBROOK DRIVE / SUITE 250 / DALLAS, TEXAS 75247
(214) 630-0945 METRO (214) 263-2019

AMERADA HESS
MONUMENT SITE
LEA COUNTY, NEW MEXICO

DATE:	12-21-92
PROJ:	92-1397-01F
DRAWN:	JDW
CKD:	JO

Materials observed consisted predominantly of construction debris and oil field scraps. Specifically, there were large quantities of lumber, paint cans, rubber belts, tubing, barbed wire, insulation materials, and miscellaneous general trash. There were also smaller quantities of electrical parts and concrete rubble. Approximately fifty steel 55-gallon drums were observed in the area around the pit. Most of these were either full of trash or marked as such indicating primary use as trash receptacles. Seven of the drums observed in the waste pile were suspected of containing liquids, but were inaccessible for sampling.

C. Drum Inspection and Sampling

Twenty-six drums were deposited in an area adjacent to the waste pit. Of the twenty-six, twenty-three of the drums were observed to have fluids in them; each of these was opened, sampled, if possible, and labelled with spray paint for future reference. The remaining three drums were observed to be empty and were placed on their sides to prevent rainwater from accumulating in them. Table 1, below, provides a summary of the drum sampling.

TABLE 1
Abandoned Drum Contents

Drum No.	Description	Quantity of Fluid	Labeling	pH	Other Notes
1	yellow, oily, viscous	3"	no label	neutral	
2	black, oily, viscous	<0.5"	no label	NS	drip tank
3	yellow, oily, viscous	1"	FINA 11930 SAE 30 non-detergent oil	NS	
4	yellow, oily, viscous	<0.5"	El Mar 2000 oil SAE 30	NS	
5	yellow, oily, viscous	6"	no label	neutral	

Drum No.	Description	Quantity of Fluid	Labeling	pH	Other Notes
6	black, oily, viscous	1/3 full	no label	NA	drip tank
7	black, oily, viscous	1/3 full	orig label - N.L. Baroid Drop WT210 - emulsion breaker	NS	drip tank; MSDS not available
8	black, oily, viscous	1/3 full	orig label - TechniHib 5324	NA	drip tank
9	thick black sludge with petroleum odor	3"	no label	NA	drip tank
10	thick black sludge	3"	orig label badly faded - Exxon Chem Clear 520	NS	MSDS in Appendix; drip tank
11	clear, thin red-brown fluid	2/3 full	no label - mark on top "TH324"	NA	
12	yellow, oily, viscous	6"	El Mar 2000 oil SAE 30	NS	
13	dark brown, watery fluid	3"	no label	8-9	
14	black, oily, viscous	3"	no label	NS	
15	clear, thin red-brown fluid	1/3 full	orig label badly deteriorated	NS	
16	dark brown fluid	full	Baker Oil Treating Aquanox D-741, K-055	6	MSDS in Appendix
17	black, oily, viscous	full w/ 4" water in bottom	Baker drum, label badly deteriorated	NA	
18	clear, oily red-brown fluid	3"	Maverick Chem 450P	neutral	MSDS in Appendix
19	opaque watery fluid	10"	Exxon Chem Breaxit 7862	1	MSDS in Appendix
20	yellow-white watery fluid w/ oil blobs	8"	Petrolite Corp. Tretolite Scale Preventive	5-6	MSDS not available -- classify as D001 waste

Drum No.	Description	Quantity of Fluid	Labeling	pH	Other Notes
21	inaccessible; bungs were rusted in place and could not be removed	full (?)	label badly deteriorated, mark on top "DROP 210"	NS	contents appear to be under pressure
22	black, oily, viscous	8"	no label	NA	drip tank
23	yellow-white watery fluid w/ oil blobs	<1/3 full	no label	5-6	

Notes

1) *Drum No. is number spray-painted on drum during sampling*
2) *NS - not sampled due either to a similar sample already being collected or a lack of material in drum for sampling*
3) *NA - not available*
4) *MSDS - Material Safety Data Sheet*

Where possible, identification names and numbers were obtained from the drums in order to allow tracking of the chemicals. Several companies, including Exxon Chemicals, Maverick Chemicals, and Petrolite Corporation, were contacted to obtain Material Safety Data Sheets (MSDS) for the identified chemicals. The MSDSs which were available have been included in Appendix 3 for reference.

To summarize, the drums were found to contain remnants of either virgin production fluids or waste production fluids, such as spent lubricating oils. The drums have been classified based on known contents and exterior labelling found during the investigation. Drums 1, 3, 4, 5, and 12 were found to contain small quantities of virgin SAE 30 motor oil of varying manufacturers. Drums 2, 6, 7, 8, 9, 10, 14, 17, and 22 were found to contain sludgy waste oil and appear to have been used as drip tanks based on the holes cut in the sides of each drum. Drums 11, 15, and 18 are believed to contain virgin Emulsion Breaker which is a highly flammable liquid with xylene and ethylbenzene components. Drum 16 is believed to contain a

similar product. Drums 20 and 23 were found to contain virgin Scale Preventive which can be either water or solvent based, but contains highly flammable components. Drum 19 is believed to contain virgin Breaxit which is an organic acid. The contents of Drums 13 and 21 could not be classified, based on the information available.

D. Subsurface Investigation

Drilling and monitor well installation during this investigation was conducted by Eades Water Well Drilling & Pump Service of Hobbs, New Mexico. On December 9, 1992, three soil borings were advanced using rotary air drilling techniques. Drill cuttings and returns were monitored continuously while drilling. Soil samples were collected for examination approximately every 10 feet.

The lithology was determined based primarily on visual observation, drilling characteristics, and the examination of returns. Selected soil samples were placed in zip-lock plastic bags, sealed and screened for hydrocarbon vapor concentrations with an Hnu photo-ionization detector (PID). No volatile compounds were detected during drilling operations, and no soil samples were retained for laboratory analysis. Drilling and sampling equipment was decontaminated after each soil boring to eliminate the potential for cross-contamination.

The locations for the three soil borings were selected based on the apparent regional groundwater gradient. Regional groundwater flow was anticipated to be southeasterly based on topography, regional stratigraphy, and local sources knowledgeable in subsurface conditions. Since the precise boundary of the pit was unknown, borings were located outside the suspected boundary of the pit to avoid disturbing possible buried materials, or penetrating any

impermeable strata beneath the pit which could create a vertical migration pathway. Therefore, one boring (MW-1) was positioned in a upgradient position at the northwest corner spoils area, while the other two borings (B-2 and B-3) were positioned in a relative downgradient position.

One of the soil borings, soil boring B-1, was converted to monitor well MW-1. Monitor well MW-1 was completed 60 feet below the surface, using 4-inch diameter flush joint schedule 40 PVC well material. A 15 foot screened interval was set from 45 to 60 feet below the surface using 0.020-inch slotted well screen with 45 feet of solid riser to the surface. The well was completed in an upright fashion within a four foot square concrete pad. The Monitor Well Construction Diagram is provided in Appendix 4.

The relative elevations between the borings were surveyed using a level. The top of the concrete pad was given the arbitrary elevation of 100 feet above sea level, and the two other borings elevations were measured in relation to it. The relative ground elevation at soil boring B-2 was 97.67 feet, and 99.60 feet at B-3.

TABLE 2
Relative Elevations of MW-1, B-2, B-3

MW-1	100.00 ft
B-2	97.67 ft
B-3	99.60 ft

A cross-section constructed from the boring logs appears on the next page. Since there was only a minor relative difference in surface elevations between the borings no corrections were made. The cross-section does not reveal any significant correlation between the borings. There is no correlation of water-

bearing zones between MW-1 and B-2, and B-3. Boring B-3 exhibited the greater sand content but it did not correlate to either of the other borings.

Monitor Well MW-1 / Soil Boring B-1

Soil boring B-1 was drilled to 60 feet below the surface. Caliche was encountered from approximately 1 to 20 feet below the surface. Red silty clay was encountered from approximately 20 to 60 feet below the surface. The returns were dry from 0 to 50 feet. An increase in sand content was observed in samples collected from 50 to 60 feet. Also, a water-bearing zone was encountered at approximately 50 feet below the surface as indicated by muddy returns. To confirm the presence of a viable water-bearing zone, drilling and air circulation were halted, the drill string was raised approximately 10 feet off-bottom, and the hole was left static to allow for possible groundwater infiltration. After approximately 10 minutes, the hole was reamed and air circulation was begun which resulted in watery returns confirming the presence of a water-bearing zone. The boring was advanced to 60 feet below the surface and the same procedure was performed to allow for water infiltration. Again, the watery returns indicated that the water-bearing zone was viable for completion of a monitoring well. Sand pack and bentonite were used to set well screen and casing, and the concrete grout was set around the cased portion of the well the following day.

Soil Boring B-2

Soil boring B-2 was drilled to a depth of 120 feet below the surface. In general, caliche was encountered from 1 to 20 feet below the surface and red to reddish brown silty clay was encountered from 20 to 120 feet. The formation became increasingly dense and darker in color from 90 to 120 feet below the surface. Drilling and air circulation was halted at two different intervals to determine if water-bearing zones were present in B-2.

Dry returns were observed from 0 to 80 feet below the surface, but increased moisture and stiff muddy returns at 80 feet indicated the presence of a possible water-bearing zone. Circulation was halted, the drill string was raised off bottom, and the hole was left static for 30 minutes. Returns after 30 minutes consisted of stiff mud clumps, but no significant indication of a water-bearing zone were observed. The hole was advanced to 87 feet and circulation was again halted, the drill string raised and the hole left static. Again, no significant indications of a water-bearing zone were observed. The hole was advanced to a total depth of 120 feet below the surface with relatively dry returns and no water-bearing zones encountered.

Soil boring B-2 was allowed to stand open overnight. On the morning of December 10, 1992, a hand bailer was lowered into the bore hole, but only minor amounts of muddy water were present in the bore hole. There was no significant accumulation of water and approximately the lower 30 feet of the borehole had collapsed. The hole was subsequently grouted to the surface.

Soil Boring B-3

Soil boring B-3 was drilled to a depth of 80 feet below the surface. In general, caliche was encountered from 1 to 20 feet below the surface and red

to reddish brown silty clay was encountered from 20 to 80 feet. The formation became increasingly silty and sandy in the interval from 50 to 80 feet below the surface. Dry returns were observed from 0 to the total depth of 80 feet below the surface when drilling was halted. No moisture or muddy returns were observed, and no significant indications of a water-bearing zone were observed. Soil boring B-3 was left to stand open overnight. A hand bailer was lowered into the bore hole on the morning of December 10, 1992, and only minor amounts of mud and silt were present on the bailer and in the bore hole. The hole was subsequently grouted to the surface.

E. Analytical Results

On December 10, 1991, monitor well MW-1 was purged using a submersible (Grundfos) pump and allowed to recharge in preparation for sampling. The well was producing approximately 2-3 gallons per minute without a significant reduction in the water level. Approximately 200 gallons of groundwater were purged into a trailer-mounted steel tank by Eades Drilling. Static water level was measured prior to purging with an electronic water level indicator at 37.0 feet from the top of casing (34.0 feet below the surface). Subsequent water level measurements were within 1/10 of a foot.

Groundwater samples were obtained using a teflon bailer lowered into the well with a clean (virgin) nylon rope. Groundwater samples were placed in clean, laboratory-supplied containers, stored on ice, and transported to Analytical Laboratories Inc. in Albuquerque, New Mexico within twenty-four hours of the sampling event. A summary of analytical results appear in Table 3. The analytical report is included as Appendix 5.

TABLE 3
MW-1 Groundwater Sample Results

PARAMETER	LABORATORY RESULT	FIELD RESULT
Total Organic Carbon	6.9 mg/l	--
Carbonate ($CaCO_3$)	<1 mg/l	--
Bicarbonate ($CaCO_3$)	477 mg/l	--
Hydroxide ($CaCO_3$)	<1 mg/l	--
Total Alkalinity (as $CaCO_3$)	477 mg/l	--
Chloride (EPA 325.2)	460 mg/l	--
Conductivity (uMhos/cm)	2790	3200
Fluoride (EPA 353.2)	1.6 mg/l	--
Nitrate (EPA 353.2)	25.4 mg/l	--
Sulfate (EPA 375.2)	280 mg/l	--
pH (EPA 150.1)	7.3 units	6.9
Total Dissolved Solids (160.1)	2000 mg/l	2200 mg/l

III. CONCLUSIONS AND RECOMMENDATIONS

Of the materials that were observed, the pit was found to contain varying quantities of oil field waste materials which are nonhazardous.

Based on observations made at the site the investigation and subsequent laboratory results, there does not appear to be a significant threat to groundwater resulting from the surface and near surface debris. The water-bearing zone encountered in MW-1 was not encountered in either soil boring B-1 or B-2 which indicates lateral migration beneath the site in a water-bearing zone is unlikely. Furthermore, vertical migration appears unlikely based on the apparent impermeable nature of the "red-bed" clay strata which lie beneath the area.

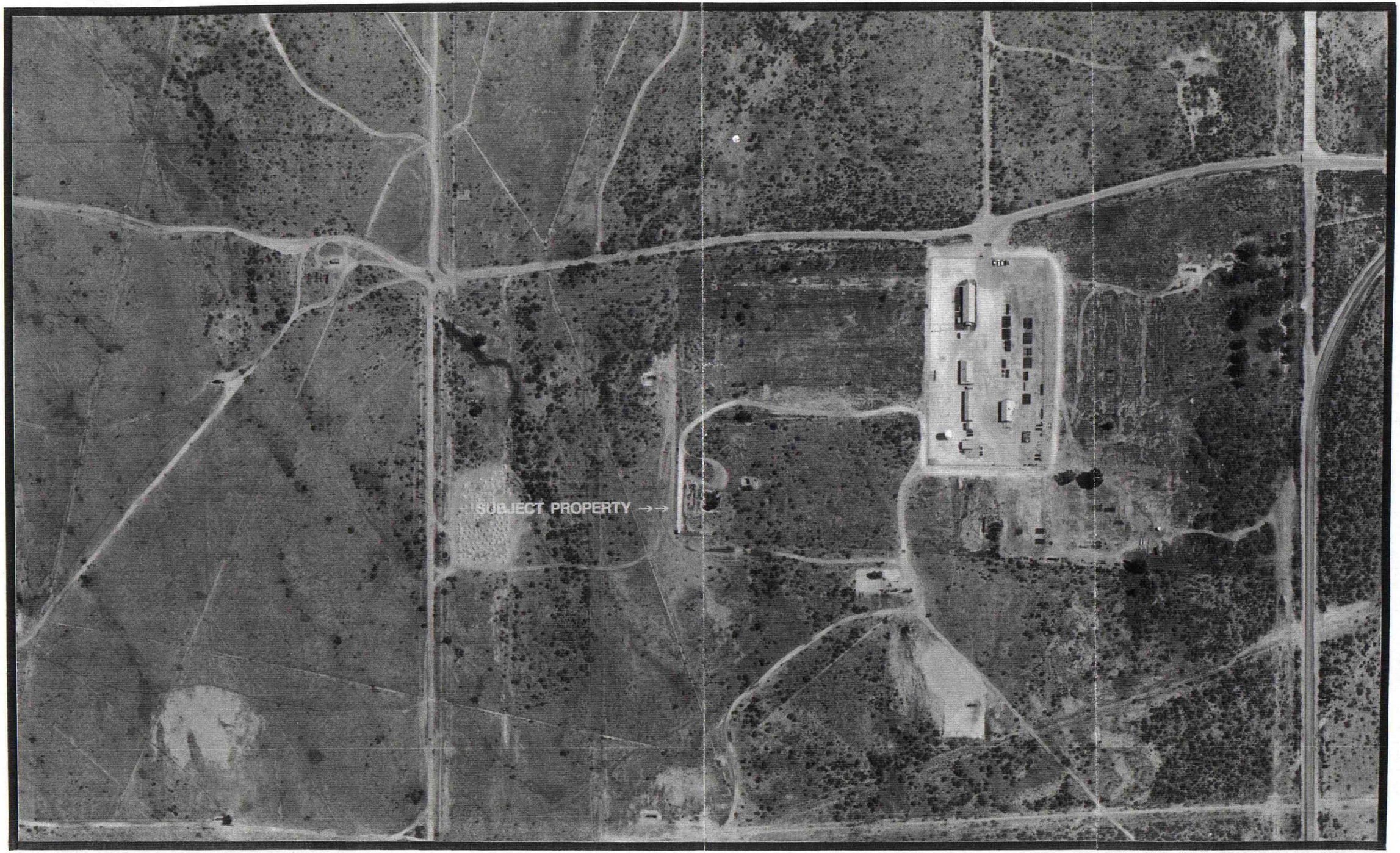
Although, a water-bearing zone was encountered in MW-1, groundwater monitoring wells were not installed at soil boring B-2 and B-3 because field observations indicated that a well would not produce sufficient recharge to adequately sustain sampling, monitoring, or accurately reflect groundwater conditions. As a result, a groundwater gradient map cannot be made. Laboratory results of groundwater sampled from MW-1 do not indicate unusual groundwater conditions, and there were no significant hydrocarbon vapors detected in any of the three soil borings which would indicate the presence of volatile hydrocarbon-based materials.

It is recommended, however, that Amerada Hess remove the waste materials for proper disposal and cap the area with native soils. The presence of the pit creates an attractive nuisance and encourages continued dumping of waste materials. Eventually, hazardous materials could be deposited in the pit which would require more costly clean-up in the future and expose Amerada Hess to potential liability as owner of the property.

Based on the observations of samples and the information gathered from various manufacturers, the drums containing liquids should be disposed of as hazardous waste. The drums will need to be overpacked due to their generally deteriorated state and sent to an approved facility for disposal (most likely incineration). The disposal company may require laboratory analysis of samples from the drums with unidentified contents. The information contained in this report should allow composite sampling of those drums rather than individual sampling and therefore a reduction in disposal costs.

This has been a modest investigation to determine if the disposal site posed a significant environmental hazard. In order to ensure that no potentially hazardous or dangerous materials are buried under the surficial layer of waste, it is recommended that trained personnel be on-site during the loading and transportation of the materials. It is possible that additional drums containing liquid could be found under the surficial waste materials and these would also require overpacking and sampling prior to transport. Additionally, some of the scrap metal, particularly the empty trash barrels, may be salvageable for sale to a metal recycling facility. Revenue would not be significant from the sale of these metal parts, but could offset the total cost of cleaning up the site.

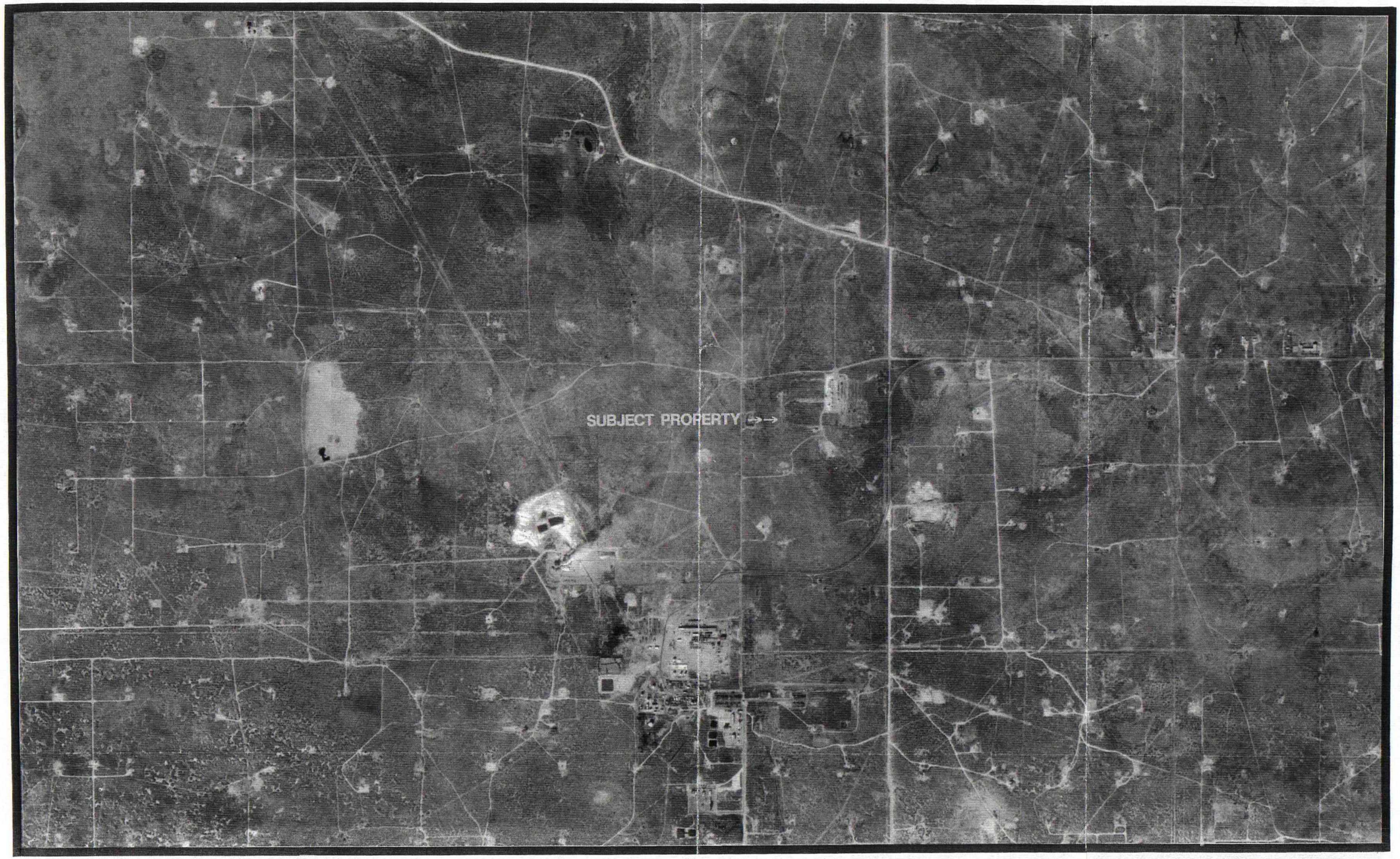
APPENDIX 1 - Aerial Photographs



APPROXIMATE SCALE: 1" = 300'

NORTH

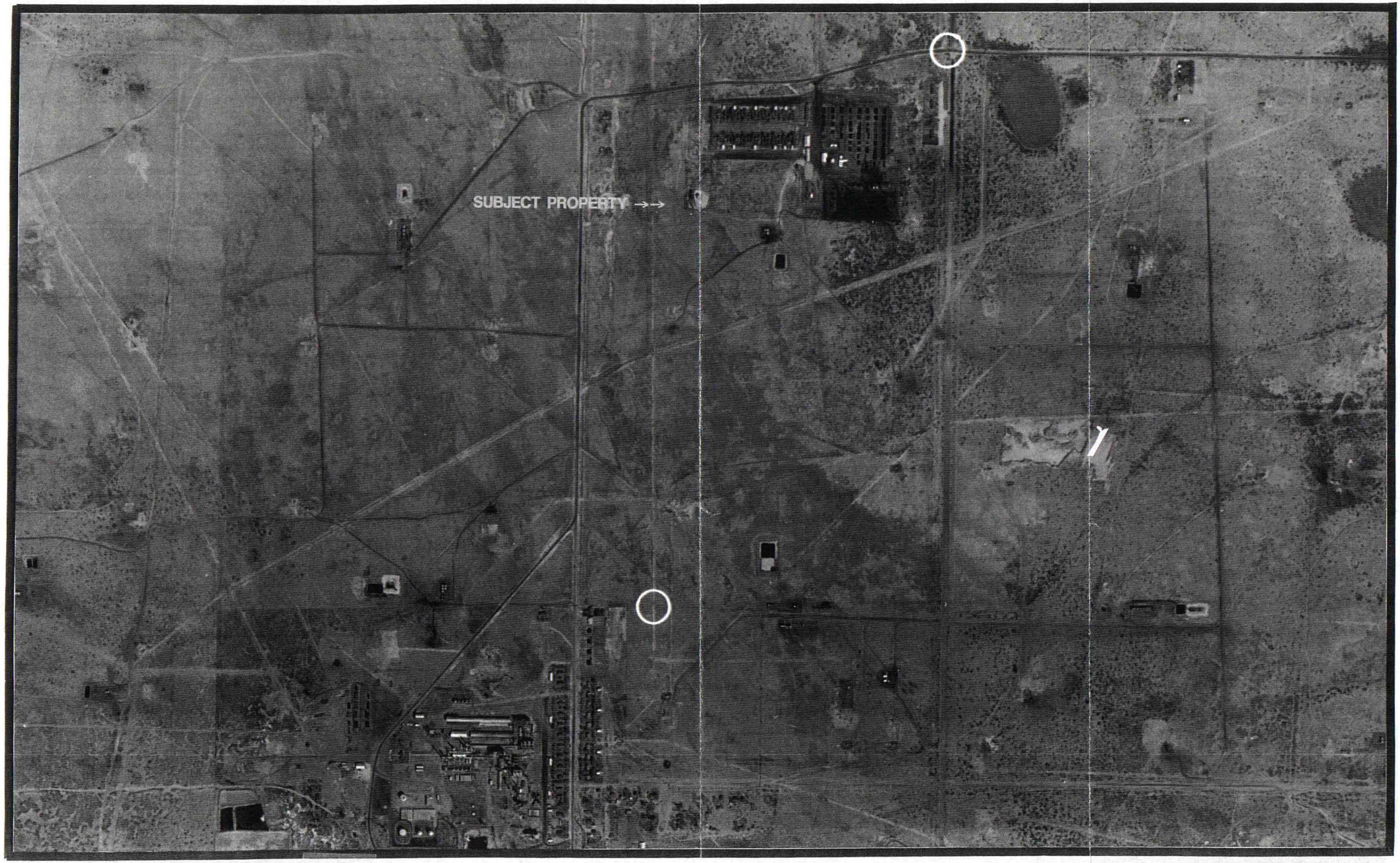
AERIAL PHOTOGRAPH
DATED 2 JULY 1978



APPROXIMATE SCALE: 1" = 2000'

NORTH

AERIAL PHOTOGRAPH
DATED 14 JAN 1975



APPROXIMATE SCALE: 1" = 1500'

NORTH

AERIAL PHOTOGRAPH
DATED 5 MAR 1957

APPENDIX 2 - Ground Level Photographs

PHOTO 1: DISPOSAL PIT, LOOKING NORTHWEST
LOCATION OF MW-1 IN BACKGROUND

PHOTO 2: ABANDONED DRUMS, LOOKING SOUTHEAST
LOCATION OF B-2 IN BACKGROUND

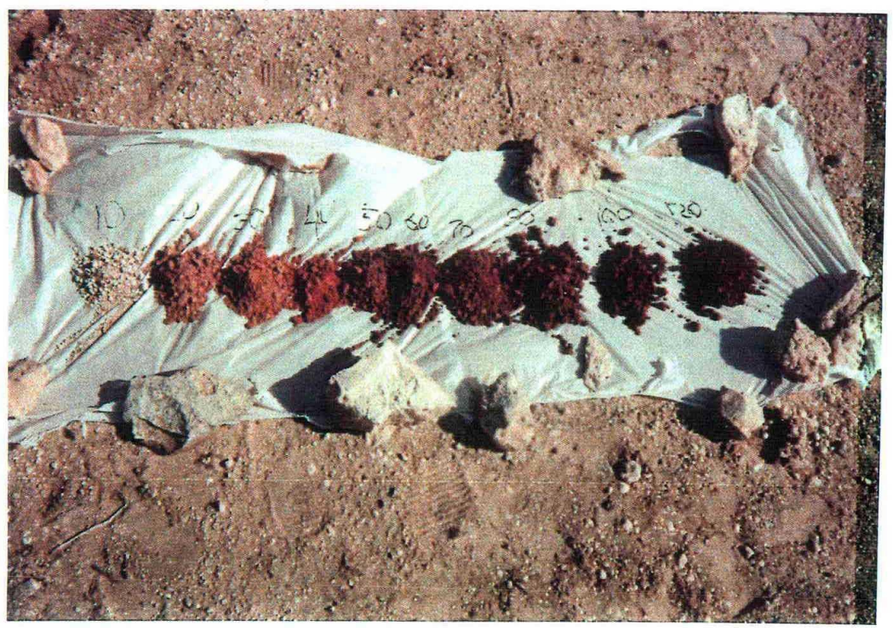


PHOTO 3: SOIL SAMPLES FROM B-2

PHOTO 4: TIMBERS ON EAST SIDE OF SITE
LOCATION OF B-3 IN BACKGROUND

PHOTOGRAPHS

Carter-Burgess

CARTER & BURGESS, INC.
3990 HULEN STREET
FORT WORTH, TX 76107-7264

SHEET

OF SHEETS

C & B PROJECT NO. 92139701F

APPENDIX 3 - Material Safety Data Sheets

EXXON CHEMICAL

MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272 HOUSTON, TEXAS 77001
A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

BREAXIT 7862

MSDS NUMBER: 77862000 ISSUE DATE: 5/9/92

EMERGENCY TELEPHONE NUMBERS:

EXXON CHEMICAL AMERICAS	(713) 870-6000
CHEMTREC	(800) 424-9300

SECTION 1. PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

CHEMICAL NAME: Not applicable: Blend
CHEMICAL FAMILY: Organic Acid
DESCRIPTION:
Dark Brown Liquid
Aromatic Odor

SECTION 2. HAZARDOUS INGREDIENT INFORMATION

The composition of this mixture may be proprietary information. In the event of a medical emergency, compositional information will be provided to a physician or nurse.
This product is hazardous as defined in 29CFR1910.1200, based on the following compositional information:

COMPONENT	OSHA HAZARD
Alkyl Aryl Sulfonic Acid	Eye & Skin Corrosive
Aromatic Naphtha	Combustible Liquid
Polynuclear Aromatic Hydrocarbons	Carcinogen
Naphthalene	PEL/TLV

For additional information see Section 3.

