

5.17 SWMU 27: SEWAGE TREATMENT PLANT

5.17.1 Site Description and Waste Generation

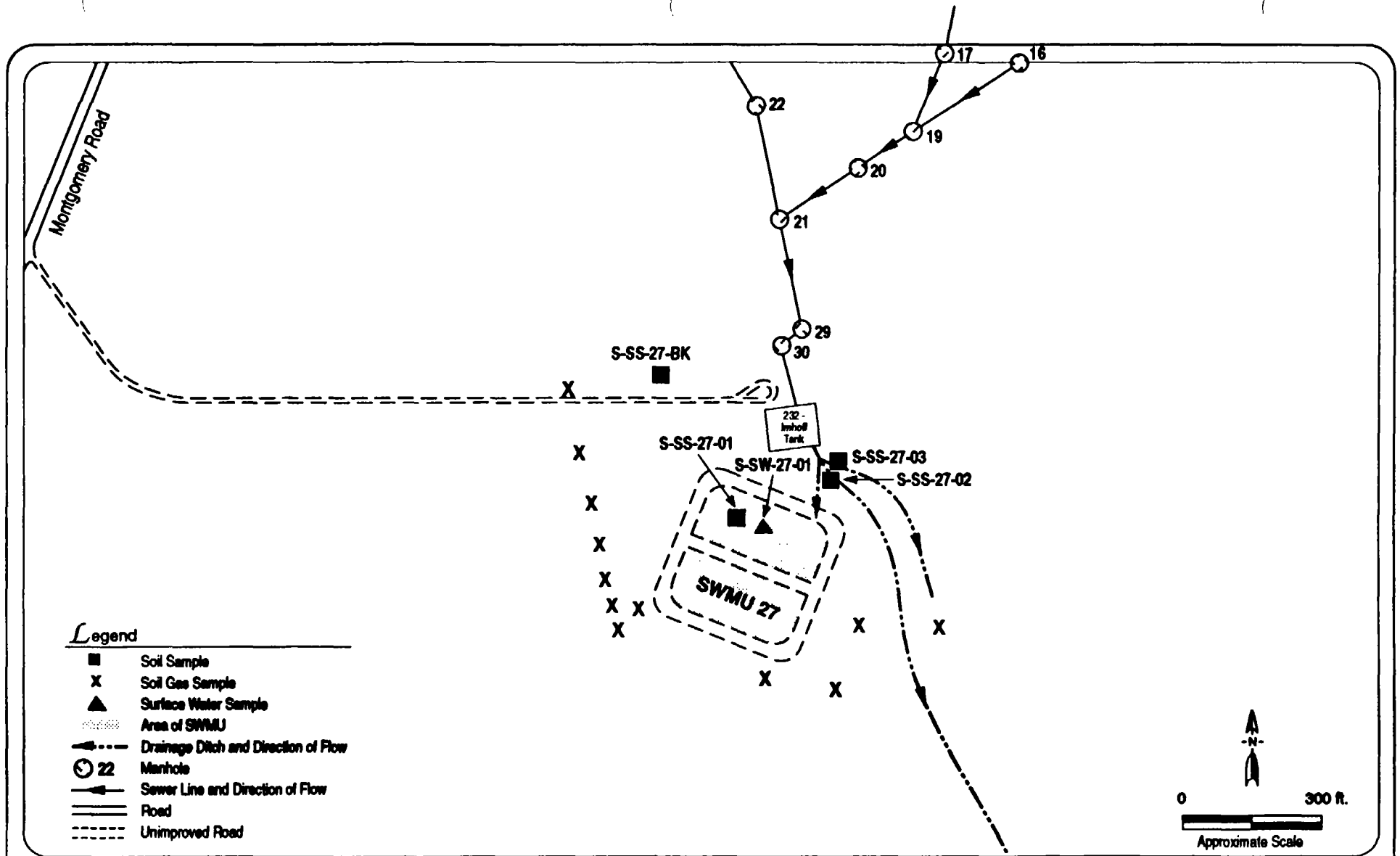
SWMU 27 consists of an Imhoff tank and two unlined sewage lagoons (Figure 5.17-1). This sewage treatment plant is located in the northeastern portion of installation, approximately 2,000 ft south of the administration area (Figure 5.0-1). The Imhoff tank and sewer lines leading to it were probably installed in 1942, during the original installation construction. The tank and disturbed area over the buried line are visible in aerial photographs dated 1952 (EPIC 1986). The tank and lines served the barracks, commissary, and support facilities located in the northeastern part of TEAD-S. The lagoons were built in 1980. The northern lagoon was to receive Imhoff tank effluent and then overflow into the southern lagoon, which is open at its southwest corner (NUS 1987). Before the construction of the sewage lagoons, discharge from the Imhoff tank flowed into ditches adjacent to the lagoon on the east (USATHAMA 1979). The Imhoff tank and denser vegetation along the ditch carrying the tank discharge were noted in 1974 aerial photographs (EPIC 1986).

