ENVIROMENTAL
SITE
ASSESSMENT
WORKPLAN

ENVIRONMENTAL ASSESSMENT
OF
CAPROCK DISPOSAL SITE

RECEIVED
MAR 29 1993
OIL CONSERVATION DIV.
SANTA FE

Prepared for:

Amerada Hess Corporation
Monument, New Mexico

Carter & Burgess, Inc.

C&B No. 92133401F

STATE OF TEXAS
CANDACE REED WATKINS
70978
REGISTERED PROFESSIONAL ENGINEER

Candace Reed Watkins
3/15/93

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Cover Photograph: Looking at Caprock disposal site from northwest

I. EXECUTIVE SUMMARY

Carter & Burgess, Inc. was retained by Amerada Hess Corporation to perform a limited environmental assessment at the Caprock Disposal Site located approximately fifteen miles southeast of Caprock in Lea County, New Mexico. The scope of services was limited to assessing and quantifying the materials contained in the waste pile and did not include assessing the condition of underlying soils or groundwater.

On December 8, 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, and to collect samples of available waste materials for laboratory analysis. Materials observed consisted predominantly of construction debris and oil field scrap. Specifically, there were large quantities of concrete rubble, wooden boards, transite pipe, miscellaneous scrap metal parts, and empty 55-gallon metal drums. Smaller quantities of tires, scrap barbed-wire fencing, miscellaneous rubber belts and parts, and solidified waste tar were also observed. Using clean sampling equipment, composite samples from the north, east, and south sides of the disposal pit were collected for analysis to determine if the soils exhibited the characteristics of hazardous waste as defined in 40 CFR Part 261, Subpart B. A copy of 40 CFR 261 is included in Appendix 1 for reference. A fourth sample (identified as "background") was collected from the west, or upwind, side of the pit about 20 feet west of the pit near the fenceline and was analyzed for the same parameters.

Slightly elevated lead concentrations were detected in Samples CAP-1 and CAP-2, located on the north and east sides, respectively. Although the specific source of these compounds is not known, it is suspected that certain materials which are likely to have been discarded at this site are the source, including paint cans, pipe dope containers, and doped piping.

Detected concentrations of other heavy metals, chromium and cadmium, are also most likely contributable to materials disposed of in the pit. Chromium was detected at low to moderate levels in the background sample, indicating that some of the chromium may be naturally-occurring. The concentrations of barium which were detected in each of the samples are not believed to be of significant concern since a moderate level of barium was detected in the background sample. The levels of total petroleum hydrocarbons are not surprising, given the nature of activity in the area. The most likely source of the hydrocarbons are the empty 55-gallon drums, many of which have square holes cut in the sides, indicating use as drip tanks.

None of the concentrations of compounds detected in the samples from the perimeter of the pit were indicative of hazardous compounds or the need for remediation of the area. The remote nature of the area, the extensive depth to groundwater and the low annual precipitation (less than sixteen inches per year) all support the conclusion that remediation is not necessary.

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 the owner of the property.

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 drums containing liquid could be found under the surficial waste materials and these would require overpacking and sampling prior to transport. Additionally, some of the scrap metal parts 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.

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 thirty 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 February 5, 1954

The location of the subject site is noted in the approximate center of the photograph. Although the photograph is at a large scale (approximately 1 inch = 2400 feet) and therefore, difficult to interpret, there are no indications of disposal being conducted at this time in the location. The area northeast of the subject site is characterized by several scarified areas indicative of oil field exploration and homesteads. The remainder of the surrounding area appears relatively undisturbed, although it may have been used as rangeland.

Photograph dated November 20, 1971

This photograph is at a smaller scale (estimated at 1 inch = 600 feet) and the subject site is noted in the lower central portion of the photograph. Waste materials appear to have disposed of on the subject site. Several new roads are observed in the vicinity and at least one of the observed scarified areas appears to be associated with the road construction. What appears to be an oil production yard and camp is located to the immediate northeast of the subject property. The camp area is characterized by numerous 15'-20' high trees which are not native vegetation. The remainder of the surrounding area is predominantly undeveloped.

Photograph dated June 10, 1986

The only color photograph of the group, this photograph has a scale intermediate (approximately 1 inch = 1600 feet) to the other photographs. The subject site is observed in the lower central portion of the photograph. The camp associated with the production yard is observed, but has undergone change. The trees previously observed are not evident and the area appears occupied by several small structures. The production yard itself is no longer apparent and the area appears to have reverted to either invasive or native vegetation. The area to the northwest is characterized by numerous scarified areas, indicative of oil field exploration. The area to the east appears predominantly undeveloped.

In summary, it can be observed from the historical aerial photographs that the subject site came into existence after the mid-1950's. There does not appear to have been any trenching at the subject site, just piling up of waste materials. On site observations indicate that some material had been covered as a result of the berm constructed around the pit. Some materials, therefore, are slightly (five to eight feet) below natural ground surface.

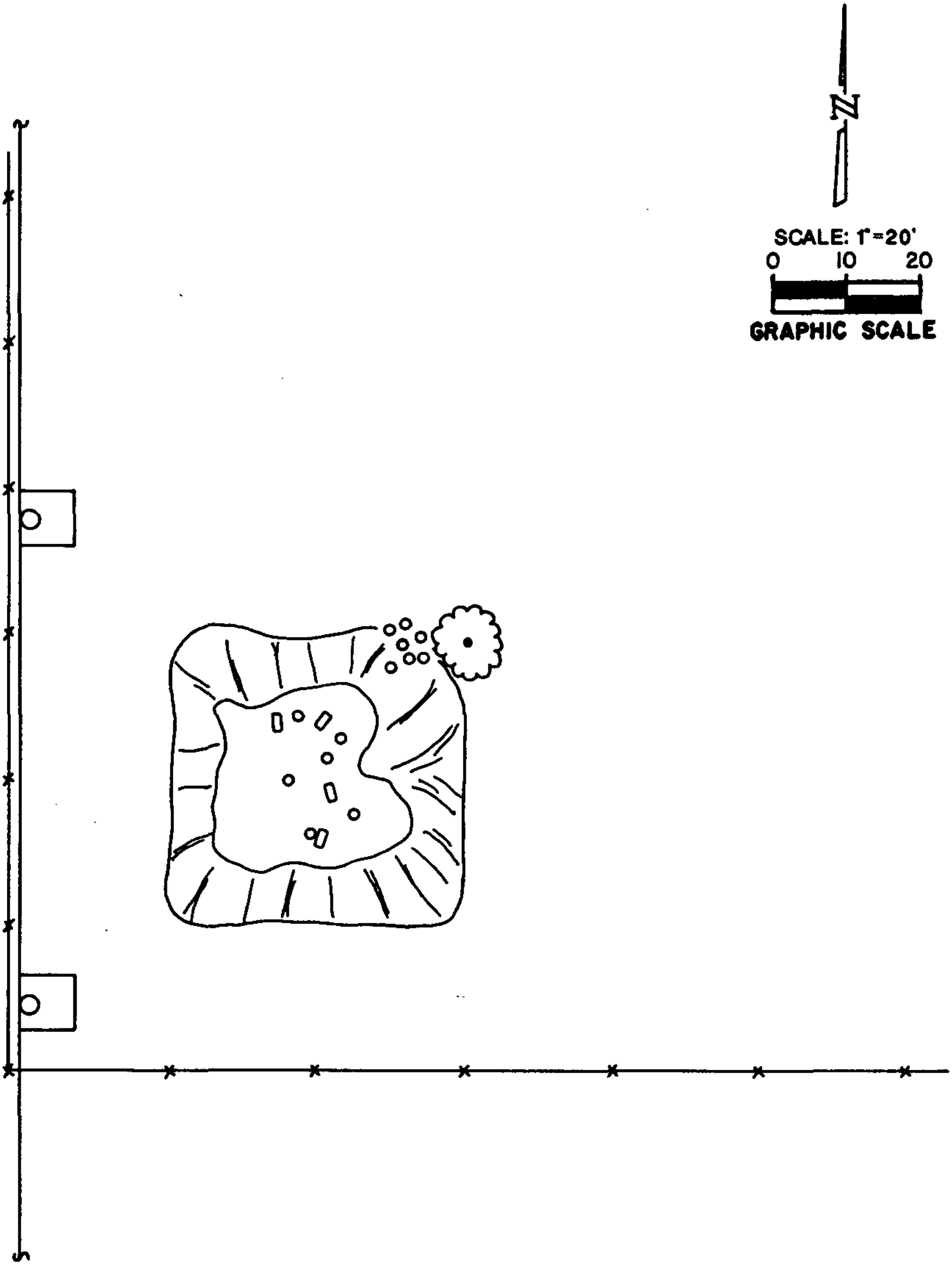
B. Site Reconnaissance

Carter & Burgess, Inc. personnel visited the site on December 8, 1992. A brief walk-over inspection of the waste pile was performed to assess the need for safety gear and to determine how best to proceed with characterizing the contents. It was determined from the walk-over that standard work clothing provided adequate protection.