SECTION 3. HEALTH INFORMATION AND PROTECTION

NATURE OF HAZARD

EYE CONTACT:
Corrosive. Will cause eye burns and permanent tissue damage.
SKIN CONTACT:
Corrosive; causes permanent skin damage.
INHALATION:
High vapor concentrations are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

BREAXIT 7862

INGESTION:
Corrosive to mouth, esophagus and stomach.

FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention.

SKIN CONTACT:
Immediately flush with large amounts of water; use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. Get prompt medical attention.

INHALATION:
Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

INGESTION:
DO NOT induce vomiting. If individual is conscious, give milk or water to dilute stomach contents. Keep warm and quiet. Get prompt medical attention. DO NOT attempt to give anything by mouth to an unconscious person.

ACUTE TOXICITY DATA IS AVAILABLE UPON REQUEST

WORKPLACE EXPOSURE LIMITS

OSHA REGULATION 29CFR1910.1000 REQUIRES THE FOLLOWING PERMISSIBLE EXPOSURE LIMITS:
A TWA of 10 ppm (50 mg/m3) and a STEL of 15 ppm (75 mg/m3) for Naphthalene.

THE ACGIH RECOMMENDS THE FOLLOWING THRESHOLD LIMIT VALUES:
A TWA of 10 ppm (52 mg/m3), and a STEL of 15 ppm (79 mg/m3) for Naphthalene.

EXXON RECOMMENDS THE FOLLOWING OCCUPATIONAL EXPOSURE LIMITS:
a TWA of 100 ppm total organic vapor based on the Heavy Aromatic Naphtha (HAN) content. This component also contains a significant level of Polynuclear Aromatic Hydrocarbons (PNA's) between 0.4 % and 0.5 %. When aerosols are likely to be generated or when product temperatures exceed 300 deg. C., air samples should be monitored for PNA's.

PRECAUTIONS

PERSONAL PROTECTION
For open systems where contact is likely, wear chemical resistant gloves, a chemical suit, rubber boots, and chemical safety goggles plus a face shield.
Where contact may occur, wear long sleeves, chemical resistant gloves, chemical goggles, and a face shield.
Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIOSH/MSHA approved respirators may be necessary to prevent overexposure by inhalation.

BREAXIT 7862

VENTILATION

The use of local exhaust ventilation is recommended to control process emissions near the source. Laboratory samples should be stored and handled in a lab hood. Provide mechanical ventilation of confined spaces. See respiratory protection recommendations.

CHRONIC EFFECTS

This product contains significant amounts of Polynuclear Aromatic Hydrocarbons (PNAs). Certain of these PNAs have been shown to cause skin cancer in laboratory animals and may also cause cancer of the lung and other sites. In view of these findings, there may be potential risk of skin cancer in humans from prolonged and repeated skin contact with this product in the absence of good personal hygiene.

Benzo(a)pyrene (BaP), some other PNAs and materials containing PNAs are listed as carcinogens or potential carcinogens in the Annual Report on Carcinogens published by the U.S. National Toxicology Program (NTP).

The International Agency for Research on Cancer (IARC) has concluded that BaP and some other PNAs are probably carcinogenic to humans.

Limited studies on oils that are very active carcinogens have shown that washing the animal's skin with soap and water between applications greatly reduces tumor formation. These studies demonstrate the effectiveness of cleansing the skin after contact.

Potential risks to humans can be minimized by observing good work practices and personal hygiene procedures generally recommended for petroleum products.

CHRONIC TOXICITY DATA IS AVAILABLE UPON REQUEST

SECTION 4. FIRE & EXPLOSION HAZARD

FLASHPOINT: 150 Deg F. METHOD: Seta CC
FLAMMABLE LIMITS: LEL: 0.8 UEL: 6.0
AUTOIGNITION TEMPERATURE: NOTE: Not available

GENERAL HAZARD

Combustible Liquid, can form combustible mixtures at temperatures at or above the flashpoint.
Toxic gases will form upon combustion.
"Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.
Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner, or properly disposed of.

FIRE FIGHTING

Use water spray to cool fire exposed surfaces and to protect personnel.
Isolate "fuel" supply from fire.
Use alcohol type foam, dry chemical or water spray to extinguish fire.

BREAXIT 7862

Respiratory and eye protection required for fire fighting personnel. Avoid spraying water directly into storage containers due to danger of boilover.

HAZARDOUS COMBUSTION PRODUCTS

Smoke, Fumes, Carbon Monoxide, Carbon Dioxide, Sulfur Oxides

SECTION 5. SPILL CONTROL PROCEDURE

LAND SPILL

Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section 7) notify the National Response Center.

Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.

Recover by pumping (use an explosion proof or hand pump) or with a suitable absorbent.

Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

WATER SPILL

Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

SECTION 6. NOTES

NOTES:

This product may contain trace amounts of ethylene oxide (CAS No. 75-21-8), a condition which creates the potential for accumulation of ethylene oxide in the head space of shipping and storage containers and in enclosed areas where the product is being handled or used. Ethylene oxide is considered by OSHA, IARC, and NTP as a potential carcinogen for humans. Ethylene oxide may also present reproductive, mutagenic, genotoxic, neurologic and sensitization hazards in humans. If this product is handled with adequate ventilation, the presence of these trace amounts is not expected to result in any short or long term hazards.

BREAXIT 7862

HAZARD RATING SYSTEMS:
This information is for people trained in:
National Paint & Coatings Association's (NPCA)
Hazardous Materials Identification System (HMIS)
National Fire Protection Association (NFPA 704)
Identification of the Fire Hazards of Materials

	NPCA-HMIS	NFPA 704
HEALTH	3	3
FLAMMABILITY	2	2
REACTIVITY	0	0

KEY
4 = Severe
3 = Serious
2 = Moderate
1 = Slight
0 = Minimal

SECTION 7. REGULATORY INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT):
DOT Proper Shipping Name:
CORROSIVE LIQUID, N.O.S.
(contains DODECYL BENZENE SULFONIC ACID) UN1760
DOT Hazard Class: CORROSIVE LIQUID N.O.S.
DOT Identification Number: UN 1760
Name: Corrosive liquids, n.o.s.

FLASHPOINT: 150 Deg F. METHOD: Seta CC

TSCA:
Components of this product are listed on the TSCA Inventory.

CERCLA:
If the reportable quantity of this product is accidentally spilled, the incident is subject to the provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and must be reported to the National Response Center by calling 800-424-8802.
The reportable spill quantity of this product is 2,450 pounds.
It contains:
Dodecyl Benzene Sulfonic Acid, Naphthalene.

SARA TITLE III:
Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories:
Immediate health, Delayed Health, Fire.
This product contains the following Section 313 Reportable Ingredients:

COMPONENT	CAS #	MAX. %
Sulfuric Acid	7664-93-9	0.7
Naphthalene	91-20-3	2.0

BREAXIT 7862

SECTION 8. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Specific Gravity (@ F): 0.98 at 60
Vapor Pressure (mmHg @ F): 5 at 100 Calculated
Density: 8.2 lbs/gal at 60
Solubility in Water: Dispersible
Viscosity (cSt @ F): 57 at 100 Cannon-Fenske
18 at 150 Cannon-Fenske
Specific Gravity of Vapor (@ 1 atm. Air = 1): Greater than 1.00
Freezing/Melting Point/Range (F): -12 Pour Point
Evaporation Rate (n-Bu Acetate=1): 0.1 Less than; Calculated
Boiling Point/Range (F): 336 Calculated

SECTION 9. REACTIVITY DATA

This product is stable and hazardous polymerization will not occur.
Conditions to avoid Instability:
None
Conditions to avoid Hazardous Polymerization:
Not applicable
Materials & Conditions to avoid Incompatibility:
Strong Oxidizing Agents, Mineral Acids
Hazardous Decomposition Products:
None

SECTION 10. STORAGE AND HANDLING

Electrostatic Accumulation Hazard? Unknown, use proper grounding procedure
Storage Temperature (F): Ambient
Storage Pressure (mmHg): Atmospheric
Loading Temperature (F): Ambient
Loading Viscosity (cSt @ F): Not Available

SECTION 11. OTHER INFORMATION

Not Applicable.

BREAXIT 7862

REVISION SUMMARY:
Since March 11,1992 this MSDS has been revised in Section(s):
7

HDHA-A-10782 REVISION: May 9,1992 SUPERSEDES: March 11,1992

FOR ADDITIONAL PRODUCT INFORMATION, CONTACT YOUR TECHNICAL SALES REPRESENTATIVE
FOR ADDITIONAL HEALTH/SAFETY INFORMATION, CALL 713-870-6885

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the users responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

CLEAR 520

MSDS NUMBER: 70520000 ISSUE DATE: 5/18/92

EMERGENCY TELEPHONE NUMBERS:

EXXON CHEMICAL AMERICAS	(713) 870-6000
CHEMTREC	(800) 424-9300

SECTION 1. PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

CHEMICAL NAME: Not Applicable: Blend
CHEMICAL FAMILY: Paraffin Dispersant
DESCRIPTION:
Clear Yellow Liquid

SECTION 2. HAZARDOUS INGREDIENT INFORMATION

The composition of this mixture may be proprietary information. In the event of a medical emergency, compositional information will be provided to a physician or nurse.
This product is hazardous as defined in 29CFR1910.1200, based on the following compositional information:

COMPONENT	OSHA HAZARD
Xylene; Ethylbenzene	Flammable Liquid
Xylene; Ethylbenzene, Dipentene	Eye Corrosive
Xylene; Ethylbenzene, Dipentene	Skin Irritant
Xylene; Ethylbenzene, Dipentene - and Respiratory Tract	Vapors Irritant to Eyes
Xylene; Ethylbenzene; Naphthalene	PEL/TLV
Polynuclear Aromatic Hydrocarbons	Carcinogen

For additional information see Section 3.

SECTION 3. HEALTH INFORMATION AND PROTECTION

NATURE OF HAZARD

EYE CONTACT:
Corrosive. Will cause eye burns and permanent tissue damage.
SKIN CONTACT:
Irritating.

CLEAR 520

Frequent or prolonged contact may irritate and cause dermatitis.

INHALATION:

High vapor concentrations are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

INGESTION:

Small amounts of the liquid aspirated into the respiratory system during ingestion, or from vomiting, may cause bronchiopneumonia or pulmonary edema.

FIRST AID

EYE CONTACT:

Immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention.

SKIN CONTACT:

Flush with large amounts of water; use soap if available.
Remove grossly contaminated clothing, including shoes, and launder before reuse.
If irritation persists, seek medical attention.

INHALATION:

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

INGESTION:

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

WORKPLACE EXPOSURE LIMITS

OSHA REGULATION 29CFR1910.1000 REQUIRES THE FOLLOWING PERMISSIBLE EXPOSURE LIMITS:

A TWA of 100 ppm (435 mg/m3) and a STEL of 150 ppm (655 mg/m3) for Xylenes.
A TWA of 100 ppm (435 mg/m3) and a STEL of 125 ppm (545 mg/m3) for Ethyl Benzene.
A TWA of 10 ppm (50 mg/m3) and a STEL of 15 ppm (75 mg/m3) for Naphthalene.

THE ACGIH RECOMMENDS THE FOLLOWING THRESHOLD LIMIT VALUES:

a TWA of 100 ppm (434 mg/m3), and a STEL of 150 ppm (651 mg/m3) for Xylene.
a TWA of 100 ppm (434 mg/m3), and a STEL of 125 ppm (543 mg/m3) for Ethyl Benzene.
A TWA of 10 ppm (52 mg/m3), and a STEL of 15 ppm (79 mg/m3) for Naphthalene.

EXXON RECOMMENDS THE FOLLOWING OCCUPATIONAL EXPOSURE LIMITS:

a TWA of 100 ppm total organic vapor based on the Heavy Aromatic Naphtha (HAN) content. This component also contains a significant level of Polynuclear Aromatic Hydrocarbons (PNA's) between 0.4 % and 0.5 %.
When aerosols are likely to be generated or when product temperatures exceed 300 deg. C., air samples should be monitored for PNA's.

CLEAR 520

PRECAUTIONS

SPECIAL PRECAUTIONS
No notes applicable.

PERSONAL PROTECTION
For open systems where contact is likely, wear long sleeves, chemically resistant gloves, chemical goggles, and a face shield.
Where contact may occur, wear long sleeves and chemical goggles.
Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIOSH/MSHA approved respirators may be necessary to prevent overexposure by inhalation.

VENTILATION
The use of local exhaust ventilation is recommended to control process emissions near the source. Laboratory samples should be stored and handled in a lab hood. Provide mechanical ventilation of confined spaces.
See respiratory protection recommendations.
Use explosion-proof ventilation equipment.

CHRONIC EFFECTS
This product contains significant amounts of Polynuclear Aromatic Hydrocarbons (PNAs). Certain of these PNAs have been shown to cause skin cancer in laboratory animals and may also cause cancer of the lung and other sites. In view of these findings, there may be potential risk of skin cancer in humans from prolonged and repeated skin contact with this product in the absence of good personal hygiene.

Benzo(a)pyrene (BaP), some other PNAs and materials containing PNAs are listed as carcinogens or potential carcinogens in the Annual Report on Carcinogens published by the U.S. National Toxicology Program (NTP).

The International Agency for Research on Cancer (IARC) has concluded that BaP and some other PNAs are probably carcinogenic to humans.

Limited studies on oils that are very active carcinogens have shown that washing the animal's skin with soap and water between applications greatly reduces tumor formation. These studies demonstrate the effectiveness of cleansing the skin after contact.

Potential risks to humans can be minimized by observing good work practices and personal hygiene procedures generally recommended for petroleum products.

CHRONIC TOXICITY DATA IS AVAILABLE UPON REQUEST

SECTION 4. FIRE & EXPLOSION HAZARD

FLASHPOINT: 93 Deg F. METHOD: Seta CC
FLAMMABLE LIMITS: Not Available

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AUTOIGNITION TEMPERATURE: Not available

GENERAL HAZARD

Flammable Liquid, can release vapors that form flammable mixtures at temperatures at or above the flashpoint.
Toxic gases will form upon combustion.
"Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.
Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner, or properly disposed of.

FIRE FIGHTING

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off "fuel" to fire. If a leak or spill has not ignited, use water spray to disperse the vapors.
Use foam or dry chemical to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.

HAZARDOUS COMBUSTION PRODUCTS

Smoke, fumes, carbon monoxide, carbon dioxide.

SECTION 5. SPILL CONTROL PROCEDURE

LAND SPILL

Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section 7) notify the National Response Center.
Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping (use an explosion proof or hand pump) or with a suitable absorbent.
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

WATER SPILL

Remove from surface by skimming or with suitable adsorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in non-confined waters.
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

SECTION 6. NOTES

NOTES:

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HAZARD RATING SYSTEMS:
This information is for people trained in:
National Paint & Coatings Association's (NPCA)
Hazardous Materials Identification System (HMIS)
National Fire Protection Association (NFPA 704)
Identification of the Fire Hazards of Materials

	NPCA-HMIS	NFPA 704	KEY
HEALTH	3	3	4 = Severe
FLAMMABILITY	3	3	3 = Serious
REACTIVITY	0	0	2 = Moderate
			1 = Slight
			0 = Minimal

SECTION 7. REGULATORY INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT):
DOT Proper Shipping Name:
FLAMMABLE LIQUID, N.O.S.
(contains ETHYL BENZENE, XYLENE) UN1993
DOT Hazard Class: FLAMMABLE LIQUID N.O.S.
DOT Identification Number: UN 1993
Name: Flammable liquids, n.o.s.

FLASHPOINT: 93 Deg F. METHOD: Seta CC

TSCA:
Components of this product are listed on the TSCA Inventory.

CERCLA:
If the reportable quantity of this product is accidentally spilled, the incident is subject to the provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and must be reported to the National Response Center by calling 800-424-8802.
The reportable spill quantity of this product is 905 pounds.
It contains:
Naphthalene, Xylene, Ethylbenzene.

SARA TITLE III:
Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories:
Immediate health, Delayed Health, Fire.
This product contains the following Section 313 Reportable Ingredients:

COMPONENT	CAS #	MAX. %
Naphthalene	91-20-3	1.0
Xylene	1330-20-7	45.0
Ethylbenzene	100-41-4	8.0

CLEAR 520

SECTION 8. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Specific Gravity (@ F): 0.89 at 68
Vapor Pressure (mmHg @ F): Not Available
Density: 7.4 lbs/gal at 60
Solubility in Water: Insoluble
Viscosity (cSt @ F): 31 at 100 SUS
Specific Gravity of Vapor (@ 1 atm. Air = 1): Not Available
Freezing/Melting Point/Range (F): -40 Pour Point
Evaporation Rate (n-Bu Acetate=1): Not Available
Boiling Point/Range (F): Not Available

SECTION 9. REACTIVITY DATA

This product is stable and hazardous polymerization will not occur.
Conditions to avoid Instability:
None
Conditions to avoid Hazardous Polymerization:
Not Applicable
Materials & Conditions to avoid Incompatibility:
Strong Oxidizing Agents
Hazardous Decomposition Products:
None

SECTION 10. STORAGE AND HANDLING

Electrostatic Accumulation Hazard? Unknown, use proper grounding procedure
Storage Temperature (F): Ambient
Storage Pressure (mmHg): Atmospheric
Loading Temperature (F): Ambient
Loading Viscosity (cSt @ F): Not Available

SECTION 11. OTHER INFORMATION

Not Applicable.

CLEAR 520

REVISION SUMMARY:
Since November 7,1990 this MSDS has been revised in Section(s):
7

HDHA-A-73076 REVISION: May 18,1992 SUPERSEDES: November 7,1990

FOR ADDITIONAL PRODUCT INFORMATION, CONTACT YOUR TECHNICAL SALES REPRESENTATIVE
FOR ADDITIONAL HEALTH/SAFETY INFORMATION, CALL 713-870-6884

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the users responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

EXXON CHEMICALS

ENERGY CHEMICALS

MATERIAL SAFETY DATA SHEET

ENERGY CHEMICALS
A Division of EXXON CHEMICAL COMPANY
17402 Wallisville Road
Houston, Texas 77049
Telephone: 713-457-1125

DROP-210

SECTION VI – HEALTH HAZARD DATA

TLV/PEL: Not Established (See Section II)

CARCINOGENICITY: Components not on IARC, NTP, or OSHA list

PRIMARY ROUTES OF EXPOSURE: Inhalation, eye or skin contact

ACUTE EFFECTS: Vapors can cause headache or dizziness; and nausea. Direct eye contact may cause moderate irritation. Prolonged or repeated skin contact will dry and defat the skin leading to irritation, chapping and cracking. Prolonged or repeated inhalation of vapor or dermal contact may cause harmful systemic effects.

CHRONIC EFFECTS: ND

EMERGENCY AND FIRST AID PROCEDURES: Move affected persons to fresh air and administer oxygen as necessary. Wash contacted areas with soap and water after use. Launder contaminated clothing before re-use. Immediately flush eyes with water for at least 15 minutes, and obtain medical attention. If this material is swallowed, DO NOT induce vomiting. Get medical attention immediately.

SECTION VII – SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Stop release and contain spill. Remove all sources of ignition. Absorb with clay or other absorbent material. Place waste in suitable containers for disposal.
RQ=591 gallons. Naphthalene. (Notify the National Response Center 800-424-8802 of spills greater than the RQ into the environment.)

WASTE DISPOSAL METHOD: As a waste this product may be considered hazardous under current hazardous waste laws. (Ignitible). Dispose of by controlled incineration in an approved system, chemical landfill or otherwise in accordance with Federal, State and local regulations.

SECTION VIII – SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: In confined areas where vapor concentrations may be high a NIOSH/MSHA approved organic chemical cartridge respirator may be desired.

PROTECTIVE GLOVES: Rubber Gloves

EYE PROTECTION: Chemical Splash Goggles

OTHER PROTECTIVE EQUIPMENT: Protective Clothing

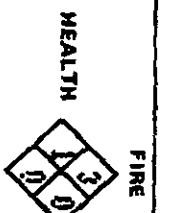
VENTILATION: Maintain adequate ventilation in enclosed areas.

SECTION IX – SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING OR STORING:
Highly Flammable! Keep container closed when not in use. Store away from heat, sparks and open flame. Avoid contact with eyes, skin and clothing.

OTHER PRECAUTIONS:
Container, even when empty may hold hazardous liquid, solid or vapor residues. Do not cut, puncture or weld on or near this container. Recondition before re-use.

DATE:



DAY: 713/457-1125
EMERGENCY 24-HOURS: 713/452-6784
CHEMTREC: 800/424-9300

MATERIAL SAFETY DATA SHEET

(Essentially similar to Form OSHA-20)

SECTION I

CODE NUMBER: PQ14090000

DATE 10-2-87
SUPERCEDES 9-4-85

TRADE NAME: DROP®-210

CHEMICAL FAMILY: Resin Adduct and Sulfonate

TSCA INFORMATION: Components in TSCA Inventory

SECTION II – HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT BY WEIGHT	TLV/PEL PPM	TLV/PEL mg/m³	VAPOR PRESSURE mm Hg @ 68°F
Aromatic Petroleum Solvent	---	100	525	---
Isopropanol	--	400	980	--
Toluene	--	100	375	--

SECTION III – PHYSICAL DATA

BOILING RANGE: Not Established SOLUBILITY: Oil

PH: NA APPEARANCE AND ODOR: Clear dark liquid, aromatic odor

VAPOR DENSITY	EVAPORATION RATE	SPECIFIC GRAVITY	WEIGHT PER GALLON	% VOLATILE BY VOLUME
Denser THAN AIR	Slower THAN ETHER	0.87	7.27 lb.	ND --

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

DOT PROPER SHIPPING NAME
Flammable Liquid, n.o.s.

REPORTABLE QUANTITY: 591 gallons

FLASH POINT: 25F (TCC)

EXTINGUISHING MEDIA: Foam, Carbon Dioxide, Dry Chemical

DOT ID NUMBER: UN1993

LEL: ND

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Highly Flammable! Vapors can be ignited at low temperatures.

SPECIAL FIRE FIGHTING PROCEDURES: Do not enter any enclosed or confined firespace without proper protective equipment such as a self-contained breathing apparatus.

SECTION V – REACTIVITY DATA

INCOMPATIBILITY (MATERIALS TO AVOID): Strong Oxidizers, Acids

STABILITY: Stable CONDITIONS TO AVOID: heat, sparks and open flame

HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion products may include carbon monoxide, sulfur and nitrogen oxides.

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: NA

ENERGY CHEMICALS
A Division of EXXON CHEMICAL COMPANY
17402 Wallisville Road
Houston, Texas 77049

EXXON CHEMICALS

MSDS

CT 450 P

MAVERICK CHEMICAL
P.O. BOX 5654
HOBBS, NEW MEXICO 88240
(505)392-2972

Material Safety Data Sh
MSDS

study this Data Sheet and become aware of Product hazards. To promote s
handling Customer should (1) notify its employees, agents and contractors of the information on this Data Sheet, and
Product hazards and safety information, (2) furnish a copy of this Data Sheet to each of its customers for the Product and
request such customers to notify their employees and customers for the Product of the information on this Data Sheet and
Product hazards and safety information.

Section I - General

Manufacturer's name: Maverick Chemcial Company
Manufacturer's address: P.O. Box 5654, Hobbs, N.M. 88240
Material name: Chem Treat 450-P
Emergency telephone (24 hour): 505-392-2972
Name (brand-trade) and synonyms: N/A
Chemical family: Emulsion Breaker

Section II - Summary of hazardous information

Summary: WARNING: HIGHLY FLAMMABLE--Avoid heat, open flame, or sparks. MODERATE EYE, SKIN, AND INHALATION HAZARD--Avoid skin and eye contact and prolonged or repeated inhalation of vapors.

400 ppm (Estimated)

Section III - Physical and reactivity data

Boiling point (°F)	Evaporation rate (ratio of time)	Other
180° F	(ETHER = 1) > 1	N/A

Vapor pressure (mm Hg at 70 °F): 11.0 Calc.
Incompatibility (materials to avoid): Strong oxidizing agents; strong alkalies.
Vapor density (air = 1 at 60-99° F): 2.3(calc.)
Stability: (X) Stable ( ) Unstable
Conditions to avoid: Heat and open flame.
Specific gravity (H²O = 1 at 39.2° F): 0.971
Hazardous polymerization may: ( ) Occur (X) Not occur
Appearance and odor: Dark brown liquid; aromatic odor.
Volatile characteristics: Negligible
Solubility in water: Negligible
Hazardous decomposition products: Incomplete combustion may produce carbon monoxide and oxides and/or compounds of nitrogen and sulfur.

Section IV - Fire and explosion data

Flash point (°F) (method used): 75° F (D-56)
Flammable limits at normal atmos. temp. and pressure (% by volume in air): Lower flammable limit: 1.1; Upper flammable: 12
Autoignition temp. (° F): 750° F (Approx.)
Extinguishing media: Carbon dioxide, dry chemical and alcohol type foam.
Special fire fighting procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, such as self-contained breathing apparatus. See Section III, Hazardous Decomposition Products for unusual decomposition products.
Unusual fire and explosion hazards: HIGHLY FLAMMABLE. When heated above the flashpoint, it releases flammable vapors which when mixed with air(se Flammabl. limits) can burn or be explosive.

Section V - First aid and emergency procedures

Note to physician: [illegible] induce vomitting.

Eye contact: Flush eyes with low pressure water for at least 15 minutes. If irritati
Skin contact: persists, seek medical attention.
Wash skin with soap and water; seek medical attention if irritation persists.
Inhalation: Remove from contaminated area to fresh air. If irritation persists, or if other signs or symptoms develop, seek medical attention.
Ingestion: Do not induce vomitting. Aspiration into lungs may cause chemical pneumonia. Immediately seek medical attention.

MSDS

Material name: Chem Treat 450-P

Section VI - Health hazard data

Primary hazard: Inhalation of vapors of this material may result in toxic effects.

Route of exposure	Affected	Signs and symptoms
Eye contact	X	Material may cause eye irritation upon direct contact.
Skin irritation	X	This material may cause skin irritation upon direct contact
Inhalation	X	Prolonged exposure to excess vapor concentrations of this material may cause signs and symptoms of central nervous system depression such as headache, dizziness, loss appetite, weakness, and loss of coordination.
Ingestion	X	Ingestion may cause toxic effects.
Skin absorption		

Effects of overexposure

Ingestion or inhalation of large quantities of vapor may cause headache, fatigue nausea, visual impairment or complete blindness, and respiratory failure.

Section VII - Spill or leak procedure

Precautions if material is spilled or released

Eliminate all sources of ignition in vicinity of the spill or released vapor.

Waste disposal methods

Soak up spill with sand or earth and shovel into container. Dispose of in approved dump site or incinerator. The contaminated area should be flushed with water being certain not to contaminate storm drain or water supplies.

Section VIII - Special protection information

Ventilation: Use only in well ventilated area.

protection: Eye protection, such as chemical type goggles or face mask, should be worn whenever splashing, spraying, or other eye contact is likely.

Skin protection: Avoid prolonged or repeated skin contact, and use good personal hygiene.

Respiratory protection: When exposur above the established standard is likely, a respiratory protecttion program which complies with OSHA General Industry Standard 1910.134(e) and respiratory equipment approved by NIOSH/MESA should be implemented.

Other protection: N/A

Section IX - Handling and storage

HIGHLY FLAMMABLE. Keep container closed when not in use. Store away from heat, open flame, or direct sunlight. Keep out of reach of children. Containers should be decontaminated and all residual contents removed before disposal.

General comments

All electrical equipment in areas where material is stored and/or handled should be installed in accordance with applicable requirements of the National Electric Code, N.F.P.A.

Date issued: Reviewed August 1986

N/A = Not applicable

1 - GENERAL INFORMATION

BAKER PERFORMANCE CHEMICALS, INC.
A Baker Hughes company
3920 ESSEX LANE, P.O. BOX 27714
HOUSTON, TEXAS 77227-7714

800-424-9300 ChemTrec
800-231-3606 Emergency
713-599-7400 Information

GENERIC NAME
OXYALKYLATED PHENOL FORMALDEHYDE RESIN

DATE REVISED: 12/4/90

DOT PROPER SHIPPING NAME
XYLENE SOLUTION

UN/NA NUMBER
UN 1307

DOT HAZARD CLASS
FLAMMABLE LIQUID

2 - SUMMARY OF HAZARDS

DANGER

PHYSICAL HAZARDS: EXTREMELY FLAMMABLE LIQUID

ACUTE HEALTH EFFECTS (SHORT-TERM): HIGH INGESTION HAZARD - CHEMICAL PNEUMONIA
SLIGHT INHALATION HAZARD
SLIGHT EYE IRRITANT
SLIGHT SKIN IRRITANT - DEFATS SKIN
NO SKIN ABSORP. HAZARD IDENTIFIED FROM DATA FOUND

CHRONIC HEALTH EFFECTS (LONG-TERM): CHRONIC SKIN CONTACT COULD RESULT IN A DERMATITIS DUE TO THE DEFATTING CHARACTERISTICS OF THIS MATERIAL. SEE SUPPLEMENT.

