

4-1-92

POL Washrack

HOLLOMAN AIR FORCE BASE

SOLID WASTE MANAGEMENT UNIT

CURRENT CONDITIONS AND FINDINGS REPORT

APRIL 1992

- \* Soils Analyses
- \* Groundwater Analyses
- \* No TDS analysis

**SECTION C**  
**INTERIM MEASURES AT SWMU's SITES**

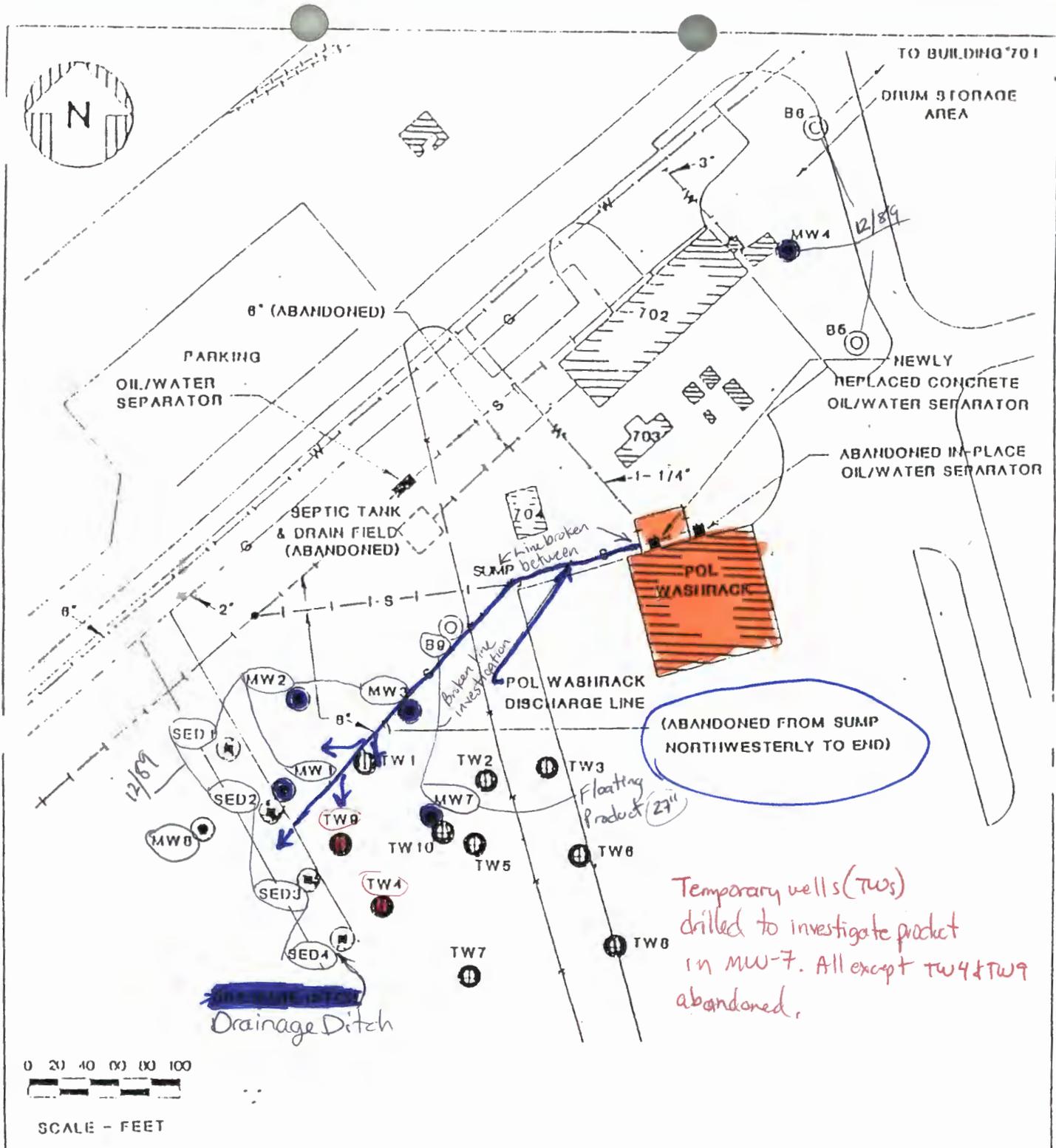
**C.1 POL Washrack Discharge Area Site SD-47 (SWMU No's. 21, 22, 54, 55, 89, 122, 123, 133):**

