LONGHORN ARMY AMMUNITION PLANT

KARNACK, TEXAS

ADMINISTRATIVE RECORD

VOLUME 1 of 5

1993

Bate Stamp Numbers
005615 - 005765

Prepared for:

Department of the Army
Longhorn Army Ammunition Plant
Marshall, Texas 75671-1059

1995

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD - CHRONOLOGICAL INDEX

VOLUME 1 of 5

1993

A. Title: Letter - Subject: Meeting, LHAAP, for Technical Review Committee - December 8, 1993
Attach(s): Meeting Agenda
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: March 2, 1993
Bate Stamp: 005615 - 005616

B. Title: Letter - Subject: Draft RI / FS Work Plan Addendum To Include Site 1A
Group(s): 1 (Partial)
Site(s): LHAAP - 1A Inert Burning Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, U.S. Corps Of Engineers
Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
Date: March 10, 1993
Bate Stamp: 005617

C. Title: Final Report - Waste Sump Inventory Remedial Investigation (RI)
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): U.S. Army Corps Of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: April, 1993
Bate Stamp: 005618 - 005763

D. Title: Letter - Subject: Requested Change In Quantification Limits For Detection Of Explosives in Ground Water Samples
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, U.S. Corps Of Engineers
Author(s): Robert W. Bringman

VOLUME 1 of 5 (Continued)

1993

Recipient: **Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement**
Date: **April 1, 1993**
Bate Stamp: **005764 - 005765**

DEPARTMENT OF THE ARMY
LONGHORN/LOUISIANA ARMY AMMUNITION PLANTS
MARSHALL, TEXAS 75671-1059

005615

REPLY TO
ATTENTION OF

March 02, 1993

SMCLO-EV (200-1a)

SUBJECT: Meeting, Longhorn Army Ammunition Plant, for Technical Review Committee (TRC) and Program Managers - March 09, 1993

Environmental Protection Agency
ATTN: Lisa M. Price (6H-ET)
1445 Ross Avenue
Dallas, Texas 75202

Dear Ms. Price:

Enclosed is a tentative agenda for the TRC and Program Manager's Meetings. This will be the fifth meeting for the TRC, and we hope that you will be able to attend.

If you have any questions or suggestions regarding the meeting or agenda, contact Mr. Lynn Muckelrath (903) 679-2980.

Sincerely,

Robert W. Bringman
Lieutenant Colonel, U.S. Army
Commanding Officer

Enclosure

LONGHORN ARMY AMMUNITION PLANT MEETING AGENDA

MEETING: TECHNICAL REVIEW COMMITTEE (TRC) AND PROGRAM MANAGERS

LOCATION: LONGHORN ARMY AMMUNITION PLANT MARSHALL , TEXAS BLDG. 703

DATE / TIME: MARCH 09, 1993 / FOLLOWING TRC

SIGN IN: AT ENTRANCE OF LHAAP THERE IS A GATE HOUSE WHERE YOU SIGN IN. THE GUARD WILL ISSUE A TEMPORARY BADGE. IF YOU BRING A CAMERA PLEASE REQUEST A CAMERA PERMIT.

AGENDA

I. COMMENTS & STATUS.- .

A. RESULTS OF GROUND WATER MONITORING BY COE BURNING GROUND & UEP
B. IRA WORK PLAN - BURNING GROUND AND UEP
C. ADDENDUM TO WORK PLAN - INERT BURNING GROUNDS
D. PROPOSED GUIDELINES FOR RI ON SUMPS

DEPARTMENT OF THE ARMY
LONGHORN/LOUISIANA ARMY AMMUNITION PLANTS
MARSHALL, TEXAS 75671-1059

005617

March 10, 1993

SMCLO-EV (200-1a)

Subject: Remedial Investigation/Feasibility Study Work Plan Addendum for Area LHAAP-1a - EBASCO Environmental

Environmental Protection Agency
ATTN: Lisa Price
1445 Ross Ave
Dallas, Texas 75202

Dear Mrs. Price

Enclosed is the final draft copy of subject plan for your review. Please provide comments to Mr. Lynn Muckelrath, SMCLO-EV, (903) 679-2980, by March 17, 1993 in order to save contractor's remobilization costs and to finalize the contract modification.

Sincerely,

Robert W. Bringman
Lieutenant Colonel, U. S. Army
Commanding Officer

Enclosure

Copy Furnished

CESWT-PP-EA (H. Davidson)

WASTE SUMP INVENTORY

Longhorn Army Ammunition Plant
Karnack, Texas

US Army Corps of Engineers
Southwestern Division
Tulsa District

April 1993

005619

WASTE SUMP INVENTORY

LONGHORN ARMY AMMUNITION PLANT

KARNACK, TEXAS

Prepared for
Longhorn Army Ammunition Plant
Karnack, Texas

By
U.S. Army Corps of Engineers
Tulsa District
P.O. Box 61
Tulsa, OK 74121-0061

April 1993

EXECUTIVE SUMMARY

An inventory of waste sumps was conducted by the Tulsa District, U.S. Army Corps of Engineers at Longhorn Army Ammunition Plant (LAAP), Karnack, Texas. Subsurface waste sumps of varied design, age, and location are present at LAAP for collection of waste waters associated with production processes and related activities. Objectives of this investigation were to identify numbers, locations, historical data, operational status, structural dimensions and characteristics, and potential contaminants for all waste sumps at LAAP. This information will form the basis for development of sampling plans aimed at investigating potential chemical releases from sumps at the facility.

Inventory activities included field verification of sump locations, review of facility documents and drawings, and interviews with LAAP personnel. In addition to field verification of known sump locations, all buildings in production areas were visually surveyed for possible existence of additional sumps not previously identified.

Inventory activities identified the presence of 125 process waste sump locations distributed among 76 buildings/locations at LAAP. Considerable variation was noted in sump configuration, dimensions, volumes, and associated drain lines. Sump identification numbers, locations, approximate dimensions, operational status, contents, and volumes are presented in this report. In addition, site photographs of each sump location and digitized drawings of production buildings and associated sumps are provided.

In addition to process waste sumps, the presence of 20 sumps associated with process waste racks were identified at LAAP. All waste rack sumps are identical in construction and are designed to

collect rainwater runoff from waste rack areas. Locations and descriptions of these sumps are likewise provided in this report.

In an attempt to identify potential chemical constituents in wastes delivered to LAAP sumps, a list of chemicals used at LAAP was compiled from process batch cards and facility materials listings. While a wide variety of chemicals were identified, the most significant from an environmental contaminants perspective appear to be compounds containing metals (including but not limited to Al, Sb, Ba, B, Cr, Co, Cu, Pb, Ag, Sr, W, Zn, Zr), organic solvents (acetone, methyl ethyl ketone, methylene chloride, 1,1,1-trichloroethylene), and the compound isophorone diisocyanate (IPDI).

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TABLES

APPENDICES

WASTE SUMP INVENTORY
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

1. INTRODUCTION

An inventory of process waste sumps was conducted by the Tulsa District, U.S. Army Corps of Engineers at Longhorn Army Ammunition Plant (LAAP), Karnack, Texas. The facility, established in 1945 for production of 2,4,6-trinitrotoluene, is a Government-owned, contractor-operated (Longhorn Division of Thiokol Corporation) facility under jurisdiction of the U.S. Army Armament, Munitions, and Chemical Command (AMCCOM). Current activities at LAAP include loading, assembling, and packing of pyrotechnic, illuminating, and signal ammunition and solid propellant rocket motors.

Subsurface waste sumps of varied design, age, and location are present at LAAP for collection of waste waters associated with production processes and related activities. Due to the age and design of these sumps, a potential exists for past or present release of sump contents to the surrounding environment. Objectives of this investigation were to identify numbers, locations, historical data, operational status, structural dimensions and characteristics, and potential contaminants for all waste sumps at LAAP. This information will form the basis for development of sampling plans aimed at investigating potential chemical releases from the sumps at the facility.

2. WASTE SUMP CHARACTERISTICS

General

Two general classes of waste sumps exist at LAAP - process waste sumps specific to buildings in production areas and related facilities and sumps associated with waste racks in central locations throughout production areas. Despite considerable variation in sump size and design, general characteristics are common to both classes of waste sumps. These characteristics are described below.

Process Waste Sumps

Process waste sumps generally consist of rectangular, square, or circular concrete sumps constructed with the top at or slightly above grade. Most sumps possess wood and/or metal covers equipped with liquid gauging devices (floating standpipes) and access doors for sump content removal. Drain lines leading from process facilities to waste sumps are typically covered concrete and/or tile troughs constructed at grade level. Buried pipe drain lines are associated with some sumps (typically circular design sumps). A great deal of variation exists in drain line length and configuration among sumps.

Waste Rack Sumps

Outdoor waste racks were constructed at centralized production area locations at LAAP in 1984-85. Waste racks consist of a covered metal grate suspended above a shallow, ground-level concrete catch basin. Process waste containers are placed on these racks prior to collection and disposal. Rainwater runoff from waste racks is collected in the concrete catch basins and transported via a drain trough (a covered 5-foot length of 12-inch-diameter PVC) to accompanying waste rack sumps. These

sumps are covered concrete structures with outside dimensions of 5 feet square, inside dimensions of 3 feet 8 inches square, and a depth of approximately 3 feet 4 inches. Waste rack sumps have a rated capacity of 260 gallons with an overflow capacity of 360 gallons.

Sump Contents Handling

Liquid wastes are periodically removed from both process and waste rack sumps by a 5,000-gallon vacuum truck. Collection schedules are based on the level of production activity at specific buildings, or visual observation of liquid levels as indicated by floating standpipes. Liquid wastes are transported to the pilot wastewater treatment facility (Building 401-C) for liquid/solids separation and evaporative reduction in liquid volume. Removed solids are transported to LAAP burning grounds for thermal destruction.

3. INVENTORY ACTIVITIES

General

Inventory activities included a review of all available information at LAAP relevant to sump numbers, locations, historical operations, and potential chemical contaminants. This included field activities, review of facility documents and drawings, and interviews with plant personnel. Detailed descriptions of these activities are provided below.

Field Verification of Sump Locations

An initial inventory of LAAP process waste sumps was conducted under the direction of Thiokol Corporation by BCM Engineers, Inc., (Draft Final Report, Wastewater Collection and Treatment System

Evaluation, BCM Project No. 06-7959-01, February 1992). Findings of this report were used as the initial basis for field verification of sump numbers and locations.

Field activities consisted of verification of each sump number and location, measurement of outside sump dimensions, determination of sump operational status (as posted on signs at each sump location), visual observation of sump contents (where possible), and photography of each sump and surrounding features. In addition to field verification of known sump locations, all buildings in production areas were visually surveyed for possible existence of additional sumps not previously identified.

Review of Plant Records/Drawings

LAAP records were searched for historical information relative to sump construction, operation, or maintenance. In general, construction documents, detailed records, and as-built drawings containing sump-related information were extremely limited at the facility. Specific information on sump construction dates, usage information, maintenance records, and related information could not be located. Information from the only available drawings (general plan-view drawings of specific buildings and associated sumps) was digitized for delineation of sump locations relative to other facility features.

Interviews with Plant Personnel

In addition to a search for historical records, interviews were conducted with plant personnel knowledgeable about past and current plant operations. Unfortunately, most personnel with a long history of employment at the facility have recently retired and were unavailable for interview. Thiokol safety personnel and chemists were, however, able to provide information relative to building-specific operations and potential chemical contaminants.

Review of Batch Cards/Materials Lists

In an attempt to identify potential chemical constituents in wastes delivered to LAAP sumps, process batch cards and facility materials listings were reviewed. Process batch cards (without accompanying mixing proportions) were obtained for batches representative of all production processes at LAAP. In addition, chemicals ordered and received by the facility were identified by review of direct and indirect materials listings provided by Thiokol. A list of all chemicals (exclusive of fuels, oils, and lubricants) identified by these means was compiled.

4. INVENTORY RESULTS

General

Process waste sump numbers, locations, and general characteristics are provided in Table 1. Photographs of each sump location (by ascending sump number) and digitized drawings of buildings and associated sumps (arranged by ascending building number) are contained in Appendices A and B, respectively. Waste rack sump locations are provided in Table 2.

Process Waste Sumps

Inventory activities identified the presence of 125 process waste sump locations distributed among 76 buildings/locations at LAAP (Table 1). Considerable variation was noted in sump configuration, dimensions, and volumes. Sump depth estimates (calculated from volumes reported in the initial BCM inventory and measured horizontal dimensions) ranged from 1 foot to 11 feet. As these are calculated estimates only, precise sump depths should be determined at each location prior to sampling activities dependent on bottom elevations of sumps.

Table 1. Process Waste Sump Characteristics, February 1993, Longhorn Army Ammunition Plant.

Sump No.	Bldg. No.	Status[1]	Contents	Outside Dimensions (feet) L	W	Depth[2]	Dia.	Volume[3] (gal.)	Comments
001	P-1	A	Liquid	15	5	5	-	2030	
002	P-3	A	Liquid	9.4	5.5	5	-	1755	
003	P-3	A	Liquid	9.4	5.5	5	-	1675	
004	P-3	I	Liquid	9.4	5.5	5	-	1835	
005	P-3	C	Sand	9.4	5.5	4	-	1271	
006	P-116*	I	Liquid	9.4	5.5	11	-	3623	
007	P-116*	A	Liquid	9.4	5.5	9	-	2904	
008	P-117*	A	Liquid	11.5	7.5	5	-	2922	
009	P-117*	A	Liquid	11.5	7	7	-	3545	
010	P-118*	A	Liquid	9.4	5.5	9	-	2990	
011	P-118*	A	Liquid	9.4	5.5	11	-	3584	
012	P-118*	A	Liquid	9.4	5.5	10	-	3156	
013	P-118*	I	Liquid	9.4	5.5	9	-	2922	
014	B-5	C	Sand	9.3	5.5	4	-	1077	
015	B-7*	U	Liquid	9.4	5.5	5	-	1596	
016	B-7*	A	Liquid	-	-	4	5	476	
017	B-9	C	Liquid	9.4	5	2.5	-	718	
018	B-9	C	Sand	-	-	5	6	1077	
019	B-10*	A	Liquid	9.5	5.5	5	-	1476	
020	B-11*	A	Liquid	9.3	5.3	5.5	-	1750	
021	B-12*	A	Liquid	14	5	3.5	-	1456	
022	B-13*	A	Liquid	9.3	4.3	7	-	1683	
023	B-14*	A	Liquid	14	5	3.5	-	1596	
024	B-15*	A	Liquid	10	5.5	1.5	-	539	
025	B-16*	A	Liquid	9.2	5.3	5	-	1537	
026	Shed C*	A	Liquid	8.3	8.7	3.5	-	1586	
027	P-9	A	Liquid	13.5	5.3	5	-	2364	
028	P-124	A	Liquid	-	-	3	4.8	374	
029	P-123	A	Liquid	9.4	5.5	11	-	3553	
030	212-12*	A	Liquid	-	-	3	5.4	535	
031	212-12*	I	Liquid	-	-	3	5.4	556	
032	212-14*	A	Liquid	-	-	3.5	6	738	
033	212-14*	I	Sand	-	-	4.0	4.3	162	
034	212-16*	A	Liquid	-	-	3	5.7	516	
035	212-18*	A	Liquid	-	-	3.5	5	486	

Table 1 (Continued)

Sump No.	Bldg. No.	Status[1]	Contents	Outside Dimensions (feet) L	W	Depth[2]	Dia.	Volume[3] (gal.)	Comments
036	P-122	G	-	-	-	-	-	-	
037	212-29	C	Sand	-	-	3	4.3	330	
038	212-32	A	Liquid	6	6	2	-	400	
039	212-33*	G	-	-	-	-	2.5	-	
040	212-33*	A	Liquid	6.5	4.5	3	-	559	
041	212-35*	A	Liquid	-	-	3	4	270	
042	212-37*	A	Liquid	-	-	3	4	276	
043	212-38*	C	Liquid	-	-	1.5	3.5	106	
044	25-C*	C	Liquid	9.4	9.4	4	-	2394	
045	25-C*	A	Liquid	9.4	9.4	6.5	-	3763	
046	25-C*	G	-	-	-	-	-	-	Location unknown
047	25-D*	A	Liquid	11	11	1.5	-	1076	
048	26-E*	A	Liquid	9.3	4.3	-	-	Unknown	
049	26-E*	A	Liquid	6	3	3	-	280	
050	26-E*	A	Liquid	9.3	4.3	4	-	977	
051	26-E*	A	Liquid	6	3	6	-	598	
052	28-G	C	Sand	8	5	2	-	524	
053	29-D*	A	Liquid	13	7	7	-	4424	
054	31-G	A	Liquid	7.4	4.4	5	-	978	
055	31-G	A	Liquid	7.4	4.4	4.5	-	875	
056	32-H*	I	Liquid	7.6	3.5	3	-	496	
057	33-G*	C	Sand	11.3	7.3	6	-	3141	
058	36-B	G	-	-	-	-	-	-	Drain present - sump gone
059	41-E*	C	Sand	17.5	5.5	4	-	2633	
060	42-E*	I	Liquid	17.5	5.5	5	-	3110	
061	42-H*	A	Liquid	9.8	9.6	8	-	5224	
062	45-E*	C	Sand	9	6.3	2.5	-	943	
063	45-E*	C	Sand	9.5	6	2.5	-	943	
064	45-E*	C	Sand	9.5	6	4	-	1346	
065	45-E*	U	Liquid	9.5	6	4	-	1481	
066	45-E*	A	Liquid	9	6	4	-	1481	
067	45-E*	C	Sand	9	6	3	-	943	
068	46-A*	I	Liquid	9.5	6	5.5	-	1941	
069	46-B*	I	Liquid	7.3	5.5	5.5	-	1372	
070	50-G	A	Liquid	21.3	6	7	-	6134	

Table 1 (Continued)

Sump No.	Bldg. No.	Status[1]	Contents	Outside Dimensions (feet) L	W	Depth[2]	Dia.	Volume[3] (gal.)	Comments
071	54-F*	I	Liquid	9	6	6	-	2020	
072	54-F*	I	Liquid	9	6	6	-	2169	
073	54-G*	C	Liquid	9	6.4	2.5	-	898	
074	54-G*	A	Liquid	6.3	4.4	3	-	501	
075	54-G*	A	Liquid	9.5	6.5	3.5	-	1346	
076	54-H*	A	Liquid	9.3	6.4	6	-	2268	
077	54-H*	A	Liquid	9.3	6.4	6	-	2222	
078	68-C	A	Liquid	-	-	3.5	4.3	359	
079	68-C	A	Liquid	-	-	3.5	4.3	386	
080	68-C	C	Unknown	7.3	4.6	1	-	200	Couldn't remove cover
081	68-F*	I	Liquid	22	10	9	-	13713	
082	68-F*	I	Liquid	13.4	7.4	6	-	3839	
083	68-F*	I	Liquid	13.4	7.4	8.5	-	5470	
084	68-G*	C	Liquid	6	5	1.5	-	200	
085	68-G*	C	Sand	7	7	3.5	-	1048	
086	68-G*	I	Liquid	15.4	15	7	-	11310	
087	68-G*	C	Liquid	6	5	2.5	-	441	
088	68-G*	C	Liquid	8.4	7.4	6	-	2513	
089	68-G*	C	Sand	8.4	7.4	6	-	2513	
090	68-G*	A	Liquid	11.4	9	8	-	5685	
091	75-I*	I	Liquid	9.4	7.3	5	-	2066	
092	75-I*	I	Liquid	9.4	7.3	6.5	-	2893	
093	75-I*	I	Liquid	9.4	7.3	5.5	-	2464	
094	16-Y*	C	Sand	-	-	2	6	355	
095	34-Y*	A	Liquid	7.7	7.5	5.5	-	2006	
096	34-Y*	C	Sand	-	-	1.5	5	212	
101	45-Y*	A	Liquid	-	-	4	5.5	661	
102	16-T	C	Sand	8	8.3	4	-	1833	
103	16-T	C	Sand	9.3	9.3	4	-	2394	
104	16-T	C	Sand	8.3	8.3	7.5	-	3351	
105	16-T	C	Sand	9.3	9.3	4	-	2199	
106	401	G	-	Unknown				-	Powerhouse Interior
097	38-Y*	A	Liquid	-	-	4	5.25	624	
098	38-Y*	C	Sand	-	-	2	6	405	