After the brief walk-over, a detailed walk-over was conducted to provide an inventory of the visible contents and to ascertain the best locations for sample collection. In addition, each accessible drum was checked for the presence of liquids. The inventory was made photographically and audio-taped. 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.

Materials observed consisted predominantly of construction debris and oil field scrap. Specifically, there were large quantities of concrete rubble, wooden boards, transite pipe, miscellaneous scrap metal parts, and empty 55-gallon metal drums. Smaller quantities of tires, scrap barbed-wire fencing, miscellaneous rubber belts and parts, and solidified waste tar.

Only one of the accessible drums, a green-coated 55-gallon metal one, was found to have liquid inside. A glass collection tube was used to obtain a sample of the liquid from the drum. The sample was moderately turbid and had a pH of 7.2 and a specific conductivity of 300 microSiemens per centimeter. No unusual odor was detected emanating from the sample.



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AMERADA HESS
CAPROCK SITE
LEA COUNTY, NEW MEXICO

DATE:	12-21-92
PROJ:	92-1334-01F
DRAWN:	JDW
CKD:	JO

C. Field Investigation

Near surface soil samples were collected from each of the four sides of the disposal site. Using clean sampling equipment, six-part composite samples from the north, east and south sides were collected for analysis of parameters selected to provide an indication if the materials exhibited hazardous waste characteristics. The fourth sample, from the west side of the pit, was collected from approximately 20 feet west of the pit, to provide information on background levels at the site. The parameters selected included: sulfide and total cyanide (reactivity), ignitability, pH (corrosivity), volatile organics by EPA Method 8240, the eight RCRA heavy metals, and total petroleum hydrocarbons. The composites were prepared by collecting soil from six different locations along each side, placing the soils into a clean mixing bag, thoroughly mixing the soils to produce a finely-divided, homogeneous medium, and then placing a portion of the well-mixed sample into pre-cleaned sample containers. Each sample container was labelled and placed into an ice-filled cooler for preservation.

D. Analytical Results

The sealed samples and Chain-of-Custody were shipped via overnight ground transportation to Analytical Technologies, Inc. (ATI) laboratory in Albuquerque, New Mexico for analysis. Analytical results were received from ATI on January 7, 1993. The following table is the summary of the analytical results. A copy of the laboratory report is included as Appendix 3 to this document.

TABLE 1
Summary of Analytical Results
Caprock Disposal Site
Lea County, New Mexico

PARAMETER	UNITS	CAP-1 North	CAP-2 East	CAP-3 South	CAP-4 Bckgrnd
Sulfide (Reactivity)	mg/kg	0.86	2.3	1.7	BDL
Total Cyanide (Reactivity)	mg/kg	1.7	0.9	BDL	BDL
Ignitability		NEG	NEG	NEG	NEG
pH (Corrosivity)		7.5	7.7	7.6	7.6
Volatile Organics (8240)	mg/kg	BDL	BDL	BDL	BDL
Silver	mg/kg	BDL	BDL	BDL	BDL
Arsenic	mg/kg	BDL	BDL	BDL	BDL
Barium	mg/kg	105	132	67.7	90.8
Cadmium	mg/kg	0.7	1.1	0.5	0.6
Chromium	mg/kg	9.9	8.9	7.6	6.3
Mercury	mg/kg	BDL	0.2	BDL	BDL
Lead	mg/kg	261	80.1	18	18
Selenium	mg/kg	BDL	BDL	BDL	BDL
Total Petroleum Hydrocarbons	mg/kg	27	150	150	BDL

Notes *mg/kg = milligrams per kilogram*
BDL = Below Detection Limit

Of the results presented above, none of the concentrations or compounds detected in the four samples are of significant concern. The levels of total petroleum hydrocarbons are not surprising, given the nature of most activity in the area. The most likely source of the hydrocarbons are the empty 55-gallon drums, many of which have square holes cut in the sides indicating use as drip tanks. Small residual amounts of oil have probably been spilled on the ground in the vicinity of the pit during off-loading of the waste drums.

The presence of concentrations of several heavy metals, including barium, cadmium, chromium, mercury and lead, are also not of significant concern given the nature of waste materials in the disposal site and given the natural occurrence of many of these metals in native soils. Slightly elevated lead concentrations were detected in Samples CAP-1 and CAP-2, located on the north and east sides, respectively. The concentrations detected were 261 mg/kg and 80.1 mg/kg, respectively. Although the specific source of these compounds is not known, it is suspected that certain materials which are likely to have been discarded at this site are the source, including paint cans, pipe dope containers, and doped piping.

The concentrations of barium which were detected in each of the samples are not believed to be of significant concern since barium is known to be a naturally-occurring substance in the West Texas-New Mexico region where the site is located. (300 parts per million is the background concentration detected in this region by Shacklette and Boerngen in Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, USGS Professional Paper 1270.) Another potential source of the compounds is waste materials contaminated with drilling muds during production activities which have been disposed of in the pit. Barium compounds are commonly added to drilling muds to increase the specific gravity.

Concentrations of other heavy metals, chromium and cadmium, are also most likely contributable to materials in the pit which have been deposited on the north and east sides of the pit. Low levels of cadmium and chromium were detected in the "background" sample, indicating that the cadmium and chromium may be naturally-occurring. In addition, Shacklette observed a chromium concentration between 1 and 20 parts per million in this region.

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. Small quantities of transite water pipe and tile, which may contain asbestos, were observed and, therefore, require bagging prior to disposal. The liquid which was found in one 55-gallon drum is believed to be rainwater which has accumulated in the drum over a period of time.

None of the concentrations of compounds detected in the samples from the perimeter of the pit were indicative of hazardous compounds or the need for remediation of the area. The remote nature of the area, the extensive depth to groundwater and the low annual precipitation rate all support the conclusion that remediation is not necessary.

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 the owner of the property.

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 drums containing liquid could be found under the surficial waste materials and these would require overpacking and sampling prior to transport. Additionally, some of the scrap metal parts 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 A - 40 CFR Part 261, Hazardous Waste Characteristics

ture, or by tests conducted by the generator, to achieve equivalent removal; or

(iii) In the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

[45 FR 78529, Nov. 25, 1980, as amended at 47 FR 36097, Aug. 18, 1982; 48 FR 14294, Apr. 1, 1983; 50 FR 1999, Jan. 14, 1985; 51 FR 40637, Nov. 7, 1986]

§ 261.8 PCB wastes regulated under Toxic Substance Control Act.

The disposal of PCB-containing dielectric fluid and electric equipment containing such fluid authorized for use and regulated under part 761 of this chapter and that are hazardous only because they fail the test for the Toxicity Characteristic (Hazardous Waste Codes D018 through D043 only) are exempt from regulation under parts 261 through 265, and parts 268, 270, and 124 of this chapter, and the notification requirements of section 3010 of RCRA.

[55 FR 11862, Mar. 29, 1990]

Subpart B—Criteria for Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste

§ 261.10 Criteria for identifying the characteristics of hazardous waste.

(a) The Administrator shall identify and define a characteristic of hazardous waste in subpart C only upon determining that:

(1) A solid waste that exhibits the characteristic may:

(i) Cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

(ii) Pose a substantial present or potential hazard to human health or the environment when it is improperly treated, stored, transported, disposed of or otherwise managed; and

(2) The characteristic can be:

(i) Measured by an available standardized test method which is reasonably within the capability of generators of solid waste or private sector laboratories that are available to serve generators of solid waste; or

(ii) Reasonably detected by generators of solid waste through their knowledge of their waste.

§ 261.11 Criteria for listing hazardous waste.

(a) The Administrator shall list a solid waste as a hazardous waste only upon determining that the solid waste meets one of the following criteria:

(1) It exhibits any of the characteristics of hazardous waste identified in subpart C.