3 - COMPONENTS

COMPONENT NAME	CAS NUMBER
TRADE SECRET 2656-01#	
*XYLENE	1330-20-7
*ETHYLBENZENE	100-41-4

* THIS IS A SARA SECTION 313 LISTED CHEMICAL
US TSCA INVENTORY: ALL COMPONENTS ARE INCLUDED ON THE

4 - PHYSICAL AND CHEMICAL DATA

BOILING POINT
AP 280F

PH
N/AP

FREEZING POINT
N/DA

DRY POINT
N/DA

SPECIFIC GRAVITY (H20=1 AT 39.2F)
AP 1.01

VOLATILE CHARACTERISTICS
APPRECIABLE

VISCOSITY UNITS, TEMP.
N/DA

SOLUBILITY IN WATER
NEGLIGIBLE

VAPOR PRESSURE
6.0 MM HG AT 70F

STABILITY
STABLE

VAPOR SP GR (AIR=1 AT 60 - 90F)
AP 3.8

HAZARDOUS POLYMERIZATION
NOT EXPECTED TO OCCUR

APPEARANCE AND ODOR
DARK BROWN LIQUID; AROMATIC ODOR

CONDITIONS AND MATERIALS TO AVOID
HEAT AND OPEN FLAMES
STRONG OXIDIZING AGENTS; STRONG ALKALIES

- PHYSICAL AND CHEMICAL DATA (continued)

HAZARDOUS DECOMPOSITION PRODUCTS
INCOMPLETE COMBUSTION RESULTS IN CARBON MONOXIDE AND MAYBE OTHER TOXIC GASES

5 - OCCUPATIONAL EXPOSURE LIMITS

SUBSTANCE	SOURCE	DATE	TYPE	VALUE	TIME
XYLENE					
	ACGIH/OSHA	1989	TLV/PEL	100 PPM	8 HRS
			STEL	150 PPM	15 MIN
ETHYLBENZENE					
	ACGIH/OSHA	1989	TLV/PEL	100 PPM	8 HRS
			STEL	125 PPM	15 MIN

6 - FIRE AND EXPLOSION

FLASH POINT METHOD=(TCC) AUTOIGNITION TEMP. METHOD=
AP 72F AP 869F
FLAMMABLE LIMITS (% VOLUME IN AIR)
AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE
LOWER: 1.0 UPPER: 7.0
FIRE AND EXPLOSION HAZARDS
RELEASES FLAMMABLE VAPORS BELOW NORMAL AMBIENT TEMPERATURES. WHEN MIXED WITH AIR AND EXPOSED TO IGNITION SOURCE, VAPORS CAN BURN IN OPEN OR EXPLODE IF CONFINED. FLAMMABLE VAPORS MAY BE HEAVIER THAN AIR. MAY TRAVEL LONG DISTANCES ALONG GROUND BEFORE IGNITING/FLASHING BACK TO VAPOR SOURCE.
EXTINGUISHING MEDIA
DRY CHEMICAL
CO2
FOAM
SPECIAL FIREFIGHTING PROCEDURES
DO NOT ENTER FIRE AREA WITHOUT PROPER PROTECTION. SEE SECTION 4 - DECOMPOSITION PRODUCTS POSSIBLE. FIGHT FIRE FROM SAFE DISTANCE/PROTECTED LOCATION. HEAT MAY BUILD PRESSURE/RUPTURE CLOSED CONTAINERS, SPREADING FIRE, INCREASING RISK OF BURNS/INJURIES. DO NOT USE SOLID WATER STREAM/MAY SPREAD FIRE. USE WATER SPRAY/FOG FOR COOLING. AVOID FROTHING/STEAM EXPLOSION. BURNING LIQUID WILL FLOAT ON WATER. NOTIFY AUTHORITIES IF LIQUID ENTERS SEWER/ PUBLIC WATERS.

7 - HEALTH HAZARDS

ROUTES OF EXPOSURE
INHALATION -- PRIMARY ROUTE
PROLONGED OVEREXPOSURE MAY CAUSE COUGHING, SHORTNESS OF BREATH, DIZZINESS AND INTOXICATION.
EYE CONTACT -- PRIMARY ROUTE
MAY CAUSE MINOR EYE IRRITATION.
SKIN ABSORPTION
NO SIGNIFICANT SIGNS OR SYMPTOMS INDICATIVE OF ANY HEALTH HAZARD ARE EXPECTED TO OCCUR AS A RESULT OF SKIN ABSORPTION EXPOSURE.
SKIN IRRITATION -- PRIMARY ROUTE
MAY PRODUCE SKIN IRRITATION.
INGESTION
ASPIRATION OF THIS MATERIAL MAY CAUSE CHEMICAL PNEUMONIA.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
THIS MATERIAL OR ITS EMISSIONS MAY DEFAT SKIN, CAUSE CONTACT DERMATITIS, OR OTHERWISE AGGRAVATE EXISTING SKIN DISEASE.

8 - PROTECTIVE EQUIPMENT / CONTROL MEASURES

RESPIRATORY PROTECTION
IF EXPOSURE EXCEEDS THE PEL/TLV, USE NIOSH/MSHA APPROVED RESPIRATORY PROTECTION EQUIPMENT AS SPECIFIED IN THE NIOSH/OSHA 1981 OCCUPATIONAL HEALTH GUIDELINES FOR CHEMICAL HAZARDS.
EYE PROTECTION
EYE PROTECTION SUCH AS CHEMICAL SPLASH GOGGLES AND/OR FACE SHIELD MUST BE WORN WHEN POSSIBILITY EXISTS FOR EYE CONTACT DUE TO SPLASHING OR SPRAYING LIQUID, AIRBORNE PARTICLES, OR VAPOR. CONTACT LENSES SHOULD NOT BE WORN.
SKIN PROTECTION
DEPENDING ON THE CONDITIONS OF USE, PROTECTIVE GLOVES, APRON, BOOTS, HEAD AND FACE PROTECTION SHOULD BE WORN. THIS EQUIPMENT SHOULD BE CLEANED THOROUGHLY AFTER EACH USE.
ENGINEERING CONTROLS
EITHER LOCAL EXHAUST OR GENERAL ROOM VENTILATION IS USUALLY REQUIRED.
OTHER HYGENIC PRACTICES
USE GOOD PERSONAL HYGIENE PRACTICES. WASH HANDS BEFORE EATING, DRINKING, SMOKING, OR USING TOILET FACILITIES. PROMPTLY REMOVE SOILED CLOTHING/WASH THOROUGHLY BEFORE REUSE. SHOWER AFTER WORK USING PLENTY OF SOAP AND WATER.
OTHER WORK PRACTICES
NO SPECIAL WORK PRACTICES ARE NEEDED BEYOND THE ABOVE RECOMMENDATIONS UNDER ANTICIPATED CONDITIONS OF NORMAL USE.

9 - EMERGENCY AND FIRST AID

INHALATION
IF OVERCOME BY EXPOSURE, REMOVE VICTIM TO FRESH AIR IMMEDIATELY. GIVE OXYGEN OR ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN EMERGENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.
EYE CONTACT
IN CASE OF EYE CONTACT, IMMEDIATELY RINSE WITH CLEAN WATER FOR 20-30 MINUTES. RETRACT EYELIDS OFTEN. OBTAIN EMERGENCY MEDICAL ATTENTION IF PAIN, BLINKING, TEARS OR REDNESS PERSIST.
SKIN CONTACT
REMOVE CONTAMINATED CLOTHING AS NEEDED. WASH SKIN THOROUGHLY WITH MILD SOAP/WATER. FLUSH WITH LUKEWARM WATER FOR 15 MINUTES. IF STICKY, USE WATERLESS CLEANER FIRST.
INGESTION
IF SWALLOWED, GIVE LUKEWARM WATER (PINT) IF VICTIM COMPLETELY CONSCIOUS/ALERT. DO NOT INDUCE VOMITING/RISK OF DAMAGE TO LUNGS EXCEEDS POISONING RISK. OBTAIN EMERGENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.
EMERGENCY MEDICAL TREATMENT PROCEDURES
DO NOT INDUCE VOMITING. ADMINISTER AN AQUEOUS SLURRY OF ACTIVATED CHARCOAL FOLLOWED BY A CATHARTIC SUCH AS MAGNESIUM CITRATE OR SORBITOL. GASTRIC LAVAGE ALSO INDICATED FOR COMPLETE EMPTYING.
TREAT SYMPTOMATICALLY.

10 - SPILL AND DISPOSAL

PRECAUTIONS IF MATERIAL IS SPILLED OR RELEASED
EXTREMELY FLAMMABLE LIQUID. EXTINGUISH ALL IGNITION SOURCES. IMPOUND/RECOVER LARGE LAND SPILL. BLANKET WITH FIREFIGHTING FOAM. SOAK UP SMALL SPILL. ON WATER, MAY BIODEGRADE. CONTAIN/MINIMIZE DISPERSION/COLLECT. REPORT PER REGULATORY REQUIREMENTS.
WASTE DISPOSAL METHODS
CONTAMINATED PRODUCT/SOIL/WATER MAY BE RCRA/OSHA HAZARDOUS WASTE DUE TO POTENTIALLY LOW FLASH POINT (SEE 40 CFR 261 AND 29 CFR 1910). LANDFILL SOLIDS AT PERMITTED SITES. USE REGISTERED TRANSPORTERS. BURN CONCENTRATED LIQUIDS. AVOID FLAMEOUTS. ASSURE EMISSIONS COMPLY WITH APPLICABLE REGULATIONS. DILUTE AQUEOUS WASTE MAY BIODEGRADE. AVOID OVERLOADING/POISONING PLANT BIOMASS. ASSURE EFFLUENT COMPLIES WITH APPLICABLE REGULATIONS.

11 - ADDITIONAL PRECAUTIONS

HANDLING AND STORAGE PROCEDURES
STORE IN TIGHTLY CLOSED/PROPERLY VENTED CONTAINERS AWAY FROM HEAT, SPARKS, OPEN FLAME, STRONG OXIDIZING AGENTS. USE ONLY NON-SPARKING TOOLS. STORE DRUMS WITH BUNG IN UP POSITION. CAREFULLY VENT INTERNAL PRESSURE BEFORE REMOVING CLOSURE. CONTAINERS MUST BE GROUNDED BEFORE BEGINNING TRANSFER. ELECTRICAL EQUIPMENT SHOULD CONFORM TO NATIONAL ELECTRIC CODE. HANDLE "EMPTY" CONTAINERS WITH CARE/VAPOR RESIDUE MAY BE FLAMMABLE. VAPOR SPACE ABOVE LIQUID MAY BE FLAMMABLE/EXPLOSIVE UNLESS BLANKETED WITH INERT GAS.
DECONTAMINATION PROCEDURES
ISOLATE, VENT, DRAIN, WASH AND PURGE SYSTEMS OR EQUIPMENT BEFORE MAINTENANCE OR REPAIR. REMOVE ALL IGNITION SOURCES. CHECK ATMOSPHERE FOR EXPLOSIVENESS AND OXYGEN DEFICIENCIES. USE ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. OBSERVE PRECAUTIONS PERTAINING TO CONFINED SPACE ENTRY.

12 - LABEL INFORMATION

USE STATEMENT
FOR INDUSTRIAL USE ONLY
KEEP OUT OF REACH OF CHILDREN
SIGNAL WORD
DANGER
PHYSICAL HAZARDS
EXTREMELY FLAMMABLE
HEALTH HAZARDS
HIGH INGESTION HAZARD-CHEMICAL PNEUMONIA
INHALATION HAZARD
EYE IRRITANT
SKIN IRRITANT - DEFATTING ACTION
MAY CAUSE LONG-TERM ADVERSE HEALTH EFFECTS
PRECAUTIONARY MEASURES

DO NOT HANDLE NEAR HEAT, SPARKS, OR OPEN FLAME.
KEEP CONTAINER CLOSED WHEN NOT IN USE.
DO NOT STORE NEAR COMBUSTIBLE MATERIALS.
AVOID CONTACT WITH EYES.
AVOID PROLONGED OR REPEATED BREATHING OF VAPOR.
AVOID PROLONGED OR REPEATED CONTACT WITH SKIN.
USE WITH ADEQUATE VENTILATION.
PREVENT CONTACT WITH FOOD, CHEWING, OR SMOKING MATERIALS.
WASH THOROUGHLY AFTER HANDLING.

13 - SUPPLEMENT

SUMMARY OFACUTE HAZARDS
THIS SOLVENT USED IN THIS PRODUCT IS VOLATILE AND THEREFORE RESPIRABLE. NERVOUS SYSTEM DEPRESSION CAN OCCUR IF HIGH ATMOSPHERIC CONCENTRATIONS OF THIS MATERIAL ARE BREATHED. IF ASPIRATED INTO THE LUNGS DURING INGESTION OR WHILE VOMITING, LIFE-THREATENING CHEMICAL PNEUMONIA CAN RESULT. IF DERMAL CONTACT OCCURS, DEFATTING CAN OCCUR WITH ATTENDANT SKIN IRRITATION. DEFATTING CAN ALSO CAUSE THIS MATERIAL TO BE MODERATELY IRRITATING TO THE EYE. WHILE READILY ABLE TO PENETRATE THE SKIN, NO
CHRONIC HEALTH EFFECTS
PROLONGED, REPEATED EXPOSURES TO HIGH LEVELS OF XYLENE CAN INDUCE CENTRAL NERVOUS SYSTEM EFFECTS INCLUDING DEPRESSION, DIZZINESS, NUMBNESS, TREMORS, IMPAIRED MEMORY, HEADACHE, NAUSEA AND LOSS OF APPETITE. MODERATE LIVER ENLARGEMENT, KIDNEY INVOLVEMENT AND EVEN DEATH IS POSSIBLE IF EXPOSURE IS NOT CONTROLLED.

NOTE -- QUALIFIERS AND CODES USED IN THIS MSDS

EQ = EQUAL	AP = APPROXIMATELY
LT = LESS THAN	GT = GREATER THAN
TR = TRACE	UK = UNKNOWN
N/AP = NOT APPLICABLE	N/P = NO APPLICABLE INFORMATION FOUND

13 - SUPPLEMENT (continued)

N/DA = NO DATA AVAILABLE

14 - DISCLAIMERS

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THE INFORMATION IN THIS MSDS WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.

THE CONDITIONS OR METHODS OF HANDLING, STORAGE, USE AND DISPOSAL OF THE PRODUCT ARE BEYOND OUR CONTROL AND MAY BE BEYOND OUR KNOWLEDGE. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

THIS MSDS WAS PREPARED AND IS TO BE USED ONLY FOR THIS PRODUCT. IF THE PRODUCT IS USED AS A COMPONENT IN ANOTHER PRODUCT, THIS MSDS INFORMATION MAY NOT BE APPLICABLE.

THIS MSDS HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1200).

1 - GENERAL INFORMATION

BAKER PERFORMANCE CHEMICALS, INC.
A Baker Hughes company
3920 ESSEX LANE, P.O. BOX 27714
HOUSTON, TEXAS 77227-7714

800-424-9300 ChemTrec
800-231-3606 Emergency
713-599-7400 Information

GENERIC NAME — DATE REVISED: 11/27/90
OXYAKYLATED ALKYLARYL SULFONATE RESIN
DOT PROPER SHIPPING NAME — UN/NA NUMBER
FLAMMABLE LIQUID, N.O.S. — UN 1993
(XYLENE, PETROLEUM NAPTHA)
DOT HAZARD CLASS
FLAMMABLE LIQUID
NFPA CLASSIFICATION: HEALTH (2) FLAMMABILITY (3) REACTIVITY (0)
SPECIFIC HAZARD (N/A)
DOT/CERCLA RQ: 4,000 LBS (XYLENE)

2 - SUMMARY OF HAZARDS

WARNING

PHYSICAL HAZARDS:	HIGHLY FLAMMABLE
ACUTE HEALTH HAZARDS: (SHORT-TERM BASED ON HAZARDOUS COMPONENTS	HIGH INHALATION HAZARD MODERATE EYE CONTACT HAZARD SEVERE SKIN IRRITATION HAZARD HIGH INGESTION HAZARD MODERATELY TOXIC BY SKIN ABSORPTION
CHRONIC HEALTH HAZARDS: (LONG-TERM)	PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE SKIN DISORDERS. MAY BE ABSORBED THROUGH THE SKIN D BE CAUSING SYSTEMIC EFFECTS AND ORGAN DAMAGE. SEER SUPPLEMENT.

3 - COMPONENTS

HAZARDOUS COMPONENTS	CAS NUMBER
*CUMENE	98-82-8
*ETHYLBENZENE	100-41-4
*XYLENE	1330-20-7
HEAVY PETROLEUM NAPTHA	64741-68-0
TRIMETHYLBENZENE	25551-13-7

* THIS IS A SARA SECTION 313 LISTED CHEMICAL
US TSCA INVENTORY: ALL COMPONENTS ARE INCLUDED ON THE

4 - PHYSICAL AND CHEMICAL DATA

BOILING POINT
180F
PH
GT 8.0
FREEZING POINT
UK
DRY POINT
UK
SPECIFIC GRAVITY (H2O=1 AT 39.2F)
AP .97
VOLATILE CHARACTERISTICS
SLIGHT
VISCOSITY UNITS, TEMP.
UK
SOLUBILITY IN WATER
MODERATE

4 - PHYSICAL AND CHEMICAL DATA (continued)

VAPOR PRESSURE
4.6 MM HG AT 70F
VAPOR SP GR (AIR=1 AT 60 - 90F)
AP 4.2
APPEARANCE AND ODOR
CLEAR LIQUID - ALCOHOL ODOR
CONDITIONS AND MATERIALS TO AVOID
HEAT, OPEN FLAMES
STRONG OXIDIZING AGENTS, STRONG ACIDS
HAZARDOUS DECOMPOSITION PRODUCTS
INCOMPLETE COMBUSTION MAY PRODUCE CARBON MONOXIDE AND/OR OXIDES OF SULFUR

STABILITY
STABLE
HAZARDOUS POLYMERIZATION
NOT EXPECTED TO OCCUR

5 - OCCUPATIONAL EXPOSURE LIMITS

SUBSTANCE	SOURCE	DATE	TYPE	VALUE	TIME
CUMENE					
	ACGIH/OSHA	1989	TLV/PEL	50 PPM	8 HRS
XYLENE					
	ACGIH/OSHA	1989	TLV/PEL	100 PPM	8 HRS
			STEL	150 PPM	15 MIN
TRIMETHYLBENZENE					
	ACGIH/OSHA	1989	TLV/PEL	25 PPM	8 HRS
ETYHLBENZENE					
	ACGIH/OSHA	1989	TLV/PEL	100 PPM	8 HRS
			STEL	125 PPM	15 MIN

6 - FIRE AND EXPLOSION

FLASH POINT METHOD=(TCC)
AP 84F
AUTOIGNITION TEMP. METHOD=
AP 750F
FLAMMABLE LIMITS (% VOLUME IN AIR)
AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE
LOWER: AP 1.1
UPPER: AP 12.0
FIRE AND EXPLOSION HAZARDS
RELEASES VAPORS AT NORMAL AMBIENT TEMPERATURES. WHEN MIXED WITH AIR AND EXPOSED TO IGNITION SOURCE, VAPORS CAN BURN IN OPEN OR EXPLODE IF CONFINED. FLAMMABLE VAPORS MAY BE HEAVIER THAN AIR. MAY TRAVEL LONG DISTANCES ALONG GROUND BEFORE IGNITING/FLASHING BACK TO VAPOR SOURCE.
EXTINGUISHING MEDIA
DRY CHEMICAL
CO2
FOAM
SPECIAL FIREFIGHTING PROCEDURES
DO NOT ENTER FIRE AREA WITHOUT PROPER PROTECTION. SEE SECTION 4 - DECOMPOSITION PRODUCTS POSSIBLE. FIGHT FIRE FROM SAFE DISTANCE/PROTECTED LOCATION. HEAT MAY BUILD PRESSURE/RUPTURE CLOSED CONTAINERS, SPREADING FIRE, INCREASING RISK OF BURNS/INJURIES. WATER MAY BE INEFFECTIVE IN FIREFIGHTING DUE TO LOW FLASH POINT. USE WATER SPRAY/FOG FOR COOLING. EVEN IF MATERIAL IS WATER SOLUBLE, MAY NOT BE PRACTICAL TO EXTINGUISH FIRE BY WATER DILUTION. NOTIFY AUTHORITIES IF LIQUID ENTERS SEWER/PUBLIC WATERS.

7 - HEALTH HAZARDS

ROUTES OF EXPOSURE
INHALATION -- PRIMARY ROUTE
ALTHOUGH NO APPROPRIATE HUMAN OR ANIMAL HEALTH EFFECTS DATA ARE KNOWN TO EXIST, THIS MATERIAL IS EXPECTED TO BE AN INHALATION HAZARD.
EYE CONTACT -- PRIMARY ROUTE
ALTHOUGH NO APPROPRIATE HUMAN OR ANIMAL HEALTH EFFECTS DATA ARE KNOWN TO EXIST, THIS MATERIAL IS EXPECTED TO CAUSE SEVERE EYE IRRITATION.

7 - HEALTH HAZARDS (continued)

SKIN ABSORPTION
EXPOSURE TO THIS MATERIAL CAN RESULT IN ABSORPTION THROUGH SKIN CAUSING HEALTH HAZARD.
SKIN IRRITATION -- PRIMARY ROUTE
ALTHOUGH NO APPROPRIATE HUMAN OR ANIMAL HEALTH EFFECTS DATA ARE KNOWN TO EXIST, THIS MATERIAL IS EXPECTED TO BE A SEVERE SKIN IRRITANT.
INGESTION
NO DATA AVAILABLE. INGESTION OF THIS MATERIAL MAY RESULT IN ASPIRATION INTO THE LUNGS CAUSING CHEMICAL PNEUMONIA.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
THIS MATERIAL OR ITS EMISSIONS MAY AFFECT THE CENTRAL NERVOUS SYSTEM AND/OR AGGRAVATE PRE-EXISTING DISORDERS. PROLONGED OBSERVATION MAY BE INDICATED.

8 - PROTECTIVE EQUIPMENT / CONTROL MEASURES

RESPIRATORY PROTECTION
IF EXPOSURE EXCEEDS THE PEL/TLV, USE NIOSH/MSHA APPROVED RESPIRATORY PROTECTION EQUIPMENT AS SPECIFIED IN THE NIOSH/OSHA 1981 OCCUPATIONAL HEALTH GUIDELINES FOR CHEMICAL HAZARDS.
EYE PROTECTION
EYE PROTECTION SUCH AS CHEMICAL SPLASH GOGGLES AND/OR FACE SHIELD MUST BE WORN WHEN POSSIBILITY EXISTS FOR EYE CONTACT DUE TO SPLASHING OR SPRAYING LIQUID, AIRBORNE PARTICLES, OR VAPOR. CONTACT LENSES SHOULD NOT BE WORN.
SKIN PROTECTION
WHEN SKIN CONTACT IS POSSIBLE, PROTECTIVE CLOTHING INCLUDING GLOVES, APRON, SLEEVES, BOOTS, HEAD AND FACE PROTECTION SHOULD BE WORN. THIS EQUIPMENT MUST BE CLEANED THOROUGHLY AFTER EACH USE.
ENGINEERING CONTROLS
PROVIDE LOCAL EXHAUST OR GENERAL ROOM VENTILATION TO PREVENT VAPOR BUILDUP HIGHER THAN 20% OF LOWER EXPLOSIVE LIMIT (SAFETY FACTOR TO PREVENT FIRE/EXPLOSION). ELECTRICAL SYSTEMS SHOULD CONFORM TO NATIONAL ELECTRIC CODE.
OTHER HYGENIC PRACTICES
EMERGENCY EYE WASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE IN THE IMMEDIATE VICINITY OF ANY POTENTIAL EXPOSURE.
OTHER WORK PRACTICES
USE GOOD PERSONAL HYGIENE PRACTICES. WASH HANDS BEFORE EATING, DRINKING, SMOKING, OR USING TOILET FACILITIES. PROMPTLY REMOVE SOILED CLOTHING/WASH THOROUGHLY BEFORE REUSE. SHOWER AFTER WORK USING PLENTY OF SOAP AND WATER.

9 - EMERGENCY AND FIRST AID

INHALATION
IF OVERCOME BY EXPOSURE, REMOVE VICTIM TO FRESH AIR IMMEDIATELY. GIVE OXYGEN OR ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN EMERGENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.
EYE CONTACT
IN CASE OF EYE CONTACT, IMMEDIATELY RINSE WITH CLEAN WATER FOR 20-30 MINUTES. RETRACT EYELIDS OFTEN. OBTAIN EMERGENCY MEDICAL ATTENTION.
SKIN CONTACT
IMMEDIATELY REMOVE CONTAMINATED CLOTHING. WASH SKIN THOROUGHLY WITH MILD SOAP/WATER. FLUSH WITH LUKEWARM WATER FOR 15 MINUTES. IF STICKY, USE WATERLESS CLEANER FIRST. OBTAIN EMERGENCY MEDICAL ATTENTION.
INGESTION
IF SWALLOWED, GIVE LUKEWARM WATER (PINT) IF VICTIM COMPLETELY CONSCIOUS/ALERT. DO NOT INDUCE VOMITING/RISK OF DAMAGE TO LUNGS EXCEEDS POISONING RISK. OBTAIN EMERGENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.
EMERGENCY MEDICAL TREATMENT PROCEDURES
IF PAIN, BLINKING, TEARS, OR REDNESS CONTINUE, PATIENT SHOULD CONTACT OPTHALMOLOGIST.
DO NOT INDUCE VOMITING. ADMINISTER AN AQUEOUS SLURRY OF ACTIVATED CHARCOAL FOLLOWED BY A CATHARTIC SUCH AS MAGNESIUM CITRATE OR SORBITOL.

10 - SPILL AND DISPOSAL

PRECAUTIONS IF MATERIAL IS SPILLED OR RELEASED
RELEASE CAN CAUSE FIRE/EXPLOSION. EXTINGUISH ALL IGNITION SOURCES. IMPOUND/RECOVER LARGE LAND SPILL; SOAK UP SMALL SPILL. ON WATER, CONTAIN/MINIMIZE DISPERSION/COLLECT. REPORT PER REGULATORY REQUIREMENTS.
WASTE DISPOSAL METHODS
CONTAMINATED PRODUCT/SOIL/WATER MAY BE RCRA/OSHA HAZARDOUS WASTE DUE TO POTENTIALLY LOW FLASH POINT (SEE 40 CFR 261 AND 29 CFR 1910). WASTE MAY BE DESIGNATED D001 UNDER RCRA LISTING DUE TO PRESENCE OF ISOPROPYL ALCOHOL. LANDFILL SOLIDS AT PERMITTED SITES. USE REGISTERED TRANSPORTERS. BURN CONCENTRATED LIQUIDS. AVOID FLAMEOUTS. ASSURE EMISSIONS COMPLY WITH APPLICABLE REGULATIONS. DILUTE AQUEOUS WASTE MAY BIODEGRADE. AVOID OVERLOADING/POISONING PLANT BIOMASS. ASSURE EFFLUENT COMPLIES WITH APPLICABLE REGULATIONS.

11 - ADDITIONAL PRECAUTIONS

HANDLING AND STORAGE PROCEDURES
STORE IN TIGHTLY CLOSED/PROPERLY VENTED CONTAINERS AWAY FROM HEAT, SPARKS, OPEN FLAME, STRONG OXIDIZING AGENTS. USE ONLY NON-SPARKING TOOLS. STORE DRUMS WITH BUNG IN UP POSITION. CAREFULLY VENT INTERNAL PRESSURE BEFORE REMOVING CLOSURE. CONTAINERS MUST BE GROUNDED BEFORE BEGINNING TRANSFER. ELECTRICAL EQUIPMENT SHOULD CONFORM TO NATIONAL ELECTRIC CODE. HANDLE "EMPTY" CONTAINERS WITH CARE/VAPOR RESIDUE MAY BE FLAMMABLE. VAPOR SPACE ABOVE LIQUID MAY BE FLAMMABLE/EXPLOSIVE UNLESS BLANKETED WITH INERT GAS.
DECONTAMINATION PROCEDURES
ISOLATE, VENT, DRAIN, WASH, AND PURGE EQUIPMENT BEFORE MAINTENANCE. REMOVE ALL IGNITION SOURCES. CHECK ATMOSPHERE FOR EXPLOSIVENESS AND OXYGEN DEFICIENCIES. IF ANY RESIDUAL PRODUCT MAY BE PRESENT, TOTAL-ENCAPSULATING IMPERVIOUS PROTECTIVE SUITS, GLOVES, AND BOOTS SHOULD BE WORN. SEE PROTECTIVE EQUIPMENT SECTION 8 FOR PROPER RESPIRATORY PROTECTION.

12 - LABEL INFORMATION

USE STATEMENT
FOR INDUSTRIAL USE ONLY
KEEP OUT OF REACH OF CHILDREN
SIGNAL WORD
WARNING
PHYSICAL HAZARDS
HIGHLY FLAMMABLE
HEALTH HAZARDS
INHALATION HAZARD
SEVERE SKIN AND EYE IRRITANT
HIGH INGESTION HAZARD-CHEMICAL PNEUMONIA
SKIN CONTACT PENETRANT
PRECAUTIONARY MEASURES

DO NOT HANDLE NEAR HEAT, SPARKS, OR OPEN FLAME.
KEEP CONTAINER CLOSED WHEN NOT IN USE.
DO NOT STORE NEAR COMBUSTIBLE MATERIALS.
AVOID CONTACT WITH EYES.
AVOID PROLONGED OR REPEATED BREATHING OF VAPOR.
AVOID PROLONGED OR REPEATED CONTACT WITH SKIN.
USE ONLY WITH ADEQUATE VENTILATION/PERSONAL PROTECTION.

13 - SUPPLEMENT

TRIMETHYLBENZENE HAS BEEN FOUND TO CAUSE ONE OR MORE OF THE FOLLOWING CONDITIONS; CHRONIC ASTHMATIC-LIKE BRONCHITIS, MILD ANEMIA, THROMBOCYTOPENIA AND PROLONGED COAGULATION TIMES, AND ELEVATED LIVER ENZYMES. IN ADDITION, AT LEAST ONE POSITIVE ASSAY FOR MUTAGENICITY HAS BEEN REPORTED.