Table 1 (Continued)

Sump No.	Bldg. No.	Status[1]	Contents	Outside Dimensions (feet) L	W	Depth[2]	Dia.	Volume[3] (gal.)	Comments
099	38-Y*	A	Liquid	-	-	2	3.7	159	
100	45-Y*	C	Sand	-	-	1.5	6	265	
107	403*	C	Sand	-	-	2	5	297	
108	406	C	Sand	9.3	5.4	1.5	-	393	
109	408	C	Sand	9.3	5	2	-	617	
110	207	I	Liquid	6.4	4.4	4.5	-	748	
111	722-P	A	Liquid	2	2	3.5	-	55	
112	722-P	A	Liquid	-	-	4.5	3	233	
113	744	I	Liquid	-	-	4	3.5	276	
114	25-X	A	Liquid	19.4	12	3.5	-	5554	
115	33-X	A	Liquid	20	10	7	-	9273	
116	37-X	I	Liquid	19.4	12	5.5	-	8954	
117	744-A	A	Solids	-	-	-	6 (2)	714	Vehicle Wash
118	813*	A	Liquid	8	8	3	-	1283	
119	725	C	Concrete	7.4	5.3	5	-	1192	Filled w/Concrete
120	725	C	Concrete	15.7	5.3	4	-	2042	Filled w/Concrete
121	32-H	I	Liquid	Unknown		-	-	2407	Swampy Area
122	401-C	A	Liquid	7	7	4	-	1212	
123	18-Y*	A	Liquid	-	-	-	-	743	Aboveground Tank
800	23-T	A	Liquid	11	10.3	-	-	Unknown	Sump at Tank Farm
-	723	A	Liquid	16	4	-	-	Unknown	Unnumbered Sump

[1] Status: A = Active; I = Inactive; C = Closed; U = Unknown; G = Gone. Based on posted signs.
[2] Calculated depth estimate.
[3] Taken from BCM report.
* Building possesses deluge fire protection system.

Table 2. Waste Rack Sump Locations, Longhorn Army Ammunition Plant.

Y-Area	Plant 2	Plant 3
34-Y	P-1	68-G
38-Y	P-117	54-H
16-Y	P-118	29-H
	P-122	42-H
	B-14 (2)	
	B-9 (2)	
	P-113	
	212-35R	
	212-20	
	212-14	
	407	

A diversity of drain line lengths, configuration, and proximity to structural features was noted at LAAP production areas. For sampling plan formulation and estimation, digitized drawings of production buildings and associated sumps are provided in Appendix B. It should be emphasized that while these figures are based on the best and most current drawings available at LAAP, facility modifications, estimated locations of many sumps, and inaccuracies in conversion of drawings to digital format should be considered prior to use of these figures for anything other than estimation purposes.

Operational status of process waste sumps (as posted at each sump at the time of investigation) was determined as follows: sixty-two (62) were listed as active, twenty-two (22) were listed as inactive, thirty-four (34) were listed as closed, two (2) were of unknown status, and five (5) were gone. Active sumps are defined as those that regularly receive waste and are periodically serviced by the vacuum truck. Inactive sumps are those that are not currently used but that have not been rendered inoperative. Sumps filled with sand or concrete or that are otherwise rendered inoperative have generally been designated as closed. Sumps listed as "gone" include locations where visual observations indicate historical presence of a sump (i.e., drain lines with no associated

sump) or locations where sumps have been removed to facilitate building modifications.

Sump contents inspections revealed the presence of twenty-five (25) process waste sumps filled with sand, two (2) sumps filled with concrete, and ninety-three (93) sumps containing liquids/ solids (Table 1).

Waste Rack Sumps

A total of twenty (20) waste rack sumps were identified at various locations within production areas at LAAP (Table 2). Of this total, thirteen (13) are located within Plant 2, four (4) in Plant 3, and three (3) in the "Y" area. Photographs of several of these sumps are included in Appendix A. All waste rack sumps are identical in construction and are described under the above Section 2, Waste Sumps Characteristics. Liquid contents are regularly removed from these sumps and transported to the pilot wastewater treatment plant via vacuum truck.

Potential Contaminants

A list of all chemicals compiled from process batch cards, LAAP materials listings, and other sources is included as Appendix C. While a wide variety of chemicals were identified by the investigation, the most significant chemicals from an environmental contaminants perspective appear to be compounds containing metals (including but not limited to Al, Sb, Ba, B, Cr, Co, Cu, Pb, Ag, Sr, W, Zn, Zr), organic solvents (acetone, methyl ethyl ketone, methylene chloride, 1,1,1-trichloroethylene), and the compound isophorone diisocyanate (IPDI).

Contaminant Release Scenarios

Due to the age and design of LAAP sumps, potential exists for past or current releases of sump materials to the surrounding

environment. While a number of potential release scenarios are conceivable, the most probable includes subsurface releases associated with structural faults in sump and/or drain lines or overflow of sump contents to surrounding soils. Due to the age of LAAP sumps, the presence of structural joints in sump and drain line materials, and the resulting potential for fracture of these materials, subsurface releases along drains or beneath sumps are possible.

Potential for sump overflows are highest at production buildings equipped with deluge fire protection systems. These systems are designed for fire suppression by discharge of large volumes of water over a rapid time period. According to LAAP personnel, activation of these systems is relatively common at the facility and typically results in localized flooding (including sumps) at buildings possessing such systems. This scenario has the potential for sump contaminants release to surrounding soils, drainage ditches, and other topographically downgradient areas. Buildings equipped with both process waste sumps and deluge fire protection systems are identified in Table 1.

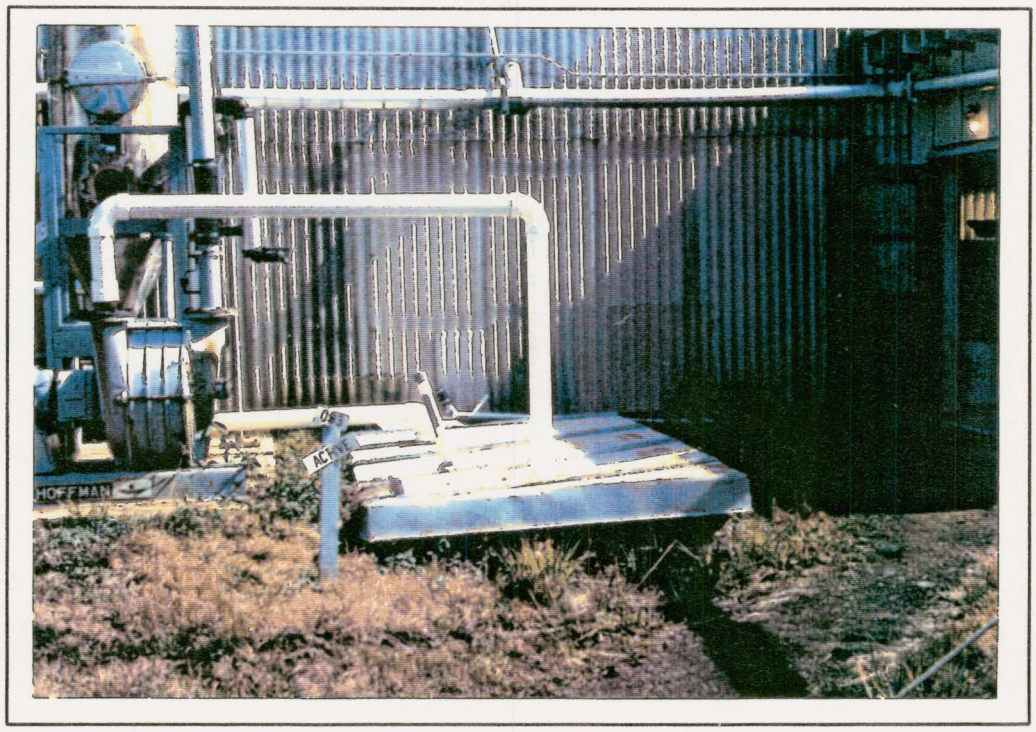
Contaminant release potential is also highest at production buildings used for preparation or handling of unconsolidated powders and other loose materials. This would include areas used for material preparation/weighing, mixing, coating, and consolidation. While building-specific release potentials could not be evaluated due to frequent renovation and program changes over the life of the facility, LAAP personnel identified the following buildings as areas frequently used for the above activities: P-122/P-123, P-1/P-3, B-7/B-11, B-12/B-14, B-13/15, 212-35, 54-H, 54-G, 46-A/46-B, 68-G, P-120, 212-14, 18Y, 34Y, and Shed C.