(2) It has been found to be fatal to humans in low doses or, in the absence of data on human toxicity, it has been shown in studies to have an oral LD 50 toxicity (rat) of less than 50 milligrams per kilogram, an inhalation LC 50 toxicity (rat) of less than 2 milligrams per liter, or a dermal LD 50 toxicity (rabbit) of less than 200 milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating reversible, illness. (Waste listed in accordance with these criteria will be designated Acute Hazardous Waste.)

(3) It contains any of the toxic constituents listed in appendix VIII and, after considering the following factors, the Administrator concludes that the waste is capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed:

(i) The nature of the toxicity presented by the constituent.

(ii) The concentration of the constituent in the waste.

(iii) The potential of the constituent or any toxic degradation product of the constituent to migrate from the waste into the environment under the types of improper management considered in paragraph (a)(3)(vii) of this section.

(iv) The persistence of the constituent or any toxic degradation product of the constituent.

(v) The potential for the constituent or any toxic degradation product of the constituent to degrade into non-

harmful constituents and the rate of degradation.

(vi) The degree to which the constituent or any degradation product of the constituent bioaccumulates in ecosystems.

(vii) The plausible types of improper management to which the waste could be subjected.

(viii) The quantities of the waste generated at individual generation sites or on a regional or national basis.

(ix) The nature and severity of the human health and environmental damage that has occurred as a result of the improper management of wastes containing the constituent.

(x) Action taken by other governmental agencies or regulatory programs based on the health or environmental hazard posed by the waste or waste constituent.

(xi) Such other factors as may be appropriate.

Substances will be listed on appendix VIII only if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms.

(Wastes listed in accordance with these criteria will be designated Toxic wastes.)

(b) The Administrator may list classes or types of solid waste as hazardous waste if he has reason to believe that individual wastes, within the class or type of waste, typically or frequently are hazardous under the definition of hazardous waste found in section 1004(5) of the Act.

(c) The Administrator will use the criteria for listing specified in this section to establish the exclusion limits referred to in § 261.5(c).

[45 FR 33119, May 19, 1980, as amended at 55 FR 18726, May 4, 1990; 57 FR 14, Jan. 2, 1992]

Subpart C—Characteristics of Hazardous Waste

§ 261.20 General.

(a) A solid waste, as defined in § 261.2, which is not excluded from regulation as a hazardous waste under § 261.4(b), is a hazardous waste if it exhibits any of the characteristics identified in this subpart.

[*Comment*: § 262.11 of this chapter sets forth the generator's responsibility to determine whether his waste exhibits one or more of the characteristics identified in this subpart]

(b) A hazardous waste which is identified by a characteristic in this subpart is assigned every EPA Hazardous Waste Number that is applicable as set forth in this subpart. This number must be used in complying with the notification requirements of section 3010 of the Act and all applicable recordkeeping and reporting requirements under parts 262 through 265, 268, and 270 of this chapter.

(c) For purposes of this subpart, the Administrator will consider a sample obtained using any of the applicable sampling methods specified in appendix I to be a representative sample within the meaning of part 260 of this chapter.

[*Comment*: Since the appendix I sampling methods are not being formally adopted by the Administrator, a person who desires to employ an alternative sampling method is not required to demonstrate the equivalency of his method under the procedures set forth in §§ 260.20 and 260.21.]

[45 FR 33119, May 19, 1980, as amended at 51 FR 40636, Nov. 7, 1986; 55 FR 22684, June 1, 1990; 56 FR 3876, Jan. 31, 1991]

§ 261.21 Characteristic of ignitability.

(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(1) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume and has flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80 (incorporated by reference, see § 260.11), or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78 (incorporated by reference, see § 260.11), or as determined by an equivalent test method approved by the Administrator under procedures set forth in §§ 260.20 and 260.21.

(2) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous

chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

(3) It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under §§ 260.20 and 260.21.

(4) It is an oxidizer as defined in 49 CFR 173.151.

(b) A solid waste that exhibits the characteristic of ignitability has the EPA Hazardous Waste Number of D001.

[45 FR 33119, May 19, 1980, as amended at 46 FR 35247, July 7, 1981; 55 FR 22684, June 1, 1990]

§ 261.22 Characteristic of corrosivity.

(a) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either an EPA test method or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21. The EPA test method for pH is specified as Method 5.2 in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see § 260.11).

(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see § 260.11) or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21.

(b) A solid waste that exhibits the characteristic of corrosivity has the EPA Hazardous Waste Number of D002.

[45 FR 33119, May 19, 1980, as amended at 46 FR 35247, July 7, 1981; 55 FR 22684, June 1, 1990]

§ 261.23 Characteristic of reactivity.

(a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has *any* of the following properties:

(1) It is normally unstable and readily undergoes violent change without detonating.

(2) It reacts violently with water.

(3) It forms potentially explosive mixtures with water.

(4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(8) It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53 or a Class B explosive as defined in 49 CFR 173.88.

(b) A solid waste that exhibits the characteristic of reactivity has the EPA Hazardous Waste Number of D003.

[45 FR 33119, May 19, 1980, as amended at 55 FR 22684, June 1, 1990]

§ 261.24 Toxicity characteristic.

(a) A solid waste exhibits the characteristic of toxicity if, using the test methods described in appendix II or equivalent methods approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21, the extract from a representative sample of the waste contains any of the contaminants listed in table 1 at the concentration equal to or greater than the respective value given in that table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the methodology outlined in appendix II, is considered to be the extract for the purpose of this section.

(b) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

TABLE 1—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC

EPA HW No.[1]	Contaminant	CAS No.[2]	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0.
D023	o-Cresol	95-48-7	[4] 200.0
D024	m-Cresol	108-39-4	[4] 200.0
D025	p-Cresol	106-44-5	[4] 200.0
D026	Cresol		[4] 200.0
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	[3] 0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide).	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	[3] 0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentrachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	[3] 5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

[1] Hazardous waste number.

[2] Chemical abstracts service number.

[3] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

[4] If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

[55 FR 11862, Mar. 29, 1990, as amended at 55 FR 22684, June 1, 1990; 55 FR 26987, June 29, 1990]

Subpart D—Lists of Hazardous Wastes

§ 261.30 General.

(a) A solid waste is a hazardous waste if it is listed in this subpart, unless it has been excluded from this list under §§ 260.20 and 260.22.

(b) The Administrator will indicate his basis for listing the classes or types of wastes listed in this subpart by employing one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
Toxicity Characteristic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

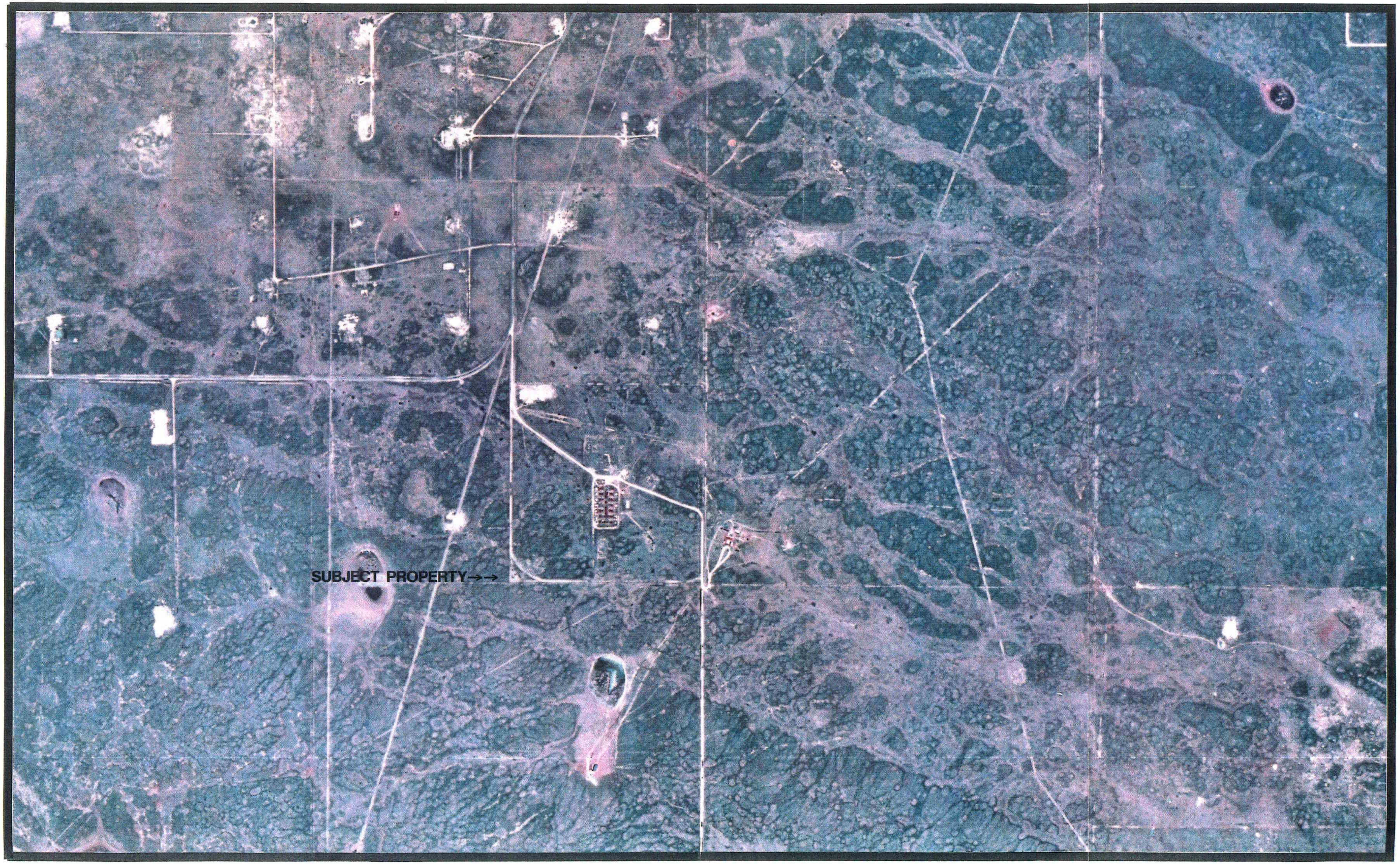
Appendix VII identifies the constituent which caused the Administrator to list the waste as a Toxicity Characteristic Waste (E) or Toxic Waste (T) in §§ 261.31 and 261.32.