The POL Washrack Discharge Area is located in the northeastern section of the main base (see Figure C-1). The POL yard, entirely enclosed by a chain link fence, occupies a large area near the base's eastern boundary. To the north is a railroad track which crosses the yard through large gates that are normally locked. The eastern site boundary is defined by the Dillard Draw arroyo. The washrack discharge area (a large open field) is between the POL yard's fenced western boundary and the drainage ditch which is intended to receive the washrack's waste water. An unpaved road forms the site's southern boundary.

Several permanent structures are located within the site's fenced boundaries. Four large buildings (Buildings 701, 702, 703, and 704) provide office space for site personnel. The eastern end of Building 702 is designed and used as a vehicle maintenance area. Other permanent structures include several pump stations, generator pad, and aboveground fuel storage tanks. Five small aboveground fuel tanks are located within a single diked area in the northeastern section of the site. Three large fuel tanks are contained within diked areas in the southeastern quadrant of the site. These tanks are serviced by two underground pipelines. The entire POL yard is covered with asphalt or gravel. The asphalt areas are used as roadways and parking areas for fuel supply vehicles. There is no site vegetation.

There was concern that two areas at this site, the Drum Storage Area (SWMU No. 54) and the POL Washrack Area (SWMU No. 89), may have been affected by POL operations. Drums containing waste POL products were formerly stored northeast of Building 702 in the Drum Storage Area. This practice ceased in 1987; however, past spills and leaks could have contaminated the area. POL vehicles are cleaned on-site at the second area of concern, the POL Washrack Area. ~~XXXXXXXXXX~~

The POL Washrack Area, in operation since 1953, is located southwest of Buildings 702 and 704. When built, the washrack had no oil/water separators and the washwater flowed directly to the nearby drainage ditch. Oil/water separators were installed at the washrack in 1980. Water from the oil/water separators flowed underground southwest of the POL area into a drainage ditch approximately 100 feet from the west fence line. Concern over the discharge developed when it was discovered that the separators were not working properly and was allowing high concentrations of petroleum product to be discharged. During a remedial investigation,



0 20 40 60 80 100  
 SCALE - FEET

LEGEND	
	STAGE I MONITORING WELL
	STAGE II MONITORING WELL
	STAGE I SORBENT
	STAGE II SORBENT
	STAGE I SEDIMENT SAMPLE
	STAGE II TEMPORARY WELL
	-S-  SEWER/DRAINAGE LINE
	W-  WATER LINE
	-X- FENCE LINE
	-G- GAS LINE
	RAILROAD

Figure C-1  
 Holloman Air Force Base  
 Site SD-47  
 Location of Monitoring Wells  
 and Site Map

it was determined that the clay discharge line was broken. After the investigation, a new oil/water separator was installed and the system attached to the sewer system.

#### **C.1.1 Previous Technical Evaluations and Recovery Efforts:**

A remedial investigation was conducted in December 1989 that focused on two areas: a former Drum Storage Area and the POL Washrack Discharge Area. To determine if any spills in the Drum Storage Area had resulted in soil or groundwater contamination, a monitoring well (MW4) and two soil borings (B5 and B6) were installed. Soil samples were collected for chemical analysis from the monitoring well borings at 2.5, 5, and 10 feet below the surface. While drilling the soil boring, soil samples were collected at 2.5 foot intervals from the surface to 15 feet. These samples were field screened and three samples from each boring exhibiting the highest concentrations of organic vapor (B5 - 10, 12.5, and 15 feet and B6 - 0, 7.5, and 15 feet) were retained for chemical analysis.

The POL Washrack Area was investigated by installing three monitoring wells (MW1, MW2 and MW3) and collecting four sediment samples (SED1, SED2, SED3, and SED4). Soil samples were collected for chemical analysis from the monitoring well boring at 2.5, 5, and 10 feet below the surface.