APPENDIX A

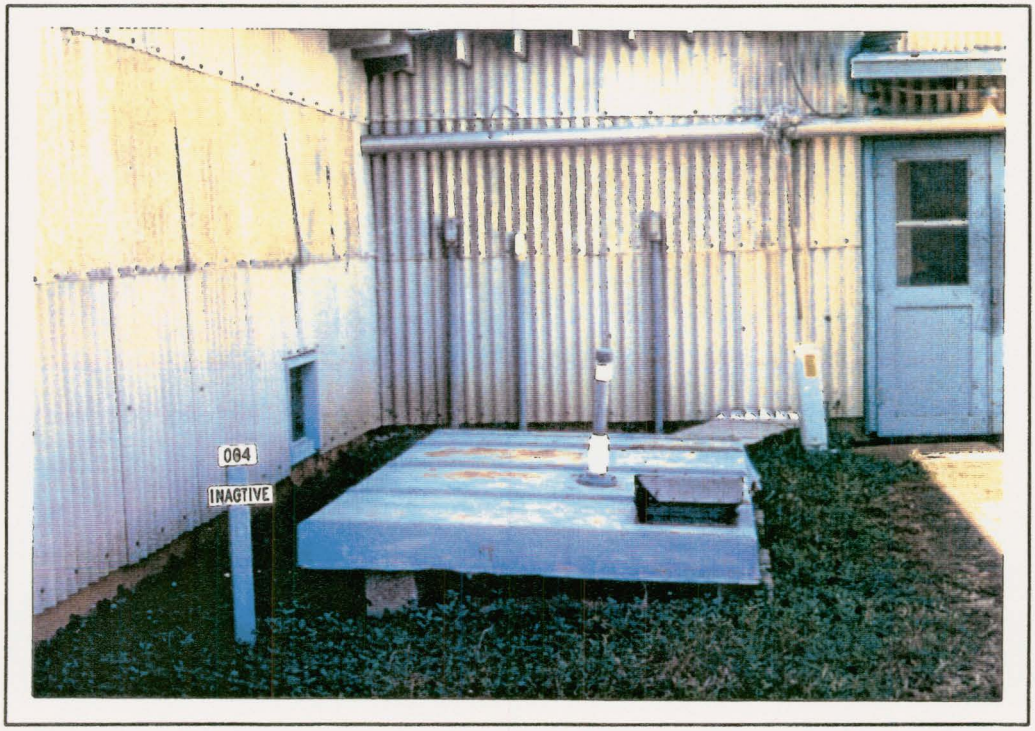
SUMP PHOTOGRAPHS

SUMP 001 - BUILDING P-1

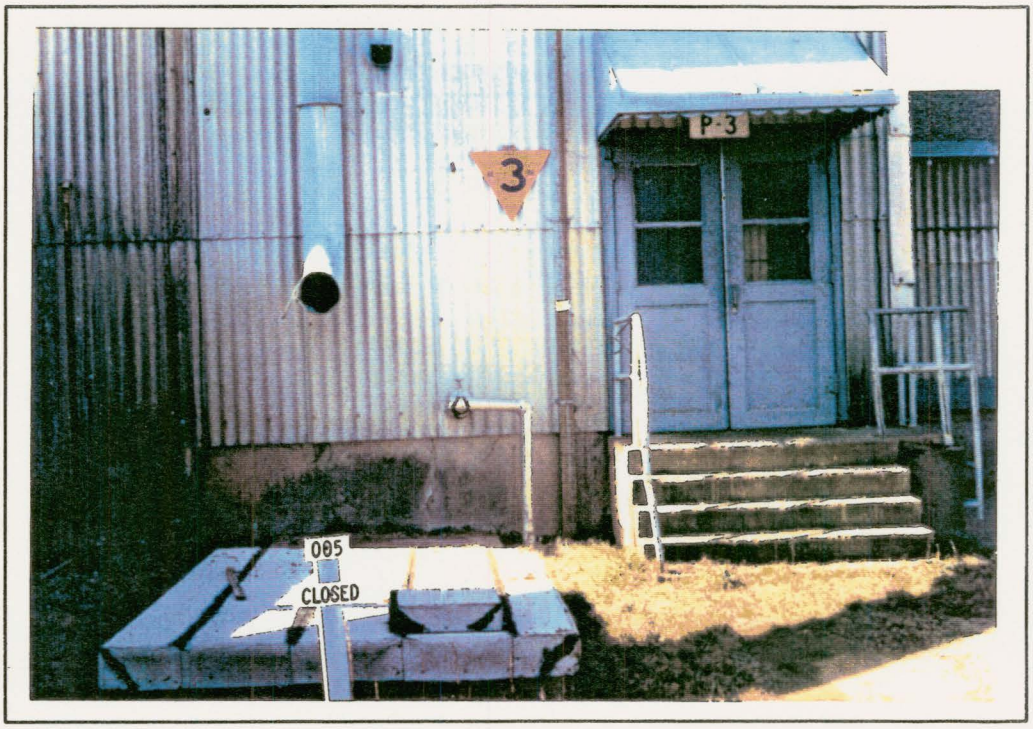
SUMP 002 - BUILDING P-3



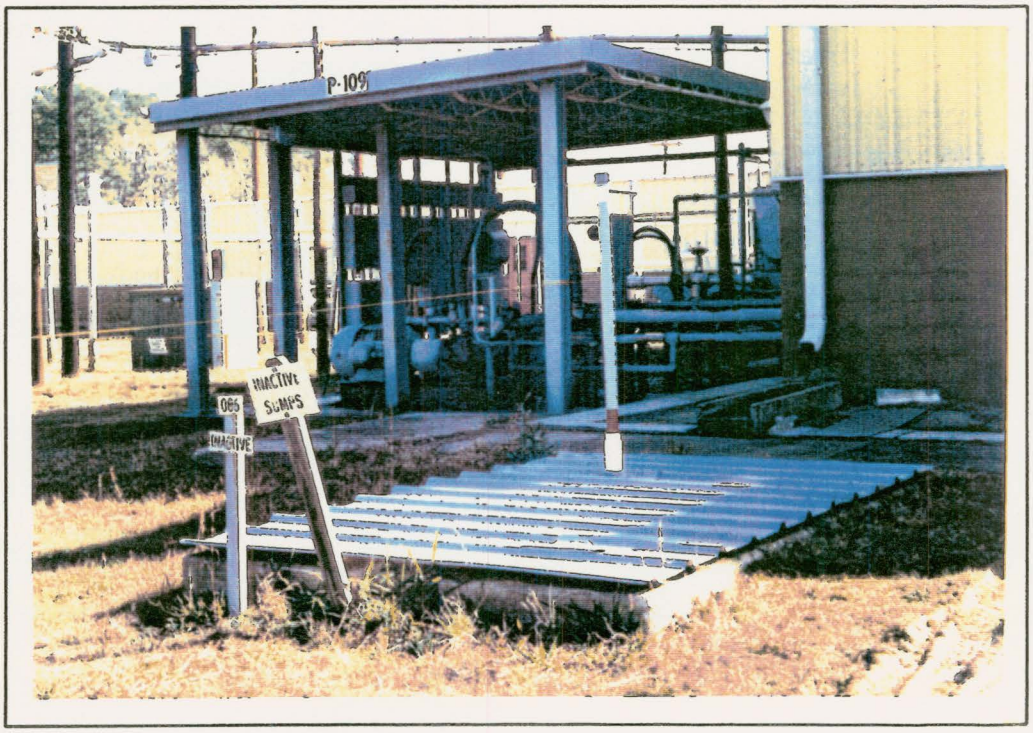
SUMP 003 - BUILDING P-3



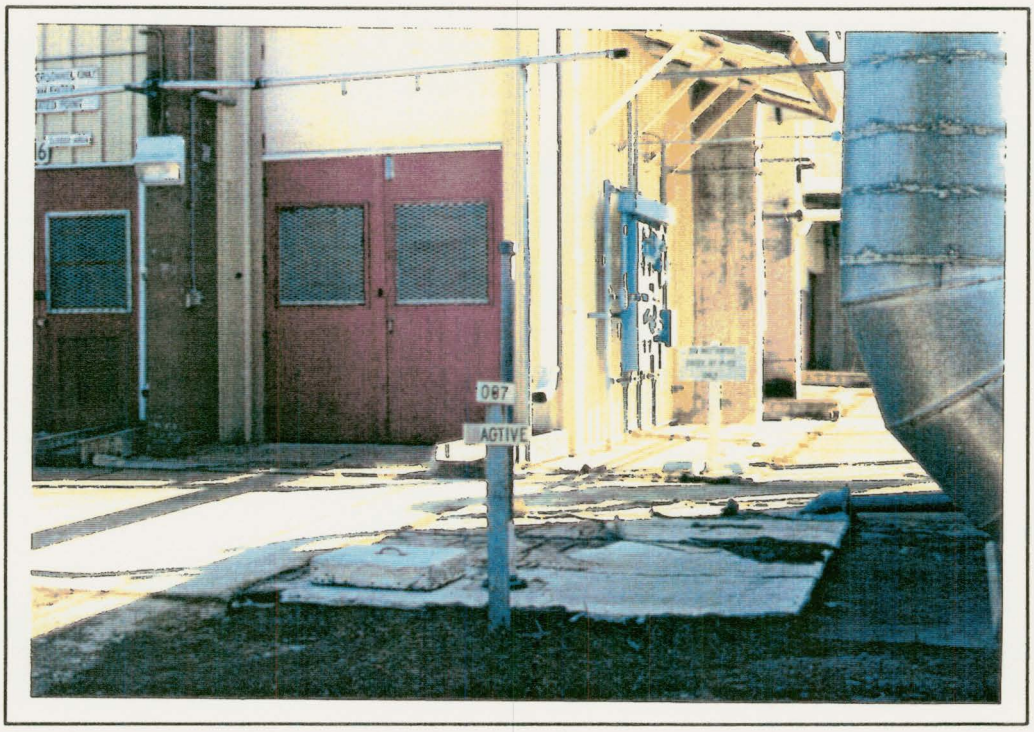
SUMP 004 - BUILDING P-3



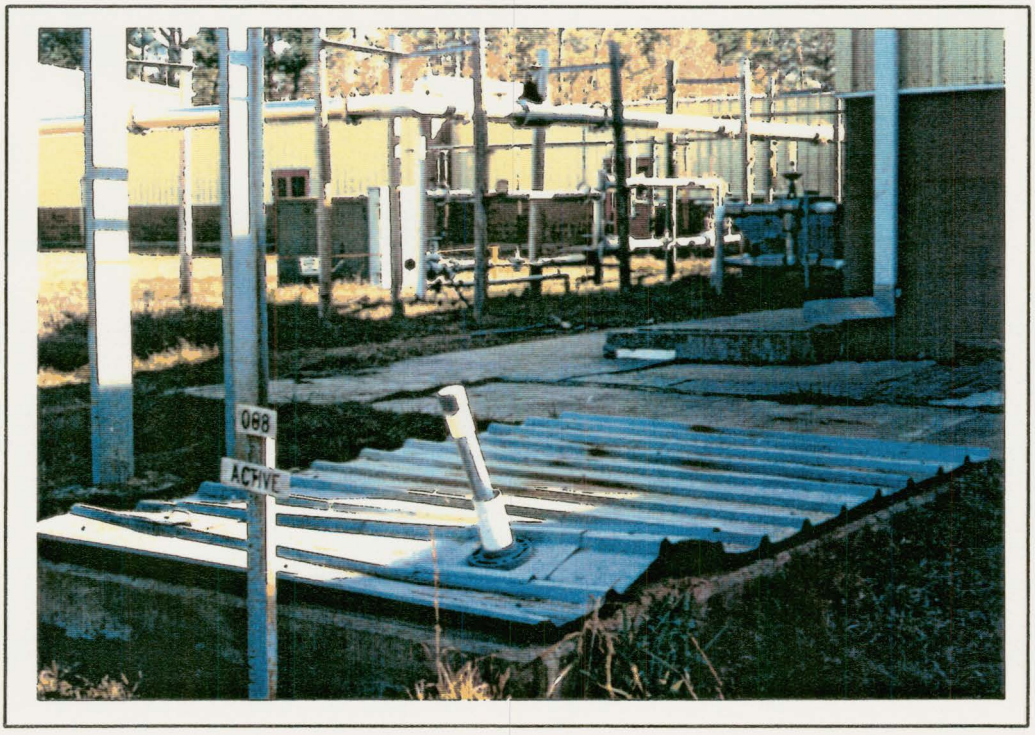
SUMP 005 - BUILDING P-3



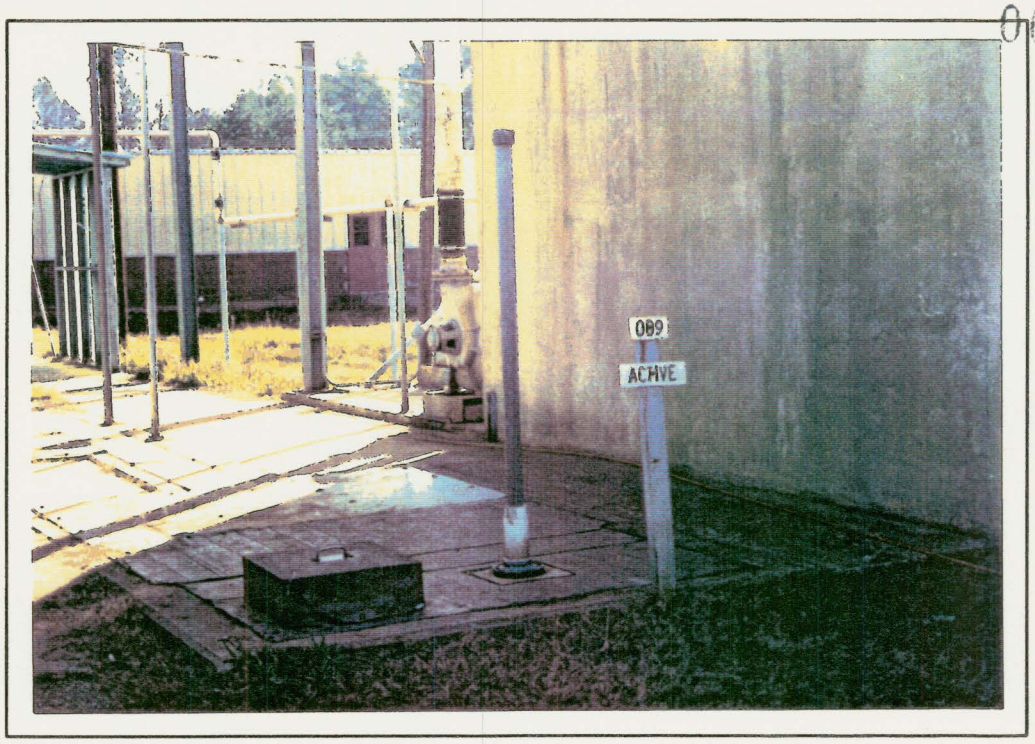
SUMP 006 - BUILDING P-116



SUMP 007 - BUILDING P-116

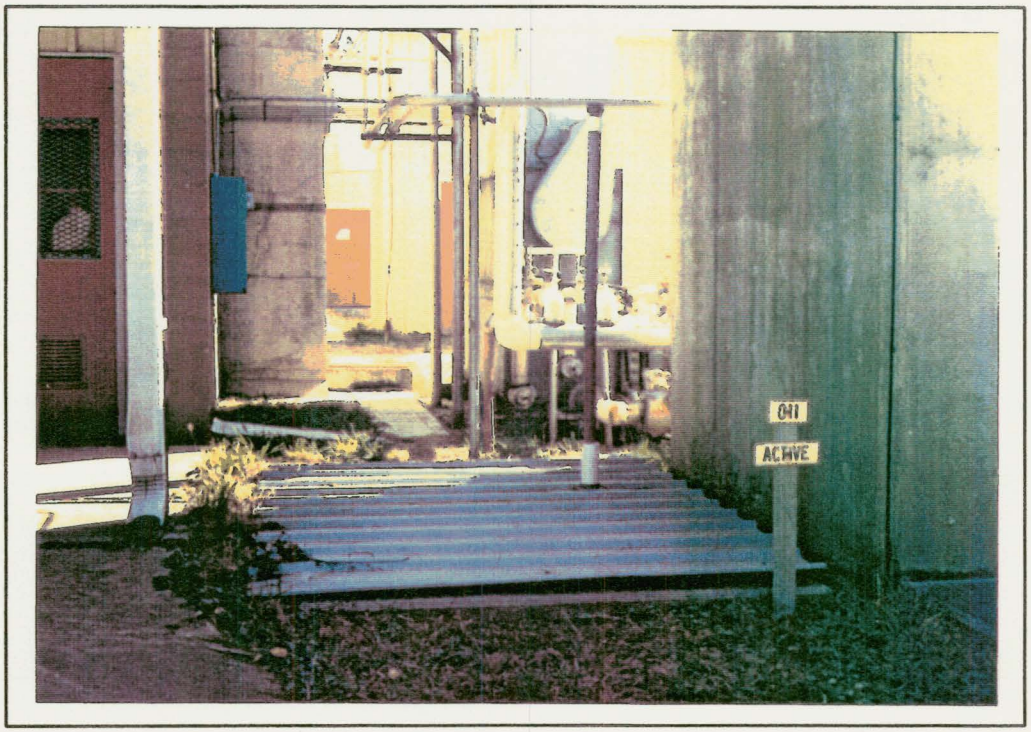


SUMP 008 - BUILDING P-117

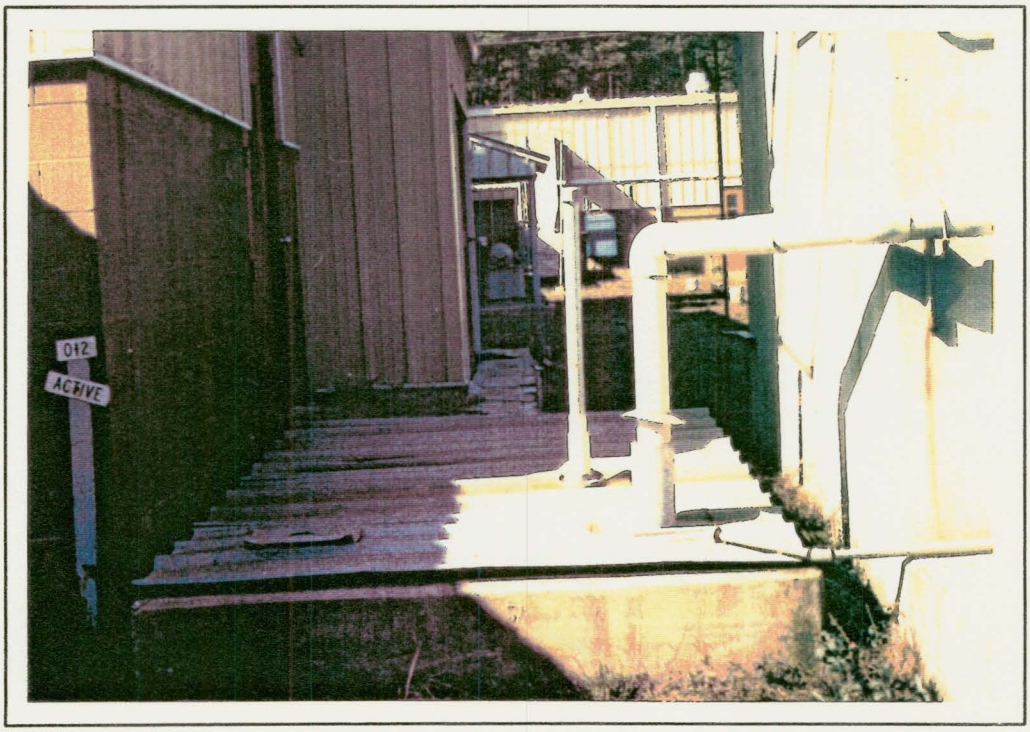


SUMP 009 - BUILDING P-117

SUMP 010 - BUILDING P-118



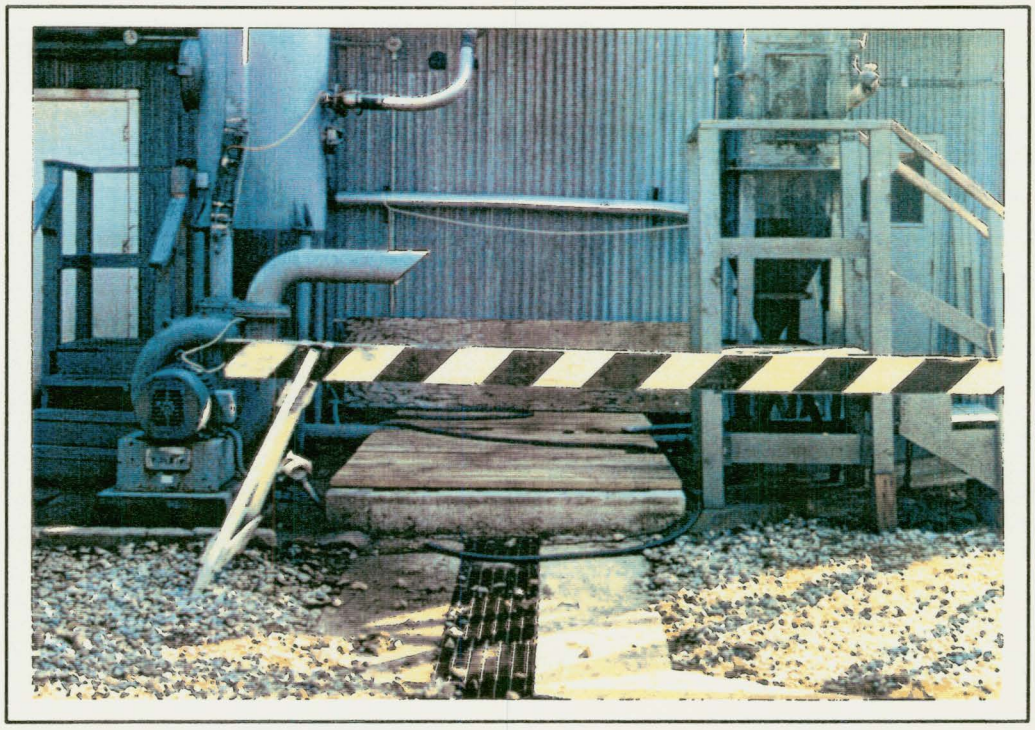