During a site inspection, NUS (1987) noted that the area around the Imhoff tank was swampy and ditches running southeast of the tank contained sewage and sewage sludge indicating that sewage was not reaching the lagoons. During the RFI-Phase I, the lagoons appeared dry except for a small patch of cattails in the northern lagoon and effluent from the Imhoff tank was still evident in the ditches. It is unclear whether wastes other than domestic sewage have reached the Imhoff tank. Floor drains in the maintenance area may be connected to the sanitary sewers (NUS 1987). Sludge from the Imhoff tank is reportedly buried at the SWMU 26 sanitary landfill (USAEHA 1986).

5.17.2 Site Hydrogeology

The area around SWMU 27 slopes gently to the southwest at an elevation of approximately 5,285 ft above msl. Coarse Quaternary alluvial gravel deposits underlie the site. Details on subsurface lithology were extrapolated from the two closest monitoring wells (S-37-90, S-38-90), from sieve analyses of representative samples, and from soil samples S-SS-27-01 and S-SS-27-BK.

Surface soil is light olive to light brownish gray silt with some sand and a trace of gravel (ML). The unsaturated zone is approximately 200 ft thick and is composed of pale brown to grayish-brown, silty gravel (GM). Beds of gravelly sand (SW) are also present, as shown in the sieve analysis. The saturated zone at depths of 205 to 231 ft is composed of silty sand, gravelly silt, and gravelly clay (SM, ML, CL). The depth to groundwater estimated from the July 1990 potentiometric surface map (Plate 3), is 185 ft below ground surface. The groundwater elevation is approximately 5,100 ft msl. This SWMU is located to the east of the groundwater high that appears to underlie a water main paralleling Montgomery Road, and groundwater flows to the southeast in this area.



Source:
 EBASCO Field Measurement
 Basic Information Maps 1985
 EPIC 1981

Figure 5.17-1
Site Map
SWMU 27 - Sewage Treatment Plant
 Tooele Army Depot - South Area
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5.17.3 Previous Sampling and RFI-Phase I Sampling Results

No groundwater or soil sampling was conducted at SWMU 27 prior to the RFI-Phase I. During the RFI-Phase I, a soil gas survey was conducted, a sediment sample was collected from the northern lagoon, and a background soil sample was collected from the area northwest of the lagoons. These samples were collected to detect possible contamination from laboratory and maintenance building wastes that may have been disposed of in the sanitary sewer system. The soil gas survey consisted of sampling at 12 locations across the area where discharge from the Imhoff tank is documented. Analyses of soil gas samples included dichloroethylene, benzene, trichloroethylene, toluene, tetrachloroethylene, and xylene. The sediment sample was analyzed for volatile organics, semivolatile organics, agent breakdown products, explosives, and metals. The trichloroethylene and 2,4,6-trinitrotoluene recoveries in the MS/MSD samples were outside the 95 percent confidence limit. During the June 1992 interim sampling program, two soil borings were collected in the streambed to the east of the lagoons, since the Imhoff tank discharge has apparently predominantly been into these ditches to the southeast rather than into the lagoons (Figure 5.17-1). A water sample was collected from the northern lagoon during the interim sampling program since none could be collected during Phase I of the RFI. These samples were analyzed for volatile and semivolatile organics and metals.

Table 5.17-1 summarizes detections in the soil and soil gas samples. Figures 5.17-2 and 5.17-4 illustrate the results of the soil and surface water investigation. Figure 5.17-3 illustrates soil gas sampling locations and detected analyte concentrations.