Groundwater samples were collected from all four monitoring wells. The groundwater, soil, and sediment samples collected were analyzed for volatile organics, acid/base/neutral extractable, and total recoverable petroleum hydrocarbons.

During further investigation of the POL Washrack Area, the drainage line from the oil/water separator was investigated to determine if the line was broken. The drainage line was accessed from the sump. It was determined from this investigation that the line was broken in several places. A soil boring (B9) was drilled downgradient from this location and north of the line. A monitoring well (MW7) was also installed to provide additional groundwater gradient information. Another well (MW8) was installed downgradient of the site. It was installed on the opposite side of the drainage ditch. Soil samples were collected from the boring (B9) at 2.5 foot intervals from the surface to 15 feet. Samples were collected from the monitoring well boring at 2.5 foot intervals from the surface to 10 feet, and at 5 foot intervals from 10 feet to the bottom of the boring. These samples were field screened and the three samples from each boring exhibiting the highest concentrations of organic vapors (B9 - 5, 7.5 and 15 feet and MW7 - 5, 7.5, and 10 feet) were retained for chemical analysis. No elevated levels of organic vapors were detected in MW8 soil samples so the same intervals which were retained from MW7 were retained from MW8 to allow for soil contamination profiling.

Upon completion of developing monitoring well MW7, 27 inches of floating product was observed the following day. Temporary wells were installed to determine the source and extent of the product plume. Each well was drilled to a depth of 15

feet. No floating product was observed in any of the temporary wells. Subsequently, all temporary wells, except TW4 and TW9, were removed and the borings were backfilled and grouted.

During the investigation, groundwater samples were collected from MW7 and MW8. Floating product was recovered from MW7. These samples were analyzed for VOA, BNA, TRPH, and total recoverable metals. In addition, a floating product sample was collected for fuel identification. It was identified as weathered JP-4 with the presence of a trace No. 6 Fuel Oil. All analytical data can be found in Tables 4-1 through 4-9.

During the investigation, an underground storage was identified just south of the fenced area in the area of MW7. A metal detector was used to determine the location.

In June 1991, a feasibility study was completed to remediate this site. Based on the feasibility study, excavation was deemed the most economical solution to meet all applicable or relevant and appropriate requirements (ARARs). The excavation alternative was chosen based on the New Mexico UST regulations, as applicable. During the excavation of the site, no UST was found.

TABLE 4-1

POL Washrack Area - Soil  
Volatile Organics (ug/kg)

Chemical	Depth (ft)	Boring				
		B1	B2	B3	B4	B5
Methylene Chloride	2.5	4	-	-	-	-
2-Butanone	5	-	-	10	-	-
Ethylbenzene		-	-	4	-	-
Methylene Chloride		7	-	7	-	-
Toluene		-	-	1	-	-
Total Xylenes		-	-	7	-	-
Benzene	10	-	-	130	-	-
Ethylbenzene		-	-	1500	-	-
Methylene Chloride		4	-	-	-	-
Toluene		-	-	670	-	-
Total Xylenes		-	-	2100	-	-
	0	B6	B7	B8	B9	B9-D
	5					
Ethylbenzene			(20000)	(-)	(18000)	
Toluene			(5000)	(-)	(-)	
Total Xylenes			(39000)	(-)	(24000)	
Ethylbenzene	7.5		(7000)	(-)	(38000)	(16000)
Total Xylenes					(41000)	(10000)
	10		(-)*		(-)*	
	15					
	20			(-)		

Borings B5, B6 & B7 are mentioned in the text, however, the remaining borings are not referenced?