SUMP 011 - BUILDING P-118



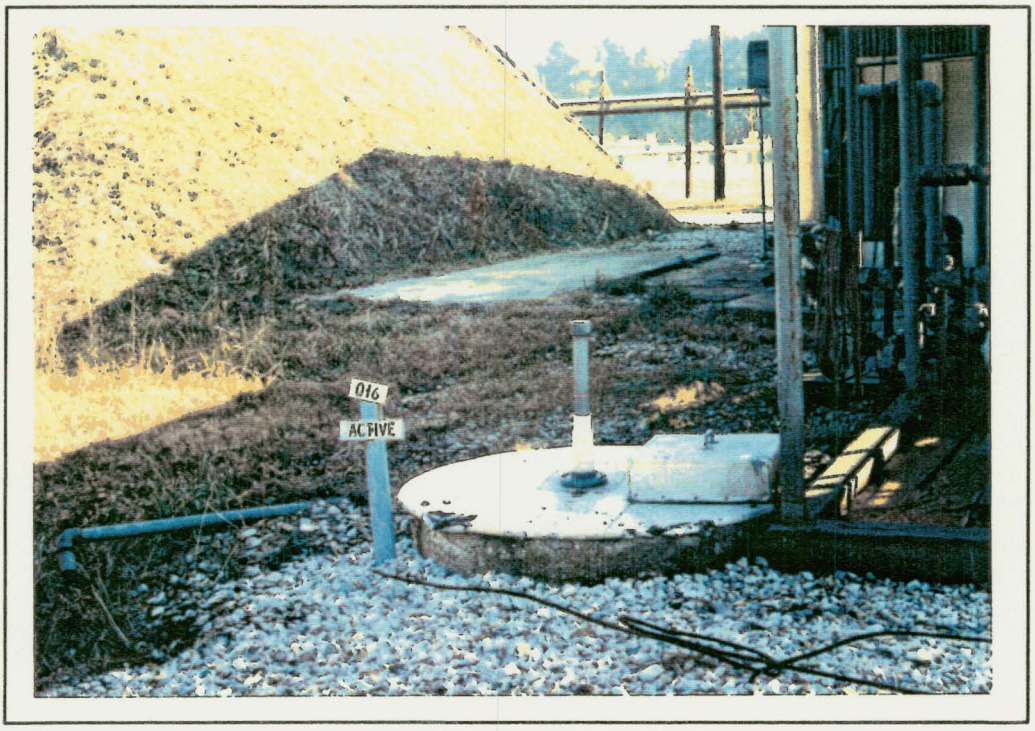
SUMP 012 - BUILDING P-118

SUMP 013 - BUILDING P-118

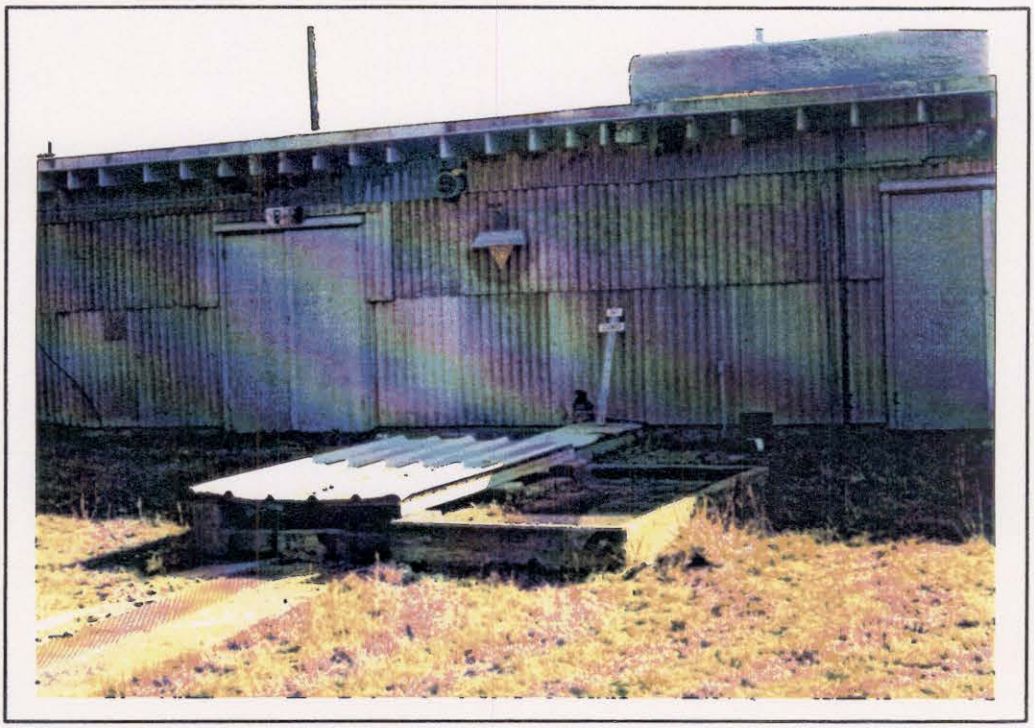
SUMP 014 - BUILDING B-5



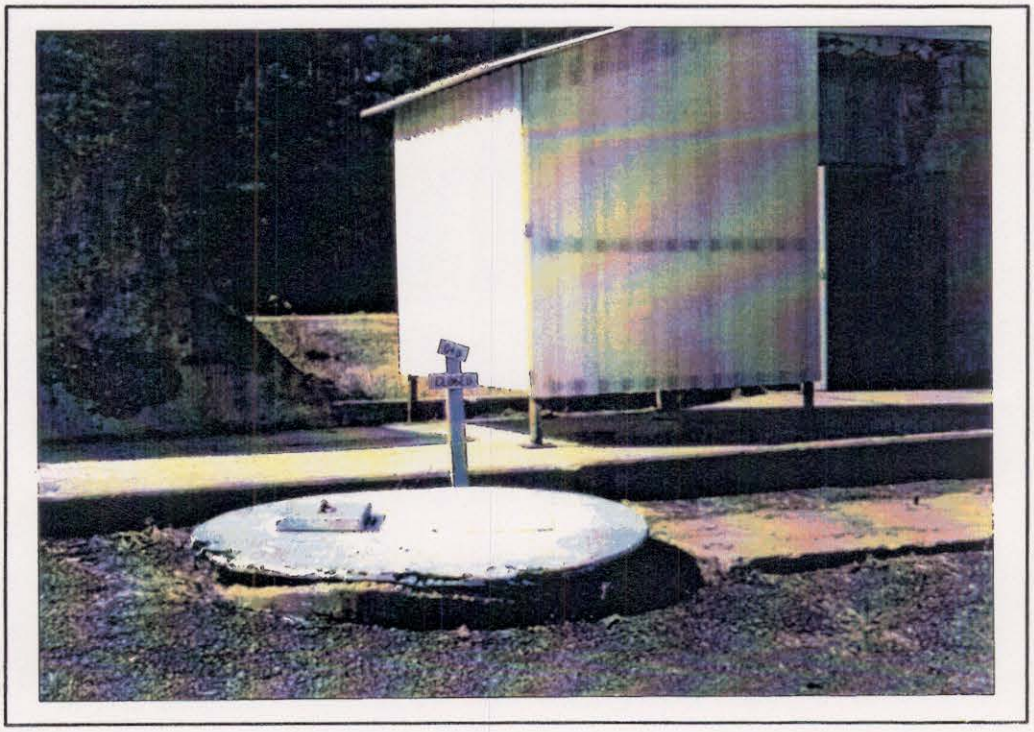
SUMP 015 - BUILDING B-7



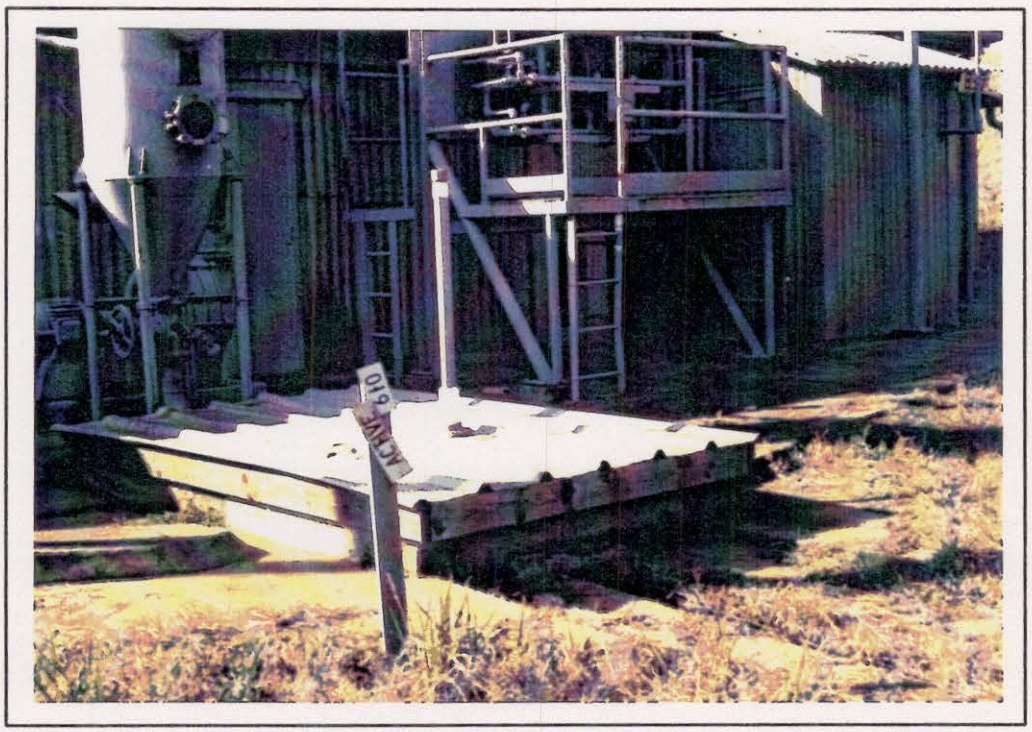
SUMP 016 - BUILDING B-7



SUMP 017 - BUILDING B-9

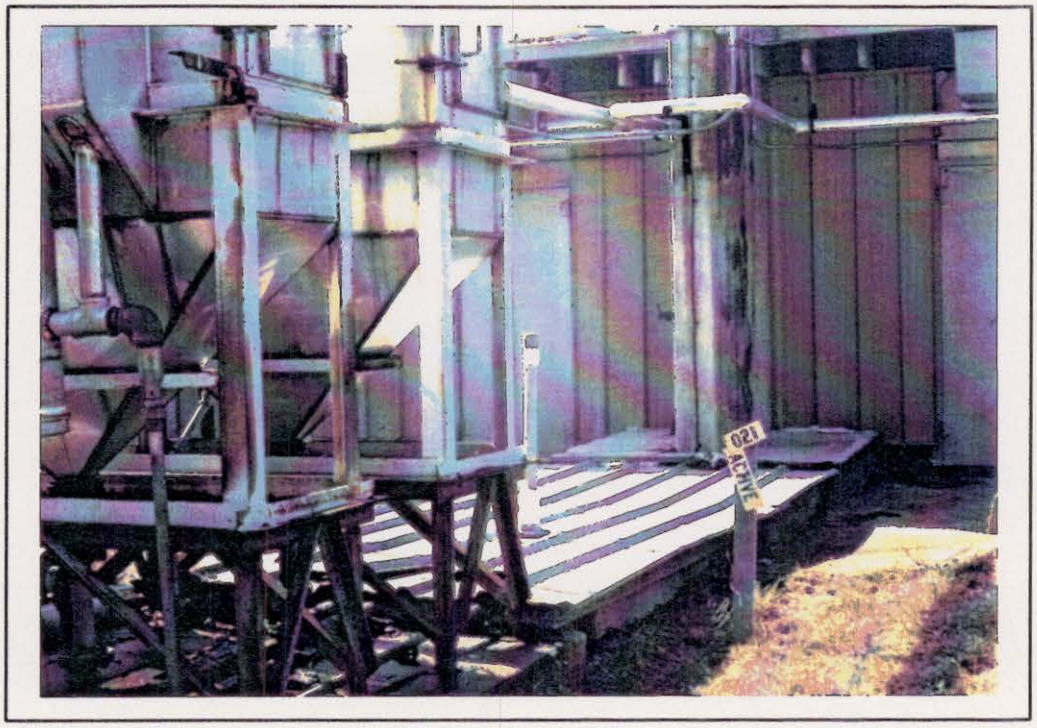


SUMP 018 - BUILDING B-9

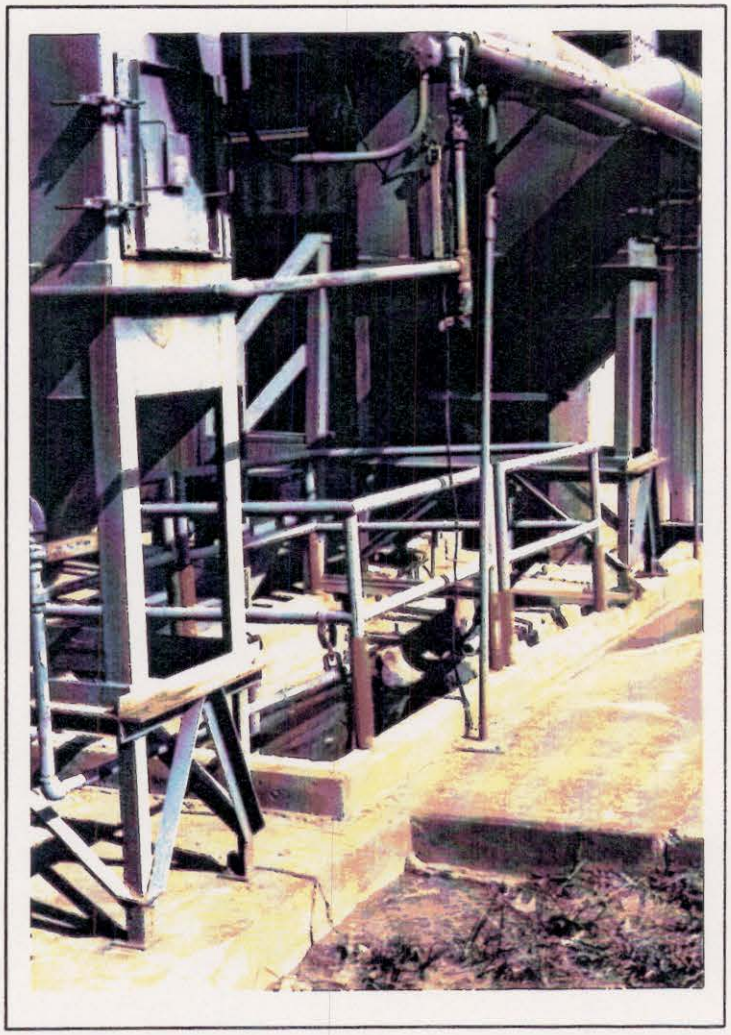


SUMP 019 - BUILDING B-10

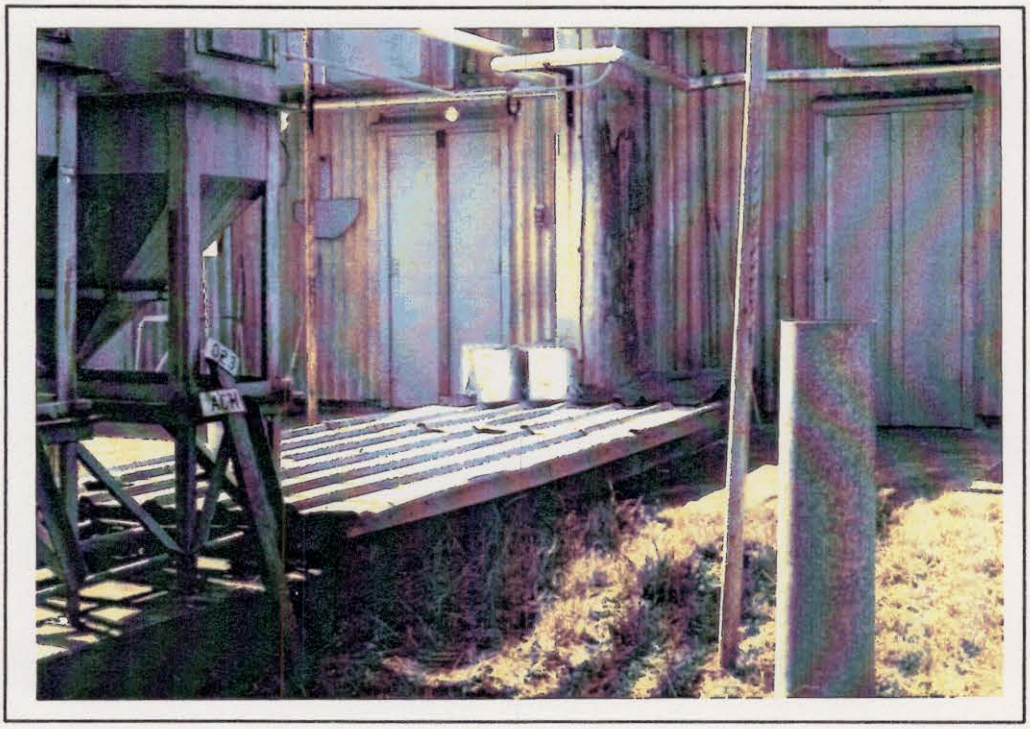
SUMP 020 - BUILDING B-11



SUMP 021 - BUILDING B-12



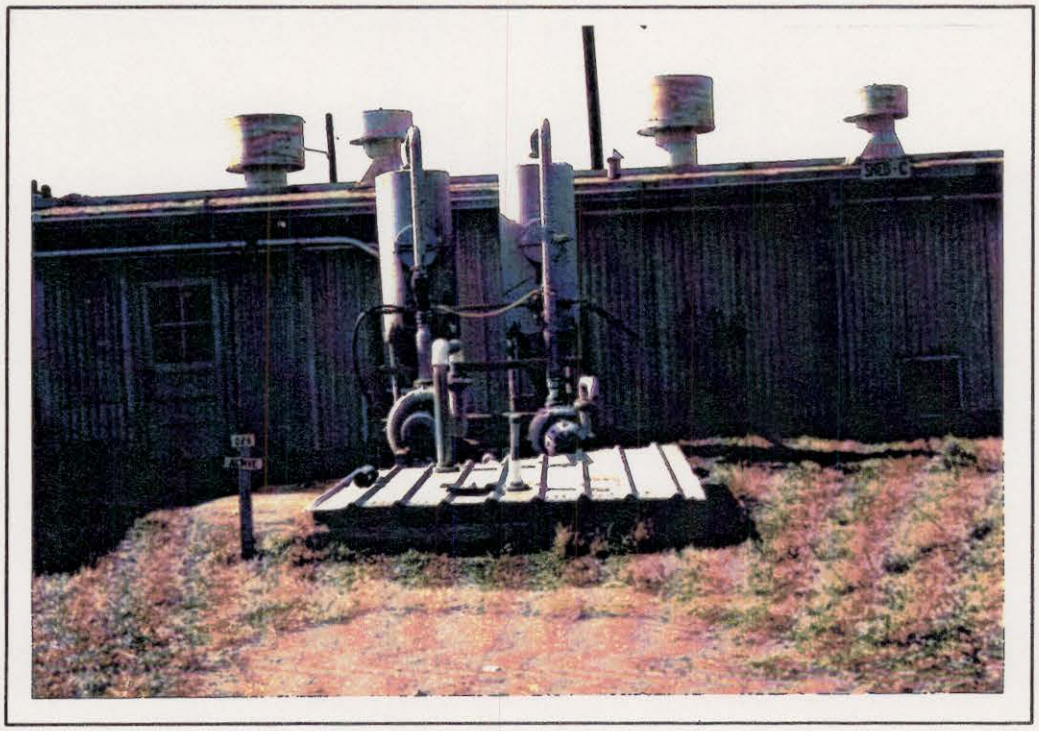
SUMP 022 - BUILDING B-13



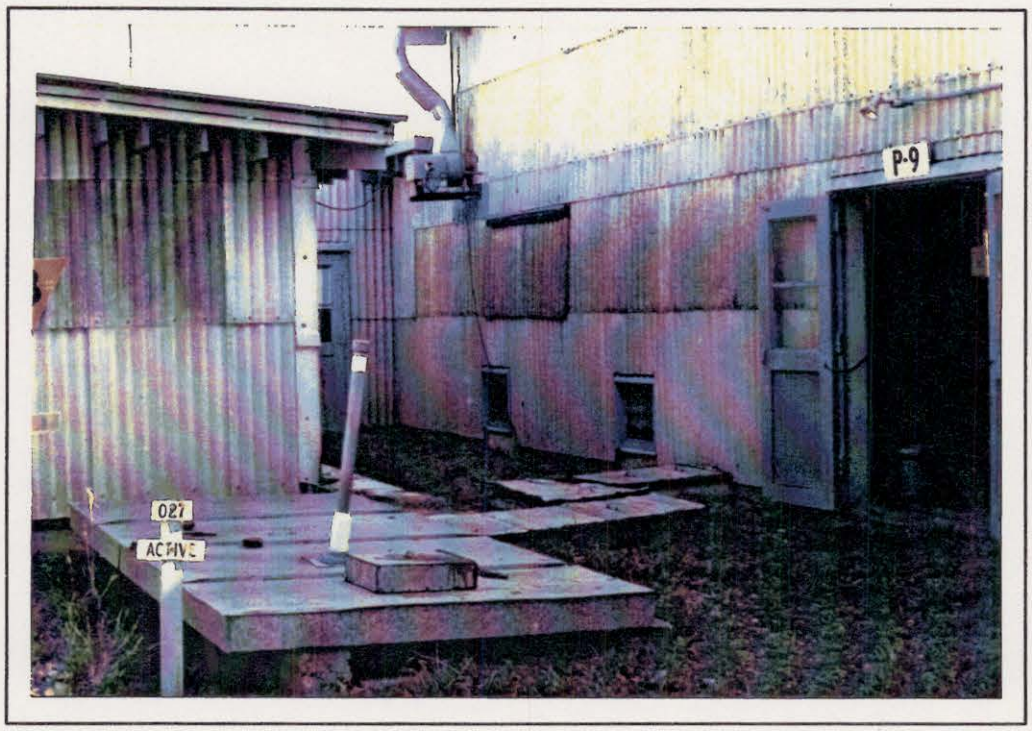