(c) Each hazardous waste listed in this subpart is assigned an EPA Hazardous Waste Number which precedes the name of the waste. This number must be used in complying with the notification requirements of Section 3010 of the Act and certain recordkeeping and reporting requirements under parts 262 through 265, 268, and part 270 of this chapter.

(d) The following hazardous wastes listed in § 261.31 or § 261.32 are subject to the exclusion limits for acutely hazardous wastes established in § 261.5: EPA Hazardous Wastes Nos. FO20, FO21, FO22, FO23, FO26, and FO27.

[45 FR 33119, May 19, 1980, as amended at 48 FR 14294, Apr. 1, 1983; 50 FR 2000, Jan. 14, 1985; 51 FR 40636, Nov. 7, 1986; 55 FR 11863, Mar. 29, 1990]

APPENDIX B - Aerial Photographs

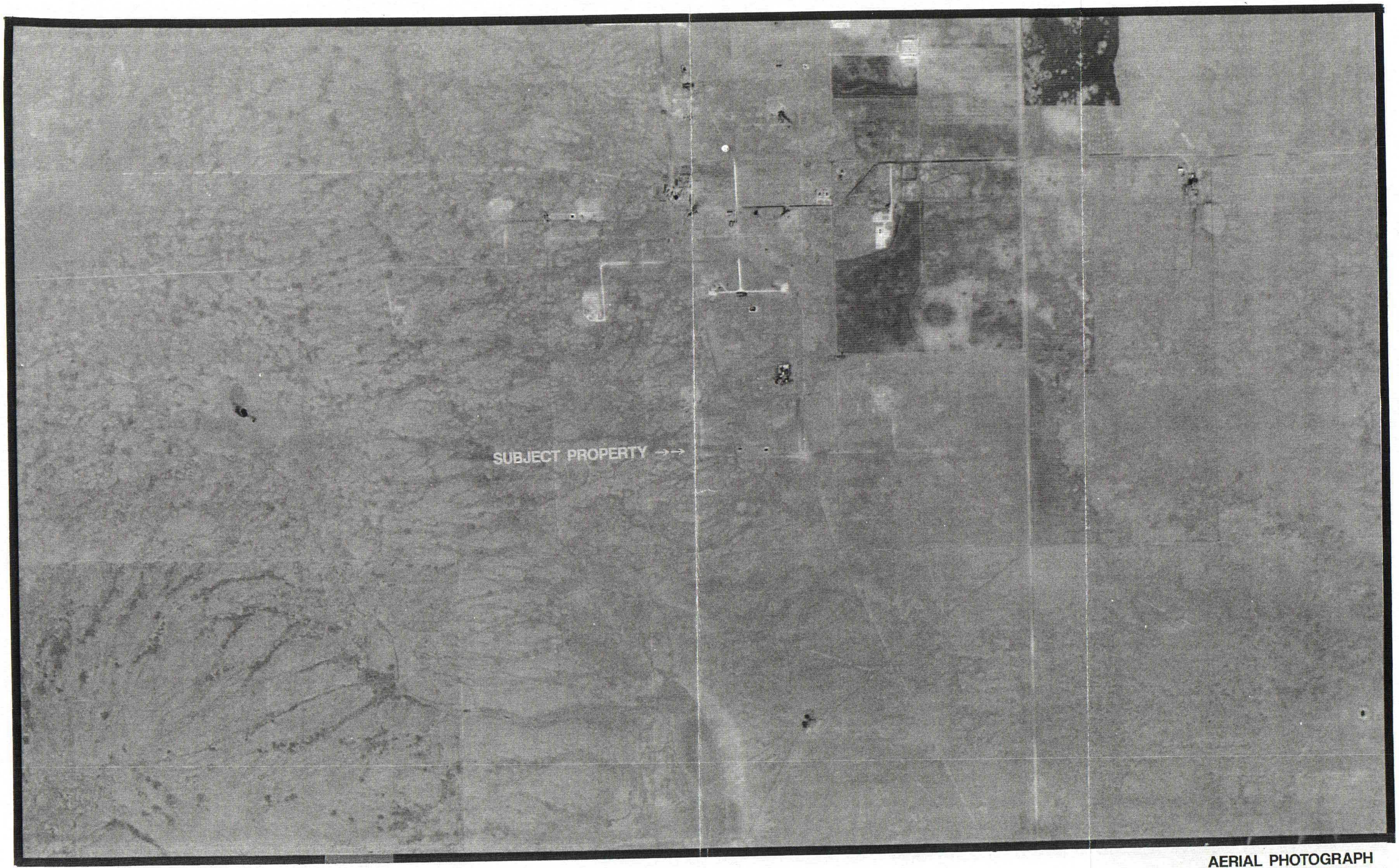


APPROXIMATE SCALE: 1" = 1800'

AERIAL PHOTOGRAPH
DATED 10 JUN 1986

APPROXIMATE SCALE: 1" = 600'

AERIAL PHOTOGRAPH
DATED 20 NOV 1971



APPROXIMATE SCALE: 1" = 2400'

NORTH

AERIAL PHOTOGRAPH
DATED 5 FEB 1954

APPENDIX C - Ground Level Photographs

PHOTO 1: DISPOSAL PIT, LOOKING EAST, FROM TOP OF BERM

PHOTO 2: DISPOSAL PIT, LOOKING EAST, LOOKING AT BERM

PHOTOGRAPHS

Carter :: Burgess

Consultants in Engineering, Architecture, Planning and the Environment

CARTER & BURGESS, INC.
3880 HULEN STREET
FORT WORTH, TX 76107-7254

SHEET

OF SHEETS

C & B PROJECT NO. 92133401F

PHOTO 3: DISPOSAL PIT, LOOKING NORTH

PHOTO 4: DISPOSAL PIT, LOOKING SOUTH

PHOTO 5: WASTE ASPHALT IN DISPOSAL PIT

PHOTOGRAPHS

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SHEET

OF SHEETS

C & B PROJECT NO. 92133401F

APPENDIX D - Analytical Results

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
01	CAP-1	SOIL	12/08/92
02	CAP-2	SOIL	12/08/92
03	CAP-3	SOIL	12/08/92
04	CAP-4	SOIL	12/08/92

PARAMETER	UNITS	01	02	03	04
PETROLEUM HYDROCARBONS, IR	MG/KG	27	150	150	<20
SULFIDE	MG/KG	0.86	2.3	1.7	<0.20
CYANIDE, TOTAL (EPA 9012)	MG/KG	1.7	0.9	<0.5	<0.5
IGNITABILITY (ATI P10.618)		NEG	NEG	NEG	NEG
PH (EPA 9040/9045)	UNITS	7.5	7.7	7.6	7.6

Analytical Technologies, Inc.