13 - SUPPLEMENT (continued)

ALTHOUGH INHALATION IS THE PRIMARY ROUTE OF EXPOSURE FOR THIS PRODUCT, SKIN ABSORPTION CAN BE A FACTOR DUE TO THE FACT THAT CUMENE IS RAPIDLY ABSORBED THROUGH THE SKIN, PENETRATES MOST PPE WITHIN AN HOUR AND HAS A LONG RETENTION TIME IN THE BODY. REPEATED PROLONGED EXPOSURE TO SIGNIFICANT CONCENTRATIONS OF CUMENE HAS BEEN ASSOCIATED WITH ELEVATED BILIRUBIN, AND ALTERED LIVER FUNCTIONS. ANIMAL STUDIES INVOLVING PROLONGED EXPOSURE HAVE SHOWN HYPERMIA AND CONGESTION IN THE LUNGS, LIVER AND KIDNEYS.
PROLONGED, REPEATED EXPOSURE TO HIGH LEVELS OF XYLENE CAN INDUCE CENTRAL NERVOUS SYSTEM EFFECTS INCLUDING DEPRESSION, DIZZINESS, NUMBNESS, TREMORS, IMPAIRED MEMORY, HEADACHE, NAUSEA AND LACK OF APPETITE. MODERATE LIVER ENLARGEMENT, KIDNEY INVOLVEMENT, AND EVEN DEATH IS POSSIBLE IF EXPOSURE IS NOT CONTROLLED.

NOTE -- QUALIFIERS AND CODES USED IN THIS MSDS

EQ	= EQUAL	AP	= APPROXIMATELY
LT	= LESS THAN	GT	= GREATER THAN
TR	= TRACE	UK	= UNKNOWN
N/AP	= NOT APPLICABLE	N/P	= NO APPLICABLE INFORMATION FOUND
N/DA	= NO DATA AVAILABLE		

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1 - GENERAL INFORMATION

ENVIRO-CHEM, INC.
921 W. MARLAND
HOBBS, NEW MEXICO 88240
(505)393-1917

800-424-9300 ChemTrec
800-231-3606 Emergency
713-599-7400 Information

GENERIC NAME
OXYALKYLATED PHENOLIC RESIN

DATE REVISED: 11/27/90

DOT PROPER SHIPPING NAME
FLAMMABLE LIQUID, N.O.S.
(XYLENE, PETROLEUM NAPTHA)

UN/NA NUMBER
UN 1993

DOT HAZARD CLASS
FLAMMABLE LIQUID

NFPA CLASSIFICATION: HEALTH:(2) FLAMMABILITY:(3) REACTIVITY:(0)
SPECIFIC HAZARD:(N/AP)

DOT/CERCLA RQ: 4,000 LBS (XYLENE)

2 - SUMMARY OF HAZARDS

WARNING

PHYSICAL HAZARDS:	HIGHLY FLAMMABLE LIQUID
ACUTE HEALTH HAZARDS: (SHORT-TERM BASED ON HAZARDOUS COMPONENTS	HIGH INHALATION HAZARD MODERATE EYE CONTACT HAZARD SEVERE SKIN IRRITATION HAZARD HIGH INGESTION HAZARD MODERATELY TOXIC BY SKIN ABSORPTION
CHRONIC HEALTH HAZARDS: (LONG-TERM)	PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE SKIN DISORDERS. MAY BE ABSORBED THROUGH THE SKIN CAUSING SYSTEMIC EFFECTS AND ORGAN DAMAGE. SEE SUPPLEMENT.

3 - COMPONENTS

HAZARDOUS COMPONENTS	CAS NUMBER
*CUMENE	98-82-8
*XYLENE	1330-20-7
*ETHYLBENZENE	100-41-4
HEAVY PETROLEUM NAPTHA	64741-68-0
TRIMETHYLBENZENE	25551-13-7

* THIS IS A SARA SECTION 313 LISTED CHEMICAL
US TSCA INVENTORY: ALL COMPONENTS ARE INCLUDED ON THE

4 - PHYSICAL AND CHEMICAL DATA

BOILING POINT
280F

PH
N/DA

FREEZING POINT
N/DA

DRY POINT
N/DA

SPECIFIC GRAVITY (H2O=1 AT 39.2F)
AP .953 AT 60F

VOLATILE CHARACTERISTICS
APPRECIABLE

VISCOSITY UNITS, TEMP.
N/DA

SOLUBILITY IN WATER
SLIGHT

4 - PHYSICAL AND CHEMICAL DATA (continued)

VAPOR PRESSURE
AP 4.1 MM HG AT 70F
VAPOR SP GR (AIR=1 AT 60 - 90F)
4.5
APPEARANCE AND ODOR
DARK BROWN LIQUID - AROMATIC ODOR
CONDITIONS AND MATERIALS TO AVOID
HEAT, SPARKS, AND OPEN FLAMES
STRONG OXIDIZING AGENTS, STRONG ACIDS
HAZARDOUS DECOMPOSITION PRODUCTS
INCOMPLETE COMBUSTION MAY PRODUCE CARBON MONOXIDE AND/OR CARBON DIOXIDE

STABILITY
STABLE
HAZARDOUS POLYMERIZATION
NOT EXPECTED TO OCCUR

5 - OCCUPATIONAL EXPOSURE LIMITS

SUBSTANCE	SOURCE	DATE	TYPE	VALUE	TIME
CUMENE					
	ACGIH/OSHA	1989	TLV/PEL	50 PPM	8 HRS
XYLENE					
	ACGIH/OSHA	1989	TLV/PEL	100 PPM	8 HRS
			STEL	150 PPM	15 MIN
TRIMETHYLBENZENE					
	ACGIH/OSHA	1989	TLV/PEL	25 PPM	8 HRS
ETHYLBENZENE					
	ACGIH/OSHA	1989	TLV/PEL	100 PPM	8 HRS
			STEL	125 PPM	15 MIN

6 - FIRE AND EXPLOSION

FLASH POINT METHOD=
AP 96F
AUTOIGNITION TEMP. METHOD=
AP 867F
FLAMMABLE LIMITS (% VOLUME IN AIR)
AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE
LOWER: 1.0 UPPER: 7.0
FIRE AND EXPLOSION HAZARDS
RELEASES VAPORS AT NORMAL AMBIENT TEMPERATURES. WHEN MIXED WITH AIR AND EXPOSED TO IGNITION SOURCE, VAPORS CAN BURN IN OPEN OR EXPLODE IF CONFINED. FLAMMABLE VAPORS MAY BE HEAVIER THAN AIR. MAY TRAVEL LONG DISTANCES ALONG GROUND BEFORE IGNITING/FLASHING BACK TO VAPOR SOURCE.
EXTINGUISHING MEDIA
DRY CHEMICAL
CO2
FOAM
USE WATER SPRAY AND WATER FOG FOR COOLING
SPECIAL FIREFIGHTING PROCEDURES
DO NOT ENTER FIRE AREA WITHOUT PROPER PROTECTION. SEE SECTION 4 - DECOMPOSITION PRODUCTS POSSIBLE. FIGHT FIRE FROM SAFE DISTANCE/PROTECTED LOCATION. HEAT MAY BUILD PRESSURE/RUPTURE CLOSED CONTAINERS, SPREADING FIRE, INCREASING RISK OF BURNS/INJURIES. WATER MAY BE INEFFECTIVE IN FIREFIGHTING DUE TO LOW FLASH POINT. USE WATER SPRAY/FOG FOR COOLING. EVEN IF MATERIAL IS WATER SOLUBLE, MAY NOT BE PRACTICAL TO EXTINGUISH FIRE BY WATER DILUTION. NOTIFY AUTHORITIES IF LIQUID ENTERS SEWER/PUBLIC WATERS.

7 - HEALTH HAZARDS

ROUTES OF EXPOSURE
INHALATION -- PRIMARY ROUTE
EXCESSIVE EXPOSURE TO VAPOR OR MIST MAY RESULT IN TOXIC EFFECTS.
EYE CONTACT -- PRIMARY ROUTE
ALTHOUGH NO APPROPRIATE HUMAN OR ANIMAL HEALTH EFFECTS DATA ARE KNOWN TO EXIST, THIS MATERIAL IS EXPECTED TO CAUSE EYE IRRITATION.

7 - HEALTH (Continued)

MATERIAL CAN RESULT IN ABSORPTION THROUGH SKIN CAUSING

-- PRIMARY ROUTE
RIATE HUMAN OR ANIMAL HEALTH EFFECTS DATA ARE KNOWN TO
AL IS EXPECTED TO BE A SEVERE SKIN IRRITANT.

E. INGESTION OF THIS MATERIAL MAY RESULT IN ASPIRATION INTO
CHEMICAL PNEUMONIA.
AGGRAVATED BY EXPOSURE
ITS EMISSIONS MAY CAUSE DAMAGE TO KIDNEY AND LIVER
EXISTING DISORDERS.

8 - PROTECTION / CONTROL MEASURES

TION
XCEED THE PEL/TLV, USE ONLY NIOSH/MSHA APPROVED
SUPPLIED AIR RESPIRATOR OPERATED IN A POSITIVE PRESSURE

CH AS CHEMICAL SPLASH GOGGLES AND/OR FACE SHIELD MUST BE
LITY EXISTS FOR EYE CONTACT DUE TO SPLASHING OR SPRAYING
PARTICLES, OR VAPOR. CONTACT LENSES SHOULD NOT BE WORN.

IS POSSIBLE, PROTECTIVE CLOTHING INCLUDING GLOVES, APRON,
EAD AND FACE PROTECTION SHOULD BE WORN. THIS EQUIPMENT
HOROUGHLY AFTER EACH USE.
S
LOCAL EXHAUST VENTILATION IS USUALLY REQUIRED TO MEET EX-
).
ICES
H FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE IN THE
Y OF ANY POTENTIAL EXPOSURE.
ES
HYGIENE PRACTICES. WASH HANDS BEFORE EATING, DRINKING,
TOILET FACILITIES. PROMPTLY REMOVE SOILED CLOTHING/WASH
REUSE. SHOWER AFTER WORK USING PLENTY OF SOAP AND WATER.

9 - EMERGENCY AID

XPOSURE, REMOVE VICTIM TO FRESH AIR IMMEDIATELY. GIVE
IAL RESPIRATION AS NEEDED. OBTAIN EMERGENCY MEDICAL
ACTION IS ESSENTIAL.

NTACT, IMMEDIATELY RINSE WITH CLEAN WATER FOR 20-30
EYELIDS OFTEN. OBTAIN EMERGENCY MEDICAL ATTENTION.

CONTAMINATED CLOTHING. WASH SKIN THOROUGHLY WITH MILD
WITH LUKEWARM WATER FOR 15 MINUTES. IF STICKY, USE WATER-
T. OBTAIN EMERGENCY MEDICAL ATTENTION.

LUKEWARM WATER (PINT) IF VICTIM COMPLETELY CONSCIOUS/
CE VOMITING/RISK OF DAMAGE TO LUNGS EXCEEDS POISONING
GENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.
TREATMENT PROCEDURES
AMMATORY/STEROID TREATMENT MAY BE REQUIRED AT FIRST
ARY/UPPER AIRWAY EDEMA.
NOT INDUCE VOMITING. GASTRIC LAVAGE AND CATHARTIC

10 - SPILL AND DISPOSAL

PRECAUTIONS IF MATERIAL IS SPILLED OR RELEASED
RELEASE CAN CAUSE FIRE/EXPLOSION. EXTINGUISH ALL IGNITION SOURCES. IMPOUND/RECOVER LARGE LAND SPILL; SOAK UP SMALL SPILL. ON WATER, CONTAIN/MINIMIZE DISPERSION/COLLECT. REPORT PER REGULATORY REQUIREMENTS.
WASTE DISPOSAL METHODS
CONTAMINATED PRODUCT/SOIL/WATER MAY BE RCRA/OSHA HAZARDOUS WASTE DUE TO POTENTIALLY LOW FLASH POINT (SEE 40 CFR 261 AND 29 CFR 1910). LANDFILL SOLIDS AT PERMITTED SITES. USE REGISTERED TRANSPORTERS. BURN CONCENTRATED LIQUIDS. AVOID FLAMEOUTS. ASSURE EMISSIONS COMPLY WITH APPLICABLE REGULATIONS. DILUTE AQUEOUS WASTE MAY BIODEGRADE. AVOID OVERLOADING/POISONING PLANT BIOMASS. ASSURE EFFLUENT COMPLIES WITH APPLICABLE REGULATIONS.

11 - ADDITIONAL PRECAUTIONS

HANDLING AND STORAGE PROCEDURES
STORE IN TIGHTLY CLOSED/PROPERLY VENTED CONTAINERS AWAY FROM HEAT, SPARKS, OPEN FLAME, STRONG OXIDIZING AGENTS. USE ONLY NON-SPARKING TOOLS. STORE DRUMS WITH BUNG IN UP POSITION. CAREFULLY VENT INTERNAL PRESSURE BEFORE REMOVING CLOSURE. CONTAINERS MUST BE GROUNDED BEFORE BEGINNING TRANSFER. ELECTRICAL EQUIPMENT SHOULD CONFORM TO NATIONAL ELECTRIC CODE. HANDLE "EMPTY" CONTAINERS WITH CARE/VAPOR RESIDUE MAY BE FLAMMABLE. VAPOR SPACE ABOVE LIQUID MAY BE FLAMMABLE/EXPLOSIVE UNLESS BLANKETED WITH INERT GAS.
DECONTAMINATION PROCEDURES
ISOLATE, VENT, DRAIN, WASH, AND PURGE EQUIPMENT BEFORE MAINTENANCE. REMOVE ALL IGNITION SOURCES. CHECK ATMOSPHERE FOR EXPLOSIVENESS AND OXYGEN DEFICIENCIES. IF ANY RESIDUAL PRODUCT MAY BE PRESENT, TOTAL-ENCAPSULATING IMPERVIOUS PROTECTIVE SUITS, GLOVES, AND BOOTS SHOULD BE WORN. SEE PROTECTIVE EQUIPMENT SECTION 8 FOR PROPER RESPIRATORY PROTECTION.

12 - LABEL INFORMATION

USE STATEMENT
FOR INDUSTRIAL USE ONLY
KEEP OUT OF REACH OF CHILDREN
SIGNAL WORD
WARNING
PHYSICAL HAZARDS
HIGHLY FLAMMABLE
HEALTH HAZARDS
SKIN AND EYE IRRITANT
HIGH INGESTION HAZARD-CHEMICAL PNEUMONIA
INHALATION HAZARD
SKIN CONTACT PENETRANT
PRECAUTIONARY MEASURES
DO NOT HANDLE NEAR HEAT, SPARKS, OR OPEN FLAME.
KEEP CONTAINER CLOSED WHEN NOT IN USE.
DO NOT STORE NEAR COMBUSTIBLE MATERIALS.
AVOID CONTACT WITH EYES, SKIN, AND CLOTHING.
AVOID PROLONGED OR REPEATED BREATHING OF VAPOR.
USE ONLY WITH ADEQUATE VENTILATION/PERSONAL PROTECTION.
PREVENT CONTACT WITH FOOD, CHEWING, OR SMOKING MATERIALS.
WASH THOROUGHLY AFTER HANDLING.
DO NOT TASTE/SWALLOW.
DO NOT TAKE INTERNALLY.

13 - SUPPLEMENT

ACUTE AND CHRONIC HEALTH EFFECTS - SECTIONS 2 AND 7
PROLONGED, REPEATED EXPOSURES TO HIGH LEVELS OF XYLENE CAN INDUCE CENTRAL NERVOUS SYSTEM EFFECTS INCLUDING DEPRESSION, DIZZINESS, NUMBNESS, TREMORS, IMPAIRED MEMORY, HEADACHE, NAUSEA AND LACK OF APPETITE. MODERATE LIVER ENLARGEMENT, KIDNEY INVOLVEMENT AND EVEN DEATH IS POSSIBLE IF

13 - SUPPLEMENT (continued)

EXPOSURE IS NOT CONTROLLED.
TRIMETHYLBENZENE HAS BEEN FOUND TO CAUSE ONE OR MORE OF THE FOLLOWING CONDITIONS; CHRONIC ASTHMATIC-LIKE BRONCHITIS, MILD ANEMIA, THROMBOCYTOPENIA AND PROLONGED COAGULATION TIMES, AND ELEVATED LIVER ENZYMES. IN ADDITION, AT LEAST ONE POSITIVE ASSAY FOR MUTAGENICITY HAS BEEN REPORTED.

ALTHOUGH INHALATION IS THE PRIMARY ROUTE OF EXPOSURE FOR THIS PRODUCT, SKIN ABSORPTION CAN BE A FACTOR DUE TO THE FACT THAT CUMENE IS RAPIDLY ABSORBED THROUGH THE SKIN, PENETRATES MOST PPE WITHIN AN HOUR AND HAS A LONG RETENTION TIME IN THE BODY. REPEATED PROLONGED EXPOSURE TO SIGNIFICANT CONCENTRATIONS OF CUMENE HAS BEEN ASSOCIATED WITH ELEVATED BILIRUBIN, AND ALTERED LIVER FUNCTIONS. ANIMAL STUDIES INVOLVING PROLONGED EXPOSURE HAVE SHOWN HYPERMIA AND CONGESTION IN THE LUNGS, LIVER AND KIDNEYS.

NOTE -- QUALIFIERS AND CODES USED IN THIS MSDS

EQ = EQUAL	AP = APPROXIMATELY
LT = LESS THAN	GT = GREATER THAN
TR = TRACE	UK = UNKNOWN
N/AP = NOT APPLICABLE	N/P = NO APPLICABLE INFORMATION FOUND
N/DA = NO DATA AVAILABLE	

14 - DISCLAIMERS

SOME OF THE INFORMATION PRESENTED AND CONCLUSIONS DRAWN HEREIN ARE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE PRODUCT ITSELF.

THE INFORMATION IN THIS MSDS WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.

THE CONDITIONS OR METHODS OF HANDLING, STORAGE, USE AND DISPOSAL OF THE PRODUCT ARE BEYOND OUR CONTROL AND MAY BE BEYOND OUR KNOWLEDGE. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

THIS MSDS WAS PREPARED AND IS TO BE USED ONLY FOR THIS PRODUCT. IF THE PRODUCT IS USED AS A COMPONENT IN ANOTHER PRODUCT, THIS MSDS INFORMATION MAY NOT BE APPLICABLE.

THIS MSDS HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1200).

1 - GENERAL INFORMATION

ENVIRO-CHEM, INC.
P.O. BOX 668
HOBBS, NEW MEXICO 88240
(505)393-1917

800-424-9300 ChemTrec
800-231-3606 Emergency
713-599-7400 Information

GENERIC NAME — DATE REVISED: 12/11/90

DOT PROPER SHIPPING NAME
FLAMMABLE LIQUID, NOS
(ISOPROPANOL, TERPENES)

UN/NA NUMBER
UN 1993

DOT HAZARD CLASS
FLAMMABLE LIQUID

NFPA CLASSIFICATION: HEALTH (2) FLAMMABILITY (4) REACTIVITY (0)
SPECIFIC HAZARD (N/A)

DOT/CERCLA RQ: 20,000 LBS (XYLENE)

2 - SUMMARY OF HAZARDS

DANGER

PHYSICAL HAZARDS:	EXTREMELY FLAMMABLE LIQUID
ACUTE HEALTH HAZARDS: (SHORT-TERM BASED ON HAZARDOUS COMPONENTS)	HIGH INHALATION HAZARD MODERATE EYE CONTACT HAZARD SEVERE SKIN IRRITATION HAZARD HIGH INGESTION HAZARD MODERATELY TOXIC BY SKIN ABSORPTION
CHRONIC HEALTH HAZARDS: (LONG-TERM)	PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE SKIN DISORDERS. MAY BE ABSORBED THROUGH THE SKIN CAUSING SYSTEMIC EFFECTS AND ORGAN DAMAGE. SEE SUPPLEMENT.

3 - COMPONENTS

HAZARDOUS COMPONENTS	CAS NUMBER
*CUMENE	98-82-84-5
*XYLENE	1330-20-7
*ETHYLBENZENE	100-41-4
HEAVY PETROLEUM NAPTHA	64741-68-0
TRIMETHYLBENZENE	25551-13-7
DIPENTENE, LIMANENE-TERPENE (C10H16)	138-86-3
ISOPROPANOL	67-63-0

* THIS IS A SARA SECTION 313 LISTED CHEMICAL
US TSCA INVENTORY: ALL COMPONENTS ARE INCLUDED ON THE

4 - PHYSICAL AND CHEMICAL DATA

BOILING POINT 180F	PH N/AP
FREEZING POINT -25F	DRY POINT UK
SPECIFIC GRAVITY (H2O=1 AT 39.2F) .95	VOLATILE CHARACTERISTICS APPRECIABLE

4 - PHYSICAL AND CHEMICAL DATA (continued)

VISCOSITY UNITS, TEMP.
UK
VAPOR PRESSURE
12.4 MM HG AT 70F
VAPOR SP GR (AIR=1 AT 60 - 90F)
2.1
APPEARANCE AND ODOR
DARK BROWN LIQUID, ALCOHOL ODOR
CONDITIONS AND MATERIALS TO AVOID
HEAT, SPARKS AND OPEN FLAME
STRONG OXIDIZING AGENTS, STRONG ALKALIES
HAZARDOUS DECOMPOSITION PRODUCTS
INCOMPLETE COMBUSTION MAY RELEASE POISONOUS CARBON MONOXIDE.
SOLUBILITY IN WATER
APPRECIABLE
STABILITY
STABLE
HAZARDOUS POLYMERIZATION
NOT EXPECTED TO OCCUR

5 - OCCUPATIONAL EXPOSURE LIMITS

SUBSTANCE	SOURCE	DATE	TYPE	VALUE	TIME
CUMENE					
	ACGIH/OSHA	1989	TLV/PEL	50 PPM	8 HRS
XYLENE					
	ACGIH/OSHA	1989	TLV/PEL	100 PPM	8 HRS
			STEL	150 PPM	15 MIN
TRIMETHYLBENZENE					
	ACGIH/OSHA	1989	TLV/PEL	25 PPM	8 HRS
ISOPROPANOL					
	ACGIH/OSHA	1989	TLV/PEL	400 PPM	8 HRS
			STEL	500 PPM	15 MIN
ETHYLBENZENE					
	ACGIH/OSHA	1989	TLV/PEL	100 PPM	8 HRS
			STEL	125 PPM	15 MIN

6 - FIRE AND EXPLOSION

FLASH POINT METHOD=(TCC)
72F
AUTOIGNITION TEMP. METHOD=
AP 750F
FLAMMABLE LIMITS (% VOLUME IN AIR)
AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE
LOWER: 1.1 UPPER: 12.0
FIRE AND EXPLOSION HAZARDS
RELEASES FLAMMABLE VAPORS BELOW NORMAL AMBIENT TEMPERATURES. WHEN MIXED WITH AIR AND EXPOSED TO IGNITION SOURCE, VAPORS CAN BURN IN OPEN OR EXPLODE IF CONFINED. FLAMMABLE VAPORS MAY BE HEAVIER THAN AIR. MAY TRAVEL LONG DISTANCES ALONG GROUND BEFORE IGNITING/FLASHING BACK TO VAPOR SOURCE.
EXTINGUISHING MEDIA
DRY CHEMICAL
CO2
FOAM
SPECIAL FIREFIGHTING PROCEDURES
DO NOT ENTER FIRE AREA WITHOUT PROPER PROTECTION. SEE SECTION 4 - DECOMPOSITION PRODUCTS POSSIBLE. FIGHT FIRE FROM SAFE DISTANCE/PROTECTED LOCATION. HEAT MAY BUILD PRESSURE/RUPTURE CLOSED CONTAINERS, SPREADING FIRE, INCREASING RISK OF BURNS/INJURIES. USE WATER SPRAY/FOG FOR COOLING.AVOID FROTHING/STEAM EXPLOSION. BURNING LIQUID MAY FLOAT ON WATER. ALTHOUGH SOLUBLE, MAY NOT BE PRACTICAL TO EXTINGUISH FIRE BY WATER DILUTION. NOTIFY AUTHORITIES IF LIQUID ENTERS SEWER/PUBLIC WATERS.

- HEALTH HAZARDS

ROUTES OF EXPOSURE
INHALATION
ALTHOUGH NO APPROPRIATE HUMAN OR ANIMAL HEALTH EFFECTS DATA ARE KNOWN TO EXIST, THIS MATERIAL IS EXPECTED TO BE AN INHALATION HAZARD.
EYE CONTACT -- PRIMARY ROUTE
ALTHOUGH NO APPROPRIATE HUMAN OR ANIMAL HEALTH EFFECTS DATA ARE KNOWN TO EXIST, THIS MATERIAL IS EXPECTED TO CAUSE SEVERE EYE IRRITATION.
SKIN ABSORPTION
EXPOSURE TO A SMALL QUANTITY OF THIS MATERIAL CAN RESULT IN RAPID ABSORPTION THROUGH SKIN CAUSING SIGNIFICANT HEALTH HAZARD.
SKIN IRRITATION
ALTHOUGH NO APPROPRIATE HUMAN OR ANIMAL HEALTH EFFECTS DATA ARE KNOWN TO EXIST, THIS MATERIAL IS EXPECTED TO BE A SEVERE SKIN IRRITANT.
INGESTION -- PRIMARY ROUTE
NO DATA AVAILABLE. INGESTION OF THIS MATERIAL MAY RESULT IN ASPIRATION INTO THE LUNGS CAUSING CHEMICAL PNEUMONIA.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
SEE SUPPLEMENT

8 - PROTECTIVE EQUIPMENT / CONTROL MEASURES

RESPIRATORY PROTECTION
IF EXPOSURE EXCEEDS THE PEL/TLV, USE NIOSH/MSHA APPROVED RESPIRATORY PROTECTION EQUIPMENT AS SPECIFIED IN THE NIOSH/OSHA 1981 OCCUPATIONAL HEALTH GUIDELINES FOR CHEMICAL HAZARDS.
EYE PROTECTION
EYE PROTECTION SUCH AS CHEMICAL SPLASH GOGGLES AND/OR FACE SHIELD MUST BE WORN WHEN POSSIBILITY EXISTS FOR EYE CONTACT DUE TO SPLASHING OR SPRAYING LIQUID, AIRBORNE PARTICLES, OR VAPOR. CONTACT LENSES SHOULD NOT BE WORN.
SKIN PROTECTION
WHEN SKIN CONTACT IS POSSIBLE, PROTECTIVE CLOTHING INCLUDING GLOVES, APRON, SLEEVES, BOOTS, HEAD AND FACE PROTECTION SHOULD BE WORN. THIS EQUIPMENT MUST BE CLEANED THOROUGHLY AFTER EACH USE.
ENGINEERING CONTROLS
GENERAL ROOM OR LOCAL EXHAUST VENTILATION IS USUALLY REQUIRED TO MEET EXPOSURE STANDARD(S).
OTHER HYGENIC PRACTICES
EMERGENCY EYE WASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE IN THE IMMEDIATE VICINITY OF ANY POTENTIAL EXPOSURE.
OTHER WORK PRACTICES
USE GOOD PERSONAL HYGIENE PRACTICES. WASH HANDS BEFORE EATING, DRINKING, SMOKING, OR USING TOILET FACILITIES. PROMPTLY REMOVE SOILED CLOTHING/WASH THOROUGHLY BEFORE REUSE. SHOWER AFTER WORK USING PLENTY OF SOAP AND WATER.

9 - EMERGENCY AND FIRST AID

INHALATION
IF OVERCOME BY EXPOSURE, REMOVE VICTIM TO FRESH AIR IMMEDIATELY. GIVE OXYGEN OR ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN EMERGENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.
EYE CONTACT
IN CASE OF EYE CONTACT, IMMEDIATELY RINSE WITH CLEAN WATER FOR 20-30 MINUTES. RETRACT EYELIDS OFTEN. OBTAIN EMERGENCY MEDICAL ATTENTION.
SKIN CONTACT
IMMEDIATELY REMOVE CONTAMINATED CLOTHING. WASH SKIN THOROUGHLY WITH MILD SOAP/WATER. FLUSH WITH LUKEWARM WATER FOR 15 MINUTES. IF STICKY, USE WATERLESS CLEANER FIRST. OBTAIN EMERGENCY MEDICAL ATTENTION.
INGESTION
IF SWALLOWED, GIVE LUKEWARM WATER (PINT) IF VICTIM COMPLETELY CONSCIOUS/ALERT. DO NOT INDUCE VOMITING/RISK OF DAMAGE TO LUNGS EXCEEDS POISONING RISK. OBTAIN EMERGENCY MEDICAL ATTENTION.
EMERGENCY MEDICAL TREATMENT PROCEDURES
VIGOROUS ANTI-INFLAMMATORY/STEROID TREATMENT MAY BE REQUIRED AT FIRST EVIDENCE OF PULMONARY/UPPER AIRWAY EDEMA.

9 - EMERGENCY AND FIRST AID (continued)

IF SWALLOWED, DO NOT INDUCE VOMITING. GASTRIC LAVAGE AND CATHARTIC INDICATED.

10 - SPILL AND DISPOSAL

PRECAUTIONS IF MATERIAL IS SPILLED OR RELEASED
EXTREMELY FLAMMABLE LIQUID. RELEASE CAUSES IMMEDIATE FIRE/EXPLOSION HAZARD. EXTINGUISH ALL IGNITION SOURCES. IMPOUND/RECOVER LARGE LAND SPILL; SOAK UP SMALL SPILL. ON WATER, MAY BIODEGRADE. CONTAIN/MINIMIZE DISPERSION/COLLECT. REPORT PER REGULATORY REQUIREMENTS.
WASTE DISPOSAL METHODS
CONTAMINATED PRODUCT/SOIL/WATER MAY BE RCRA/OSHA HAZARDOUS WASTE DUE TO POTENTIALLY LOW FLASH POINT (SEE 40 CFR 261 AND 29 CFR 1910). WASTE MAY BE DESIGNATED D001 UNDER RCRA LISTING DUE TO PRESENCE OF ISOPROPYL ALCOHOL. LANDFILL SOLIDS AT PERMITTED SITES. USE REGISTERED TRANSPORTERS. BURN CONCENTRATED LIQUIDS. AVOID FLAMEOUTS. ASSURE EMISSIONS COMPLY WITH APPLICABLE REGULATIONS. DILUTE AQUEOUS WASTE MAY BIODEGRADE. AVOID OVERLOADING/POISONING PLANT BIOMASS. ASSURE EFFLUENT COMPLIES WITH APPLICABLE REGULATIONS.