5.17.4 Contamination Assessment

The soil gas survey indicated very low concentrations of toluene, xylene, and trichloroethylene in the area west of the Imhoff tank. Because the soil gas detections were low, no soil samples were collected in the areas outside the lagoon. The sediment sample collected from the northern lagoon had only a low level detection of acetone, which was probably introduced into the sample by laboratory contamination. Methylene chloride, acetone, and methyl ethyl ketone detected at low concentrations in soil samples from the ditches are probably laboratory contaminants. The 1,4-dichlorobenzene in these samples may result from the use of sanitary deodorizers in toilets that drain to this system. The only semivolatile contaminant, butyl benzyl phthalate, is a common plasticizer. No elevated levels of inorganics were found. However, observations during the RFI-Phase I field program indicated that the sewage lagoon may still not be in use, and that the ditches to the east of the lagoon may, therefore, receive the Imhoff tank discharge.

5.17.5 Recommendations

No significant contaminant release is indicated by the Phase I sampling program. Therefore, no Phase II action is recommended at SWMU 27.

TABLE 5.17-1

**Summary of RFI-Phase I Investigations for
SWMU 27: Sewage Treatment Plant**

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SOIL (µg/g)

Analytical Groups and Analytes Detected	PHASE I			ADDITIONAL SAMPLING JUNE 1992						Surface Water (µg/l)
	S-SS-27-01	S-FD-27-01	S-SS-27-BK ¹	S-SS-27-02			S-SS-27-03			S-SW-27-01
				0 - 0.5 ft	1 - 2 ft	2 - 3 ft	0 - 0.5 ft	1 - 2 ft	2 - 3 ft	
<i>Volatile Organics:</i>										
1,4-Dichlorobenzene (14DCLB)	LT 0.0009	LT 0.0009		0.0036	LT 0.0009	0.00052	LT 0.0009	LT 0.0009	LT 0.0009	LT 8.1
Acetone (ACET)	0.014	0.013		0.012	ND	ND	0.026	0.0078	ND	ND
Methylene chloride (CH ₂ CL ₂)	LT 0.057	LT 0.0057		0.0091*	0.011*	0.0097*	0.011*	0.0068*	0.0099*	76*
Methylethyl ketone (MEK)							0.0074			
<i>Semivolatile Organics:</i>										
Unknowns	10*	24		0.32	1.5		3.8	0.34	0.69	5.5
Butylbenzyl phthalate (BBZP)					0.18					
<i>Agent Breakdown Products:</i>										
None detected										
<i>Explosives: None detected</i>				NA	NA	NA	NA	NA	NA	NA
<i>Metals:</i>				NA	NA	NA	NA	NA	NA	NA
Arsenic (As)	12	22	13	12	13	14	9.3	12	11	5.7
Beryllium (Be)	LT 0.16	LT 0.16	0.31	LT 0.78	LT 0.78	LT 0.78	LT 0.78	LT 0.78	LT 0.78	LT 0.34
Chromium (Cr)	14	16	17	LT 39	LT 39	LT 39	LT 39	LT 39	LT 39	5.6
Copper (Cu)	8.5	9.2	11*	LT 20	29	LT 20	LT 20	LT 20	LT 20	130
Lead (Pb)	10	11	13	22	34	14	17	11	13	17
Mercury (Hg)	LT 0.026	0.030	LT 0.026	0.046	0.13	LT 0.026	0.071	LT 0.026	LT 0.026	LT 0.57
Silver (Ag)	0.14	0.11	0.14	0.24	0.33	0.095	0.026	0.047	0.052	LT 0.32
Sodium (Na)	LT 100	LT 100	1100							33,000
Zinc (Zn)	35	37	46	LT 80	130	LT 80	110	LT 80	LT 80	410

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1 Metals analysis only
 * Detected in associated methanol blank
 LT Less than
 mg/l Microgram per liter
 µg/g Microgram per gram