GCMS - RESULTS

ST : VOLATILE ORGANICS (EPA 8240)
CLIENT : CARTER & BURGESS, INC.
PROJECT # : (NONE)
PROJECT NAME: HOBBS

ATI I.D. : 212340
DATE RECEIVED: 12/12/92
UNITS : MG/KG

SAMPLE I.D. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	CAP-1	SOIL	12/08/92	12/15/92	12/16/92	1
02	CAP-2	SOIL	12/08/92	12/15/92	12/16/92	1

PARAMETER	01	02
CHLOROMETHANE	<0.50	<0.50
BROMOMETHANE	<0.50	<0.50
VINYL CHLORIDE	<0.05	<0.05
CHLOROETHANE	<0.05	<0.05
METHYLENE CHLORIDE	<0.3	<0.3
ACETONE	<0.50	<0.50
CARBON DISULFIDE	<0.05	<0.05
1,1-DICHLOROETHENE	<0.05	<0.05
1,1-DICHLOROETHANE	<0.05	<0.05
1,2-DICHLOROETHENE (TOTAL)	<0.05	<0.05
CHLOROFORM	<0.05	<0.05
1,2-DICHLOROETHANE	<0.05	<0.05
-BUTANONE (MEK)	<0.50	<0.50
,1,1-TRICHLOROETHANE	<0.05	<0.05
CARBON TETRACHLORIDE	<0.05	<0.05
VINYL ACETATE	<0.50	<0.50
BROMODICHLOROMETHANE	<0.05	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05	<0.05
1,2-DICHLOROPROPANE	<0.05	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05	<0.05
TRICHLOROETHENE	<0.05	<0.05
DIBROMOCHLOROMETHANE	<0.05	<0.05
1,1,2-TRICHLOROETHANE	<0.05	<0.05
BENZENE	<0.05	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05	<0.05
2-CHLOROETHYLVINYLETHER	<0.50	<0.50
BROMOFORM	<0.3	<0.3
2-HEXANONE (MBK)	<0.50	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50	<0.50
TETRACHLOROETHENE	<0.05	<0.05
TOLUENE	<0.05	<0.05
CHLOROBENZENE	<0.05	<0.05
ETHYLBENZENE	<0.05	<0.05
STYRENE	<0.05	<0.05
TOTAL XYLENES	<0.05	<0.05

GCMS - RESULTS

TEST : VOLATILE ORGANICS (EPA 8240) (CONTINUED)
CLIENT : CARTER & BURGESS, INC. ATI I.D. : 212340

PARAMETER	01	02
NO ADDITIONAL COMPOUNDS	NA	NA
SURROGATES:		
1,2-DICHLOROETHANE-D4 (%)	106	102
BROMOFLUOROBENZENE (%)	97	93
TOLUENE-D8 (%)	96	99

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GCMS - RESULTS

ST : VOLATILE ORGANICS (EPA 8240)
CLIENT : CARTER & BURGESS, INC.
PROJECT # : (NONE)
PROJECT NAME: HOBBS

ATI I.D. : 212340
DATE RECEIVED: 12/12/92
UNITS : MG/KG

SAMPLE I.D. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
03	CAP-3	SOIL	12/08/92	12/15/92	12/16/92	5
04	CAP-4	SOIL	12/08/92	12/15/92	12/16/92	1

PARAMETER	03	04
CHLOROMETHANE	<2.50	<0.50
BROMOMETHANE	<2.50	<0.50
VINYL CHLORIDE	<0.25	<0.05
CHLOROETHANE	<0.25	<0.05
METHYLENE CHLORIDE	<1.5	<0.3
ACETONE	<2.50	<0.50
CARBON DISULFIDE	<0.25	<0.05
1,1-DICHLOROETHENE	<0.25	<0.05
1,1-DICHLOROETHANE	<0.25	<0.05
1,2-DICHLOROETHENE (TOTAL)	<0.25	<0.05
CHLOROFORM	<0.25	<0.05
1,2-DICHLOROETHANE	<0.25	<0.05
BUTANONE (MEK)	<2.50	<0.50
-,1,1-TRICHLOROETHANE	<0.25	<0.05
CARBON TETRACHLORIDE	<0.25	<0.05
VINYL ACETATE	<2.50	<0.50
BROMODICHLOROMETHANE	<0.25	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.25	<0.05
1,2-DICHLOROPROPANE	<0.25	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.25	<0.05
TRICHLOROETHENE	<0.25	<0.05
DIBROMOCHLOROMETHANE	<0.25	<0.05
1,1,2-TRICHLOROETHANE	<0.25	<0.05
BENZENE	<0.25	<0.05
CIS-1,3-DICHLOROPROPENE	<0.25	<0.05
2-CHLOROETHYLVINYLETHER	<2.50	<0.50
BROMOFORM	<1.5	<0.3
2-HEXANONE (MBK)	<2.50	<0.50
4-METHYL-2-PENTANONE (MIBK)	<2.50	<0.50
TETRACHLOROETHENE	<0.25	<0.05
TOLUENE	<0.25	<0.05
CHLOROBENZENE	<0.25	<0.05
ETHYLBENZENE	<0.25	<0.05
STYRENE	<0.25	<0.05
TOTAL XYLENES	<0.25	<0.05

GCMS - RESULTS

TEST : VOLATILE ORGANICS (EPA 8240) (CONTINUED)
CLIENT : CARTER & BURGESS, INC. ATI I.D. : 212340

PARAMETER	03	04
NO ADDITIONAL COMPOUNDS	NA	NA
SURROGATES:		
1,2-DICHLOROETHANE-D4 (%)	105	112
BROMOFLUOROBENZENE (%)	99	100
TOLUENE-D8 (%)	95	97

GCMS - RESULTS

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TEST	: VOLATILE ORGANICS (EPA 8240)	ATI I.D.	: 212340
CLIENT	: CARTER & BURGESS, INC.	DATE EXTRACTED:	12/15/92
PROJECT #	: (NONE)	DATE ANALYZED :	12/16/92
PROJECT NAME:	HOBBS	UNITS	: MG/KG
		DIL. FACTOR	: N/A

PARAMETER	
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
1,2-DICHLOROETHENE (TOTAL)	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLOROETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYLBENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05
SURROGATES:	
1,2-DICHLOROETHANE-D4 (%)	108
BROMOFLUOROBENZENE (%)	100
TOLUENE-D8 (%)	100

QUALITY CONTROL DATA

MSMSD

TEST : EPA 8240 VOLATILE ORGANICS
MSMSD # : 21234002
CLIENT : CARTER & BURGESS, INC.

PROJECT # : (NONE)
PROJECT NAME: HOBBS

ATI I.D. : 212340
DATE EXTRACTED: 12/15/92
DATE ANALYZED : 12/16/92
SAMPLE MATRIX : SOIL
REF. I.D. : 21234002
UNITS : MG/KG

PARAMETERS	SAMPLE RESULT	CONC. SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD
BENZENE	<0.05	2.5	2.8	112	2.6	104	7
CHLOROBENZENE	<0.05	2.5	2.5	100	2.6	104	4
1,1-DICHLOROETHENE	<0.05	2.5	2.7	108	2.7	108	0
TOLUENE	<0.05	2.5	2.7	108	2.6	104	4
TRICHLOROETHENE	<0.05	2.5	2.4	96	2.4	96	0

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

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

METALS RESULTS

CLIENT	: CARTER & BURGESS, INC.	ATI I.D.	: 212340
PROJECT #	: (NONE)	DATE RECEIVED:	12/12/92
PROJECT NAME:	HOBBS	REPORT DATE	: 01/05/93

PARAMETER	UNITS	01	02	03	04
SILVER (EPA 6010)	MG/KG	<0.5	<0.5	<0.5	<0.5
ARSENIC (EPA 6010)	MG/KG	<5	<5	<5	<5
BARIUM (EPA 6010)	MG/KG	105	132	67.7	90.8
CADMIUM (EPA 6010)	MG/KG	0.7	1.1	0.5	0.6
CHROMIUM (EPA 6010)	MG/KG	9.9	8.9	7.6	6.3
MERCURY (EPA 7470)	MG/KG	<0.1	0.2	<0.1	<0.1
LEAD (EPA 6010)	MG/KG	261	80.1	18	18
SELENIUM (EPA 6010)	MG/KG	<5	<5	<5	<5