11 - ADDITIONAL PRECAUTIONS

HANDLING AND STORAGE PROCEDURES
BOTH PERMANENT AND PORTABLE DISPOSAL CONTAINERS MUST BE GROUNDED BEFORE BEGINNING TRANSFER.
DECONTAMINATION PROCEDURES
ISOLATE, VENT, DRAIN, WASH AND PURGE SYSTEMS OR EQUIPMENT BEFORE MAINTENANCE OR REPAIR. REMOVE ALL IGNITION SOURCES. CHECK ATMOSPHERE FOR EXPLOSIVENESS AND OXYGEN DEFICIENCIES. USE ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. OBSERVE PRECAUTIONS PERTAINING TO CONFINED SPACE ENTRY.

12 - LABEL INFORMATION

USE STATEMENT
FOR INDUSTRIAL USE ONLY
SIGNAL WORD
DANGER
PHYSICAL HAZARDS
EXTREMELY FLAMMABLE
HEALTH HAZARDS
HIGH SKIN CONTACT HAZARD
MAY CAUSE LONG-TERM ADVERSE HEALTH EFFECTS
SKIN CONTACT PENETRANT
MUCOUS MEMBRANE IRRITANT
HIGH INGESTION HAZARD-CHEMICAL PNEUMONIA
SEVERE EYE IRRITANT
PRECAUTIONARY MEASURES
DO NOT HANDLE NEAR HEAT, SPARKS, OR OPEN FLAME.
KEEP CONTAINER CLOSED WHEN NOT IN USE.
SPILL/LEAK CAN CAUSE FIRE/EXPLOSION.
AVOID CONTACT WITH EYES, SKIN, AND CLOTHING.
AVOID PROLONGED OR REPEATED BREATHING OF VAPOR.

13 - SUPPLEMENT

HEALTH HAZARDS - SECTIONS 2 AND 7
ISOPROPANOL HAS BEEN REPORTED IN ONE ANIMAL STUDY TO BE FETOTOXIC AT LEVELS OF 2.5% IN DRINKING WATER. NO TERATOGENIC EFFECTS WERE, OR HAVE BEEN, REPORTED. THERE ARE NO REPORTS OF ADVERSE REPRODUCTIVE EFFECTS IN HUMANS EXPOSED TO THIS CHEMICAL.

- SUPPLEMENT (continued)

TRIMETHYLBENZENE HAS BEEN FOUND TO CAUSE ONE OR MORE OF THE FOLLOWING CONDITIONS; CHRONIC ASTHMATIC-LIKE BRONCHITIS, MILD ANEMIA, THROMBOCYTOPENIA AND PROLONGED COAGULATION TIMES, AND ELEVATED LIVER ENZYMES. IN ADDITION, AT LEAST ONE POSITIVE ASSAY FOR MUTAGENICITY HAS BEEN REPORTED.

ALTHOUGH INHALATION IS THE PRIMARY ROUTE OF EXPOSURE FOR THIS PRODUCT, SKIN ABSORPTION CAN BE A FACTOR DUE TO THE FACT THAT CUMENE IS RAPIDLY ABSORBED THROUGH THE SKIN, PENETRATES MOST PPE WITHIN AN HOUR AND HAS A LONG RETENTION TIME IN THE BODY. REPEATED PROLONGED EXPOSURE TO SIGNIFICANT CONCENTRATIONS OF CUMENE HAS BEEN ASSOCIATED WITH ELEVATED BILIRUBIN, AND ALTERED LIVER FUNCTIONS. ANIMAL STUDIES INVOLVING PROLONGED EXPOSURE HAVE SHOWN HYPERMIA AND CONGESTION IN THE LUNGS, LIVER AND KIDNEYS.

PROLONGED, REPEATED EXPOSURE TO HIGH LEVELS OF XYLENE CAN INDUCE CENTRAL NERVOUS SYSTEM EFFECTS INCLUDING DEPRESSION, DIZZINESS, NUMBNESS, TREMORS, IMPAIRED MEMORY, HEADACHE, NAUSEA AND LACK OF APPETITE. MODERATE LIVER ENLARGEMENT, KIDNEY INVOLVEMENT, AND EVEN DEATH IS POSSIBLE IF EXPOSURE IS NOT CONTROLLED.

ALL ELECTRICAL EQUIPMENT IN AREAS WHERE THIS MATERIAL IS STORED OR HANDLED SHOULD BE INSTALLED IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, N.F.P.A.

NOTE -- QUALIFIERS AND CODES USED IN THIS MSDS

EQ	= EQUAL	AP	= APPROXIMATELY
LT	= LESS THAN	GT	= GREATER THAN
TR	= TRACE	UK	= UNKNOWN
N/AP	= NOT APPLICABLE	N/P	= NO APPLICABLE INFORMATION FOUND
N/DA	= NO DATA AVAILABLE		

14 - DISCLAIMERS

SOME OF THE INFORMATION PRESENTED AND CONCLUSIONS DRAWN HEREIN ARE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE PRODUCT ITSELF.

THE INFORMATION IN THIS MSDS WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.

THE CONDITIONS OR METHODS OF HANDLING, STORAGE, USE AND DISPOSAL OF THE PRODUCT ARE BEYOND OUR CONTROL AND MAY BE BEYOND OUR KNOWLEDGE. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

THIS MSDS WAS PREPARED AND IS TO BE USED ONLY FOR THIS PRODUCT. IF THE PRODUCT IS USED AS A COMPONENT IN ANOTHER PRODUCT, THIS MSDS INFORMATION MAY NOT BE APPLICABLE.

THIS MSDS HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1200).

ENVIRO-CHEM
DIV. OF ZIA DRILL
P.O. BOX 668
HOBBS NM 88240

ATTN: PLANT MGR./SAFETY DIR.

SECTION I-PRODUCT IDENTIFICATION

General or Generic ID: AROMATIC HYDROCARBON

DOT Hazard Classification: COMBUSTIBLE (173.115)

SECTION II-COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS AND CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III SECTION 313 ARE IDENTIFIED IN THIS SECTION. SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (by WT)	PEL	TLV	Note
AROMATIC PETROLEUM DISTILLATES CAS #: 64741-88-6	100	100 PPM		(1)

Notes:

(1) TLV NOT ESTABLISHED FOR THIS MATERIAL.

THIS COMPONENT CONTAINS 20% PSEUDOCUMENE (1,2,4- OR 1,2,5-TRIMETHYLBENZENE), CAS# 95-63-6, WHICH HAS A PEL/TLV OF 25 PPM; 7% CUMENE , CAS# 98-82-8, WHICH HAS A PEL/TLV OF 50 PPM-SKIN; AND 16% XYLENE, CAS# 1330-20-7, WHICH HAS A PEL/TLV OF 100 PPM, AND AN STEL OF 150 PPM. 1,2,4-TRIMETHYLBENZENE, CUMENE, AND XYLENE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III.

SECTION III-PHYSICAL DATA

Boiling Point	for PRODUCT	300.00 - 495.00 Deg F (148.88 - 257.22 Deg C) @ 760.00 mm Hg
Vapor Pressure	for PRODUCT	< 1.00 mm Hg @ 68.00 Deg F (20.00 Deg C)
Specific Vapor Density		HEAVIER THAN AIR
Specific Gravity		.870 @ 60.00 Deg F (15.55 Deg C)
Percent Volatiles		100.00%
Evaporation Rate		SLOWER THAN ETHER

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT(TCC) 104.0 Deg F (40.0 Deg C)

EXPLOSIVE LIMIT (PRODUCT) LOWER - 1.0%

EXTINGUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE WHEN FIGHTING FIRES.

SPECIAL FIRE & EXPLOSION HAZARDS: VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR BE MOVED BY VENTILATION AND IGNITED BY HEAT, PILOT LIGHTS, OTHER FLAMES AND IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING POINT.

NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

ALL FIVE GALLON PAILS AND LARGER METAL CONTAINERS INCLUDING TANK CARS AND TANK TRUCKS SHOULD BE GROUNDED AND/OR BONDED WHEN MATERIAL IS TRANSFERRED.

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL 100 PPM

SEE SECTION II

EFFECTS OF ACUTE OVEREXPOSURE:

EYES - CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION.
SKIN - PROLONGED OR REPEATED CONTACT CAN CAUSE MODERATE IRRITATION, DEFATTING, DERMATITIS.

CONTINUED ON PAGE: 2

SECTION V-HEALTH HAZARD DATA (Continued)

BREATHING - EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, CENTRAL NERVOUS SYSTEM EFFECTS INCLUDING DIZZINESS, WEAKNESS, FATIGUE, NAUSEA, HEADACHE AND POSSIBLE UNCONSCIOUSNESS, AND EVEN DEATH.

SWALLOWING - CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.

IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING, KEEP PERSON WARM, QUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

INHALATION, SKIN CONTACT

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ABSORB LIQUID ON VERMICULITE, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND TRANSFER TO HOOD.

LARGE SPILL: ELIMINATE ALL IGNITION SOURCES (FLARES, FLAMES INCLUDING PILOT LIGHTS, ELECTRICAL SPARKS). PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE. PREVENT FROM ENTERING DRAINS, SEWERS, STREAMS OR OTHER BODIES OF WATER.PREVENT FROM SPREADING. IF RUNOFF OCCURS, NOTIFY AUTHORITIES AS REQUIRED. PUMP OR VACUUM TRANSFER SPILLED PRODUCT TO CLEAN CONTAINERS FOR RECOVERY. ABSORB UNRECOVERABLE PRODUCT.TRANSFER CONTAMINATED ABSORBENT, SOIL AND OTHER MATERIALS TO CONTAINERS FOR DISPOSAL.

PREVENT RUN-OFF TO SEWERS, STREAMS OR OTHER BODIES OF WATER. IF RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED, THAT A SPILL HAS OCCURED.

WASTE DISPOSAL METHOD:

SMALL SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED (SEE SECTION II), 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 SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS:, NITRILE RUBBER

EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

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.

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.

APPENDIX 4 - Monitor Well Construction Diagram and Boring Logs

PROJECT: AMERADA HESS MONUMENT

PROJECT NO: 92139701F

DRILLING COMPANY: EADES

MONITOR WELL NO.: MW-1

DRILLER: GENE EADES

PERMIT NO.: HOBBS, NEW MEXICO

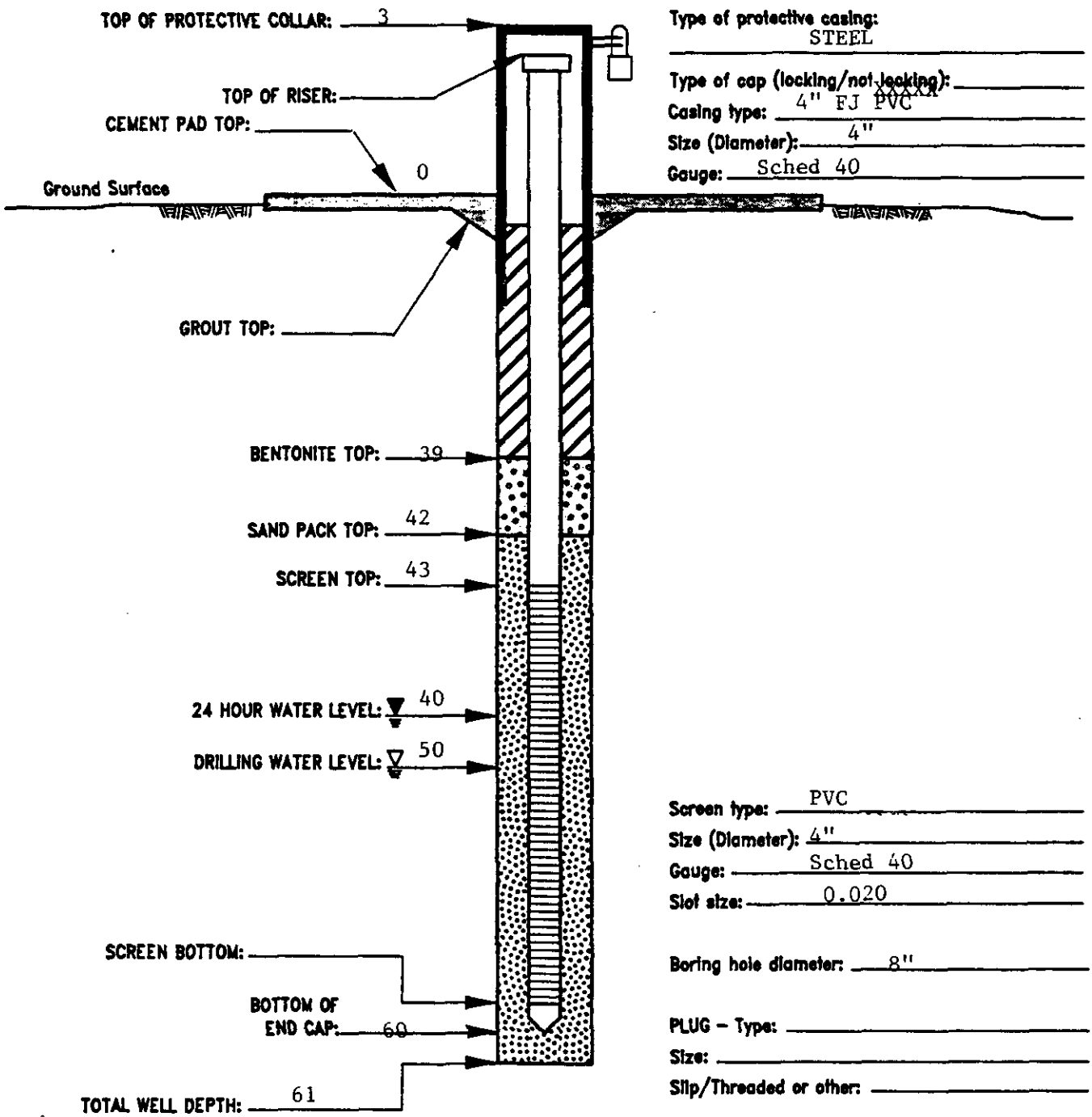
HELPERS:

MAPSCO NO.(location):

TIME BEGAN:

TIME ENDED:

MONITOR WELL CONSTRUCTION DIAGRAM



Type of protective casing: STEEL

Type of cap (locking/not locking):

Casing type: 4" FJ PVC

Size (Diameter): 4"

Gauge: Sched 40

Screen type: PVC

Size (Diameter): 4"

Gauge: Sched 40

Slot size: 0.020

Boring hole diameter: 8"

PLUG - Type:

Size:

Slip/Threaded or other:

SIGNATURE

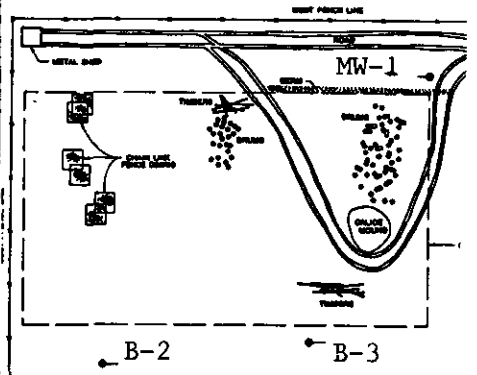
DATE

DRILLING LOG

MW-1

PROJECT: AMERADA HESS	
LOCATION: MONUMENT	PROJECT NO. 92-1397-01F
OWNER: AMERADA HESS	DATE DRILLED: 12-9-92
DRIG. CO.: EADES	INITIAL WATER LEVEL: 55'
DRILLER: GENE EADES	AFTER 24 HOURS: 40'
LOG BY: JOHN OVERMAN	
SURFACE ELEVATION:	
DEPTH OF WELL: 60'	DRLG. METHOD: HOLLOW STEM - AIR
LENGTH OF SCREEN: 15'	SAMPLE METHOD: AIR
LENGTH OF CASING: 45'	P.I.D./C.G.I. BKGRD: 0
DIAMETER OF HOLE: 8"	DEPTH OF HOLE: 60'
SLOT SIZE: .02	DIAMETER OF SCREEN: 4"
TYPE: SCHD. 40 PVC	DIAMETER OF CASING: 4"

LOCATION MAP

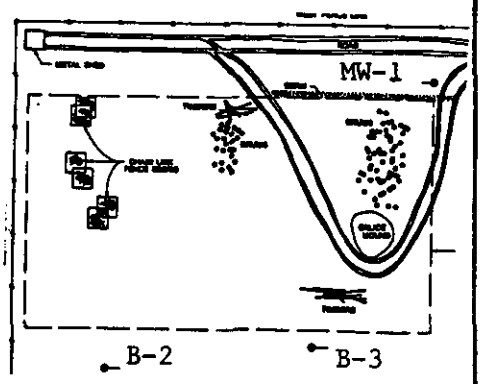


DEPTH IN FEET	WELL DESIGN	NOTES	HNU (PPM)	SAMPLE NO.	GRAPHIC LOG	SOIL CLASSIFICATION / DESCRIPTION (COLOR, TEXTURE, STRUCTURES)	SAMPLE RECOVERY
0		UPRIGHT COMPLETION	0			CALICHE - WHITE CHALKY	
10		CASING	0				
20			0			CALICHE - PINK, CHALKY SILTY	
		CEMENT GROUT					
30			0			CLAY - RED / REDDISH BROWN	
40			0			CLAY - RED / REDDISH ORANGE SILTY, LIMEY INCLUSIONS	
		BENTONITE					
		WELL SCREEN					
50			0			50' STOP DRILLING, LEFT HOLE OPEN FOR 10 MINS., MUDDY WATER RETURNS	
		WATER AT 55'					
60						TD 60'	
70							

DRILLING LOG B-2

PROJECT: AMERADA HESS		
LOCATION: MONUMENT	PROJECT NO. 92-1397-01F	
OWNER: AMERADA HESS	DATE DRILLED: 12-9-92	
DRIG. CO.: EADES	INITIAL WATER LEVEL: 0	
DRILLER: GENE EADES	AFTER 24 HOURS: NIL	
LOG BY: JOHN OVERMAN		
SURFACE ELEVATION:		
DEPTH OF WELL:	DRLG. METHOD: HOLLOW STEM - AIR	
LENGTH OF SCREEN:	SAMPLE METHOD: (AIR DRILLING)	
LENGTH OF CASING:	P.I.D./C.G.I. BKGRD: 0	
DIAMETER OF HOLE: 8"	DEPTH OF HOLE: 120'	
SLOT SIZE:	DIAMETER OF SCREEN:	
TYPE:	DIAMETER OF CASING:	

LOCATION MAP

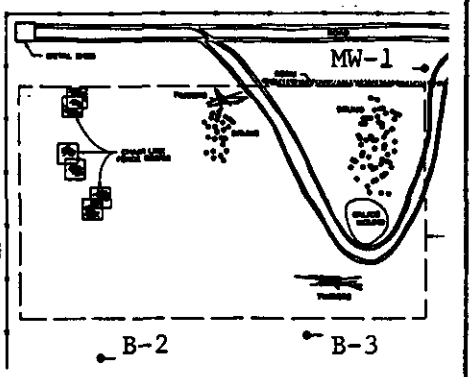


DEPTH IN FEET	WELL DESIGN	NOTES	HNU (PPM)	SAMPLE NO.	GRAPHIC LOG	SOIL CLASSIFICATION / DESCRIPTION (COLOR , TEXTURE , STRUCTURES)	SAMPLE RECOVERY
0			0			CALICHE - WHITE , BUFF , CHALKY	
10			0			CALICHE - PINK / RED FIRM , CLAYEY LIMEY INCLUSIONS , SILTY	
20			0			CLAY - PINK / LT. RED FIRM , LIMEY , SILTY	
30			0			CLAY / SILTSTONE - RED , REDDISH BROWN SANDY , GRAY IN PART	
40			0			CLAY / SILTSTONE - RED , REDDISH ORANGE SANDY IN PART	
50			0			CLAY / SILTSTONE - REDDISH BROWN CLAYEY , LIMEY INCLUSIONS	
60			0			CLAY - RED BROWN , DARK RED , SILTY	
70			0			CLAY - RED / REDDISH BROWN , SILTY , LIMEY INCLUSIONS	

DRILLING LOG B-2

PROJECT: AMERADA HESS			
LOCATION: MONUMENT		PROJECT NO. 92-1397-01F	
OWNER: AMERADA HESS		DATE DRILLED: 12-9-92	
DRIG. CO.: EADES		INITIAL WATER LEVEL: 0	
DRILLER: GENE EADES		AFTER 24 HOURS: NIL	
LOG BY: JOHN OVERMAN			
SURFACE ELEVATION:			
DEPTH OF WELL:		DRLG. METHOD: HOLLOW STEM - AIR	
LENGTH OF SCREEN:		SAMPLE METHOD: (AIR DRILLING)	
LENGTH OF CASING:		P.I.D./C.G.I. BKGRD: 0	
DIAMETER OF HOLE:	8"	DEPTH OF HOLE: 120'	
SLOT SIZE:		DIAMETER OF SCREEN:	
TYPE:		DIAMETER OF CASING:	

LOCATION MAP

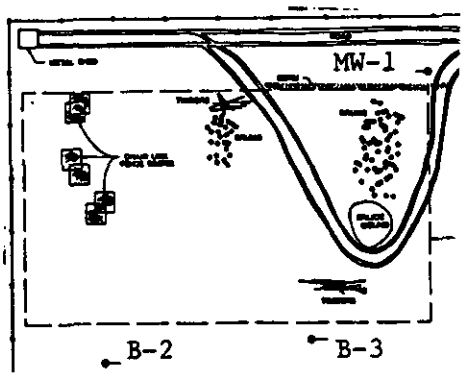


DEPTH IN FEET	WELL DESIGN	NOTES	HNU (PPM)	SAMPLE NO.	GRAPHIC LOG	SOIL CLASSIFICATION / DESCRIPTION (COLOR , TEXTURE , STRUCTURES)	SAMPLE RECOVERY
80		MOISTURE	0			STOP DRILLING AT 80'; LEFT BORE OPEN FOR 30 MIN., MUDDY RETURNS , NO SIGNIFICANT WATER ACCUMULATION	
90		MOISTURE	0			STOP DRILLING AT 87 ; LEFT BORE HOLE OPEN FOR 20 MIN., MUDDY RETURNS , NO SIGNIFICANT WATER ACCUMULATION	
100			0			CLAY - DK RED , REDDISH BROWN DESNE , SILTY	
110			0			CLAY - DK RED / BROWN SILTY DENSE	
120						CLAY - REDDISH BROWN , STIFF , DENSE	
						TD 120' NO SIGNIFICANT ACCUMULATION OF WATER WHILE DRILLING. TRACE WATER AFTER OPEN FOR 24 HRS.: HOLE PLUGGED WITH CEMENT GROUT.	

DRILLING LOG B-3

PROJECT: AMERADA HESS	
LOCATION: MONUMENT	PROJECT NO. 92-1397-01F
OWNER: AMERADA HESS	DATE DRILLED: 12-9-92
DRIG. CO.: EADES	INITIAL WATER LEVEL: 0
DRILLER: GENE EADES	AFTER 24 HOURS: NIL
LOG BY: JOHN OVERMAN	
SURFACE ELEVATION:	
DEPTH OF WELL:	DRLG. METHOD: HOLLOW STEM - AIR
LENGTH OF SCREEN:	SAMPLE METHOD: (AIR DRILLING)
LENGTH OF CASING:	P.I.D./C.G.I. BKGRD: 0
DIAMETER OF HOLE: 8"	DEPTH OF HOLE: 120'
SLOT SIZE:	DIAMETER OF SCREEN:
TYPE:	DIAMETER OF CASING:

LOCATION MAP

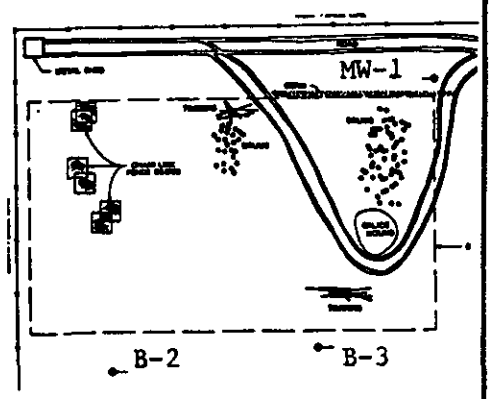


DEPTH IN FEET	WELL DESIGN	NOTES	HNU (PPM)	SAMPLE NO.	GRAPHIC LOG	SOIL CLASSIFICATION / DESCRIPTION (COLOR , TEXTURE , STRUCTURES)	SAMPLE RECOVERY
0			0			CALICHE - WHITE CHALKY	
10			0			CLAY / SILTSTONE - LT. RED , PINK CALICE & SILTY CLAY	
20			0			CLAY / SILTSTONE - BROWN / REDDISH BROWN LIMEY INCLUSIONS	
30			0			CLAY / SILTSTONE - RED / REDDISH ORANGE SILTY , LIMEY INCLUSIONS	
40			0				
50			0			CLAY / SILTSTONE - RED , REDDISH BROWN LIMEY INCLUSIONS	
60			0			CLAY - REDDISH BROWN , VERY SILTY , SANDY IN PART	
70			0			CLAY / SILTSTONE - RED , REDDISH BROWN , LIMEY INCLUSIONS	

DRILLING LOG B-3

PROJECT: AMERADA HESS		
LOCATION: MONUMENT	PROJECT NO. 92-1397-01F	
OWNER: AMERADA HESS	DATE DRILLED: 12-9-92	
DRIG. CO.: EADES	INITIAL WATER LEVEL: 0	
DRILLER: GENE EADES	AFTER 24 HOURS: NIL	
LOG BY: JOHN OVERMAN		
SURFACE ELEVATION:		
DEPTH OF WELL:	DRLG. METHOD: HOLLOW STEM - AIR	
LENGTH OF SCREEN:	SAMPLE METHOD: (AIR DRILLING)	
LENGTH OF CASING:	P.I.D./C.G.L. BKGRD: 0	
DIAMETER OF HOLE: 8"	DEPTH OF HOLE: 120'	
SLOT SIZE:	DIAMETER OF SCREEN:	
TYPE:	DIAMETER OF CASING:	

LOCATION MAP



DEPTH IN FEET	WELL DESIGN	NOTES	HNU (PPM)	SAMPLE NO.	GRAPHIC LOG	SOIL CLASSIFICATION / DESCRIPTION (COLOR , TEXTURE , STRUCTURES)	SAMPLE RECOVERY
80						TD 80' HOLE LEFT OPEN FOR 18 HRS., NO SIGNIFICANT WATER ACCUMULATION. NO WATER - BEARING ZONES ENCOUNTERED WHILE DRILLING.	

APPENDIX 5 - Analytical Results

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

CLIENT : CARTER & BURGESS, INC.
PROJECT # : (NONE)
PROJECT NAME: HOBBS

ATI I.D. : 212340
DATE RECEIVED: 12/12/92
REPORT DATE : 01/05/93

SAMPLE I.D. #	CLIENT I.D.	MATRIX	DATE SAMPLED
05	MW-1	AQ	12/10/92

PARAMETER	UNITS	05
TOTAL ORGANIC CARBONS	MG/L	6.9
CARBONATE (CACO3)	MG/L	<1
BICARBONATE (CACO3)	MG/L	477
HYDROXIDE (CACO3)	MG/L	<1
TOTAL ALKALINITY (AS CACO3)	MG/L	477
CHLORIDE (EPA 325.2)	MG/L	460
CONDUCTIVITY, (UMHOS/CM)		2790
FLUORIDE (EPA 353.2)	MG/L	1.60
TRATE (EPA 353.2)	MG/L	25.4
PH (EPA 150.1)	UNITS	7.3
SULFATE (EPA 375.2)	MG/L	280
T. DISSOLVED SOLIDS (160.1)	MG/L	2000

Analytical **Technologies**, Inc.

ION BALANCE

ATI ACCESSION NUMBER: 21234005
SAMPLE IDENTIFICATION: MW-1
CLIENT: CARTER & BURGESS

ANIONS	RESULT MG/L	FACTOR ME/L	TOTAL
ALKALINITY (AS CACO3)	477.000	0.02000	9.54000
CHLORIDE	460.000	0.02821	12.97660
FLUORIDE	1.600	0.05264	0.08422
NITRATE AS N	25.400	0.01613	1.81498
SULFATE	280.000	0.02082	5.82960
		TOTAL ANIONS	30.24540

CATIONS	RESULT	FACTOR	TOTAL
CALCIUM	331.000	0.04990	16.51690
POTASSIUM	8.500	0.02558	0.21743
MAGNESIUM	82.700	0.08229	6.80538
SODIUM	169.000	0.04350	7.35150
COPPER	NA	0.03147	0.00000
IRON	NA	0.05372	0.00000
MANGANESE	NA	0.03640	0.00000
ZINC	NA	0.03059	0.00000
		TOTAL CATIONS	30.89121
		%RPD (<10%)	-2.11

TOTAL ANIONS/CATIONS	1644		
TOTAL DISSOLVED SOLIDS	2000	%RPD (<15%)	-19.51
ELECTRICAL COND.	2790	TDS/EC RATIO (0.65+/-0.1)	0.71685

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : CARTER & BURGESS, INC.
PROJECT # : (NONE) ATI I.D.: 212340
PROJECT NAME: HOBBS

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC.	% REC
PETROLEUM HYDROCARBONS	MG/KG	21235401	61	59	3	120	63	94
SULFIDE	MG/KG	21234001	0.86	0.82	5	3.2	4.0	59
TOTAL ORGANIC CARBONS	MG/L	21234005	6.9	6.4	8	26.3	20.0	97
CARBONATE	MG/L	21269301	<1	<1	NA	NA	NA	NA
BICARBONATE	MG/L		139	140	0.7	NA	NA	NA
HYDROXIDE	MG/L		<1	<1	NA	NA	NA	NA
TOTAL ALKALINITY	MG/L		139	140	0.7	NA	NA	NA
CHLORIDE	MG/L	21233401	2500	2500	0	4400	2000	95
CYANIDE, TOTAL	MG/KG	21234002	0.9	0.8	12	11.6	12.3	87
CONDUCTIVITY (UMHOS/CM)		21234005	2790	2790	0	NA	NA	NA
FLUORIDE	MG/L	21234005	1.59	1.60	0.6	2.89	1.50	87
NITABILITY		21234004	NEG	NEG	NA	NA	NA	NA
NITRATE AS NITROGEN	MG/L	21278407	0.19	0.19	0	2.25	2.00	103
PH	UNITS	21263315	9.2	9.2	0	NA	NA	NA
PH	UNITS	21287005	8.3	8.4	1	NA	NA	NA
SULFATE	MG/L	21234301	400	390	3	860	500	92
TOTAL DISSOLVED SOLIDS	MG/L	21234005	2000	2000	0	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{D (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

SITE SAFETY AND HEALTH PLAN

AMERADA HESS CORPORATION
MONUMENT DISPOSAL SITE

February 11, 1994

Prepared by:
J.D. McNamara
Carter & Burgess, Inc.