- Not detected

TABLE 4-2

POL Washrack Area - Soil  
BNA/TRPH

Chemical	Depth (ft)	Boring				
		B1	B2	B3	B4	B5
Acid/Base/Neutral Extractables (ug/kg)	2.5	-	-	-	-	-
	5	-	-	-	-	-
	10	-	-	-	-	-
	12.5	-	-	-	-	-
	15	-	-	-	-	-
TRPH (mg/kg)	0	-	-	-	-	-
	2.5	-	16	-	-	-
	5	-	-	5315	-	-
	10	-	-	-	-	31
	12.5	-	-	-	-	-
		B6	B7	B8	B9	
Acid/Base/Neutral Extractables (ug/kg)	0	-	-	-	-	-
	5	-	-	-	-	-
2-Methylnaphthalene Naphthalene	7.5	-	(-)	(-)*	(1296)	-
		-	(-)	(-)	(157)	-
2-Methylnaphthalene Naphthalene	10	-	(-)	(-)	(1206)	-
	15	-	(-)	(-)	(307)	-
	20	-	(-)	(-)	(-)	-
TRPH (mg/kg)	0	-	-	-	-	-
	5	-	(522)	(-)	(157)	-
	7.5	-	(104)	(-)	(210)	-
	10	-	(-)	(-)	(-)	-
	15	-	(-)	(-)	(35)	-
	20	-	(-)	(-)	(-)	-

- Not detected

\* Acid extractables not valid due to out-of-range surrogate recoveries

( ) Stage II data

TABLE 4-3

**POL Washrack Area - Soil  
Tentatively Identified Compounds (ug/kg)**

Chemical	Boring/Depth (ft)				
	B7/5	B7/7.5	B7/10	B9/5	B9/7.5
Methylcyclopentane	31000				
3-Methylcyclopentane	15000				
3-Methylpentane		14000	11000	11000	
Trans-1,3-Dimethyl-cyclopentane					13000
Trans-1,3-Dimethyl-cyclohexane					6000
1,1,3-Trimethylcyclohexane					17000
Trans-2,2-Dimethyl-3-hexane					21000
2,2,3,3-Tetramethylhexane	1800				1150
1-Ethyl-2Methylbenzene					423
3-Methylnonane					1828
1,3,5-Trimethylbenzene	703			663	2065
2,4,6-Trimethyldecane	15442			6738	
2,6,7-Trimethyldecane	1380			1003	2157
2,5,6-Trimethyldecane	10000	1129			4734
7-Methyl-Tridecane	11380	2293		6670	3923
2,6,10-Trimethyldodecane	9531	3530		6975	3348
Tetradecane	21250	9014			8702
2,6-Dimethylheptadecane	14843	6649		10143	5929
Heptadecane				4103	
1-iodododecane	8645	3459		5842	3348
Heptadecane	6145	2455		4103	2286
2,6,10,15-Tetramethylheptadecane					1991
1,1,2-Trimethylcyclohexane				23000	
2,4,6,10,14-Tetramethylpentadecane				2652	
2-Methylheptene	703				
Propyl-cyclohexane	1223				
Hexatriacontane	1953				
Docosane	677				

Table 4-4

POL Washrack Area - Soil  
Metals (mg/kg)

B7

Chemical	Depth (ft)			
	5	5-FD	7.5	10
Antimony	-	-	-	-
Arsenic	3	3	3	4
Barium	39	92	81	63
Beryllium	2	2	2	2
Cadmium	1	1	1	2
Chromium	12	13	10	12
Copper	30	27	28	38
Iron	11799	11861	8974	9232
Lead	6	7	5	6
Manganese	265	124	121	130
Mercury	-	-	-	-
Nickel	18	16	11	13
Selenium*	-	-	-	-
Silver	1	2	2	3
Sodium	2105	1901	1149	1052
Thallium	-	-	-	-
Zinc	33	30	24	29

\* Elevated detection limits due to matrix interference (10 mg/kg)

FD Field duplicate

- Not detected

TABLE 4-4 (continued)

POL Washrack Area - Soil  
Metals (mg/kg)

B8

Chemical	Depth (ft)			
	5	7.5	20	20-FD
Antimony	-	-	-	-
Arsenic*	-	-	5	-
Barium	12	24	33	33
Beryllium	0.5	0.8	0.5	0.5
Cadmium	0.3	0.4	-	0.3
Chromium	2	4	4	4
Copper	10	11	9	9
Iron	1244	2503	3226	3216
Lead	2	4	6	6
Manganese	12	21	52	51
Mercury	-	-	-	-
Nickel	1	5	6	6
Selenium	-	-	-	-
Silver	0.5	0.5	0.5	-
Sodium	151	292	1037	1034
Thallium	-	-	-	-
Zinc	4	9	11	11