SUMP 023 - BUILDING B-14

SUMP 024 - BUILDING B-15

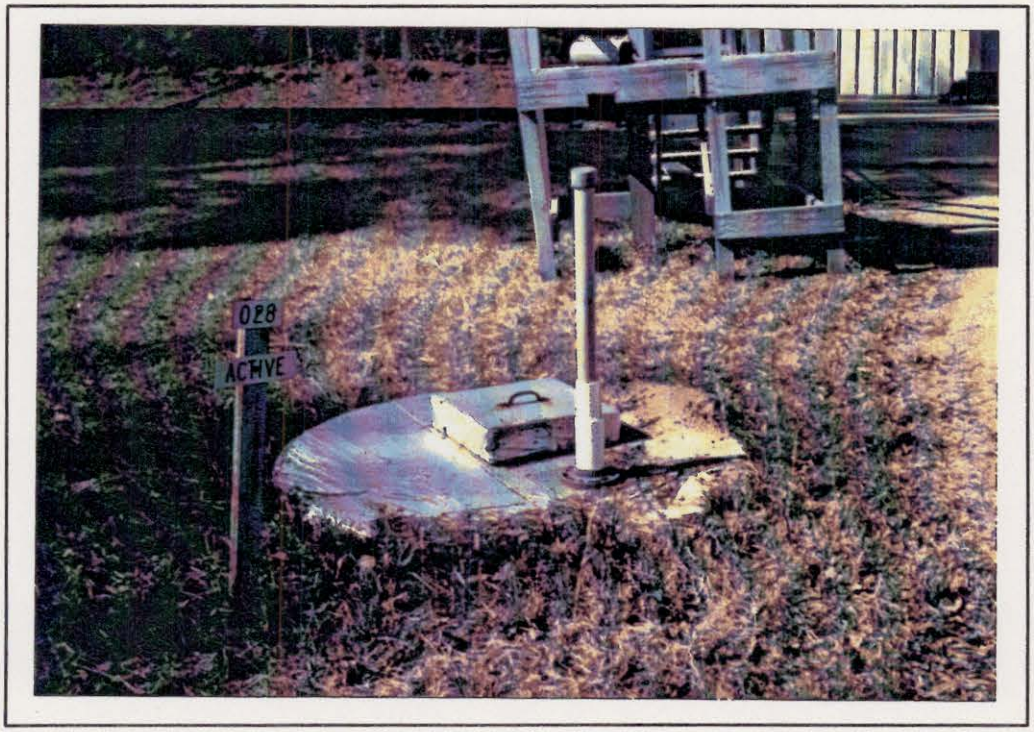
SUMP 025 - BUILDING B-16



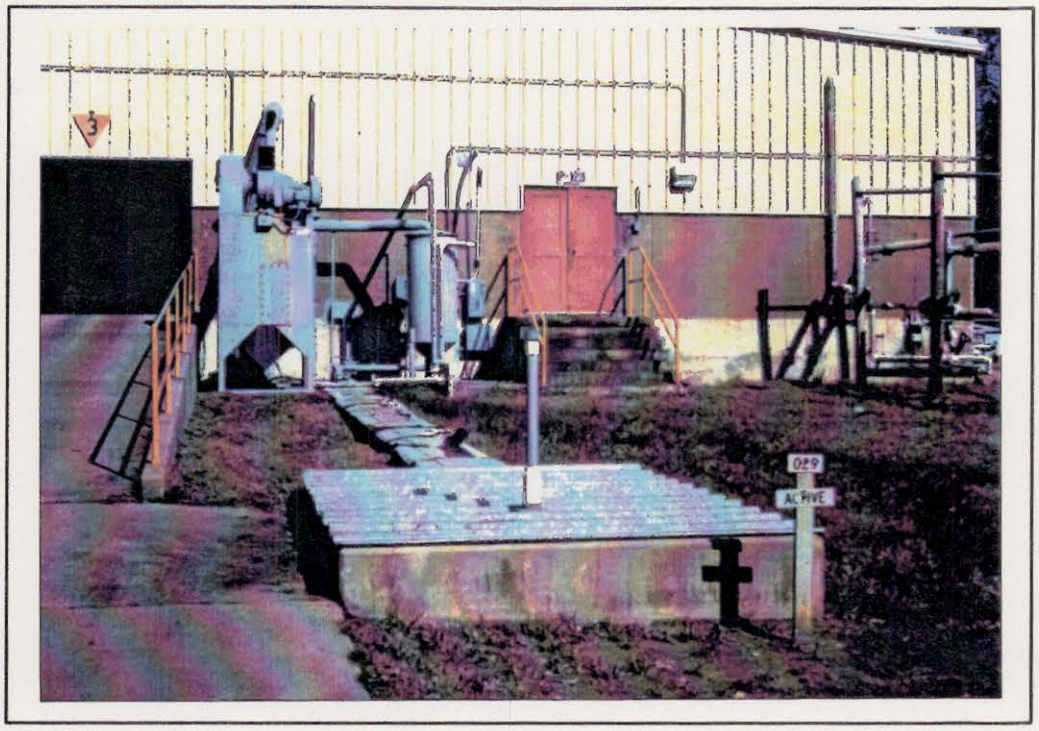
SUMP 026 - SHED C



SUMP 027 - BUILDING P-9

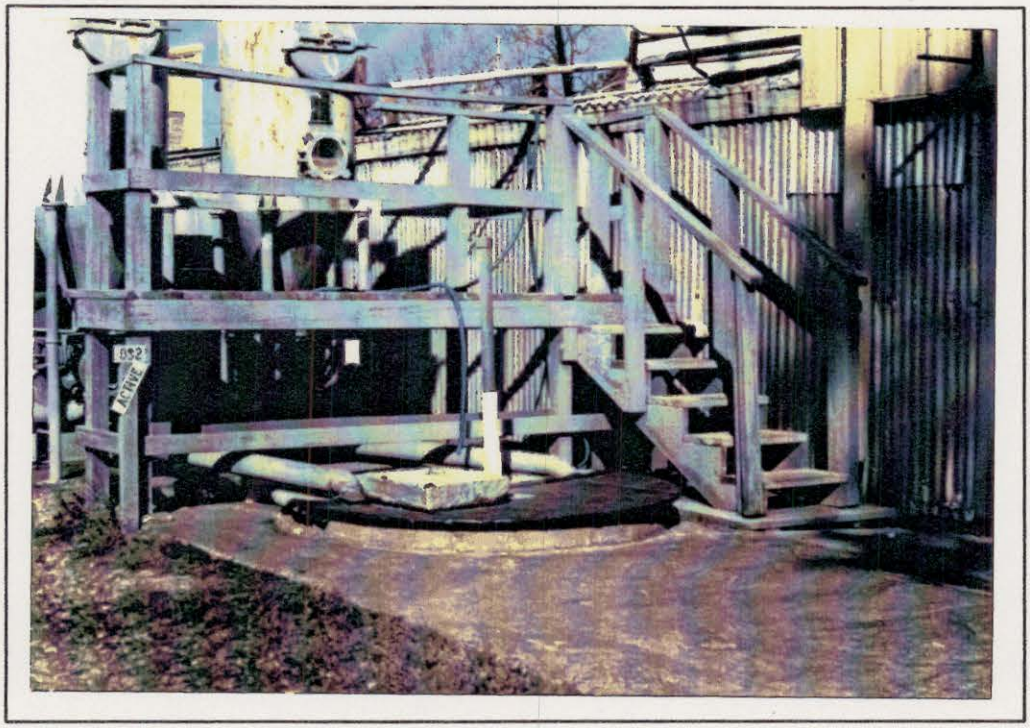


SUMP 028 - BUILDING P-124

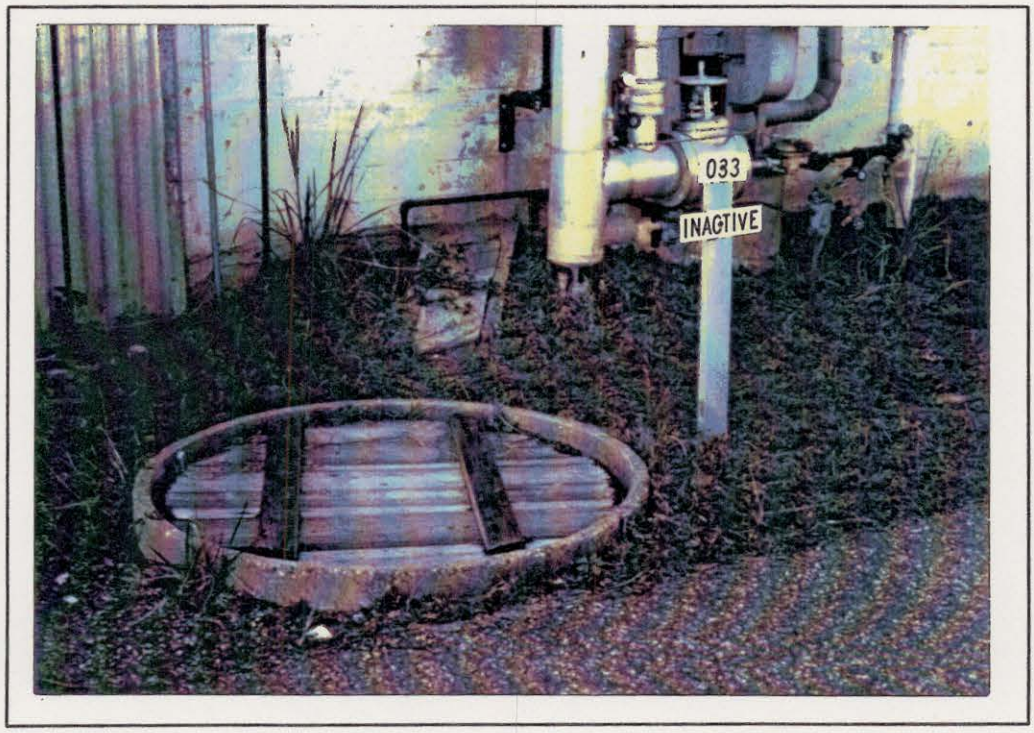


SUMP 029 - BUILDING P-123

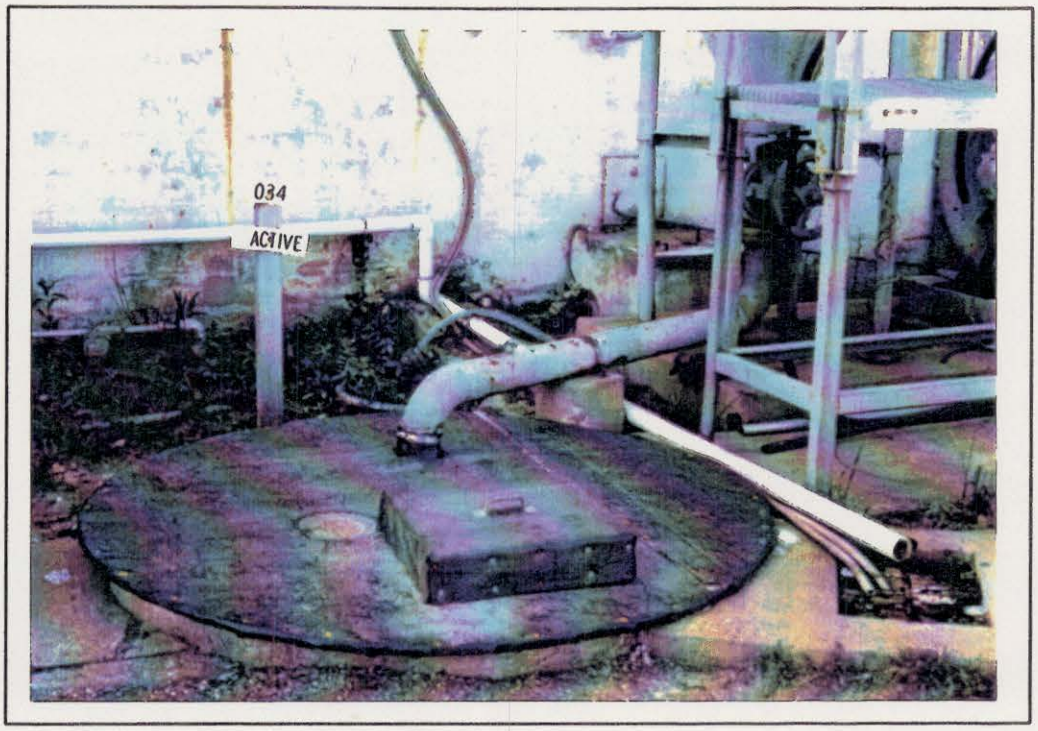
SUMPS 030 & 031 - BUILDING 212-12



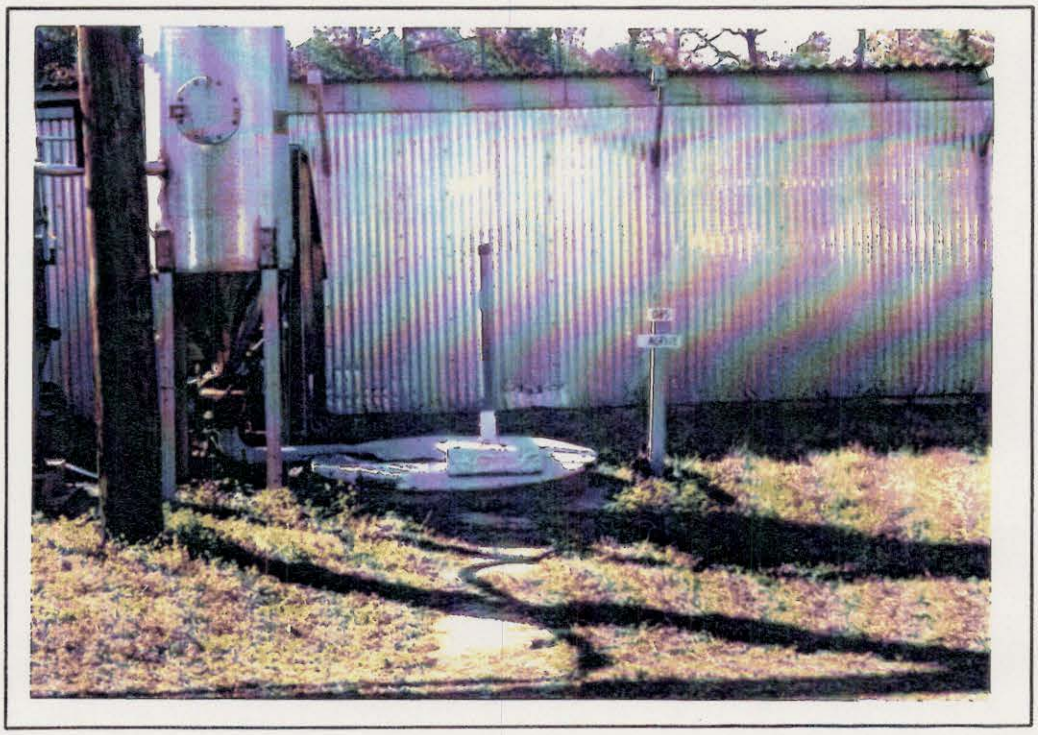
SUMP 032 - BUILDING 212-14



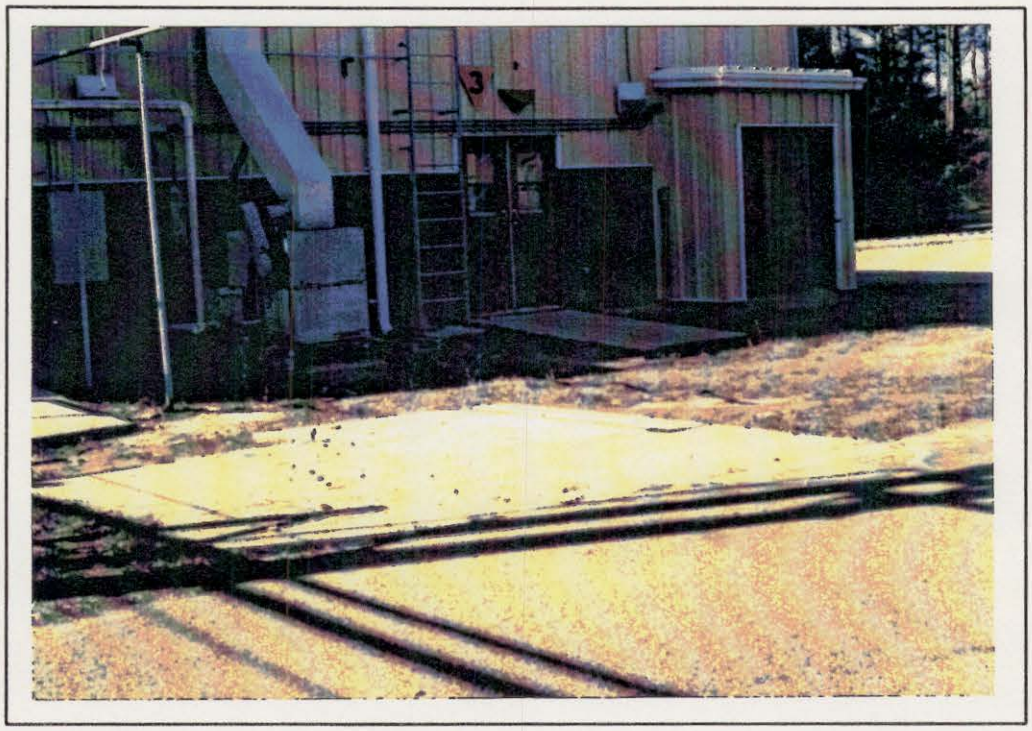
SUMP 033 - BUILDING 212-14



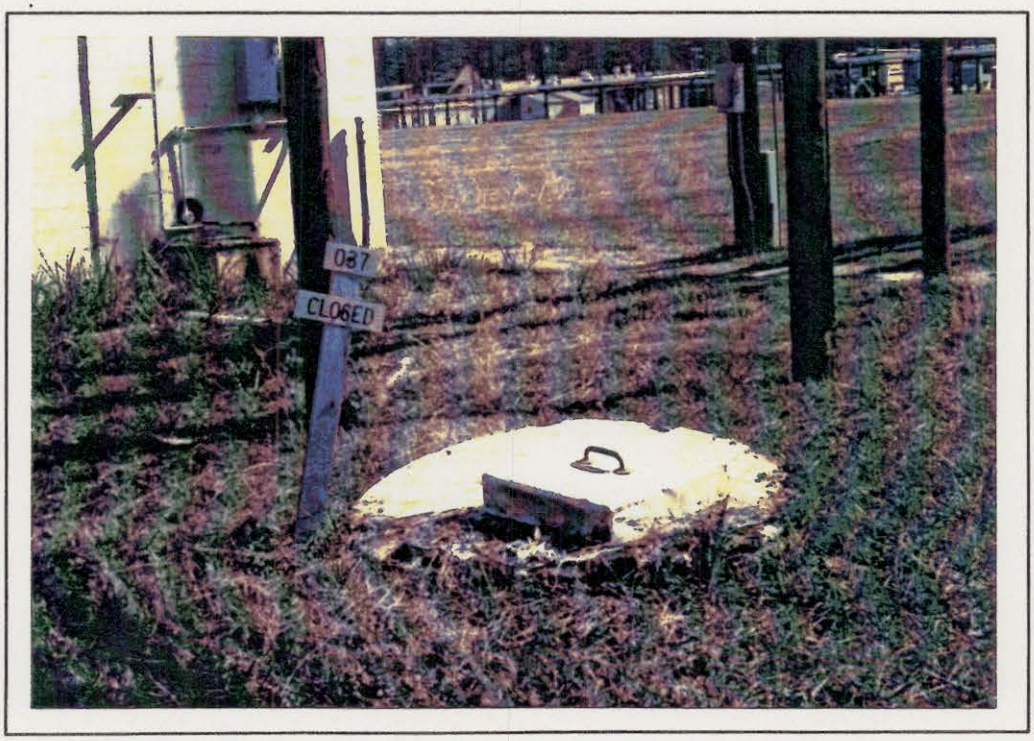
SUMP 034 - BUILDING 212-16



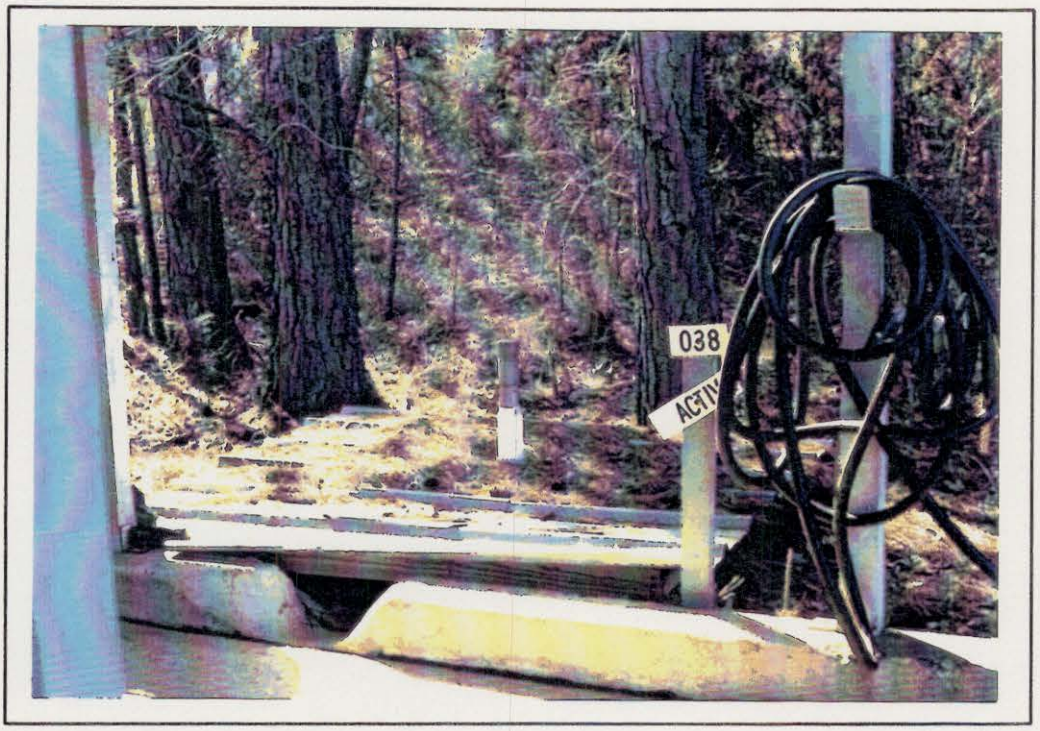