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METALS RESULTS

CLIENT	: CARTER & BURGESS, INC.	ATI I.D.	: 212340
PROJECT #	: (NONE)	DATE RECEIVED	: 12/12/92
PROJECT NAME	: HOBBS	REPORT DATE	: 01/05/93

PARAMETER	UNITS	05
CALCIUM (EPA 200.7/6010)	MG/L	331
HARDNESS, TOTAL (EPA 200.7/6010)	MG/L	1170
POTASSIUM (EPA 200.7/6010)	MG/L	8.5
MAGNESIUM (EPA 200.7/6010)	MG/L	82.7
SODIUM (EPA 200.7/6010)	MG/L	169

METALS - QUALITY CONTROL

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

ATI I.D.: 212340

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC.	% REC
SILVER	MG/KG	21234004	<0.5	<0.5	NA	21.6	25.0	86
ARSENIC	MG/KG	21234004	<5	<5	NA	46	50	92
BARIUM	MG/KG	21234004	90.8	92.2	2	591	500	100
CALCIUM	MG/L	21278402	11.8	11.6	2	65.4	50.0	107
CADMIUM	MG/KG	21234004	0.6	0.6	0	23.0	25.0	90
CHROMIUM	MG/KG	21234004	6.3	7.0	11	48.1	50.0	84
HARDNESS	MG/L	21278402	52.1	51.7	0.8	NA	NA	NA
MERCURY	MG/KG	21283914	<0.1	<0.1	NA	2.5	2.5	100
MERCURY	MG/KG	21234002	0.2	0.1	67	2.6	2.5	96
POTASSIUM	MG/L	21278402	7.3	6.9	6	59.1	50.0	104
MAGNESIUM	MG/L	21278402	5.5	5.4	2	37.1	25.0	105
SODIUM	MG/L	21278402	331	336	1	426	100	95
LEAD	MG/KG	21234004	18	16	12	58	50	80
SELENIUM	MG/KG	21234004	<5	<5	NA	44	50	88

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

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

SITE SAFETY AND HEALTH PLAN

AMERADA HESS CORPORATION
CAPROCK DISPOSAL SITE

February 11, 1994

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

With the assistance of HASP

RECEIVED

FEB 21 1994

OIL CONSERVATION DIV.
SANTA FE

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

XYLENE	TLV: 100 PPM IDLH: 10000 ppm For O, M, and P isomers. (NIOSH, 1987)	Surface Soil - 0 to 0	Inhalation Ingestion Contact Absorbtion
CADMIUM COMPOUND	TLV: 0.01 MG (CD)/M3 IDLH: Not applicable for Cadmium, a potential human carcinogen (NIOSH, 1987)	Surface Soil - 0 to 0	Inhalation Ingestion
CHROMIUM	TLV: 1 MG/M3 IDLH:	Surface Soil - 0 to 0	Inhalation Ingestion
LEAD, INORGANIC	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 human carcinogen. (NIOSH, 1987)	Subsurface Soil - 0 to 0	Inhalation Ingestion Contact Absorbtion
CADMIUM COMPOUND	TLV: 0.01 MG (CD)/M3 IDLH: Not applicable for Cadmium, a potential human carcinogen (NIOSH, 1987)	Subsurface Soil - 0 to 0 Surface Soil - 0 to 0	Inhalation Ingestion
TOLUENE	TLV: 100 PPM IDLH: 2000 ppm (NIOSH, 1987)	Subsurface Soil - 0 to 0	Inhalation Ingestion Contact Absorbtion
XYLENE	TLV: 100 PPM IDLH: 10000 ppm For O, M, and P isomers. (NIOSH, 1987)	Subsurface Soil - 0 to 0	Inhalation Ingestion Contact Absorbtion
CHROMIUM	TLV: 1 MG/M3 IDLH:	Subsurface Soil - 0 to 0	Inhalation Ingestion
LEAD, INORGANIC	TLV: 0.05 MG/M3 IDLH:	Subsurface Soil - 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 isomers. (NIOSH, 1987)		Absorbtion
**** Drum crushing ****			
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

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(1)]	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)

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

5.4 Level C Personnel Protective Equipment:

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

5.5 Level D Personnel Protective Equipment:

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

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

- Air supply consumption (SCBA use).

- Suit/Ensemble permeation and penetration rates for chemicals (section 5.8).
- Ambient temperature and weather conditions (heat stress cold stress).
- 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:

- o 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:

- Determine that the clothing material is correct for the specified task at hand.
- Visually inspect for:
  - imperfect seams
  - non-uniform coatings
  - tears
  - malfunctioning closures

- Hold up to light and check for pinholes.
- Flex product:
  - observe for cracks
  - observe for other signs of shelf deterioration

- If the product has been used previously, inspect inside and out for signs of chemical attack:
  - discoloration
  - swelling
  - stiffness

During the work task

- Evidence of chemical attack such as discoloration, swelling, stiffening, and softening. Keep in mind, however, that chemical permeation can occur without any visible effects.

- Closure failure.

- Tears.

- Punctures.

- Seam Discontinuities.

GLOVES

Before use:

- o 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:

- o 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.
- o 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.

- Intrinsically safe radio
- 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	

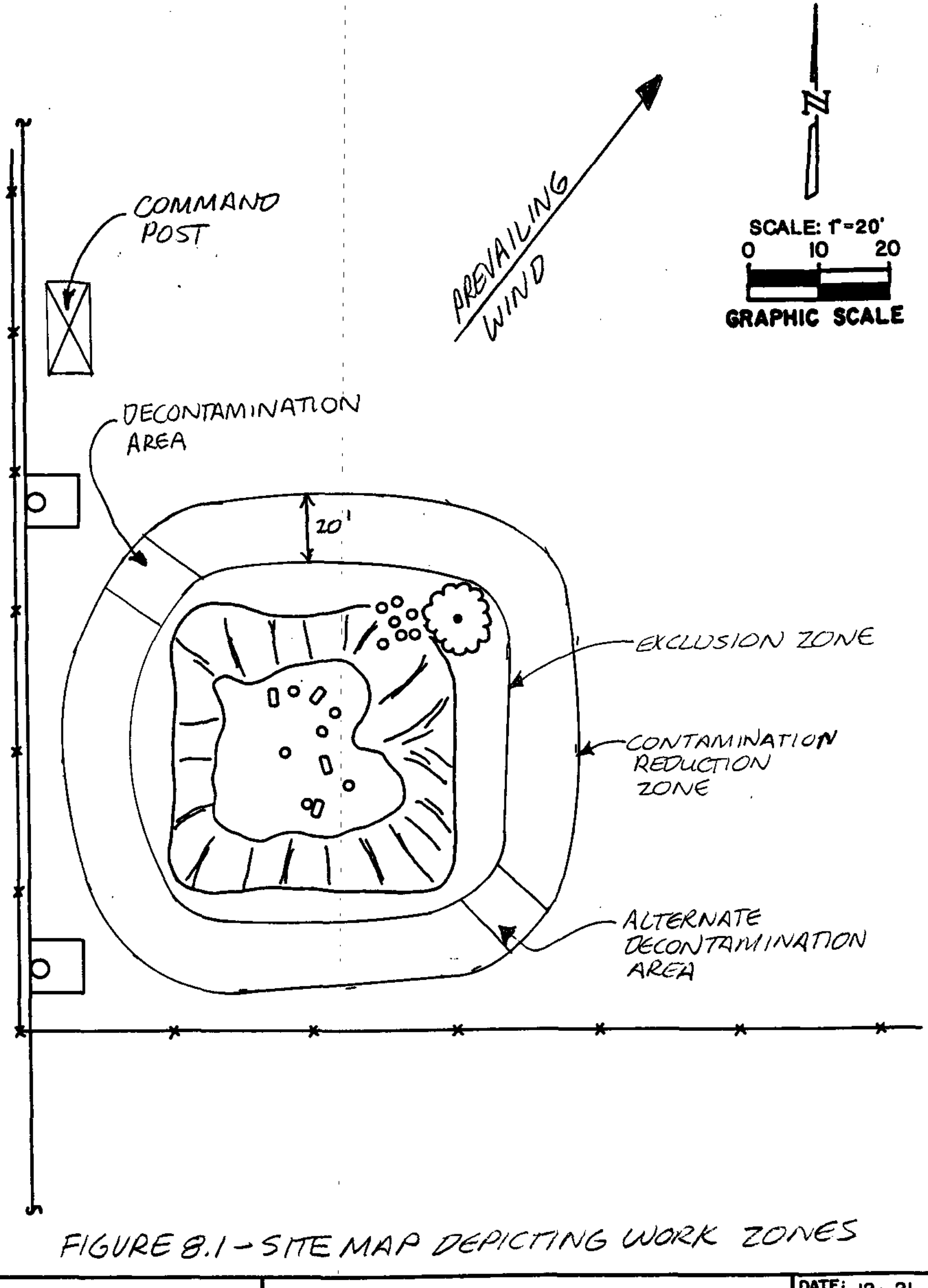

FIGURE 8.1 - SITE MAP DEPICTING WORK ZONES

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LEA COUNTY, NEW MEXICO

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PROJ:	92-1334-01F
DRAWN:	JDW
CKD:	JO