- Not detected

FD Field duplicate

\* Elevated detection limit due to matrix interference (2mg/kg)

TABLE 4-4 (continued)

POL Washrack Area - Soil  
Metals (mg/kg)

B9

Chemical	Depth (ft)			
	5	7.5	7.5 - FD	15
Antimony	-	-	-	-
Arsenic	3	5	4	1
Barium	62	93	102	24
Beryllium	2	2	2	2
Cadmium	1	1	1	2
Chromium	12	11	17	12
Copper	28	22	24	28
Iron	9816	10359	14696	9108
Lead	5	7	7	5
Manganese	38	112	342	89
Mercury	-	-	-	-
Nickel	11	10	17	10
Selenium*	-	-	-	-
Silver	1	1	2	2
Sodium	548	484	623	667
Thallium	-	-	-	-
Zinc	26	26	40	24

- Not detected

FD Laboratory duplicate

\* Elevated detection limit due to matrix interference (10 mg/kg)

**TABLE 4-5**

**POL Washrack Area - Sediment  
Organics/TRPH**

Chemical	Sediment				
	SED1	SED2	SED2-D	SED3	SED4
Volatiles (ug/kg)		-			-
Acid/Base/Neutral Extractables(ug/kg)	-			-	-
TRPH (mg/kg)	54	105	52	131	49

- Not detected

D Laboratory duplicate

**TABLE 4-6**

**POL Washrack Area - Groundwater  
Organics (ug/L)**

Chemical	Monitoring Well						
	MW1	MW2	MW3	MW4	MW7	MW7(FP)	MW8
<b>Volatiles</b>							
Benzene	697 (-)	- (-)	1330 (5000)	-	(5400)	(4650000)	(-)
Chlorobenzene	5 (-)	- (-)	- (-)	-	(-)	(1050000)	(-)
Ethylbenzene	- (-)	- (-)	212 (124000)	-	(-)	(8150000)	(-)
2-Hexanone	- (-)	- (-)	- (-)	-	(-)	(3750000)	(-)
4-methyl-2-pentanone	45 (-)	- (-)	- (-)	-	(-)	(3750000)	(-)
Tetrachloroethene	43 (-)	- (-)	- (-)	-	(-)	(-)	(-)
Toluene	5 (-)	- (-)	144 (-)	-	(-)	(-)	(-)
Total Xylenes	139 (-)	- (-)	91 (1400)	-	(-)	(10100000)	(-)
<b>Acid/Base/Neutral Extractables</b>							
2,4-Dimethylphenol	25	-	-	-	-		(-)*
2-Methylnaphthalene	-	-	-	-	(21)		(-)
4-Methylphenol	11	-	-	-	-		(-)
Naphthalene	-	-	11	-	(14)		(-)

- Not detected

(FP) Floating product

( ) StageII data

\* Corps of Engineers lab data

TABLE 4-7

POL Washrack Area - Groundwater  
Tentatively Identified Compounds (ug/L)

Chemical	Monitoring Well		
	MW2	MW3	MW7 (FP)
Hexane	30	334	-
1,5-Hexadiyne	-	3482	-
Pentane (ACN)(DOT)	-	-	2655000
Cyclohexane (DOT)	-	-	9785000
Methylcyclopentane	-	-	4714000
2,2,3-Trimethylhexane	-	-	3061000
3-Methylpentane	-	-	4470000
Ethylcyclopentane	-	-	1303000
2,2,3-Trimethylhexane	-	-	2952000
2,4,4-Trimethyl-2-Pentene	-	-	3711000
1,1,3-Trimethylcyclohexane	-	-	3160000
:			
-	Not detected		

**TABLE 4-8**

**POL Washrack Area - Groundwater  
TRPH (mg/L)**

Chemical	Monitoring Well						
	MW1	MW2	MW3	MW4	MW7	MW7(FP)	MW8
TRPH (mg/L)	335	-	1	-			
	(2)		(2)		(13)	(96000)	(-)