SUMP 035 - BUILDING 212-18



SUMP 036 - BUILDING P-122

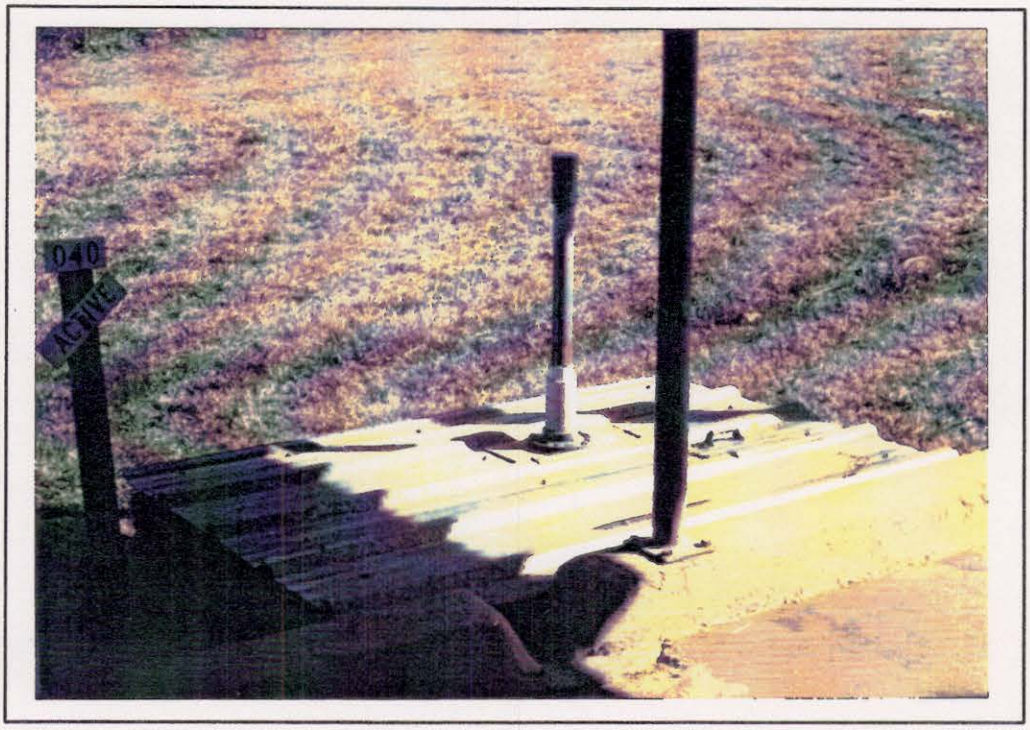


SUMP 037 - BUILDING 212-29



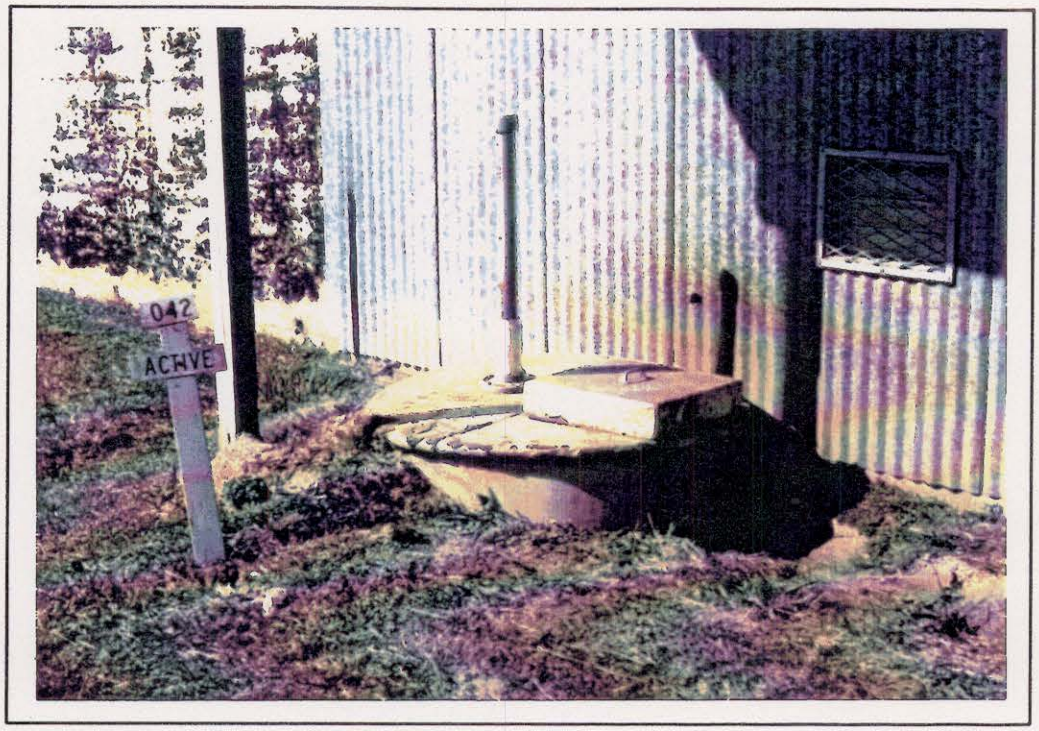
SUMP 038 - BUILDING 212-32

SUMP 039 - BUILDING 212-33



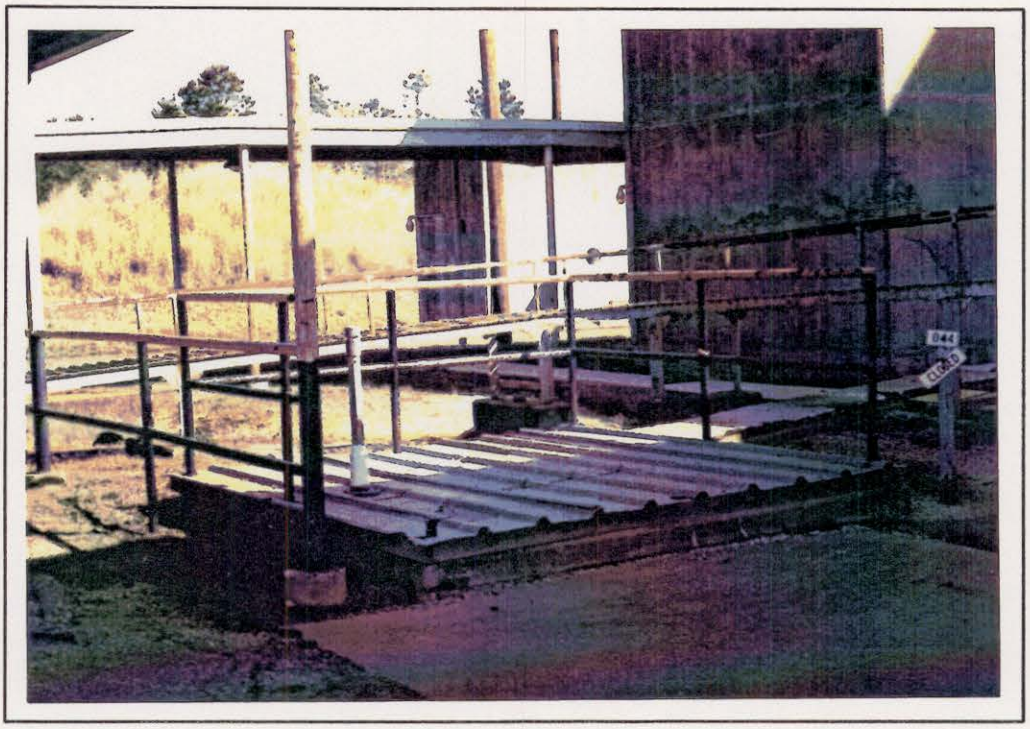
SUMP 040 - BUILDING 212-33

SUMP 041 - BUILDING 212-35

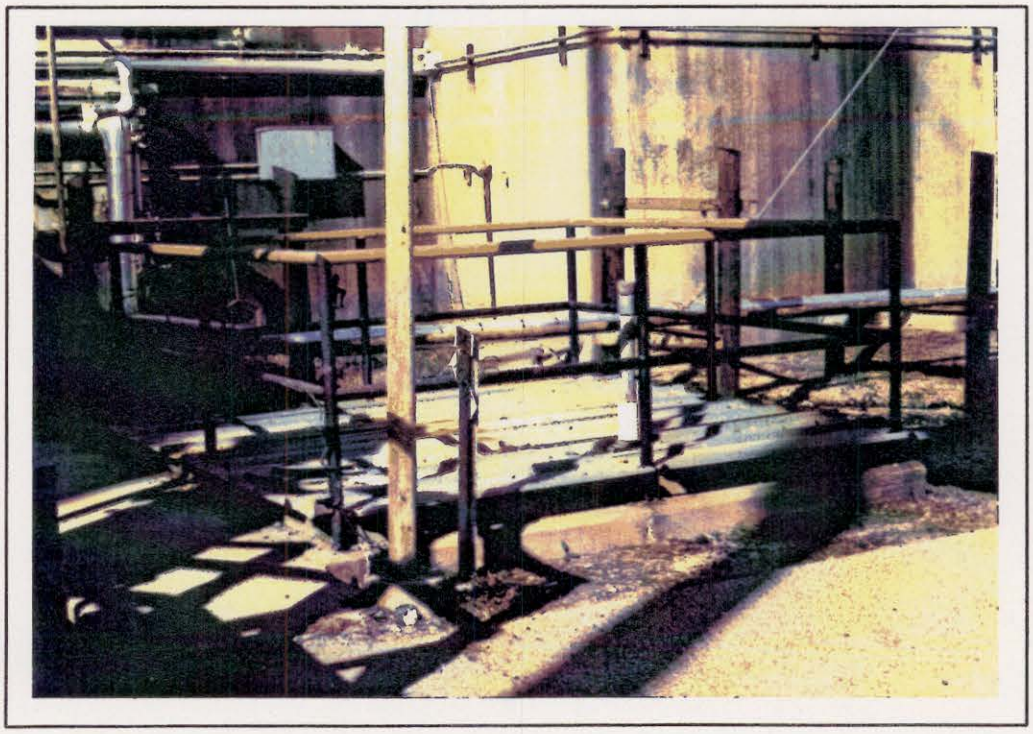


SUMP 042 - BUILDING 212-37

SUMP 043 - BUILDING 212-38



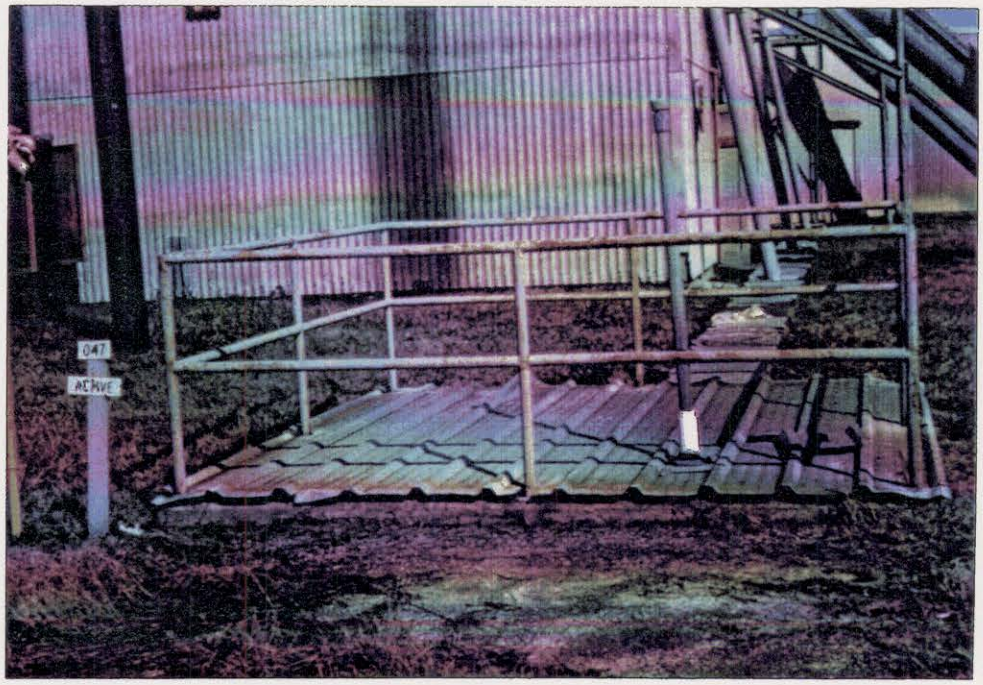
SUMP 044 - BUILDING 25-C



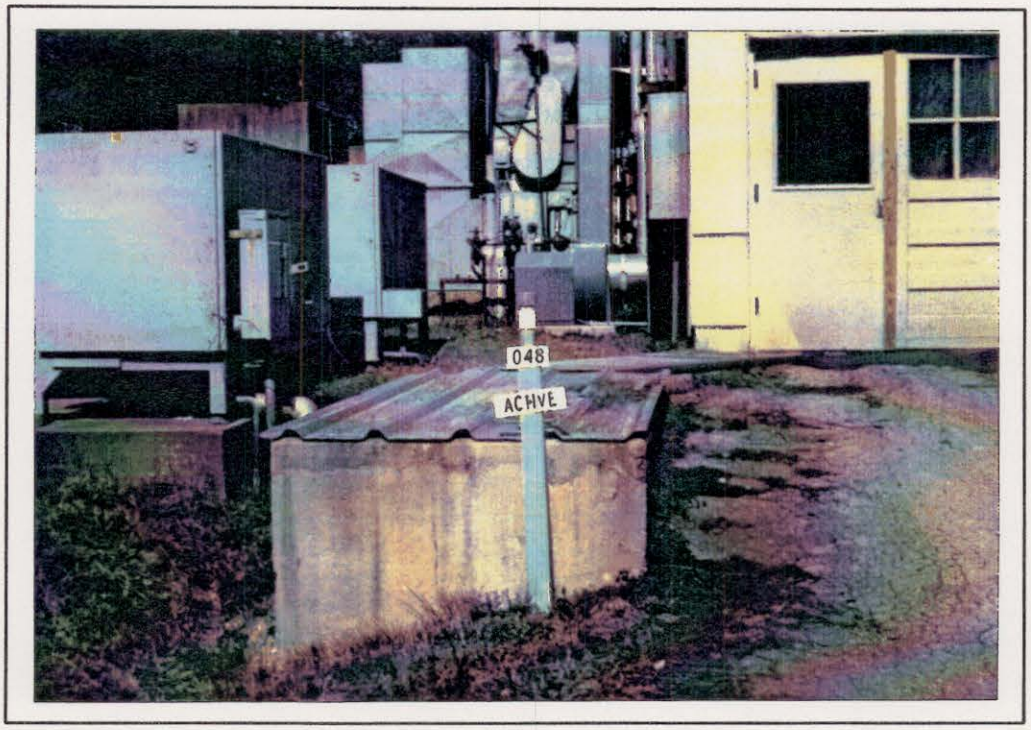
SUMP 045 - BUILDING 25-C

SUMP LOCATION UNKNOWN

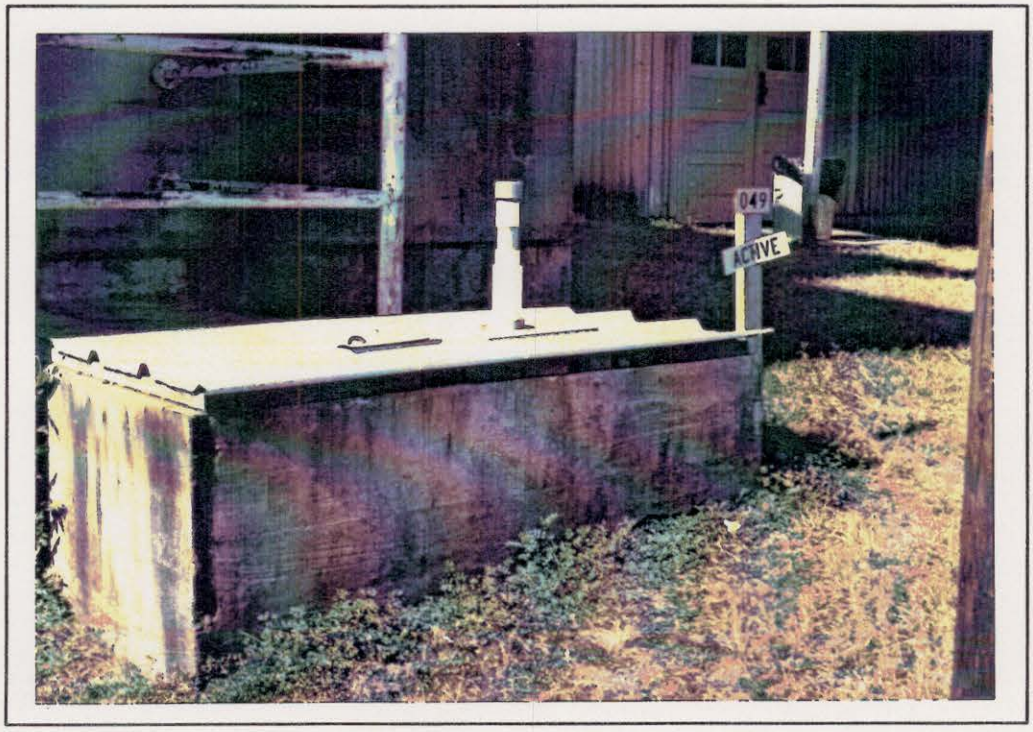
SUMP 046 - BUILDING 25-C



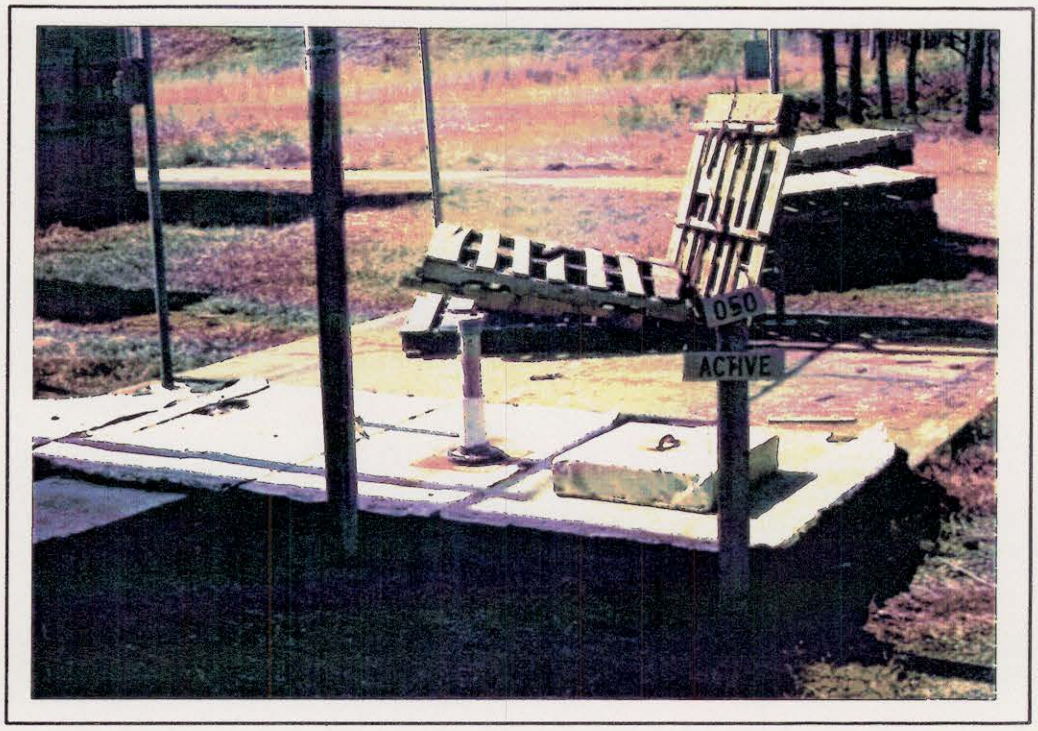