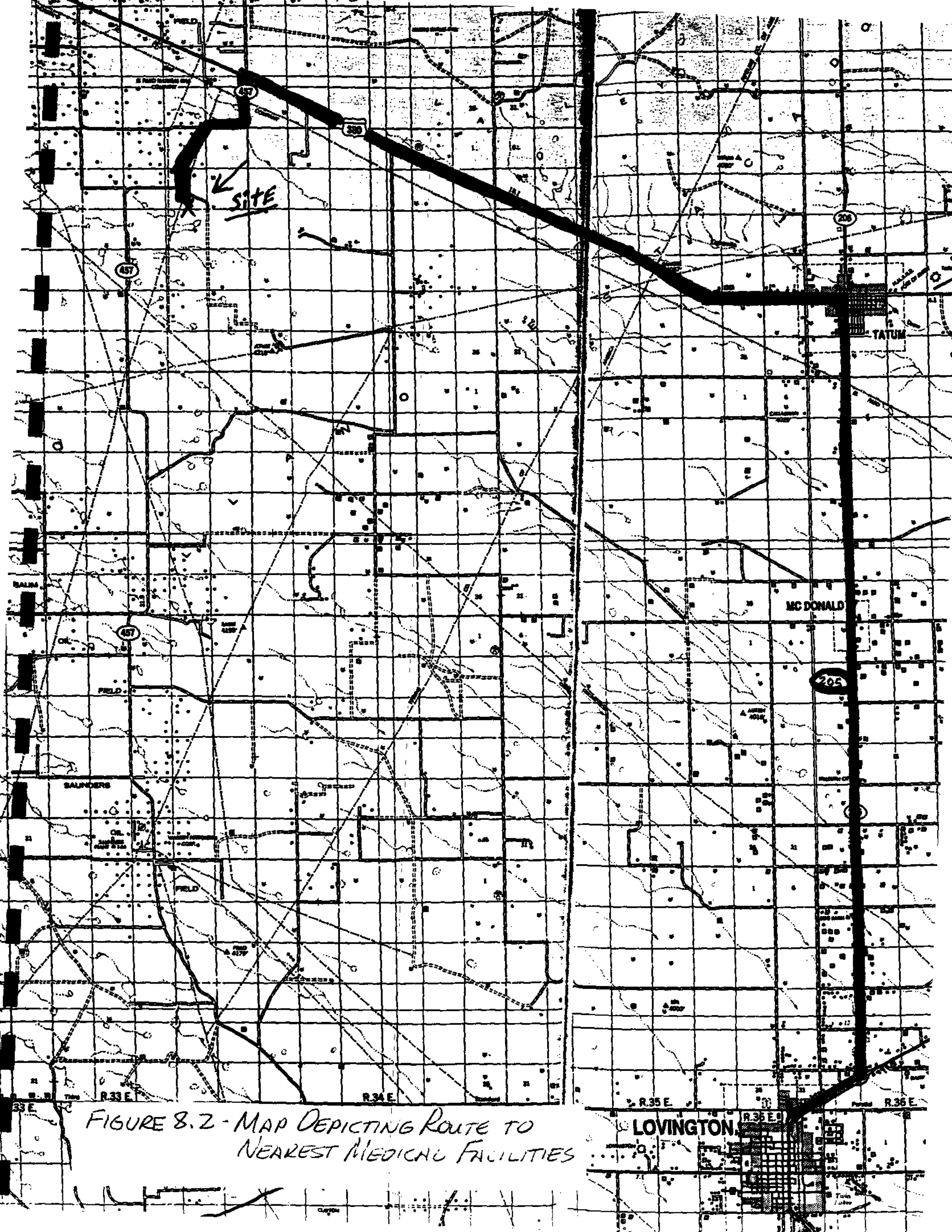

FIGURE 8.2 - MAP DEPICTING ROUTE TO NEAREST MEDICAL FACILITIES

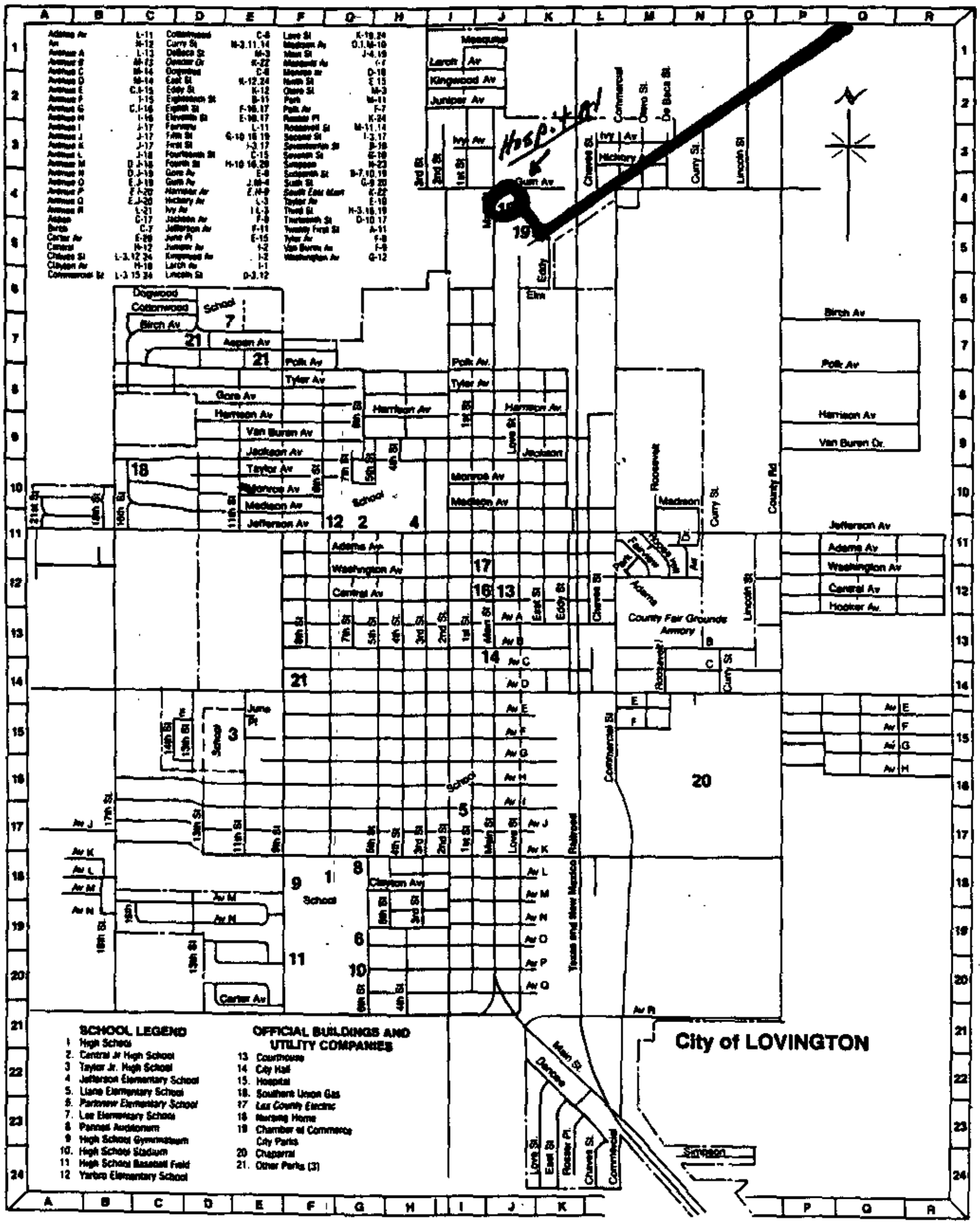

FIGURE 8.2(A) - MAP DEPICTING ROUTE TO NEAREST MEDICAL FACILITIES (LOVINGTON DETAIL)