- Not detected

FP Floating product

( ) Stage II data

**TABLE 4-9**

**POL Washrack Area - Groundwater  
Metals (ug/L)**

Chemical	Monitoring Well			
	MW1	MW2	MW2-FD	MW3
Antimony	39	59	-	33
Arsenic	149	-*	-*	115
Barium	384	353	286	90
Beryllium	11	12	9	5
Cadmium	10	5	-	4
Chromium	66	44	41	20
Copper	169	146	98	74
Iron	48080	27379	26783	12800
Lead	37	87	37	-*
Manganese	2588	173	235	4487
Mercury	-	-	-	-
Nickel	175	66	50	133
Selenium	-*	-*	-*	-*
Silver	7	-	-	-
Sodium	1361129	335697	332272	323632
Thallium	-	-	-	-
Zinc	180	107	117	51

\* Elevated detection limits due to matrix interference (arsenic 100 ug/L, lead and selenium 50 ug/L)

- Not detected

FD Field duplicate

TABLE 4-9 (continued)

POL Washrack Area - Groundwater  
Metals (ug/L)

Chemical	Monitoring Well				
	MW7	MW7-LD	MW7-FP	MW8	MW8-FD
Antimony	-	-	-	-	-
Arsenic	-	-	-	.*	.*
Barium	87	78	-	1033	896
Beryllium	4	4	-	15	14
Cadmium	4	-	-	7	-
Chromium	14	10	-	128	110
Copper	53	44	-	178	16
Iron	8889	7677	28	103664	89882
Lead	9	8	62	41	47
Manganese	2665	2593	-	138	1076
Mercury	-	-	0.415	-	-
Nickel	44	42	-	127	113
Selenium*	-	-	-	-	-
Silver	11	-	-	32	13
Sodium	1939810	177610	-	3170000	3035980
Thallium	-	-	-	-	-
Zinc	44	39	3	316	273

- Not detected

FD Field duplicate

LD Laboratory duplicate

FP Floating product

\* Elevated detection limit due to matrix interference (arsenic 100 ug/L, selenium 50 ug/L)

### **C.1.2 Planned Actions at Site SD-47:**

Approximately 4000 cubic yards of soil have been removed from the site. The waste is stockpiled near the base landfill. Samples of the stockpiled material have been collected and the base is awaiting analytical results. If the stockpiled material is proven hazardous, the pile will be removed from the base to an EPA approved RCRA disposal facility. Based on the verification sampling at the site itself, more waste may be present. If more waste is present at the site, a further investigation will be conducted to determine the extent of contamination.

### **C.2 Acid Trailer Burial Site OT-04 (SWMU No. 102):**

The Acid Trailer Burial Site (SWMU No. 102) is located in the North Area of Holloman AFB adjacent to the arroyo known as Malone Draw. Waste materials were dumped and buried on a one-half acre tract of land along the banks of the arroyo. The majority of the waste at the site probably originated from the former Unconventional Fuels Storage Area (SWMU No. 129 and 178) which is located one-half mile south of the site, as illustrated in Figure C-2.

The Unconventional Fuels Storage Area housed propellants, oxidizers, and other fuels components that were used by the 6585th Test Group for rocket and sled tests conducted at the base. Compounds typically stored at the facility included, but were not limited to, the following: JP-4 (jet fuel); unsymmetrical dimethylhydrazine (UDMH); aniline; inhibited red fuming nitric acid (IRFNA); inhibited white fuming nitric acid (IWFNA); liquid oxygen (LOX); JPX (1:1 JP-4 and UDMH); dyes; and other compounds.

#### **C.2.1 Previous Technical Evaluations and Recovery Efforts:**

During field investigations conducted in February 1991, the following were observed at the site:

- oo A partially buried tank trailer;
- oo An unlabeled empty stainless steel 55-gallon drum;
- oo Approximately 20 1-quart amber bottles filled with solid compounds;
- oo Rocket engines and fuselage; and
- oo other debris.

During a remedial investigation, an electromagnetic and a conductivity survey were conducted. Based on the surveys, several pits were dug to uncover objects detected under the surface. Several rocket motors, amber bottles, and other debris were uncovered. The contents of the amber bottles were field tested with a field