TABLE 5.17-1

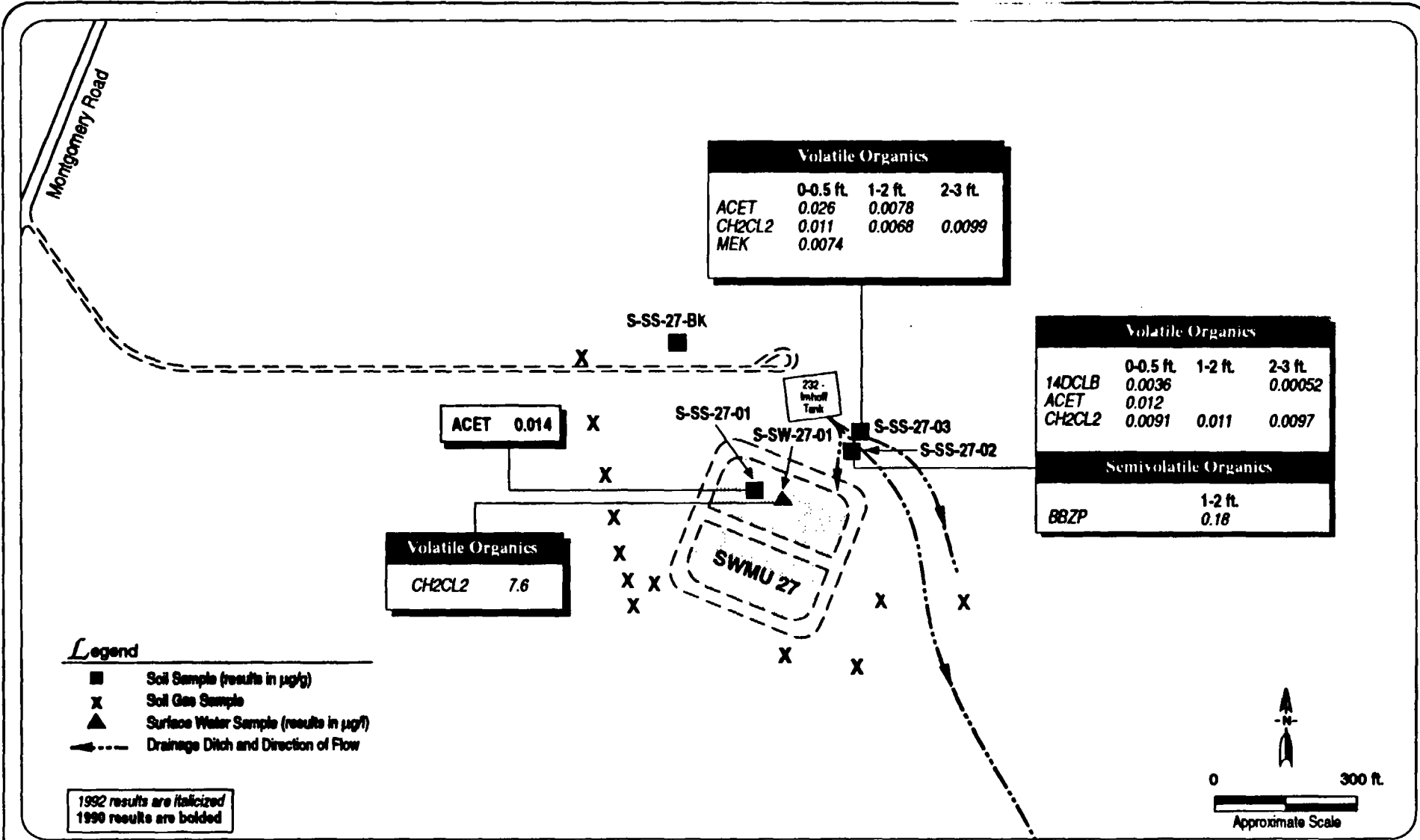
Summary of RFI-Phase I Investigations for
SWMU 27: Sewage Treatment Plant

SOIL GAS (ppb)

Sample Number	11DCE	TCLEE	TRCLE	Toluene	Xylene	Benzene	Remarks
27-01	LT 5	LT 5	14	44	95	LT 5	
27-01 ^d	LT 5	LT 5	LT 5	5.6	6.6	6.2	
27-02	LT 5	LT 5	LT 5	27	24	LT 5	
27-03	LT 5	LT 5	LT 5	42	61	LT 5	**
27-04	LT 5	LT 5	LT 5	LT 5	38	LT 5	
27-06	LT 5	LT 5	26	14	14	LT 5	
27-06 ^d	LT 5	LT 5	26	13	33	LT 5	
27-08	LT 5	LT 5	LT 5	10	7.4	LT 5	
27-10	LT 5	LT 5	LT 5	14	28	LT 5	**
27-11	LT 5	LT 5	LT 5	LT 5	LT 5	LT 5	
27-12	LT 5	LT 5	LT 5	LT 5	LT 5	LT 5	
27-13	LT 5	LT 5	LT 5	LT 5	LT 5	LT 5	
27-14	LT 5	LT 5	LT 5	LT 5	LT 5	LT 5	
27-14 ^d	LT 5	LT 5	LT 5	LT 5	LT 5	LT 5	