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: Nor-Lea General 1600 N. Main Lovington, NM		(505)396-6611
Hospital 2: Lea Regional 5419 Lovington Hwy Hobbs, NM		(505) 392-6581
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

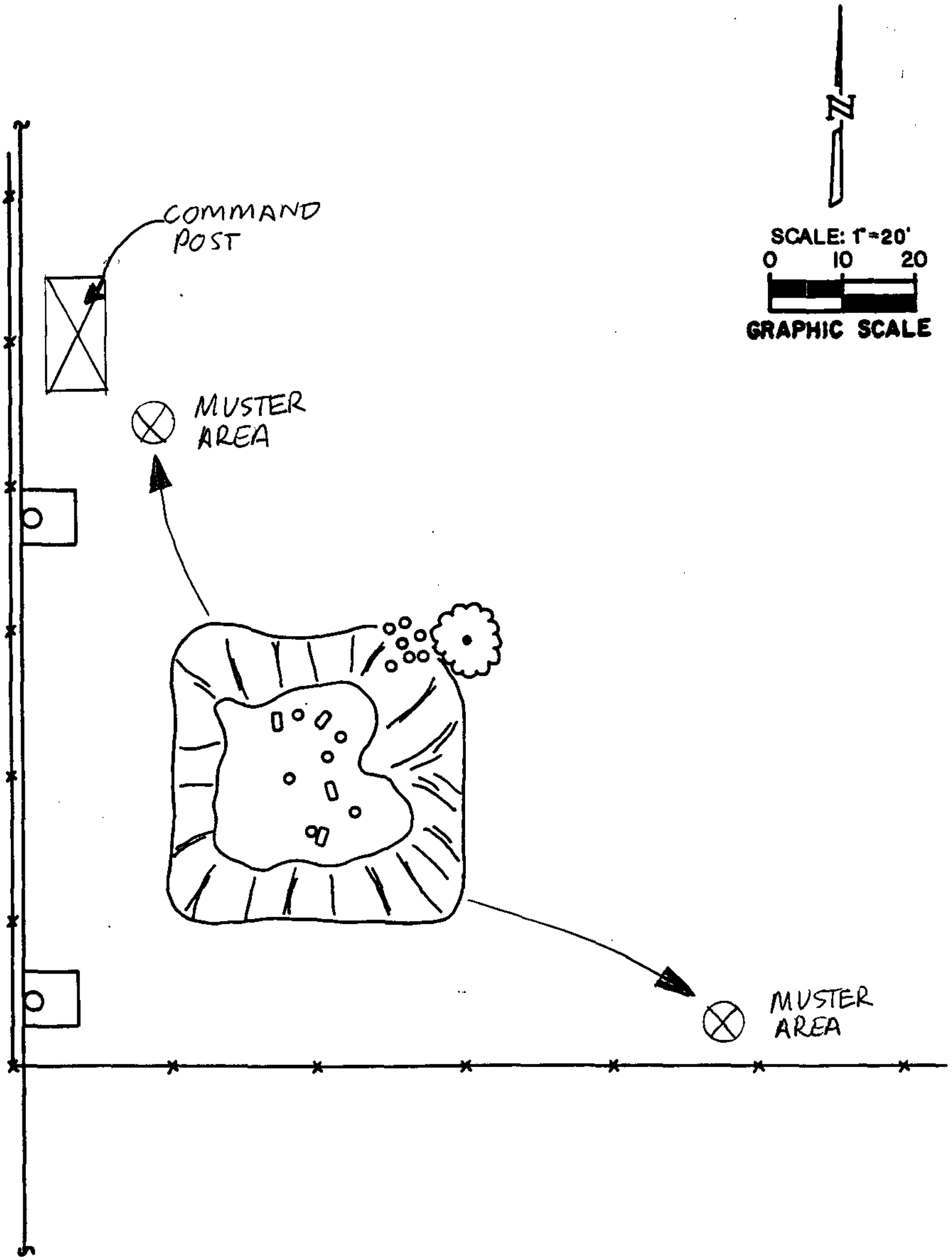

FIGURE 10.1 - SITE MAP DEPICTING EVACUATION ROUTES & MUSTER AREA

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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

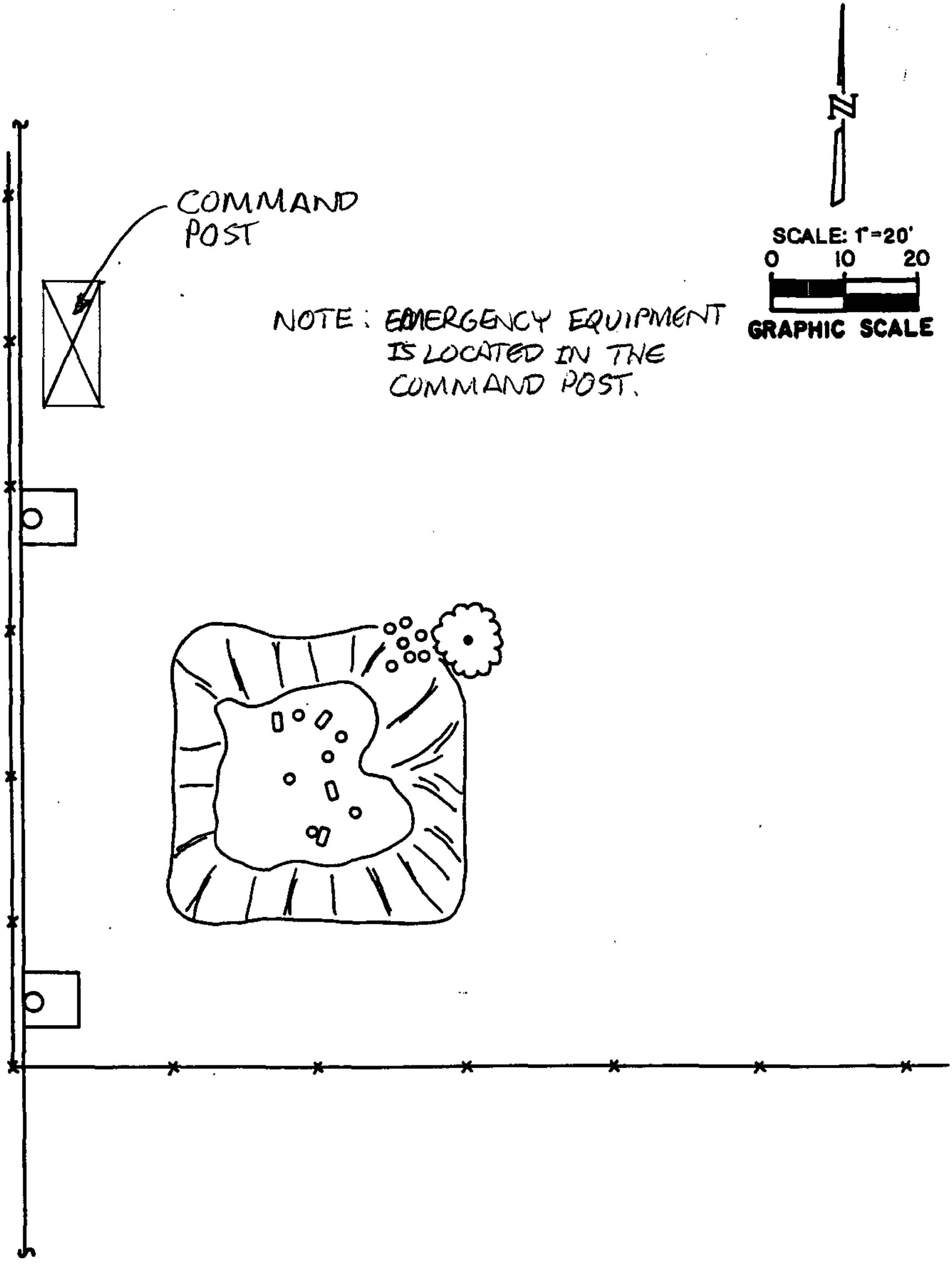
In the event of a spill or a leak, site personnel will:

- 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



NOTE: EMERGENCY EQUIPMENT IS LOCATED IN THE COMMAND POST.

FIGURE 10.2 - SITE MAP WITH EMERGENCY EQUIPMENT LOCATED

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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