With the assistance of HASP

** Table of Contents **

1.0 INTRODUCTION

This section of the Site Health and Safety Plan (HASP) document defines general applicability and general responsibilities with respect to compliance with Health and Safety programs.

1.1 Scope and Applicability of the Site Health and Safety Plan

The purpose of this Site Health and Safety Plan is to define the requirements and designate protocols to be followed at the Site during investigation and remediation activities. Applicability extends to all Government employees, contractors, subcontractors, and visitors.

All personnel on site, contractors and subcontractors included, shall be informed of the site emergency response procedures and any potential fire, explosion, health, or safety hazards of the operation. This HASP summarizes those hazards in table 3.1 and defines protective measures planned for the site.

This plan must be reviewed and an agreement to comply with the requirements must be signed by all personnel prior to entering the exclusion zone or contamination reduction zone.

During development of this plan consideration was given to current safety standards as defined by EPA/OSHA/NIOSH, health effects and standards for known contaminants, and procedures designed to account for the potential for exposure to unknown substances. Specifically, the following reference sources have been consulted:

- OSHA 29 CFR 1910.120 and EPA 40 CFR 311
- U.S. EPA, OERR ERT Standard Operating Safety Guides
- NIOSH/OSHA/USCG/EPA Occ. Health and Safety Guidelines

1.2 Visitors

All visitors entering the contamination reduction zone and exclusion zone at the Site will be required to read and verify compliance with the provisions of this HASP. In addition, visitors will be expected to comply with relevant OSHA requirements such as medical monitoring (Sec. 6.0), training (Sec. 4.0), and respiratory protection (if applicable). Visitors will also be expected to provide their own protective equipment.

In the event that a visitor does not adhere to the provisions of the HASP, he/she will be requested to leave the work area. All nonconformance incidents will be recorded in the site log.

2.0 KEY PERSONNEL/IDENTIFICATION OF HEALTH AND SAFETY

2.1 Key Personnel

The following personnel and organizations are critical to the planned activities at the Site. The organizational structure will be reviewed and updated periodically by the site supervisor.

Amerada Hess	
Sam Small	(915)758-6741
Rob Williams	(505)393-2144
Al Young	(505)393-2144

New Mexico Environment Department	
Ed Horst	(505)827-2850

New Mexico Oil Conservation Division	
William Olson	(505)827-5885
Wayne Price	(505)393-6161

Carter & Burgess	
Kenneth Davis	(915)687-2425
J.D.McNamara	(915)687-2425

HazMat of Texas	
Rex Chitty	(915)580-3983

2.2 Site Specific Health and Safety Personnel

The Site Health and Safety Officer (HSO) has total responsibility for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, it is vital that personnel assigned as HSO be experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120 (see Section 4.0 of this HASP). The HSO is also responsible for conducting site inspections on a regular basis in order to ensure the effectiveness of this plan.

The HSO at the site is Rex Chitty

Designated alternates include:

- Jesse Barrett

2.3 Organizational Responsibility

HazMat of Texas
Performance of activities within scope of work on project.

Carter & Burgess:
Oversight of all on site operations.

Amerada Hess:
Responsible for final approval of all site activities.

New Mexico Environmental Department:
Compliance with all hazardous waste activities.

New Mexico Oil Conservation Division:
Compliance with oilfield regulations.

3.0 TASK/OPERATION SAFETY AND HEALTH RISK ANALYSIS

3.1 Historical Overview of Site

This HASP defines the hazards and methods to protect personnel from those hazards as identified in previous site work or background information. For a thorough overview of historical information concerning the Site see the following documents:

Site inspection report

Ken Davis Carter & Burgess

Remedial investigation report

Ken Davis Carter & Burgess

3.2 Task by Task Risk Analysis

The evaluation of hazards is based upon the knowledge of site background presented in Section 3.1, and anticipated risks posed by the specific operation.

The following subsections describe each task/operation in terms of the specific hazards associated with it. In addition, the protective measures to be implemented during completion of those operations are also identified.

The Monument Disposal Site is an old oilfield lease waste pile that is no longer in use. This waste pile contains general oilfield solid waste, drums, and miscellaneous materials.

All surface waste from the landfill area must be removed and segregated according to waste type and potential hazardous waste characteristics.

Drums containing significant materials should be segregated according to type of waste.

The chemicals that cannot be used must be overpacked if leakage is possible.

Drums and containers with any residual materials present should be emptied and triple-rinsed, using a non-hazardous cleaner. Rinsate must be contained and disposed of properly.

Empty and clean drums should be crushed and placed with

other clean metals and transported to a metals recycling facility.

All non-hazardous waste materials must be transported and disposed of at an approved facility.

Any hazardous material will be segregated and left on site pending further analysis and acceptance into a permitted disposal site.

Table 3.1 provide a summary of task analysis and chemical hazards for each task at the Site.

All materials are extremely weathered at this site however, their is a possibility that residual amounts of chemicals may be present.

This site will be evaluated on a continuing basis to determine the proper PPE necessary to perform each task.

Drum overpacking, rinsing, and crushing are the tasks that will create the greatest possibility of exposure.

TABLE 3.1
TASK ANALYSIS
CHEMICAL HAZARDS OF CONCERN

CONTAMINANT	TLV/IDLH	SOURCE/ CONCENTRATION	ROUTES OF EXPOSURE
**** Air sampling/monitoring ****			
BENZENE	TLV: 1.0 PPM IDLH: Not applicable, potential hu man carcinog en. (NIOSH , 1987)	Air - 0 to 0	Inhalation Ingestion Contact Absorbtion
TOLUENE	TLV: 100 PP M IDLH: 2000 ppm (NIOSH , 1987)	Air - 0 to 0	Inhalation Ingestion Contact Absorbtion
XYLENE	TLV: 100 PP M IDLH: 10000 ppm For O , M, and P i somers. (N IOSH, 1987)	Air - 0 to 0	Inhalation Ingestion Contact Absorbtion
**** Surface soil sampling ****			
BENZENE	TLV: 1.0 PPM IDLH: Not applicable, potential hu man carcinog en. (NIOSH , 1987)	Surface Soil - 0 to 0	Inhalation Ingestion Contact Absorbtion
TOLUENE	TLV: 100 PP M IDLH: 2000 ppm (NIOSH , 1987)	Surface Soil - 0 to 0	Inhalation Ingestion Contact Absorbtion

XYLENE	TLV: 100 PP M IDLH: 10000 ppm For O , M, and P i somers. (N IOSH, 1987)	Surface Soil - 0 to 0	Inhalation Ingestion Contact Absorbtion
CADMIUM COMP OUND	TLV: 0.01 MG (CD)/M3 IDLH: Not applicable f or Cadmium, a potential human carcin ogen (NIOS H, 1987)	Surface Soil - 0 to 0	Inhalation Ingestion
CHROMIUM	TLV: 1 MG/M3 IDLH:	Surface Soil - 0 to 0	Inhalation Ingestion
LEAD, INORGA NIC	TLV: 0.05 MG /M3 IDLH:	Surface Soil - 0 to 0	Inhalation Ingestion Contact

**** Subsurface soil sampling ****

BENZENE	TLV: 1.0 PPM IDLH: Not applicable, potential hu man carcinog en. (NIOSH , 1987)	Subsurface S oil - 0 to 0	Inhalation Ingestion Contact Absorbtion
CADMIUM COMP OUND	TLV: 0.01 MG (CD)/M3 IDLH: Not applicable f or Cadmium, a potential human carcin ogen (NIOS H, 1987)	Subsurface S oil - 0 to 0 Surface Soil - 0 to 0	Inhalation Ingestion
TOLUENE	TLV: 100 PP M IDLH: 2000 ppm (NIOSH , 1987)	Subsurface S oil - 0 to 0	Inhalation Ingestion Contact Absorbtion
XYLENE	TLV: 100 PP M IDLH: 10000 ppm For O , M, and P i somers. (N IOSH, 1987)	Subsurface S oil - 0 to 0	Inhalation Ingestion Contact Absorbtion
CHROMIUM	TLV: 1 MG/M3 IDLH:	Subsurface S oil - 0 to 0	Inhalation Ingestion
LEAD, INORGA NIC	TLV: 0.05 MG /M3 IDLH:	Subsurface S oil - 0 to 0	Inhalation Ingestion Contact

*** Drum sampling ****

BENZENE	TLV: 1.0 PPM IDLH: Not applicable, potential human carcinogen. (NIOSH, 1987)	Drums - 0 to 0	Inhalation Ingestion Contact Absorbtion
TOLUENE	TLV: 100 PPM IDLH: 2000 ppm (NIOSH, 1987)	Drums - 0 to 0	Inhalation Ingestion Contact Absorbtion
XYLENE	TLV: 100 PPM IDLH: 10000 ppm For O, M, and P isomers. (NIOSH, 1987)	Drums - 0 to 0	Inhalation Ingestion Contact Absorbtion

**** Drum overpacking ****

BENZENE	TLV: 1.0 PPM IDLH: Not applicable, potential human carcinogen. (NIOSH, 1987)	Drums - 0 to 0	Inhalation Ingestion Contact Absorbtion
TOLUENE	TLV: 100 PPM IDLH: 2000 ppm (NIOSH, 1987)	Drums - 0 to 0	Inhalation Ingestion Contact Absorbtion
XYLENE	TLV: 100 PPM IDLH: 10000	Drums - 0 to 0	Inhalation Ingestion Contact

	ppm For O , M, and P i somers. (N IOSH, 1987)		Absorbtion
**** Drum crushing ****			
BENZENE	TLV: 1.0 PPM IDLH: Not applicable, potential hu man carcinog en. (NIOSH , 1987)	Drums - 0 to 0	Inhalation Ingestion Contact Absorbtion
TOLUENE	TLV: 100 PP M IDLH: 2000 ppm (NIOSH , 1987)	Drums - 0 to 0	Inhalation Ingestion Contact Absorbtion
XYLENE	TLV: 100 PP M IDLH: 10000 ppm For O , M, and P i somers. (N IOSH, 1987)	Drums - 0 to 0	Inhalation Ingestion Contact Absorbtion

3.3 Task Hazard Descriptions

Air sampling/monitoring:

General hazards frequently encountered during air sampling and monitoring include:

- Electrical hazards as a result of power sources to run sampling pumps.
- Placing sampling pumps in elevated areas or areas where slip/trip and fall hazards exist.
- Hazards associated with ambient environment being sampled.
- Readings indicating nonexplosive atmospheres, low concentrations of toxic substances, or other conditions may increase or decrease suddenly, changing the associated risks.
- Air sampling matrix solutions may be acidic or basic, causing a corrosive hazard, and broken glass collection tubes can cut hands if mishandled.

HAZARD PREVENTION

- Grounded plugs should be used when a power source is needed to reduce the hazard of electric shock.
- Generators or air pumps should be used in dry areas, away from possible ignition sources. Do not stand in water or other liquids when handling equipment. Electrical equipment shall conform with OSHA 1910.303(a), 1910.305(a),(f),(f)(3).
- Ground fault interrupters are used in the absence of properly grounded circuitry or when portable tools must be used in wet areas.
- Extension cords should be protected from damage and maintained in good condition.
- Air pumps should be placed within easy reach using an OSHA approved ladder, elevated platform or by placing the pump on a stake.
- Personnel should be thoroughly familiar with the use, limitations and operating characteristics of the

monitoring instruments.

- Perform continuous monitoring in variable atmospheres.
- Use intrinsically safe instruments until the absence of combustible gases or vapors is anticipated.
- Proper protective clothing such as gloves and goggles should be used when handling corrosive substances. 15-minute eyewash and first aid should be available. Handle and store corrosives in appropriate areas.

Surface soil sampling:

For the purposes of this hazard identification section, surface soil sampling will be considered any soil sampling completed by hand using a trowel, split spoon, shovel, auger, or other type of handheld tool. Hazards generally associated with soil and tailings/spoils sampling include:

- Contact with or inhalation of contaminants, potentially in high concentrations in sampling media.
- Back strain and muscle fatigue due to lifting, shoveling and augering techniques.
- Contact with or inhalation of decontamination solutions.

HAZARD PREVENTION

- To minimize exposure to chemical contaminants, a thorough review of suspected contaminants should be completed and implementation of an adequate protection program.
- Proper lifting (pre-lift weight assessment, use of legs, multiple personnel) techniques will prevent back strain. Use slow easy motions when shoveling, augering, and digging to decrease muscle strain.
- Material Safety Data Sheets for all decon solutions should be included with each Site Health and Safety Plan.
- First aid equipment should be available based on MSDS requirements.

Subsurface soil sampling:

For the purposes of this hazard identification section, surface soil sampling will be considered any soil sampling completed by hand using a trowel, split spoon, shovel, auger, or other type of handheld tool. Hazards generally associated with soil and tailings/spoils sampling include:

- Contact with or inhalation of contaminants, potentially in high concentrations in sampling media.
- Back strain and muscle fatigue due to lifting, shoveling and augering techniques.
- Contact with or inhalation of decontamination solutions.

HAZARD PREVENTION

- To minimize exposure to chemical contaminants, a thorough review of suspected contaminants should be completed and implementation of an adequate protection program.
- Proper lifting (pre-lift weight assessment, use of legs, multiple personnel) techniques will prevent back strain. Use slow easy motions when shoveling, augering, and digging to decrease muscle strain.
- Material Safety Data Sheets for all decon solutions should be included with each Site Health and Safety Plan.
- First aid equipment should be available based on MSDS requirements.

Drum sampling:

Hazards generally associated with drum sampling include the following:

- The drums or containers to be sampled could be in various stages of deterioration.
- Personnel may come in contact with unknown wastes. Depending upon the sampling method used, waste may be splashed onto personnel, or exposed through the handling of sampling instruments used to extract waste.

HAZARD PREVENTION

- Prior to any sampling, a sampling plan should be developed. The plan should include background information on the waste, a determination of which drums should be sampled and selection of the appropriate sampling devices and containers. Health and Safety personnel should determine the appropriate personal protective equipment to be used during sampling, decontamination, and packaging of the samples.

- Visually inspect all drums and containers for: physical condition such as rusting, swelling, and risk of structural failure; symbols or other markings that may indicate the contents such as DOT labels and manufacturer's labels; note drum type such as stainless steel, plastic, or metal; and note configuration of drum head such as open headed or bung.

When manually sampling from a drum, use the following techniques:

- Keep sampling personnel at a safe distance while drums are being opened. Sample only after opening operations are complete.

- Do not lean over other drums to reach the drum being sampled, unless absolutely necessary.

- Cover drum tops with plastic sheeting or other suitable monocontaminated materials to avoid excessive contact with the drum tops.

- Never stand on drums because this is extremely dangerous. Use mobile steps or another platform to achieve the height necessary to safely sample from the drums.

- Obtain samples with either glass rods or vacuum pumps. Do not use contaminated items when sampling, as these may contaminate the sample and may not be compatible with the waste in the drum. Glass rods should be removed prior to pumping to minimize damage to pumps.

Drum overpacking:

Hazards generally associated with drum handling include the following:

- Explosion of pressurized drums (identified by swollen caps) when moved.
- Leakage or disintegration of corroded drums, causing the contents to spill. Personnel may be exposed to drummed waste from handling.
- Back strain, falling drums and heavy machinery hazards are all associated with moving drums depending upon the method used for the drum removal, i.e., drum cart, grappler on a backhoe front end loader, rough terrain forklift, roller conveyor.

HAZARD PREVENTION

- If a drum is suspected to contain explosive or shock-sensitive waste, or is a bulging drum under pressure, special assistance might be required before handling. Use a grappler unit constructed for explosive containment for initial handlings of drums.
- Palletize and secure drums prior to transport.
- Maintain continuous communication during handling and have siren signals for the commencement and completion of explosive waste handling activities.
- Ensure all unnecessary personnel are kept a safe distance away from all activities. Use shock resistant shields as necessary.
- Personnel should be wearing all appropriate personal protective equipment.
- Vehicles used should have a clear view of the roadway when carrying drums. Where necessary, have ground workers available to guide the operator motion.
- Staging areas should be provided with adequate access and egress routes.
- Leaking drums should be properly containerized before moving. In areas where spills may occur, a containment

berm adequate to contain the entire volume in drums should be constructed.

Drum crushing:

Hazards generally encountered during drum crushing include the following:

- Drums may contain residuals which when crushed may release hazardous vapors or splash contaminants.
- Fumes such as carbon monoxide (CO) may be exhausted from the generator powered drum crusher into the workers breathing zone, possibly causing CO poisoning.
- Personnel could be physically injured from the drum crusher.

HAZARD PREVENTION

- Remove and containerize any residual material in the drum. Wear appropriate personal protective equipment.
- Exhaust fumes can be effectively diverted from the breathing zone by attaching flexible tubing to tail pipe and running it to an area downwind of the work site.
- Alert observation of moving parts on the drum crusher and securing loose clothing can greatly reduce the possibility of having body parts caught in the drum crusher.

3.4 Physical Hazards

General Description:

BENZENE-
Benzene is a clear colorless liquid with a characteristic aromatic odor. It is used to make other chemicals, as a solvent, and as a gasoline additive. It has a flash point of 12 deg F., and solidifies at 42 deg F. It is lighter than water and insoluble in water. Its vapors are heavier than air. ((C)AAR, 1986)

TOLUENE-
Toluene is a clear colorless liquid with a characteristic aromatic odor. It is used in aviation and automotive fuels, as a solvent for many materials, and to make other chemicals. It has a flash point of 40 deg F. It is lighter than water and insoluble in water. Its vapors are heavier than air. ((C)AAR, 1986)

XYLENE-
Xylene is a clear colorless liquid with a characteristic aromatic odor. It is used as a solvent for paints and adhesives, and to make other chemicals. It has a flash point of 81-90 deg F. It is lighter than water and insoluble in water. Its vapors are heavier than air. ((C)AAR, 1986)

LEAD, INORGANIC-
Metal: a heavy , ductile, soft gray solid. It is used as an additive in motor fuels, paints, and coatings. Flash Point: NA. It is insoluble in water.

CHROMIUM-
Metal: Blue-white to steel-gray, lustrous, brittle, hard solid. It is present in many compounds. Flash Point: NA. It is insoluble in water.

CADMIUM COMPOUND-
Metal: Silver-white, blue-tinged lustrous, odorless solid. Flash Point: NA. It is insoluble in water.

Health Hazards:

BENZENE-
VAPOR: Irritating to eyes, nose and throat. If inhaled, will cause headache, difficult breathing, or loss of consciousness. LIQUID: Irritating to skin and eyes. Harmful if swallowed. (USCG, 1985)

TOLUENE-
VAPOR: Irritating to eyes, nose and throat. If inhaled, will cause nausea, vomiting, headache, dizziness, difficult breathing, or loss of consciousness. LIQUID: Irritating to skin and eyes. If swallowed, will cause nausea, vomiting or loss of consciousness. (USCG, 1985)

XYLENE-
May be poisonous if inhaled or absorbed through skin. Vapors may cause dizziness or suffocation. Contact may irritate or burn skin and eyes. Fire may produce irritating or poisonous gases. Runoff from fire control or dilution water may cause pollution (DOT, 1984)

LEAD, INORGANIC-
May be irritating to eyes, and absorbed through skin. Target organs: GI tract, CNS, kidneys, blood, gingival tissue.

CHROMIUM-
May be irritating to eyes, and absorbed through skin. Target organs: Respitory system

CADMIUM COMPOUND-
May be irritating to eyes, and absorbed through skin. Target organs: Respitory system, kidneys, prostate, blood.

Poisonous if swallowed. Inhalation of dust poisonous. Fire may produce irritating or poisonous gases. Runoff from fire control or dilution water may cause polution. (DOT, 1984)

Fire/Explosion Hazards:

BENZENE-
FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back. (USCG, 1985)

TOLUENE-
FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back. (USCG, 1985)

XYLENE-
Flammable/combustible material; may be ignited by heat, sparks or flames. Vapors may travel to a source of ignition and flash back. Container may explode in heat of fire. Vapor explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. (DOT, 1984)

LEAD, INORGANIC-
CHROMIUM-
CADMIUM COMPOUND-
Some of these materials may burn but none of them ignite readily. (DOT, 1984)

Fire Fighting:

BENZENE-
Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may spread fire. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use foam, carbon dioxide or dry chemical. ((C)AAR, 1986)

TOLUENE-
Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may spread fire. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use foam, carbon dioxide or dry chemical. ((C)AAR, 1986)

XYLENE-
Do not extinguish fire unless flow can be stopped. Use

water in flooding quantities as fog. Solid streams of water may spread fire. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use foam, carbon dioxide or dry chemical. ((C)AAR, 1986)

LEAD, INORGANIC-
CHROMIUM-
CADMIUM COMPOUND-
SMALL FIRES: Dry chemical, CO2, water spray or foam. LARGE FIRES: Water spray, fog or foam. Move container from fire area if you can do it without risk. (DOT, 1984)

Non-Fire Response:

BENZENE-
Keep sparks, flames, and other sources of ignition away. Keep material out of water sources and sewers. Build dikes to contain flow as necessary. Attempt to stop leak if without hazard. Use water spray to knock-down vapors. Land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash, cement powder, sawdust, or commercial sorbents. Apply fluorocarbon-water foam to diminish vapor and fire hazard. Water spill: Use natural barriers or oil spill control booms to limit spill motion. Use surface active agent (e.g. detergent, soaps, alcohols) to compress and thicken spilled material. Inject "universal" gelling agent to solidify encircled spill and increase effectiveness of booms. If dissolved, apply activated carbon at ten times the spilled amount in region of 10 ppm or greater concentration. Remove trapped material with suction hoses. Use mechanical dredges or lifts to remove immobilized masses of pollutants and precipitates. Air spill: Apply water spray or mist to knock down vapors. ((C)AAR, 1986)

TOLUENE-
Keep sparks, flames, and other sources of ignition away. Keep material out of water sources and sewers. Build dikes to contain flow as necessary. Attempt to stop leak if without hazard. Use water spray to knock-down vapors. Land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash, cement powder, sawdust, or commercial sorbents. Apply "universal" gelling agent to immobilize spill. Apply fluorocarbon-water foam to diminish vapor and fire hazard. Water spill: Use natural barriers

or oil spill control booms to limit spill motion. Use surface active agent (e.g. detergent, soaps, alcohols) to compress and thicken spilled material. Inject "universal" gelling agent to solidify encircled spill and increase effectiveness of booms. If dissolved, apply activated carbon at ten times the spilled amount in region of 10 ppm or greater concentration. Remove trapped material with suction hoses. Use mechanical dredges or lifts to remove immobilized masses of pollutants and precipitates. Air spill: Apply water spray or mist to knock down vapors. ((C)AAR, 1986)

XYLENE-

Keep sparks, flames, and other sources of ignition away. Keep material out of water sources and sewers. Build dikes to contain flow as necessary. Attempt to stop leak if without hazard. Use water spray to knock-down vapors. Land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash, cement powder, sawdust, or commercial sorbents. Apply "universal" gelling agent to immobilize spill. Apply fluorocarbon-water foam to diminish vapor and fire hazard. Water spill: Use natural barriers or oil spill control booms to limit spill motion. Use surface active agent (e.g. detergent, soaps, alcohols) to compress and thicken spilled material. Inject "universal" gelling agent to solidify encircled spill and increase effectiveness of booms. If dissolved, apply activated carbon at ten times the spilled amount in region of 10 ppm or greater concentration. Remove trapped material with suction hoses. Use mechanical dredges or lifts to remove immobilized masses of pollutants and precipitates. Air spill: Apply water spray or mist to knock down vapors. ((C)AAR, 1986)

LEAD, INORGANIC-

CHROMIUM-

CADMIUM COMPOUND-

Do not touch spilled material; stop leak if you can do it without risk. SMALL SPILLS: Take up with sand or other noncombustible absorbent material and place into containers for later disposal. SMALL DRY SPILLS: With clean shovel place material into clean, dry container and cover; move containers from spill area. LARGE SPILLS: Dike far ahead of spill for later disposal. (DOT, 1984)

First Aid:

BENZENE-
If this chemical comes in contact with the eyes, immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn when working with this chemical. If this chemical comes in contact with the skin, promptly wash the contaminated skin with soap and water. If this chemical penetrates through the clothing, promptly remove the clothing and wash the skin with soap and water. Get medical attention promptly. If a person breathes in large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible. If this chemical has been swallowed, get medical attention immediately. (NIOSH, 1987)

TOLUENE-
If this chemical comes in contact with the eyes, immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn when working with this chemical. If this chemical comes in contact with the skin, promptly wash the contaminated skin with soap and water. If this chemical penetrates through the clothing, promptly remove the clothing and wash the skin with soap and water. Get medical attention promptly. If a person breathes in large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible. If this chemical has been swallowed, get medical attention immediately. (NIOSH, 1987)

XYLENE-
If this chemical comes in contact with the eyes, immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn when working with this chemical. If this chemical comes in contact with the skin, promptly wash the contaminated skin with soap and water. If this chemical penetrates through the clothing, promptly remove the clothing and wash the skin with soap and water. Get medical attention promptly. If a person breathes in large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible. If this chemical has been swallowed, get medical

attention immediately. (NIOSH, 1987)

LEAD, INORGANIC-
CHROMIUM-
CADMIUM COMPOUND-

If this chemical comes in contact with the eyes, immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn when working with this chemical. If this chemical comes in contact with the skin, wash the contaminated skin with soap and water. If a person breathes in large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible. If this chemical has been swallowed, get medical attention immediately. (NIOSH, 1987)

4.0 PERSONNEL TRAINING REQUIREMENTS

Consistent with OSHA's 29 CFR 1910.120 regulation covering Hazardous Waste Operations and Emergency Response, all site personnel are required to be trained in accordance with the standard. At a minimum all personnel are required to be trained to recognize the hazards on-site, the provisions of this HASP, and the responsible personnel.

4.1 Preassignment and Annual Refresher Training

Prior to arrival on site, each employer will be responsible for certifying that his/her employees meet the requirements of preassignment training, consistent with OSHA 29 CFR 1910.120 paragraph (e)(3). The employer should be able to provide a document certifying that each general site worker has received 40 hours of instruction off the site, and 24 hours of training for any workers who are on site only occasionally for a specific task. If an individual employee has work experience and/or training that is equivalent to that provided in the initial training, an employer may waive the 40-hour training so long as that equivalent experience is documented or certified. All personnel must also receive 8 hours of refresher training annually.

4.2 Site Supervisors Training

Consistent with OSHA 29 CFR 1910.120 paragraph (e)(8), individuals designated as site supervisors require an additional 8 hours of training.

The following individuals are identified as site supervisors:

Name	Title/Responsibility
J.D.McNamara	Project Manager

4.3 Training and Briefing Topics

The following items will be discussed by a qualified individual at the site pre-entry briefing(s) or periodic site briefings.

Training	Frequency
Air Monitoring, Sec. 7.0; [29 CFR 1910.120(h)]	Periodic
Animal bites and stings	Periodic

Backhoe	Periodic
Chemical hazards, Table 3.1	Periodic
Emergency response plan, Sec. 10.0; [29 CFR 1910.120(l)]	Periodic
Engineering controls and work practices	Periodic
Forklift, [29 CFR 1910.178(e)]	Periodic
Handling drums and containers, [29 CFR 1910.120(j)]	Periodic
Heavy machinery	Periodic
Medical surveillance requirements	Periodic
Personnel protective equipment, Sec. 5.0	Peroidic
Physical hazards, Table 3.2	Periodic
Pressurized air cylinders, [29 CDR 1910.101(b)]	Periodic
Respiratory protection, Sec. 5.8	Periodic
Sanitation, [29 CFR 1910.120(n)]	Periodic
Site Control, Sec. 8.0; [29 CFR 1910.120(d)]	Periodic
Site characterization and analysis, Sec. 3.0	Periodic
Spill Containment, Sec. 12.0; [29 CFR 1910.120(b)(4)(j)]	Periodic
Symptoms of overexposure to hazards	Periodic
Tools, [29 CFR 1910.242 - .247]	Periodic
Training requirements, Sec. 4.0; [29 CFR 1910.120(e)]	Periodic

5.0 PERSONAL PROTECTIVE EQUIPMENT TO BE USED

This section describes the general requirements of the EPA designated Levels of Protection (A-D), and the specific levels of protection required for each task at the Site.