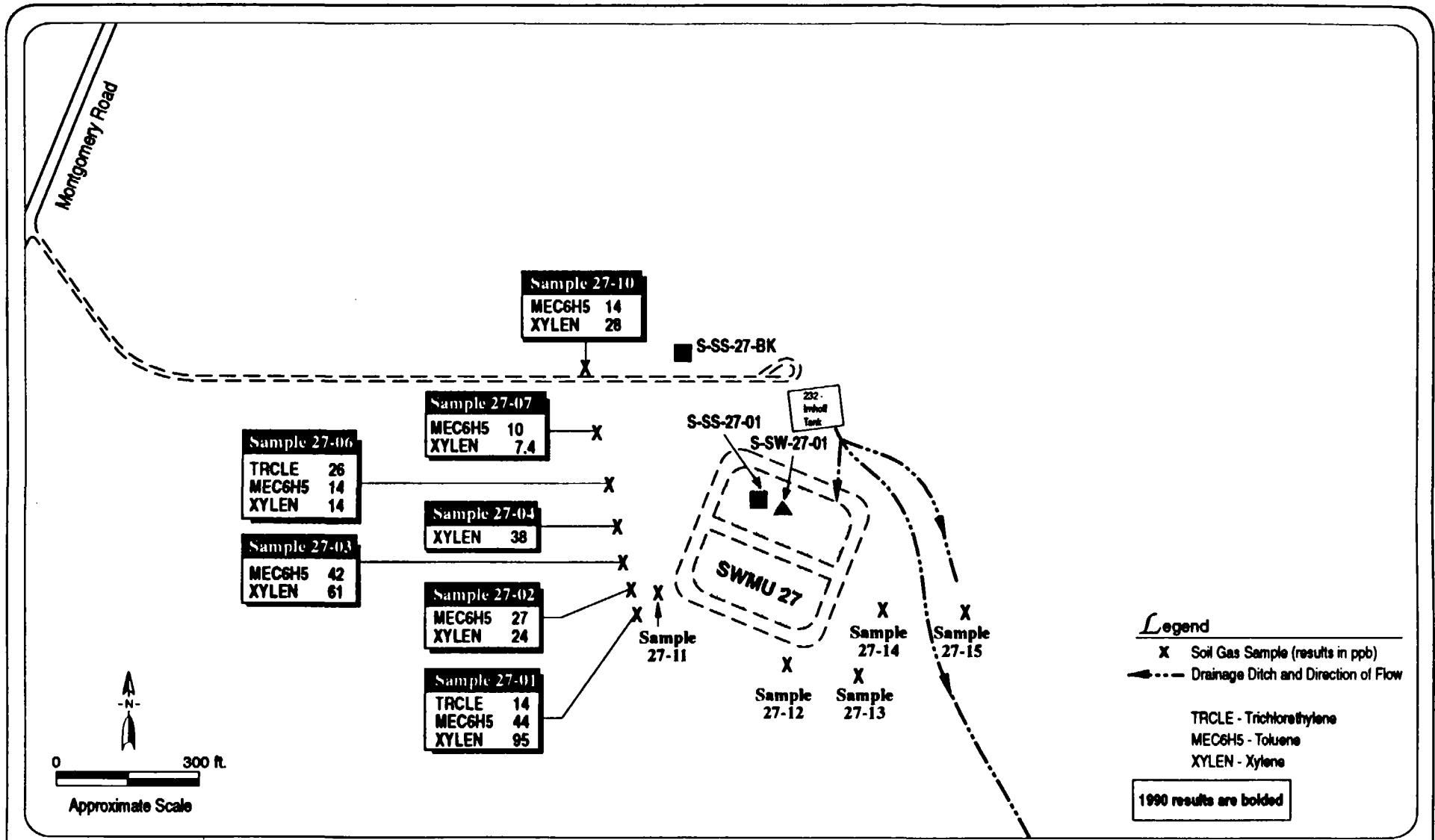
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- d Duplicate sample
- ppb Parts per billion
- 11DCE 1,1 - Dichloroethane
- TCLEE 1,1 - Tetrachloroethylene/tetrachloroethene
- TRCLE Trichloroethylene
- ** Detection was a multipeak response indicative of a fuel product
- LT Less than



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Figure 5.17-2
SWMU 27 - Sewage Treatment Plant
Organics



Tooele Army Depot - South Area
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Figure 5.17-3
SWMU 27 - Sewage Treatment Plant
Soil Gas Detections