SUMP 047 - BUILDING 25-D



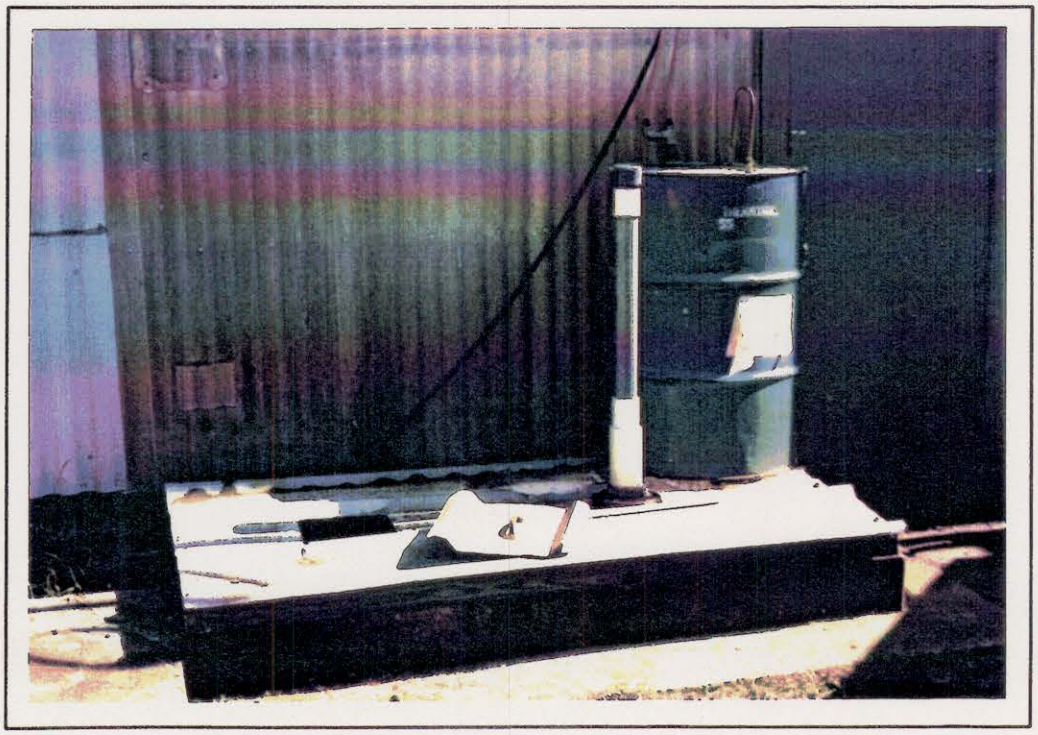
SUMP 048 - BUILDING 26-E



SUMP 049 - BUILDING 26-E

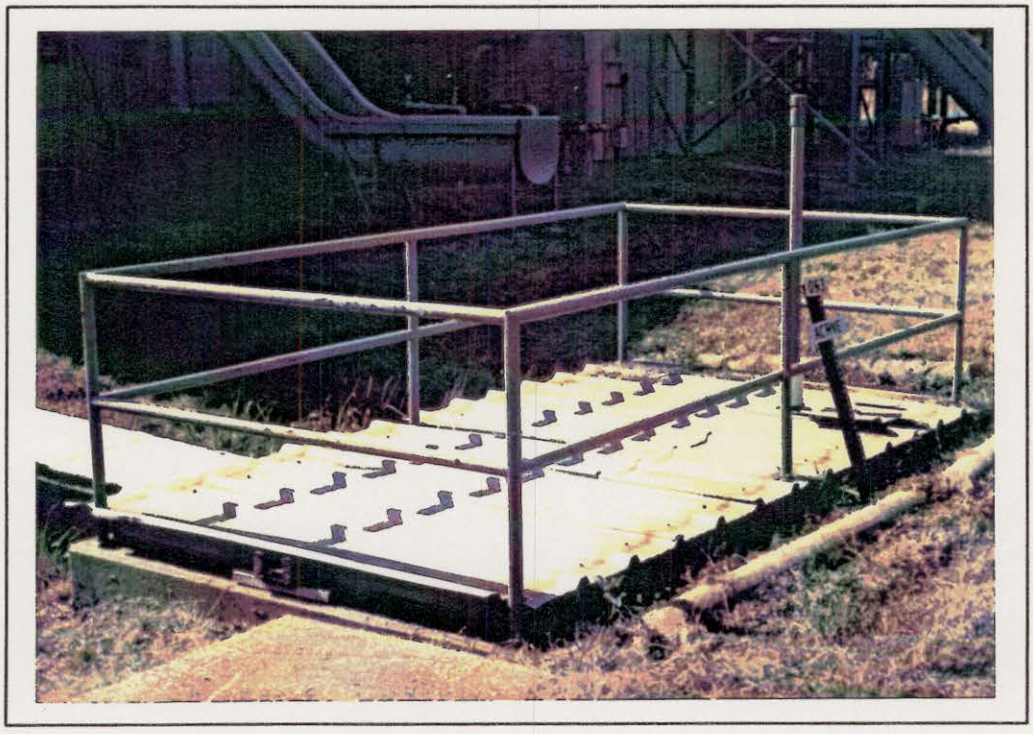


SUMP 050 - BUILDING 26-E



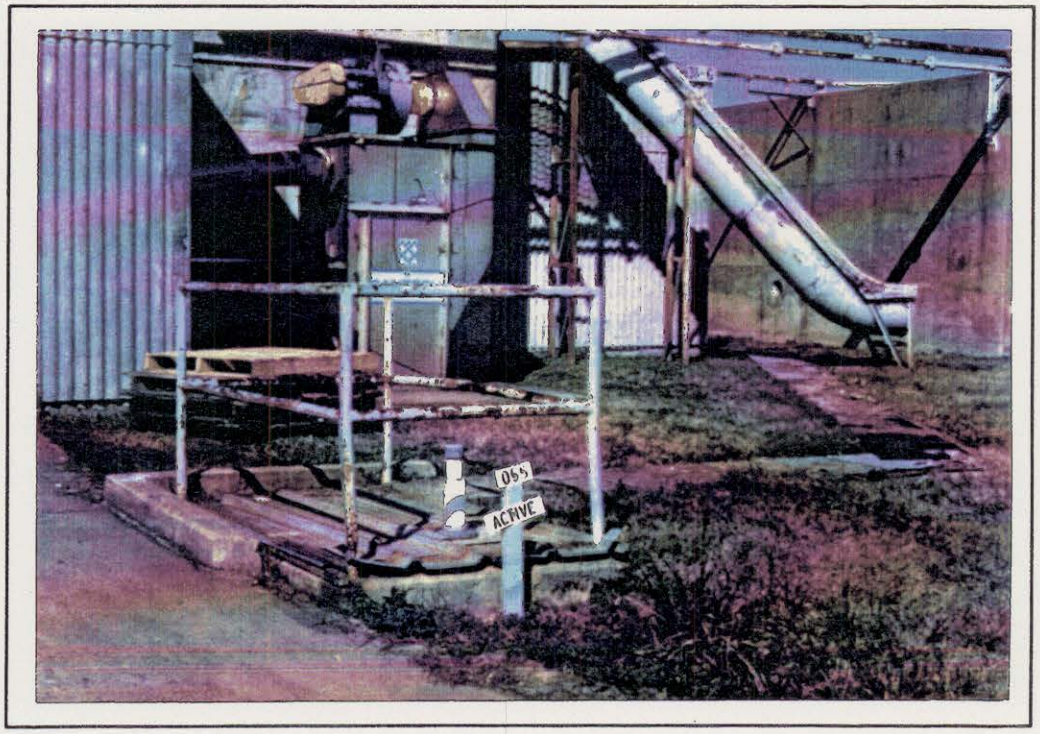
SUMP 051 - BUILDING 26-E

SUMP 052 - BUILDING 28-G



SUMP 053 - BUILDING 29-D

SUMP 054 - BUILDING 31-G



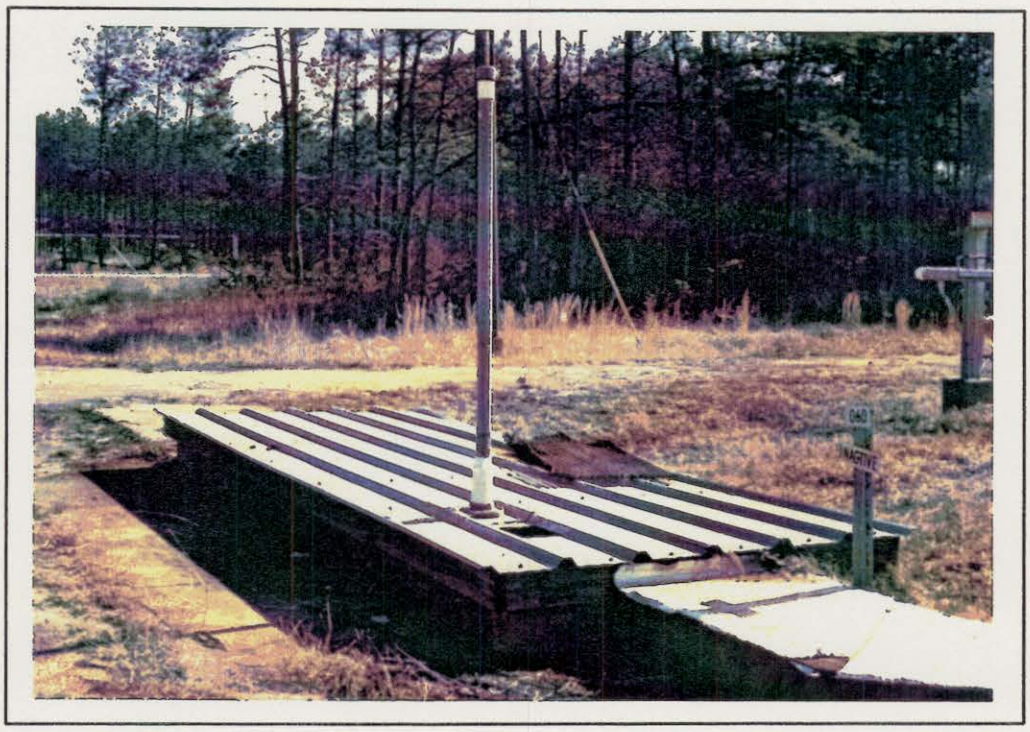
SUMP 055 - BUILDING 31-G

SUMP 056 - BUILDING 32-H

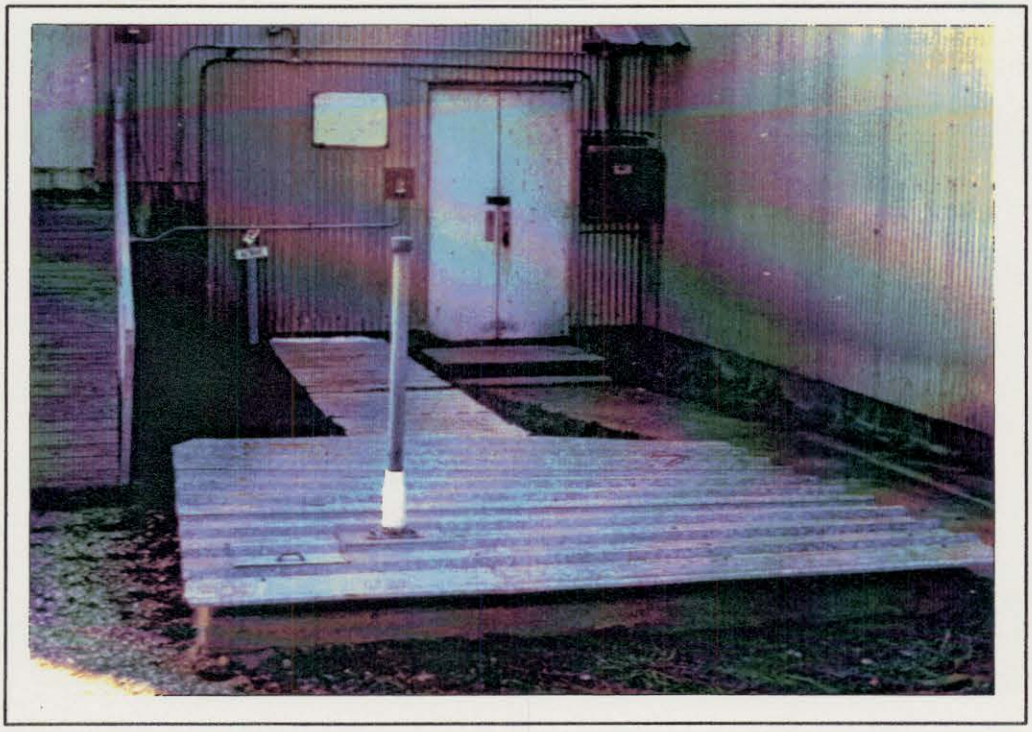
SUMP 057 - BUILDING 33-G

SUMP 058 - BUILDING 36-B

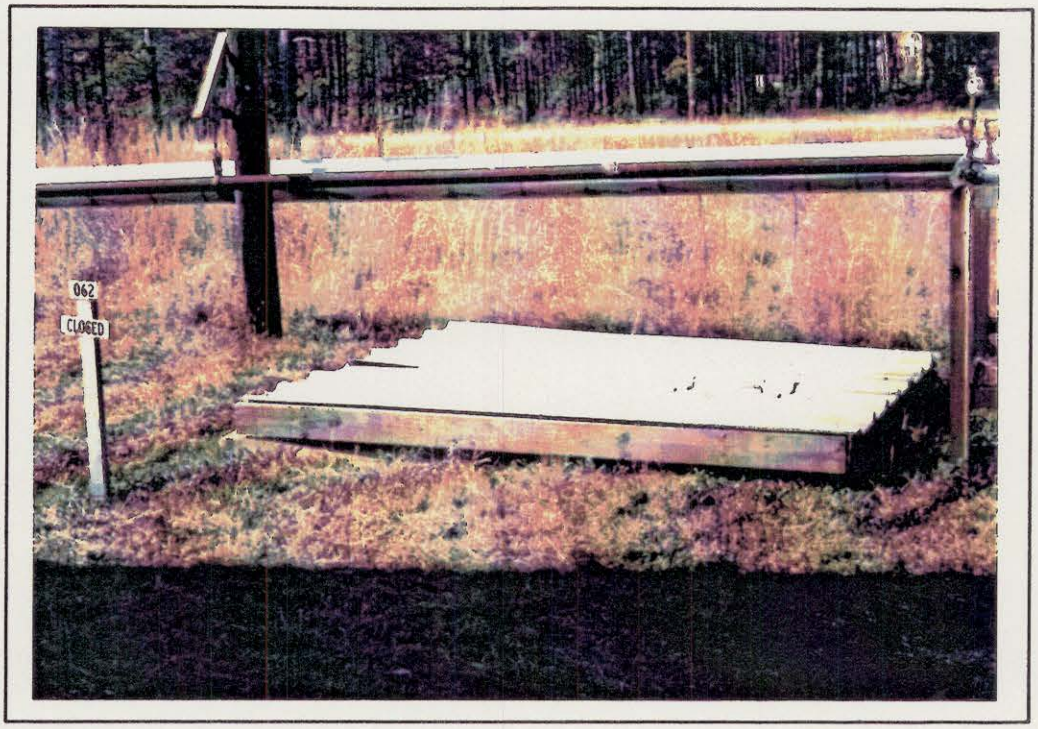
SUMP 059 - BUILDING 41-E



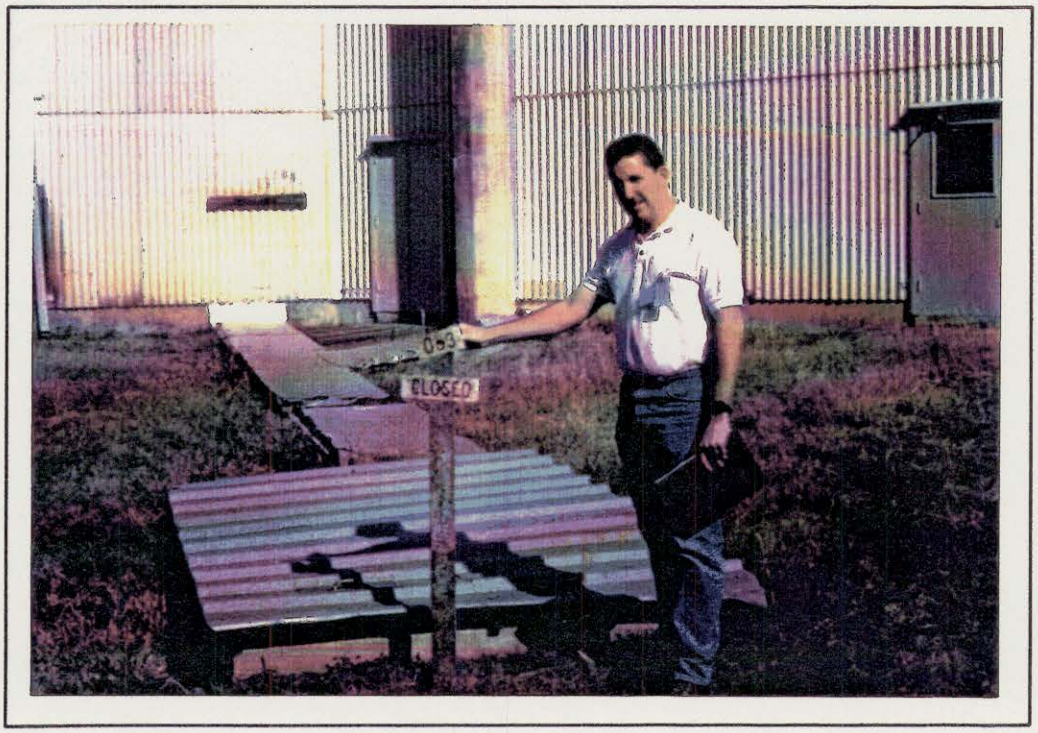
SUMP 060 - BUILDING 42-E



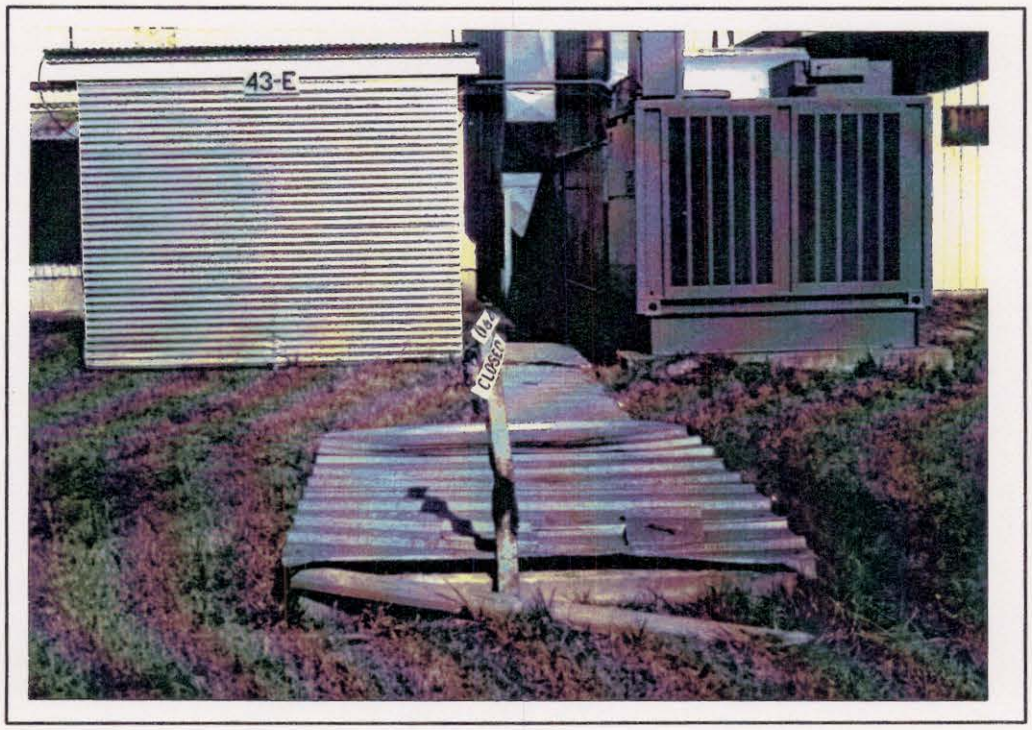