5.1 Levels of Protection

Personnel wear protective equipment when response activities involve known or suspected atmospheric contamination vapors, gases, or particulates may be generated by site activities, or when direct contact with skin-affecting substances may occur. Full facepiece respirators protect lungs, gastrointestinal tract, and eyes against airborne toxicant. Chemical-resistant clothing protects the skin from contact with skin-destructive and absorbable chemicals.

The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

Level B: Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B is the primary level of choice when encountering unknown environments.

Level C: Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed.

Level D: Should be worn only as a work uniform and not in any area with respiratory or skin hazards. It provides minimal protection against chemical hazards.

Modifications of these levels are permitted, and routinely employed during site work activities to maximize efficiency. For example, Level C respiratory protection and Level D skin protection may be required for a given task. Likewise the type of chemical protective ensemble (i.e., material, format) will depend upon contaminants and degrees of contact.

The Level of Protection selected is based upon the following:

- Type and measured concentration of the chemical

substance in the ambient atmosphere and its toxicity.

- Potential for exposure to substances in air liquids, or other direct contact with material due to work being done.

- Knowledge of chemicals on-site along with properties such as toxicity, route of exposure, and contaminant matrix.

In situations where the type of chemical, concentration, and possibilities of contact are not known, the appropriate Level of Protection must be selected based on professional experience and judgment until the hazards can be better identified.

5.2 Level A Personnel Protective Equipment:

- Supplied-air respirator approved by the Mine Safety and Health Administration (MSHA) and National Institute for Occupational Safety and Health (NIOSH). Respirators may be positive pressure-demand, self-contained breathing apparatus (SCBA), or positive pressure-demand, airline respirator (with escape bottle for Immediately Dangerous to Life and Health (IDLH) or potential for IDLH atmosphere)

- Fully encapsulating chemical-resistant suit

- Coveralls

- Long cotton underwear

- Gloves (inner)

- Boots, chemical-resistant, steel toe and shank (depending on suit construction, worn over or under suit boot)

- Hard hat (under suit)

- Disposable gloves and boot covers (worn over fully encapsulating suit)

- Cooling unit

- 2-way radio communications (intrinsically safe)

5.3 Level B Personnel Protective Equipment:

- Supplied-air respirator (MSHA/NIOSH approved). Respirators may be positive pressure-demand, self-contained breathing apparatus (SCBA), or positive

pressure-demand, airline respirator (with escape bottle for IDLH or potential for IDLH atmosphere)

- o Chemical-resistant clothing (overalls and long-sleeved jacket; hooded, one or two-piece chemical-splash suit; disposable chemical-resistant, one-piece suits)
- o Long cotton underwear
- o Coveralls
- o Gloves (outer), chemical-resistant
- o Gloves (inner), chemical-resistant
- o Boots (outer), chemical-resistant, steel toe and shank
- o Boot covers (outer), chemical-resistant (disposable)
- o Hard hat (face shield)
- o 2-way radio communications (intrinsically safe)

5.4 Level C Personnel Protective Equipment:

- o Air-purifying respirator, full-face, cartridge-equipped (MSHA/NIOSH approved)
- o Chemical-resistant clothing (coveralls; hooded, one-piece or two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls)
- o Coveralls
- o Long cotton underwear
- o Gloves (outer), chemical-resistant
- o Gloves (inner), chemical-resistant
- o Boots (outer), chemical-resistant, steel toe and shank
- o Boot covers (outer), chemical-resistant (disposable)
- o Hard hat (face shield)
- o Escape mask
- o 2-way radio communications (intrinsically safe)

5.5 Level D Personnel Protective Equipment:

- o Coveralls
- o Gloves
- o Boots/shoes, leath or chemical-resistant, steel toe and shank
- o Safety glasses
- o Hard hat

5.6 Reassessment of Protection Program

The Level of Protection provided by PPE selection shall be upgraded or downgraded based upon a change in site conditions or findings of investigations.

When a significant change occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:

- o Commencement of a new work phase, such as the start of drum sampling or work that begins on a different portion of the site.
- o Change in job tasks during a work phase.
- o Change of season/weather.
- o When temperature extremes or individual medical considerations limit the effectiveness of PPE.
- o Contaminants other than those previously identified are encountered.
- o Change in ambient levels of contaminants.
- o Change in work scope which effects the degree of contact with contaminants.

5.7 Work Mission Duration

Before the workers actually begin work in their PPE ensembles the anticipated duration of the work mission should be established. Several factors limit mission length, including:

- o Air supply consumption (SCBA use).

- o Suit/Ensemble permeation and penetration rates for chemicals (section 5.8).
- o Ambient temperature and weather conditions (heat stress cold stress).
- o Capacity of personnel to work in PPE.

5.8 Chemical Resistance and Integrity of Protective Material

The following specific clothing materials are recommended for the site:

Air sampling/monitoring - (Level D)

Inner Gloves - Latex

Boots/Boot Covers - Rubber/Steel Toe

Outer Gloves - Neoprene

Outer Garment/Coveralls - Tyvek

Surface soil sampling - (Level D)

Inner Gloves - Latex

Boots/Boot Covers - Rubber/Steel Toe

Outer Gloves - Neoprene

Outer Garment/Coveralls - Tyvek

Subsurface soil sampling - (Level D)

Inner Gloves - Latex

Boots/Boot Covers - Rubber/Steel Toe

Outer Gloves - Neoprene

Outer Garment/Coveralls - Tyvek

Drum sampling - (Level C)

Inner Gloves - Latex

Boots/Boot Covers - Rubber/Steel Toe

Outer Gloves - Neoprene/Silver Shield

Outer Garment/Coveralls - Barricade

Drum overpacking - (Level C)

Inner Gloves - Latex

Boots/Boot Covers - Rubber/Steel Toe

Outer Gloves - Neoprene/Silver Shield

Outer Garment/Coveralls - Barridade

Drum crushing - (Level D)

Inner Gloves - Latex

Boots/Boot Covers - Rubber/Steel Toe

Outer Gloves - Neoprene

Outer Garment/Coveralls - Tyvek

5.9 SOP for Respiratory Protection Devices

The following subsections define standard operating procedures for air purifying respirators and self-contained breathing apparatus.

5.9.1 Cleaning and Disinfecting Air Purifying Respirators

APRs in routine use should be cleaned and disinfected at least daily. Where respirators are used only occasionally or when they are in storage, the cleaning interval is weekly or monthly, as appropriate.

5.9.1.1 Daily Cleaning Procedure

The steps to be followed for cleaning and disinfecting daily are as follows:

- Respirator Disassembly. Respirators are taken to a clean location where the filters, cartridges or canisters are removed, damaged to prevent accidental reuse, and discarded. For thorough cleaning, the

inhalation and exhalation valves, speaking diaphragm, and any hoses are removed.

- Cleaning. In most instances, the cleaning and disinfecting solution provided by the manufacturer is used, and is dissolved in warm water in an appropriate tub. Using gloves, the respirator is placed in the tub and swirled for a few moments. A soft brush may be used to facilitate cleaning.

- Rinsing. The cleaned and disinfected respirators are rinsed thoroughly in water to remove all traces of detergent and disinfectant. This is very important for preventing dermatitis.

- Drying. The respirators may be allowed to dry in room air on a clean surface. They may also be hung upside down like drying clothes, but care must be taken not to damage or distort the facepieces.

- Reassembly and Inspection. The clean, dry respirator facepieces should be resembled and inspected in an area separate from the disassembly area to avoid contamination. Special emphasis should be given to inspecting the respirators for detergent or soap residue left by inadequate rinsing. This appears most often under the seat of the exhalation valve, and can cause valve leakage or sticking.

5.9.1.2 After Routine Use in Exclusion Zone

The steps to be followed for cleaning and disinfecting in the field are as follows:

- The mask may be washed/rinsed with soap and water.

- At a minimum, the mask should be wiped with disinfectant wipes (benzoalkaloid or isopropyl alcohol), and allowed to air dry in a clean area.

5.9.2 APR Inspection and Checkout

1. Visually inspect the entire unit for any obvious damages, defects, or deteriorated rubber.

2. Make sure that the facepiece harness is not damaged. The serrated portion of the harness can fragment which will prevent proper face seal adjustment.

3. Inspect lens for damage and proper seal in facepiece.

4. Exhalation Valve - pull off plastic cover and check valve for debris or for tears in the neoprene valve (which could cause leakage).

5. Inhalation Valves (two) - screw off cartridges/ canisters and visually inspect neoprene valves for tears. Make sure that the inhalation valves and cartridge receptacle gaskets are in place.

6. Make sure a protective cover lens is attached to the lens.

7. Make sure the speaking diaphragm retainer ring is hand tight.

8. Make sure that you have the correct cartridge.

9. Don and perform negative pressure test.

5.9.3 Storage of Air Purifying Respirators

OSHA requires that respirators be stored to protect against:

Dust
Sunlight
Heat
Extreme cold
Excessive moisture
Damaging chemicals
Mechanical damage

Storage of respirators should be in a clean which minimizes the chance for contamination or unsanitary conditions.

5.10 SOP for Personal Protective Equipment

5.10.1 Inspection

Proper inspection of PPE features several sequences of inspection depending upon specific articles of PPE and it's frequency of use. The different levels of inspection are as follows:

- Inspection and operational testing of equipment received from the factory or distributor.
- Inspection of equipment as it is issued to workers.
- Inspection after use or training and prior to maintenance.
- Periodic inspection of stored equipment.
- Periodic inspection when a question arises concerning the appropriateness of the selected equipment, or when problems with similar equipment arise.

The primary inspection of PPE in use for activities at the Site will occur prior to immediate use and will be conducted by the user. This ensures that the specific device or article has been checked-out by the user that the user is familiar with its use.

Table 5.1 Sample PPE Inspection Checklists

CLOTHING

Before use:

- o Determine that the clothing material is correct for the specified task at hand.
- o Visually inspect for:
  - imperfect seams
  - non-uniform coatings
  - tears
  - malfunctioning closures
- o Hold up to light and check for pinholes.
- o Flex product:
  - observe for cracks
  - observe for other signs of shelf deterioration
- o If the product has been used previously, inspect inside and out for signs of chemical attack:
  - discoloration
  - swelling
  - stiffness

During the work task

- o Evidence of chemical attack such as discoloration, swelling, stiffening, and softening. Keep in mind, however, that chemical permeation can occur without any visible effects.
- o Closure failure.
- o Tears.
- o Punctures.
- o Seam Discontinuities.

GLOVES

Before use:

- Visually inspect for:
  - imperfect seams
  - tears
  - non-uniform coating
  - pressurize glove with air; listen for pin-hole leaks.

5.11 Specific Levels of Protection Planned for the Site

The following levels of protection will be utilized during activities at the Site:

- Level C — Concur: _____
  Based on the weathering of the drums, and analytical data from the surrounding area, level C, PPE should be adequate for this task. However, if conditions warrant, upgrading to a higher level will be required.
- Level D

Table 5.2 presents the level of protection planned for the completion of individual task assignments and the specific components of each protective ensemble.

TABLE 5.2
SPECIFIC LEVELS OF PROTECTION PLANNED FOR THE
TASK ASSIGNMENTS AT THE SITE

LEVEL A Tasks

LEVEL A Tasks (modified)

LEVEL B Tasks

LEVEL B Tasks (modified)

LEVEL C Tasks

- Drum sampling
- Drum overpacking

LEVEL C Tasks (modified)

LEVEL D Tasks

- Air sampling/monitoring
- Surface soil sampling
- Subsurface soil sampling
- Drum crushing

LEVEL D Tasks (modified)

6.0 MEDICAL SURVEILLANCE REQUIREMENTS

Medical monitoring programs are designed to track the physical condition of employees on a regular basis as well as survey preemployment or baseline conditions prior to potential exposures The medical surveillance program is a part of each employers Health and Safety program.

6.1 Baseline or Preassignment Monitoring

Prior to being assigned to a hazardous or a potentially hazardous activity involving exposure to toxic materials employee must receive a preassignment or baseline physical. The contents of the physical is to be determined by the employers medical consultant. As suggested by NIOSH/OSHA/USCG/EPA's Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities, the minimum medical monitoring requirements for work at the Site is as follows:

- Complete medical and work histories.
- Physical examination.
- Pulmonary function tests (FVC and FEV1).
- Chest X-ray (every 2 years).
- EKG.
- Eye examination and visual acuity.
- Audiometry.
- Urinalysis.
- Blood chemistry
  and heavy metals toxicology.

The preassignment physical should categorize employees as fit-for-duty and able to wear respiratory protection.

6.2 Periodic Monitoring

In addition to a baseline physical, all employees require a periodic physical within the last 12 months unless the advising physician believes a shorter interval is appropriate. The employers medical consultant should prescribe an adequate medical which fulfills OSHA 29 CFR 1910.120 requirements. The preassignment medical outlined above may be applicable.

All personnel working in contaminated or potentially contaminated area's at the Site will verify currency (within 12 months) with respect to medical monitoring. This is done by indicating date of last physical on the safety plan agreement form.

6.3 Site Specific Medical Monitoring

For activities at the Site, the following specific tests will be required prior to individuals entering the Exclusion Zone or Contamination Reduction Zone.

6.4 Exposure/Injury/Medical Support

As a follow-up to an injury or possible exposure above established exposure limits, all employees are entitled to and encouraged to seek medical attention and physical testing. Depending upon the type of exposure, it is critical to perform follow-up testing within 24-48 hours. It will be up to the employers medical consultant to advise the type of test required to accurately monitor for exposure effects.

6.5 Exit Physical

At termination of employment or reassignment to an activity or location which does not represent a risk of exposure to hazardous substances, an employee shall require an exit physical. If his/her last physical was within the last 6 months, the advising medical consultant has the right to determine adequacy and necessity of exit exam.

7.0 FREQUENCY AND TYPES OF AIR MONITORING/SAMPLING

This section explains the general concepts of an air monitoring program and specifies the surveillance activities that will take place during project completion at the Site.

The purpose of air monitoring is to identify and quantify airborne contaminants in order to verify and determine the level of worker protection needed. Initial screening for identification is often qualitative, i.e., the contaminant, or the class to which it belongs, is demonstrated to be present but the determination of its concentration (quantification) must await subsequent testing. Two principal approaches are available for identifying and/or quantifying airborne contaminants:

- The on-site use of direct-reading instruments.
- Laboratory analysis of air samples obtained by gas sampling bag, collection media (i.e., filter, sorbent), and/or wet-contaminant collection methods.

7.1 Direct-Reading Monitoring Instruments

Unlike air sampling devices, which are used to collect samples for subsequent analysis in a laboratory, direct-reading instruments provide information at the time of sampling, enabling rapid decision-making. Data obtained from the real-time monitors are used to assure proper selection of personnel protection equipment, engineering controls, and work practices. Overall, the instruments provide the user the capability to determine if site personnel are being exposed to concentrations which exceed exposure limits or action levels for specific hazardous materials.

Of significant importance, especially during initial entries, is the potential for IDLH conditions or oxygen deficient atmospheres. Real-time monitors can be useful in identifying any IDLH conditions, toxic levels of airborne contaminants, flammable atmospheres, or radioactive hazards. Periodic monitoring of conditions is critical, especially if exposures may have increased since initial monitoring or if new site activities have commenced.

Table 7.1. excerpted from Occupational Safety and Health Guidelines for Hazardous Waste Site Activities, provides an overview of available monitoring instrumentation and their specific operating parameters.

TABLE 7.1 SOME DIRECT-READING INSTRUMENTS FOR GENERAL SURVEY

Instrument: Combustible gas indicator (CGI)

Hazard Monitored: Combustible gases and vapors.

Application: Measures the concentration of a combustible gas or vapor.

Detection Method: A filament, usually made of platinum, is heated by burning the combustible gas of vapor. The increase in heat is measured. Gases and vapors are ionized in a flame. A current is produced in proportion to the number of carbon atoms present.

General Care/Maintenance: Recharge or replace battery. Calibrate immediately before use.

Typical Operating Time: Can be used for as long as the battery lasts, or for the recommended interval between calibrations, whichever is less.

Instrument: Flame Ionization Detector (FID) with Gas Chromatography Option. Example: Foxboro OVA.

Hazard Monitored: Many organic gases and vapors.

Application: In survey mode, detects the concentration of many organic gases and vapors. In gas chromatography (GC) mode identifies and measures specific compounds. In survey mode, all the organic compounds are ionized and detected at the same time. In GC mode, volatile species are separated.

General Care/Maintenance: Recharge or replace battery. Monitor fuel and/or combustion air supply gauges. Perform routine maintenance as described in the manual. Check for leaks.

Typical Operating Time: 8 hours; 3 hours with strip chart recorder.

Instrument: Portable Infrared (IR) Spectrophotometer

Hazard Monitored: Many gases and vapors.

Application: Measures concentration of many gases and vapors in air. Designed to quantify one or two component mixtures.

Detection Method: Passes different frequencies of IR through the sample. The frequencies absorbed are specific for each compound.

General Care/Maintenance: As specified by manufacturer.

Instrument: Ultraviolet (UV) Photoionization Detector (PID) Example: HNU.

Hazard Monitored: Many organic and some inorganic gases and vapors.

Application: Detects total concentration of many organic and some inorganic gases and vapors. Some identification of compounds are possible if more than one probe is measured.

Detection Method: Ionizes molecules using UV radiation; produces a current that is proportional to the number of ions.

General Care/Maintenance: Recharge or replace battery. Regularly clean lamp window. Regularly clean an maintain the instrument and accessories.

Typical Operating Time: 10 hours. 5 hours with strip chart recorder.

Instrument: Direct Reading Colorimetric Indicator Tube

Hazard Measured: Specific gas and vapors.

Application: Measures concentration of specific gases and vapors.

Detection Method: The compound reacts with the indicator chemical in the tube, producing a stain whose length or color change is proportional to the compound's concentration.

General Care/Maintenance: Do not use a previously opened tube even if the indicator chemical is not stained. Check pump for leaks before and after use. Refrigerate before use to maintain a shelf life of about 2 years. Check expiration date of tubes. Calibrate pump volume at least quarterly. Avoid rough handling which may cause channeling.

Instrument: Oxygen Meter

Hazard Monitored: Oxygen (O2)

Application: Measures the percentage of O2 in the air.

Detection Method: Uses an electrochemical sensor to measure the partial pressure of O2 in the air, and converts that reading to O2 concentration.

General Care/Maintenance: Replace detector cell according to manufacturers recommendations. Recharge or replace batteries prior to expiration of the specified interval. If the ambient air is more than 0.5% CO2, replace the detector cell frequently.

Typical Operating Time: 8-12 hours.

Instrument: Real Time Aerosol Monitor

Hazard Monitored: Particulates

Application: Measures total particulates in air.

Detection Method: Uses an internal light source. The particulates defract the light beam and the amount of diffraction is converted into concentration (mg/m3).

General Care/Maintenance: Recharge batteries. Replace desiccant when necessary.

Typical Operating Time: 8-12 hours.

Instrument: Monitox

Hazard Monitored: Gases and Vapors

Application: Measures specific gases and vapors

Detection Method: Electrochemical sensor relatively specific for the chemical species in question.

General Care/Maintenance: Moisten sponge before use; check the function switch; change the battery when needed.

Instruments: Gamma Radiation Survey Instrument

Hazard Monitored: Gamma Radiation

Application: Environmental radiation monitor

Detection Method: Scintillation detector

General Care/Maintenance: Must be calibrated annually at a specialized facility.

Typical Operating Time: Can be used for as long as the battery lasts, or for the recommended interval between calibrations, whichever is less.

After site mitigation activities have commenced, the selective monitoring of high-risk workers, i.e., those who are closest to the source of contaminant generation, is essential. Personal monitoring samples should be collected in the breathing zone and, if workers are wearing respiratory protective equipment, outside the facepiece.

Those employees working closest with the source have the highest likelihood of being exposed to concentrations which exceed established exposure limits. Representative sampling approaches emphasizing worst case conditions, those employees with the greatest risk of exposure, is acceptable. However, the sampling strategy may change if the operation or tasks change on site or if exposures potentially increase.

7.3 Specific Contaminants to be monitored at the Site

The following checklist provides a summary of the contaminants to be monitored for and frequency/schedule of monitoring. The air sampling checklist will serve as a site monitoring plan.

7.3.1 Site Air Monitoring and Sampling Program

A. Air Monitoring Instruments

Combustible Gas Indicator (CGI)

Frequency : Continuous monitoring
Locations : Upwind and downwind of site activities

Ultraviolet (UV) Photoionization Detector (PID)

Frequency : Continuous monitoring
Locations : Upwind and downwind of site activities

B. Action Levels

Organic gases and vapors:

Action Level	Action
Depends on contaminant	Consult standard reference manuals for air concentration/toxicity data. Action level depends on PEL/REL/TLV. Action Level is 1/2 the current standard. See Table 3.1.

Inorganic gases and vapors:

Action Level	Action
Depends on contaminant	Consult standard reference manuals for air concentration/toxicity data. Action level depends on PEL/REL/TLV. Action Level is 1/2 the current standard. See Table 3.1.

C. Reporting Format

- Field notebook

8.0 SITE CONTROL MEASURES

The following section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site health and safety program.

8.1 Buddy System

During all Level B activities or when some conditions present a risk to personnel, the implementation of a buddy system is mandatory. A buddy system requires at least two people who work as a team; each looking out for each other. For example, Level B operations generally require three people. Table 8.1 lists those tasks which require a buddy system and any additional site control requirements.

8.2 Site Communications Plan

Successful communications between field teams and contact with personnel in the support zone is essential. The following communications systems will be available during activities at the Site.

- o Intrinsically safe radio
- o Horn for emergencies

8.3 Work Zone Definition

The three general work zones established at the Site are the Exclusion Zone, Contamination Reduction Zone, and Support Zone. Figure 8.1 provides a site map with the work zones designated on it.

The Exclusion Zone is defined as the area where contamination is either known or likely to be present, or because of activity, will provide a potential to cause harm to personnel. Entry into the Exclusion Zone requires the use of personnel protective equipment.

The Contamination Reduction Zone is the area where personnel conduct personal and equipment decontamination. It is essentially a buffer zone between contaminated areas and clean areas. Activities to be conducted in this zone will require personal protection as defined in the decontamination plan.

The Support Zone is situated in clean areas where the chance to encounter hazardous materials or conditions is minimal. Personal protective equipment is therefore not required.

8.4 Nearest Medical Assistance

Figure 8.2 provides a map of the route to the nearest medical facility which can provide emergency care for individuals who may experience an injury or exposure on site. The route to the hospital should be verified by the HSO, and should be familiar to all site personnel.

The following individuals on site have current certification in CPR and/or first aid:

- J.D. McNamara
- Rex Chitty

8.5 Safe Work Practices

Table 8.2 provides a list of standing orders for the Exclusion Zone.

Table 8.3 provides a list of standing orders for the Contamination Reduction Zone.

8.6 Emergency Alarm Procedures

The warning signals described in section 10.4 "Evacuation Routes and Procedures," will be deployed in the event of an emergency. Communication signals will also be used according to section 8.2.

TABLE 8.1. PERSONNEL REQUIREMENTS

Task	Control Measures	Comments
**Air sampling/monitoring	Buddy system	
**Surface soil sampling	Buddy system	
**Subsurface soil sampling	Buddy system	
**Drum overpacking	Buddy system	
**Drum crushing	Buddy system	

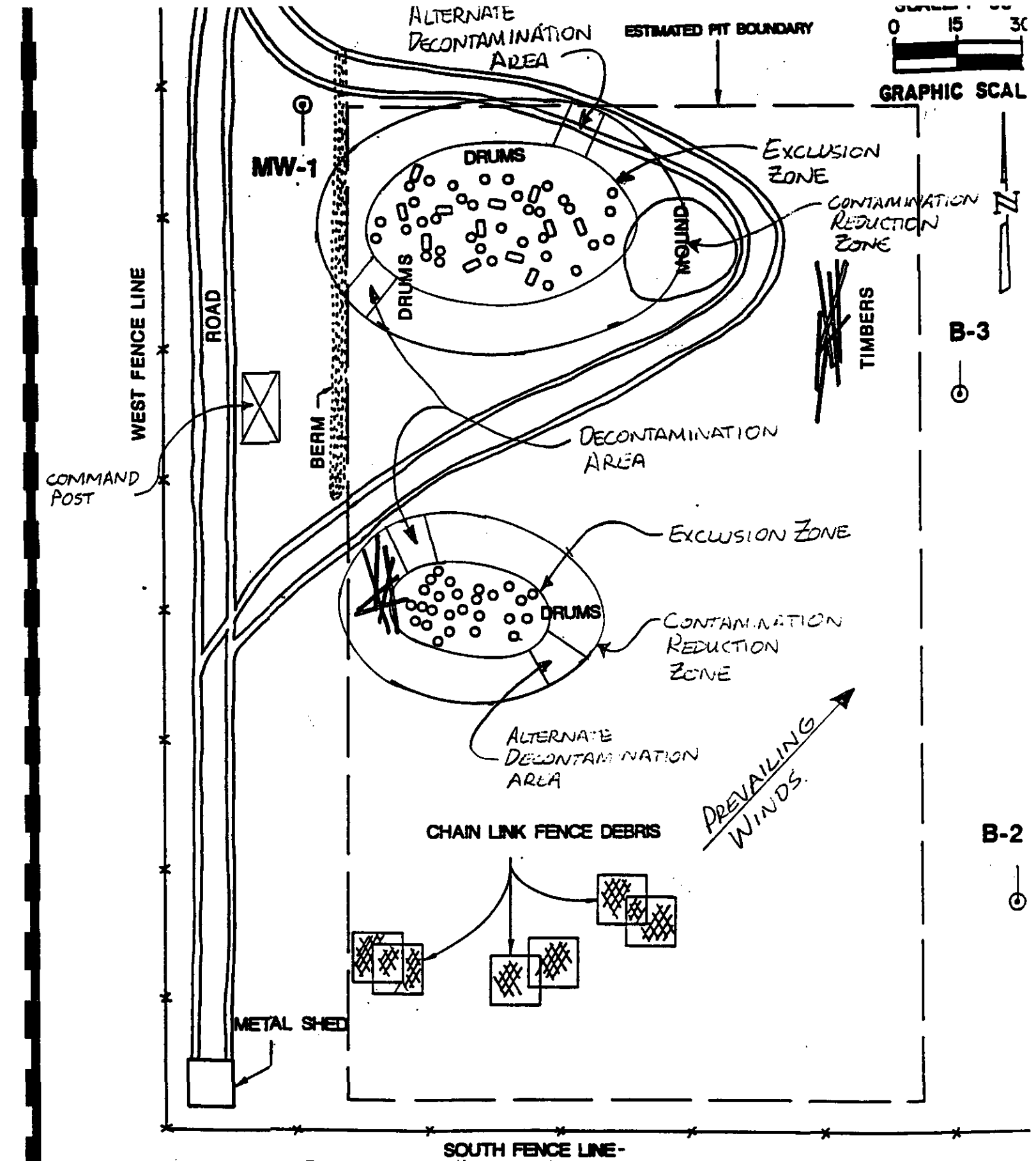


FIGURE 8.1 - WORK ZONES

CARTER & BURGESS, INC.
ENGINEERS · PLANNERS · SURVEYORS
7950 ELMBROOK DRIVE / SUITE 230 / DALLAS, TEXAS 75247
(214) 638-0145 METRO (214) 263-2019

AMERADA HESS MONUMENT SITE LEA COUNTY, NEW MEXICO

DATE:	12-21-92
PROJ:	92-1397-01
DRAWN:	JDW
CKD:	JO

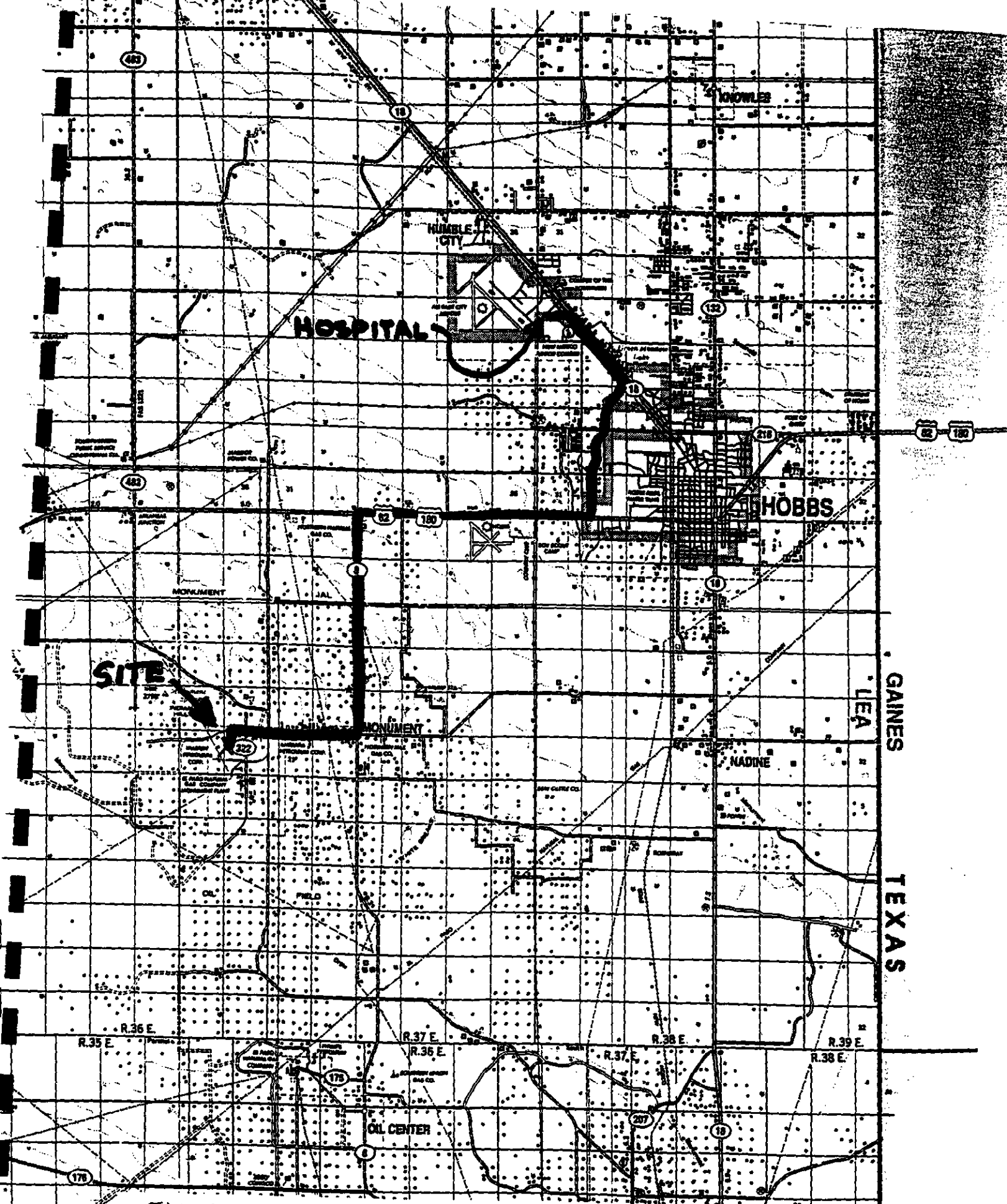


FIGURE 8.2 - MAP DEPICTING ROUTE TO NEAREST MEDICAL FACILITIES

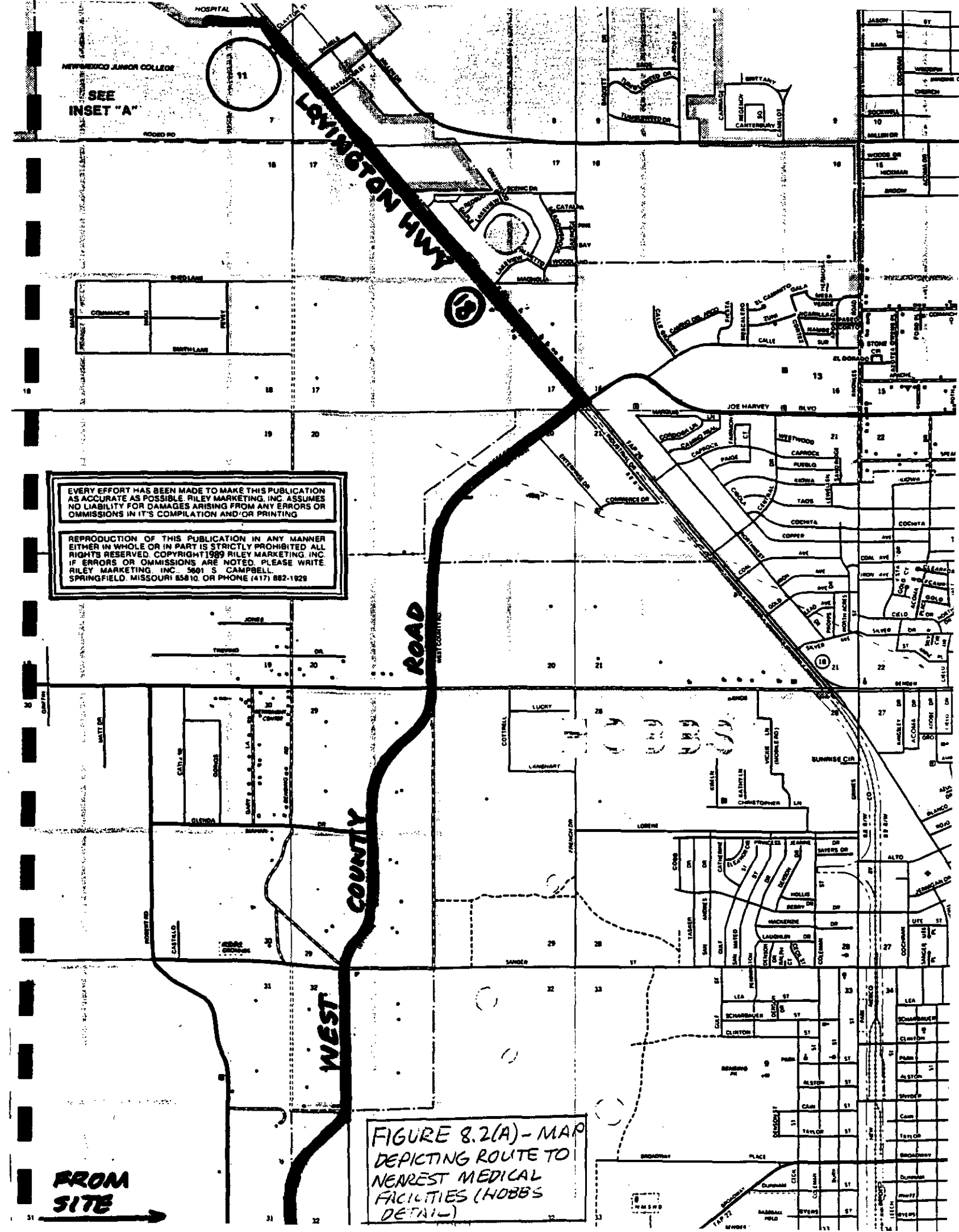


FIGURE 8.2(A) - MAP DEPICTING ROUTE TO NEAREST MEDICAL FACILITIES (HOBBS DETAIL)

TABLE 8.2 STANDING ORDERS FOR EXCLUSION ZONE

- No smoking, eating, or drinking in this zone.
- No horse play.
- No matches or lighters in this zone.
- Check-in on entrance to this zone.
- Check-out on exit from this zone.
- Implement the communications system.
- Line of sight must be in position.
- Wear the appropriate level of protection as defined in the Safety Plan.

TABLE 8.3 STANDING ORDERS FOR CONTAMINATION REDUCTION ZONE

- No smoking, eating, or drinking in this zone.
- No horse play.
- No matches or lighters in this zone.
- Wear the appropriate level of protection.

9.0 DECONTAMINATION PLAN

Table 5.2 lists the tasks and specific levels of protection required for each task. Consistent with the levels of protection required, the decontamination figure provides a step by step representation of the personnel decontamination process for either level A, B, or C. These procedures should be modified to suit site conditions and protective ensembles in use.

9.1 Standard Operating Procedures

Decontamination involves the orderly controlled removal of contaminants. Standard decontamination sequences are presented in the decontamination figure. All site personnel should minimize contact with contaminants in order to minimize the need for extensive decon.

9.2 Levels of Decontamination Protection Required for Personnel

The levels of protection required for personnel assisting with decontamination will be Level C or Level D.

The Site Safety Officer is responsible for monitoring decontamination procedures and determining their effectiveness.

9.3 Equipment Decontamination

Sampling equipment will be decontaminated in accordance with procedures as defined in the other, subcontractor decon plan The sequence of decontamination steps required for non-sampling equipment and heavy machinery can be found in the Quality Assurance Sampling Plan.

9.4 Disposition of Decontamination Wastes

All equipment and solvents used for decontamination shall be decontaminated or disposed of properly. Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment shall be informed of the potentially harmful effects of exposures.

FIGURE 9.1.
LEVEL A DECONTAMINATION STEPS

Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal - boot and glove
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/safety boot rinse
Step 9 Safety boot removal
Step 10 Fully encapsulating suit and hard hat removal
Step 11 SCBA backpack removal
Step 12 Inner glove wash
Step 13 Inner glove rinse
Step 14 Face piece removal
Step 15 Innver glove removal
Step 16 Inner clothing removal
Step 17 Field wash
Step 18 Redress

FIGURE 9.2.
LEVEL B DECONTAMINATION STEPS

Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal - outer glove and boot
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/SCBA/boot/glove rinse
Step 9 Safety boot removal
Step 10 SCBA backpack removal
Step 11 Splash suit removal
Step 12 Inner glove wash
Step 13 Inner glove rinse
Step 14 Face piece removal
Step 15 Inner glove removal
Step 16 Inner clothing removal
Step 17 Field wash
Step 18 Redress

FIGURE 9.3.
LEVEL C DECONTAMINATION STEPS

Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/safety boot rinse
Step 9 Safety boot removal
Step 10 Splash suit removal
Step 11 Inner glove wash
Step 12 Inner glove rinse
Step 13 Face piece removal
Step 14 Inner glove removal
Step 15 Inner clothing removal
Step 16 Field wash
Step 17 Redress

FIGURE 9.4.
LEVEL D DECONTAMINATION STEPS

Step 1 Remove outer garments (i.e., coveralls)
Step 2 Remove gloves
Step 3 Wash hands and face

10.0 EMERGENCY RESPONSE/CONTINGENCY PLAN

This section describes contingencies and emergency planning procedures to be implemented at the Site. This plan is compatible with local, state and federal disaster and emergency management plans as appropriate.

10.1 Pre-Emergency Planning

During the site briefings held periodically/daily, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. Table 10.1 identifies the hazardous conditions associated with specific site activities. The plan will be reviewed and revised if necessary, on a regular basis by the HSO. This will ensure that the plan is adequate and consistent with prevailing site conditions.

10.2 Personnel Roles and Lines of Authority

The Site Supervisor has primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measure to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area, and evacuation of adjacent residents. He/she is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow-up reports completed. The HSO may be called upon to act on the behalf of the site supervisor, and will direct responses to any medical emergency. The individual contractor organizations are responsible for assisting the project manager in his/her mission within the parameters of their scope of work.

The Site Supervisor(s): J.D.McNamara.

The HSO is: Rex Chitty

Alternates are:

- Jesse Barrett

10.3 Emergency Recognition/Prevention

Table 3.1 provides a listing of chemical and physical hazards onsite. Additional hazards as a direct result of site activities are listed in Table 10.1 as are prevention and control techniques/mechanisms. Personnel will be familiar with techniques of hazard recognition from preassignment training

and site specific briefings. The HSO is responsible for ensuring that prevention devices or equipment is available to personnel.

10.4 Evacuation Routes/Procedures

In the event of an emergency which necessitates an evacuation of the site, the following alarm procedures will be implemented:

Evacuation alarm notification should be made using three short blasts on the air horn, supplemented using the hand held radios. All personnel should evacuate upwind of any activities. Insure that a predetermined location is identified off-site in case of an emergency, so that all personnel can be accounted for.

Personnel will be expected to proceed to the closest exit with your buddy, and mobilize to the safe distance area associated with the evacuation route. Personnel will remain at that area until the re-entry alarm is sounded or an authorized individual provides further instructions.

TABLE 10.1
EMERGENCY RECOGNITION/CONTROL MEASURES

HAZARD	PREVENTION/CONTROL	LOCATION
Fire/Explosion	Fire Extinguisher Alarm System Fire Inspections	
Spill	Berms/Dikes Sorbent Materials Foams	
Air Release	Water Spray Foam Alarm System Evacuation Routes	

Figure 10.1 provides a map depicting evacuation routes for the site and immediate area. Also indicated are muster areas and safe distances in the event of a major incident.

10.7 Emergency Contact/Notification System

The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the HSO and notify the appropriate emergency organization. In the event of a fire or spill, the site supervisor will notify the appropriate local, state, and federal agencies.

Organization	Contact	Telephone
Ambulance:		(505)392-5588
Aero-Care		(800)627-2376
Police:		(505)392-5588
Fire:		(505)392-5588
State Police:		(505)392-5588
Hospital 1: Lea Regional 5419 Lovington Hwy Hobbs, NM		(505) 392-6581
Hospital 2: Nor-Lea General 1600 N. Main Lovington, NM		(505)396-6611
Poison Control Center		(800)432-6866
Regional EPA:		(214)655-6444
EPA Emergency Response Team		(908)321-6660
State Authority: Oil Conservation Division		(505)827-5800
Environment Department		(505)827-2850
National Response Center		(800)424-8802
Center for Disease Control		(404)488-4100
Chemtrec		(800)424-9555

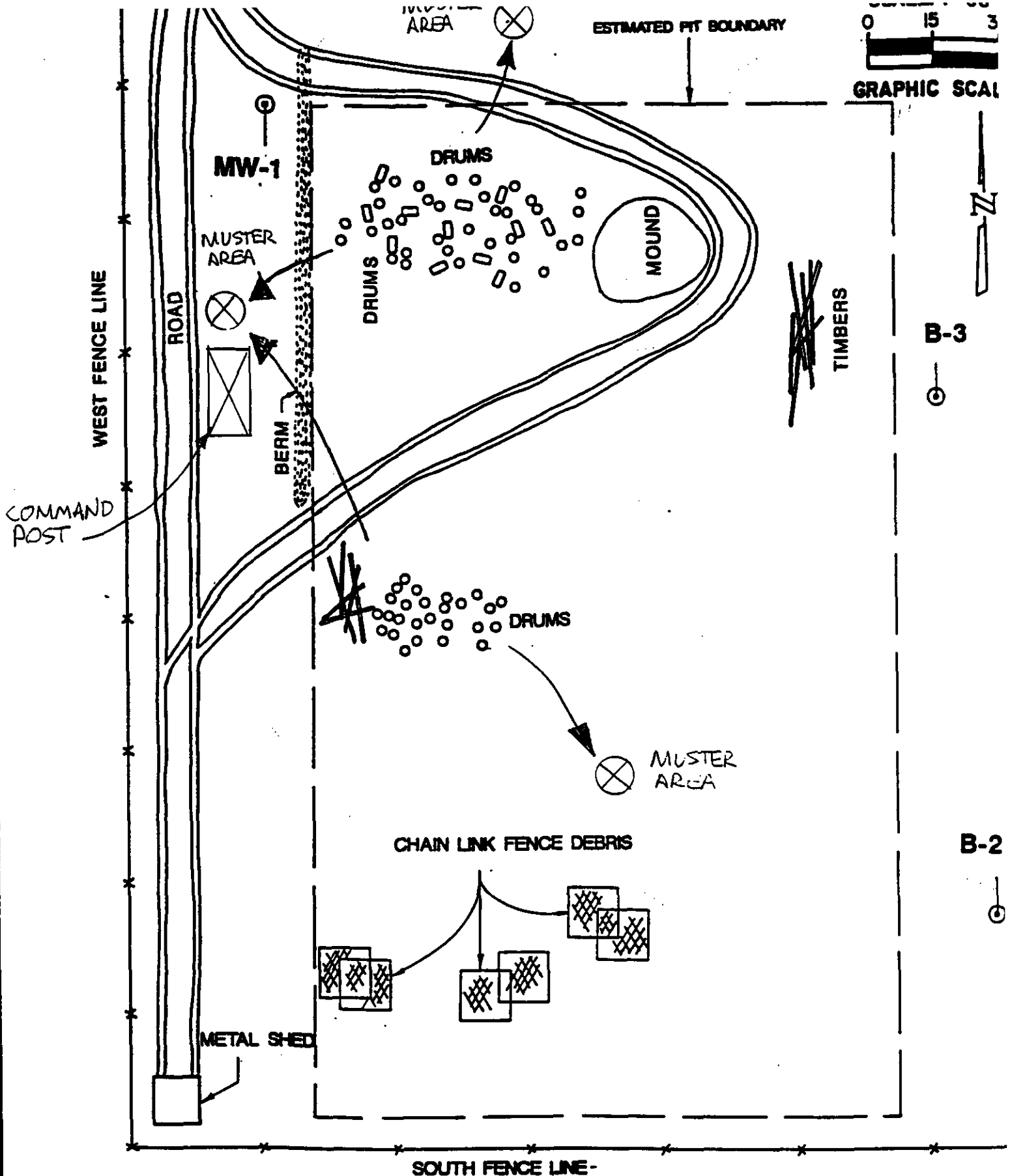


FIGURE 10.1 - EVACUATION ROUTE & MUSTER AREAS

CARTER & BURGESS, INC.
ENGINEERS · PLANNERS · SURVEYORS
7950 ELMBROOK DRIVE / SUITE 250 / DALLAS, TEXAS 75247
(214) 638-0145 METRO (214) 263-2019

AMERADA HESS MONUMENT SITE LEA COUNTY, NEW MEXICO

DATE:	12-21-92
PROJ:	92-1397-01
DRAWN:	JDW
CKD:	JO

10.8 Emergency Medical Treatment Procedures

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket.) First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the project manager.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the site. This information is included in Table 3.1.

Any vehicle used to transport contaminated personnel will be treated and cleaned as necessary.

10.9 Fire or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the project manager or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials on site.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available on site to control or extinguish the fire; and,
- Remove or isolate flammable or other hazardous materials which may contribute to the fire.

10.10 Spill or Leaks

In the event of a spill or a leak, site personnel will:

- Inform their supervisor immediately;
- Locate the source of the spillage and stop the flow if it can be done safely; and,
- Begin containment and recovery of the spilled materials.

10.11 Emergency Equipment/Facilities

Figure 10.2 provides a map of the site and identifies the location of the following emergency equipment:

- First aid kit
- Fire extinguisher
- Mobile telephone
- Spill kits
- Emergency SCBAs
- Eye wash
- Emergency shower
- Overpacks

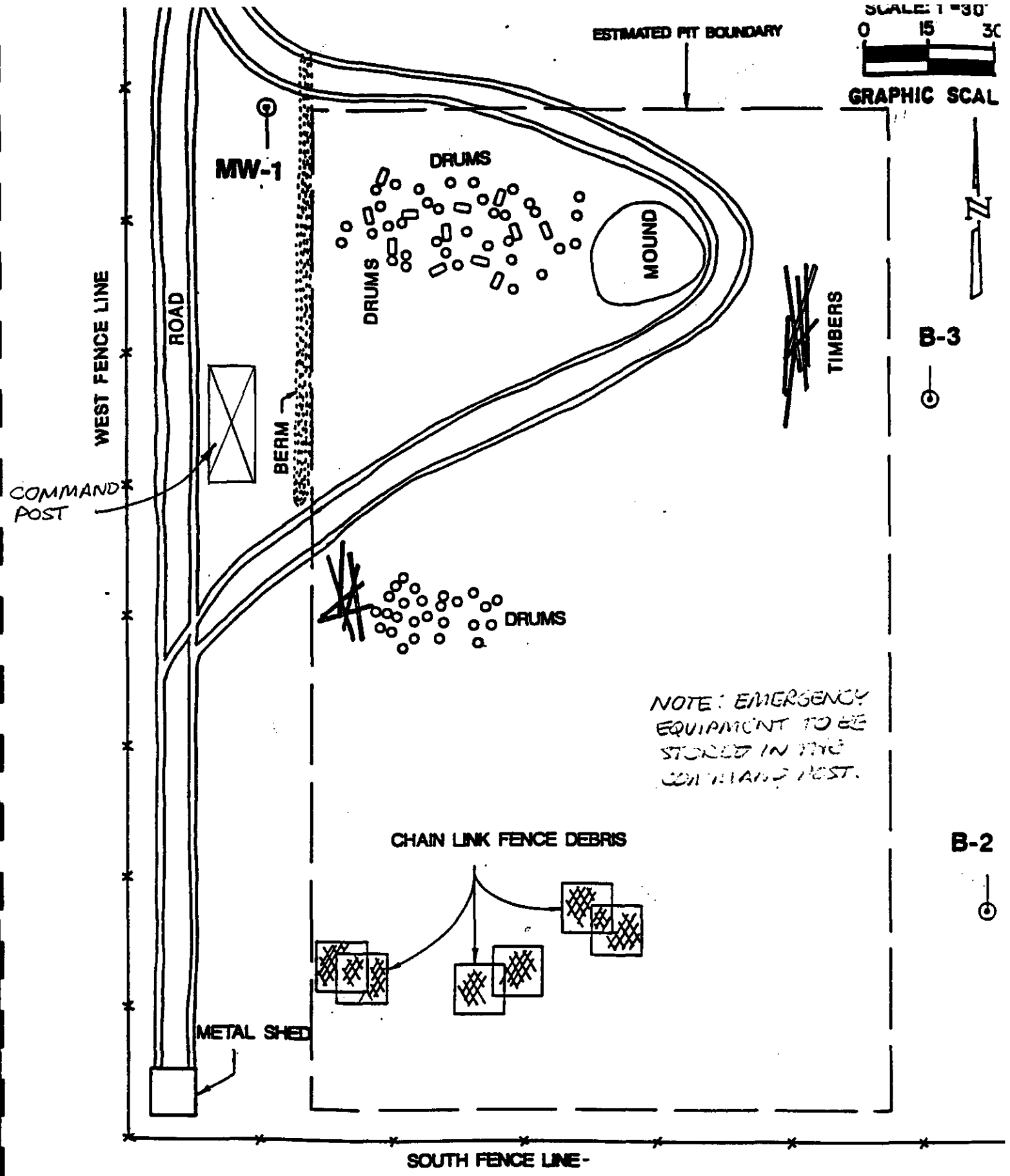


FIGURE 10.2 - EMERGENCY EQUIPMENT

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7950 ELMBROOK DRIVE / SUITE 250 / DALLAS, TEXAS 75247
(214) 630-0945 METRO (214) 263-2019

AMERADA HESS MONUMENT SITE LEA COUNTY, NEW MEXICO

DATE:	12-21-92
PROJ:	92-1397-01F
DRAWN:	JDW
CKD:	JO

11.0 CONFINED SPACE ENTRY PROCEDURES

A confined space provides the potential for unusually high concentrations of contaminants, explosive atmospheres, limited visibility, and restricted movement. This section will establish requirements for safe entry into, continued work in, and safe exit from confined spaces. Additional information regarding confined space entry can be found in 29 CFR 1926.21, 29 CFR 1910 and NIOSH 80-106.

11.1 Definitions

Confined Space: A space or work area not designed or intended for normal human occupancy, having limited means of egress and poor natural ventilation; and/or any structure, including buildings or rooms, which have limited means of egress.

Confined Space Entry Permit (CSEP): A document to be initiated by the supervisor of personnel who are to enter into or work in a confined space. The Confined Space Entry Permit (CSEP) will be completed by the personnel involved in the entry and approved by the HSO before personnel will be permitted to enter the confined space. The CSEP shall be valid only for the performance of the work identified and for the location and time specified. The beginning of a new shift with change of personnel will require the issuance of a new CSEP.

Confined Space Observer: An individual assigned to monitor the activities of personnel working within a confined space. The confined space observer monitors and provides external assistance to those inside the confined space. The confined space observer summons rescue personnel in the event of emergency and assists the rescue team.

11.2 General Provisions

- When possible, confined spaces should be identified with a posted sign which reads: Caution - Confined Space.
- Only personnel trained and knowledgeable of the requirements of these Confined Space Entry Procedures will be authorized to enter a confined space or be a confined space observer.
- A Confined Space Entry Permit (CSEP) must be issued prior to the performance of any work within a confined space. The CSEP will become a part of the permanent and official record of the site.

- Natural ventilation shall be provided for the confined space prior to initial entry and for the duration of the CSEP. Positive/forced mechanical ventilation may be required. However, care should be taken to not spread contamination outside of the enclosed area.

- If flammable liquids may be contained within the confined space, explosion proof equipment will be used. All equipment shall be positively grounded.

- The contents of any confined space shall, where necessary, be removed prior to entry. All sources of ignition must be removed prior to entry.

- Hand tools used in confined spaces shall be in good repair explosion proof and spark proof, and selected according to intended use. Where possible, pneumatic power tools are to be used.

- Hand-held lights and other illumination utilized in confined spaces shall be equipped with guards to prevent contact with the bulb and must be explosion proof.

- Compressed gas cylinders, except cylinders used for self-contained breathing apparatus, shall not be taken into confined spaces. Gas hoses shall be removed from the space and the supply turned off at the cylinder valve when personnel exit from the confined space.

- If a confined space requires respiratory equipment or where rescue may be difficult, safety belts, body harnesses, and lifelines will be used. The outside observer shall be provided with the same equipment as those working within the confined space.

- A ladder is required in all confined spaces deeper than the employee's shoulders. The ladder shall be secured and not removed until all employees have exited the space.

- Only self-contained breathing apparatus or NIOSH approved airline respirators equipped with a 5-minute emergency air supply (egress bottle) shall be used in untested confined spaces or in any confined space with conditions determined immediately dangerous to life and health.

- Where air-moving equipment is used to provide ventilation, chemicals shall be removed from the vicinity to prevent introduction into the confined space.

- Vehicles shall not be left running near confined space work or near air-moving equipment being used for confined space ventilation.

- Smoking in confined spaces will be prohibited at all times.

- Any deviation from these Confined Space Entry Procedures requires the prior permission of the On-Scene Coordinator.

11.3 Procedure for Confined Space Entry

The HSO and Entry Team shall:

- Evaluate the job to be done and identify the potential hazards before a job in a confined space is scheduled.

- Ensure that all process piping, mechanical and electrical equipment, etc., have been disconnected, purged, blanked-off or locked and tagged as necessary.

- If possible, ensure removal of any standing fluids that may produce toxic or air displacing gases, vapors, or dust.

- Initiate a Confined Space Entry Permit (CSEP) in concurrence with the project manager or designated alternative.

- Ensure that any hot work (welding, burning, open flames, or spark producing operation) that is to be performed in the confined space has been approved by the project manager and is indicated on the CSEP.

- Ensure that the space is ventilated before starting work in the confined space and for the duration of the time that the work is to be performed in the space.

- Ensure that the personnel who enter the confined space and the confined space observer helper are familiar with the contents and requirements of this instruction.

- Ensure remote atmospheric testing of the confined space prior to employee entry and before validation/revalidation of a CSEP to ensure the following:

    1. Oxygen content between 19.5% - 23.0%.
    2. No concentration of combustible gas in the space. Sampling will be done throughout the confined space and specifically at the lowest point in the space.
    3. The absence of other atmospheric contaminants

space has contained toxic, corrosive, or irritant material.

4. If remote testing is not possible, Level B PPE is required as referenced in III 13.

- Designate whether hot or cold work will be allowed. If all tests in a. through c. in IV 8 are satisfactory, complete the CSEP listing any safety precautions, protective equipment, or other requirements.

- Ensure that a copy of the CSEP is posted at the work site a copy is filed with the project supervisor, and a copy is furnished to the project manager.

  The CSEP shall be considered void if work in the confined space does not start within one hour after the tests in IV 8 are performed or if significant changes within the confined space atmosphere or job scope occurs.

  The CSEP posted at the work site shall be removed at the completion of the job or the end of the shift, whichever is first.

11.4 Confined Space Observer

- While personnel are inside the confined space, a confined space observer will monitor the activities and provide external assistance to those in the space. The observer will have no other duties which may take his attention away from the work or require him to leave the vicinity of the confined space at any time while personnel are in the space.

- The confined space observer shall maintain at least voice contact with all personnel in the confined space. Visual contact is preferred, if possible.

- The observer shall be instructed by his supervisor in the method for contacting rescue personnel in the event of an emergency.

- If irregularities within the space are detected by the observer, personnel within the space will be ordered to exit.

- In the event of an emergency, the observer must NEVER enter the confined space prior to contacting and receiving assistance from a helper. Prior to this time, he should

attempt to remove personnel with the lifeline and to perform all other rescue functions from outside the space.

- A helper shall be designated to provide assistance to the confined space observer in case the observer must enter the confined space to retrieve personnel.

12.0 SPILL CONTAINMENT PROGRAM

The procedures defined in this section comprise the spill containment program in place for activities at the Site.

- All drums and containers used during the clean-up shall meet the appropriate DOT, OSHA, and EPA regulators for the waste that they will contain.
- Drums and containers shall be inspected and their integrity assured prior to being moved. Drums or containers that cannot be inspected before being moved because of storage conditions, shall be positioned in an accessible location and inspected prior to further handling.
- Operations on site will be organized so as to minmize the amount of drum or container movement.
- Employees involved in the drum or container operations shall be warned of the hazards associated with the containers.
- Where spills, leaks, or ruptures may occur, adequate quantities of spill containment equipment (absorbent, pillows, etc.) will be stationed in the immediate area. The spill containment program must be sufficient to contain and isolate the entire volume of hazardous substances being transferred.
- Drums or containers that cannot be moved without failure, shall be emptied into a sound container.
- Fire extinguishing equipment meeting 29 CFR part 1910. subpart 1 shall be on hand and ready for use to control fires.

13.0 HAZARD COMMUNICATION

In order to comply with 29 CFR 1910.1200, Hazard Communication, the following written Hazard Communication Program has been established. All employees will be briefed on this program, and have a written copy for review.

A. CONTAINER LABELING

All containers received on site will be inspected to ensure the following: (1) all containers will be clearly labeled as to the contents; (2) the appropriate hazard warnings will be noted; and (3) the name and address of the manufacturer will be listed.

All secondary containers will be labeled with either an extra copy of the original manufacturer's label or with generic labels which have a block for identify and blocks for the hazard warning.

B. MATERIAL SAFETY DATA SHEETS (MSDSs)

Copies of MSDSs for all hazardous chemicals known or suspected on site will be maintained in the work area. MSDSs will be available to all employees for review during each work shift.

C. EMPLOYEE TRAINING AND INFORMATION

Prior to starting work, each employee will attend a health and safety orientation and will receive information and training on the following: (1) an overview of the requirements contained in the Hazard Communication Standard, 29 CFR 1910.1200; (2) chemicals present in their workplace operations; (3) location and availability of a written hazard program; (4) physical and health effects of the hazardous chemicals; (5) methods and observation techniques used to determine the presence or release of hazardous chemicals; (6) how to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment; (7) emergency procedures to follow if they are exposed to these chemicals; (8) how to read labels and review MSDSs to obtain appropriate hazard information; (9) location of MSDS file and location of hazardous chemical list.

Acknowledgement of Safety and Health Plan

I hereby acknowledge that I have read and understand the contents of the site specific safety and health plan. I also understand that by signing this acknowledgement that I agree to fully comply with the requirements of this plan.

Printed Name	Signature	Date