SUMP 061 - BUILDING 42-H



SUMP 062 - BUILDING 45-E



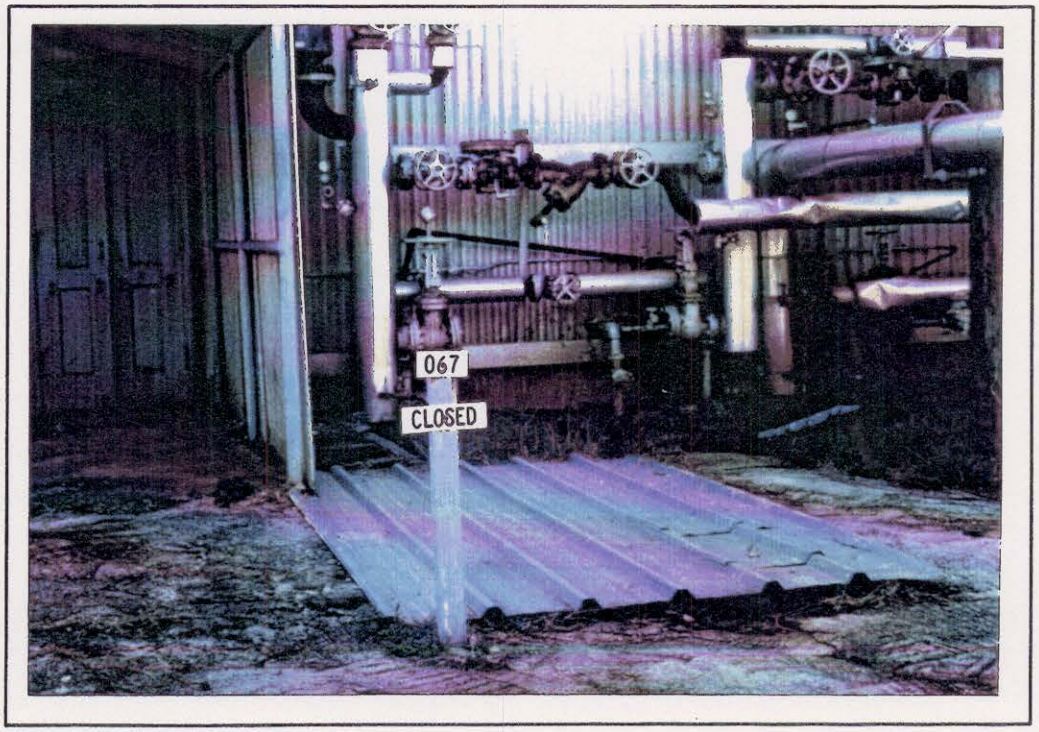
SUMP 063 - BUILDING 45-E



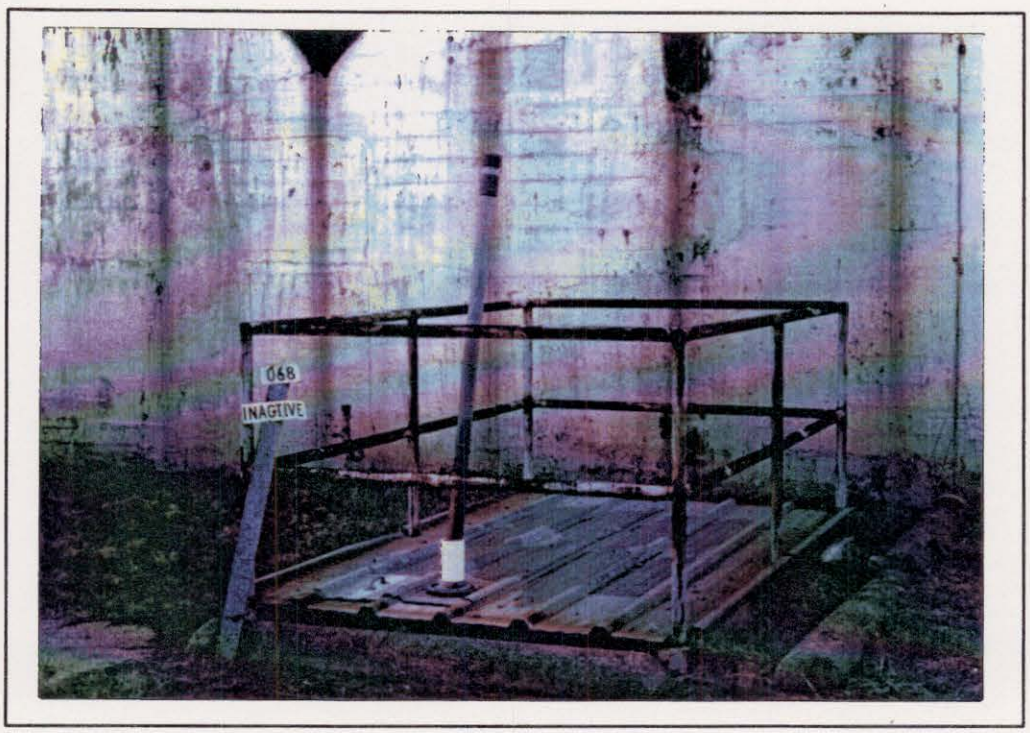
SUMP 064 - BUILDING 45-E

SUMP 065 - BUILDING 45-E

SUMP 066 - BUILDING 45-E



SUMP 067 - BUILDING 45-E

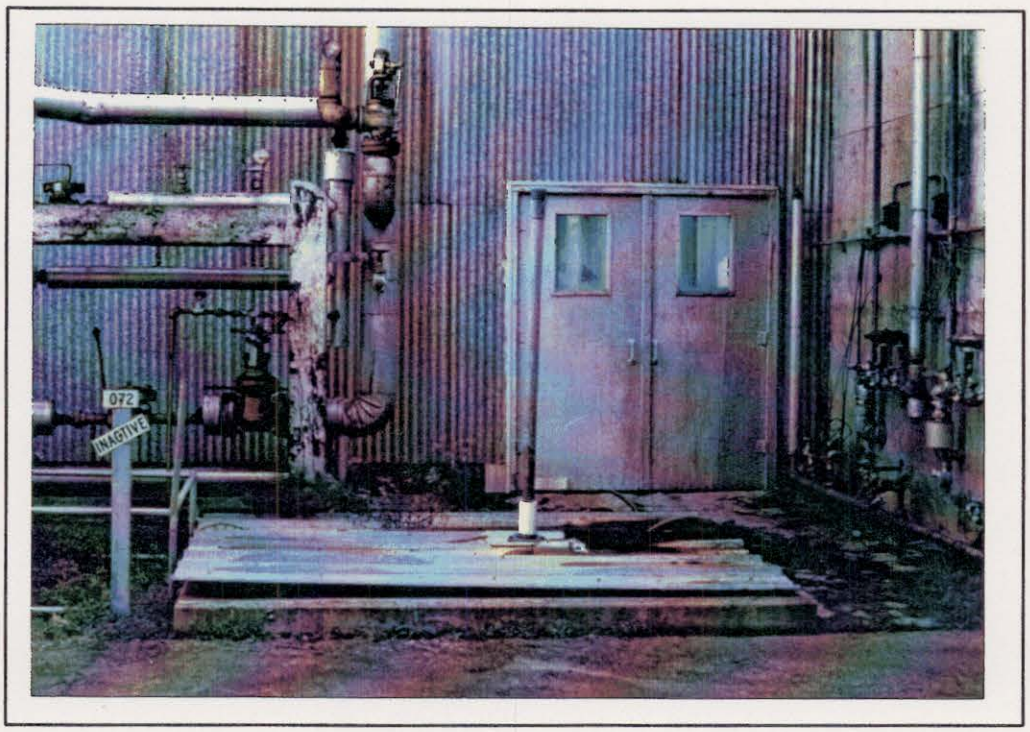


SUMP 068 - BUILDING 46-A

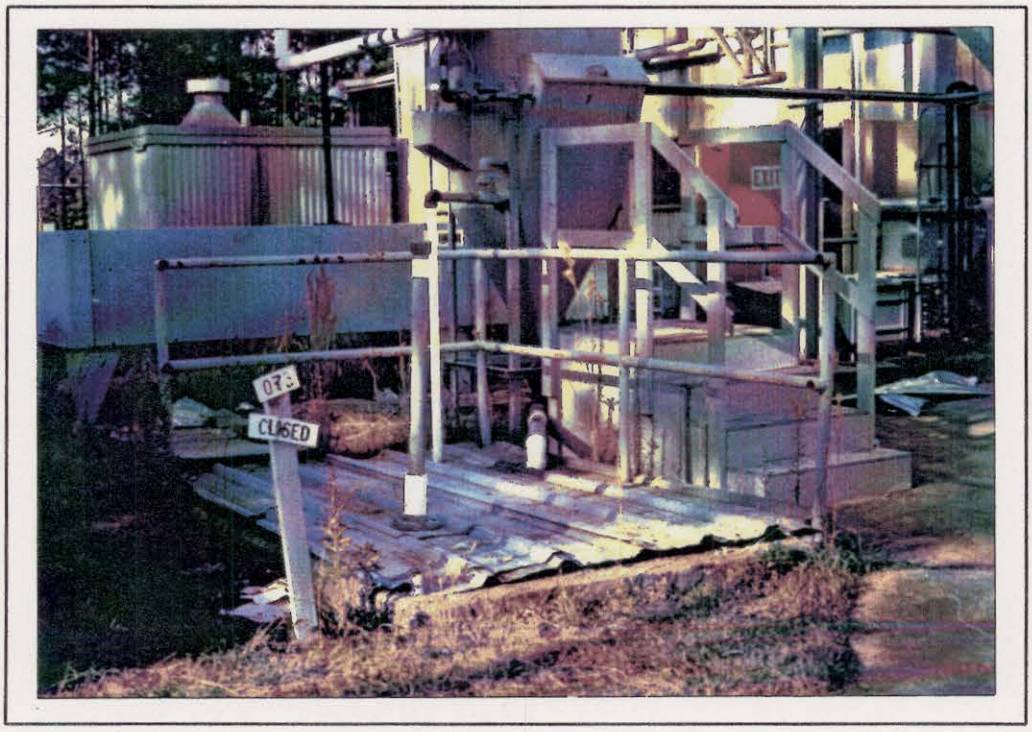
SUMP 069 - BUILDING 46-B

SUMP 070 - BUILDING 50-G

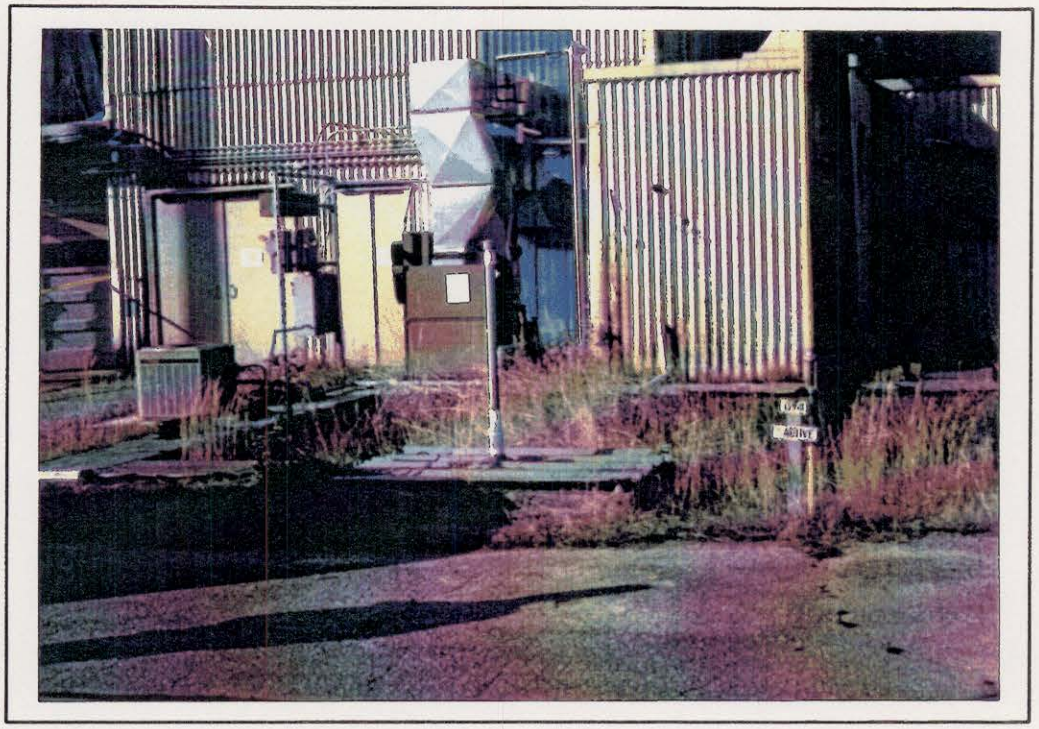
SUMP 071 - BUILDING 54-F



SUMP 072 - BUILDING 54-F

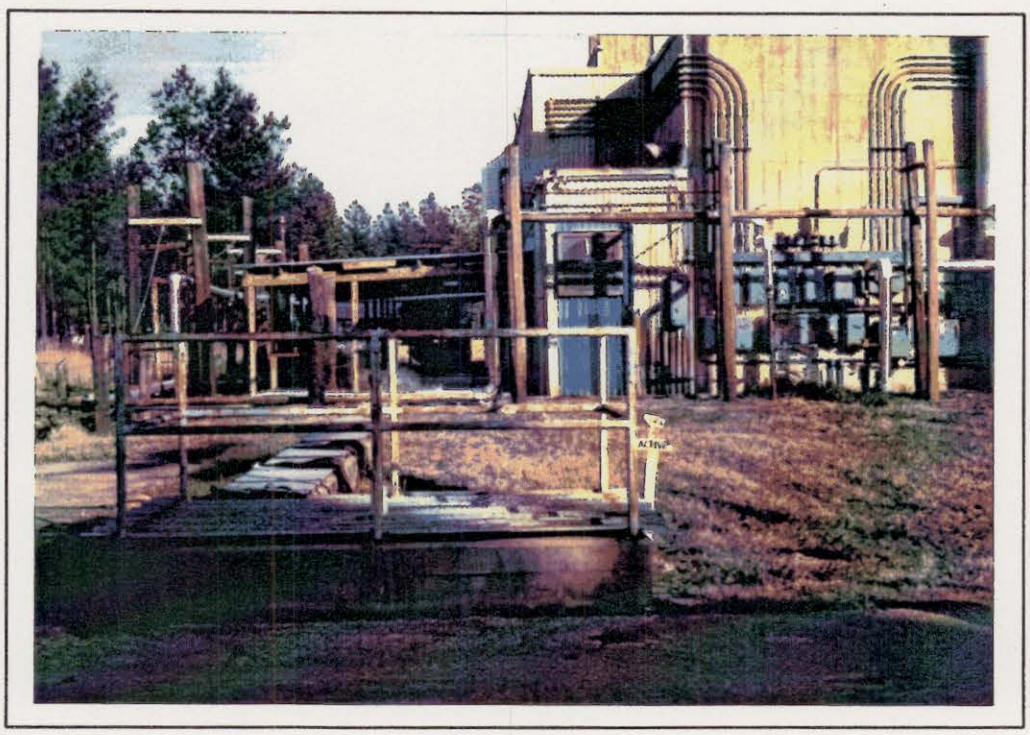


SUMP 073 - BUILDING 54-G

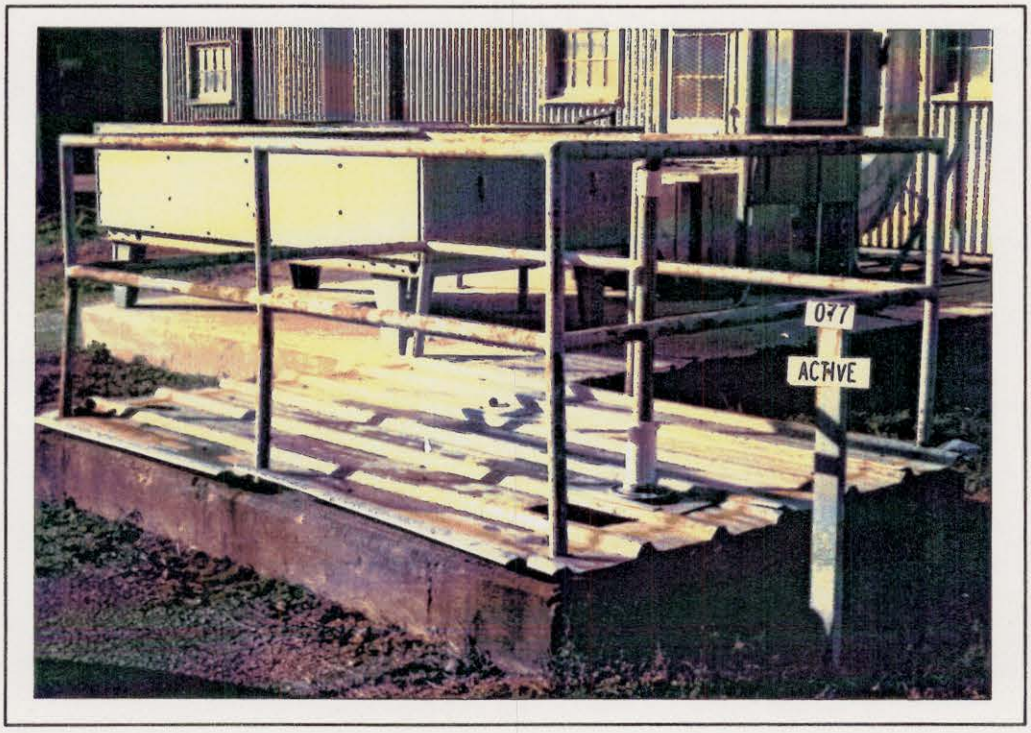


SUMP 074 - BUILDING 54-G

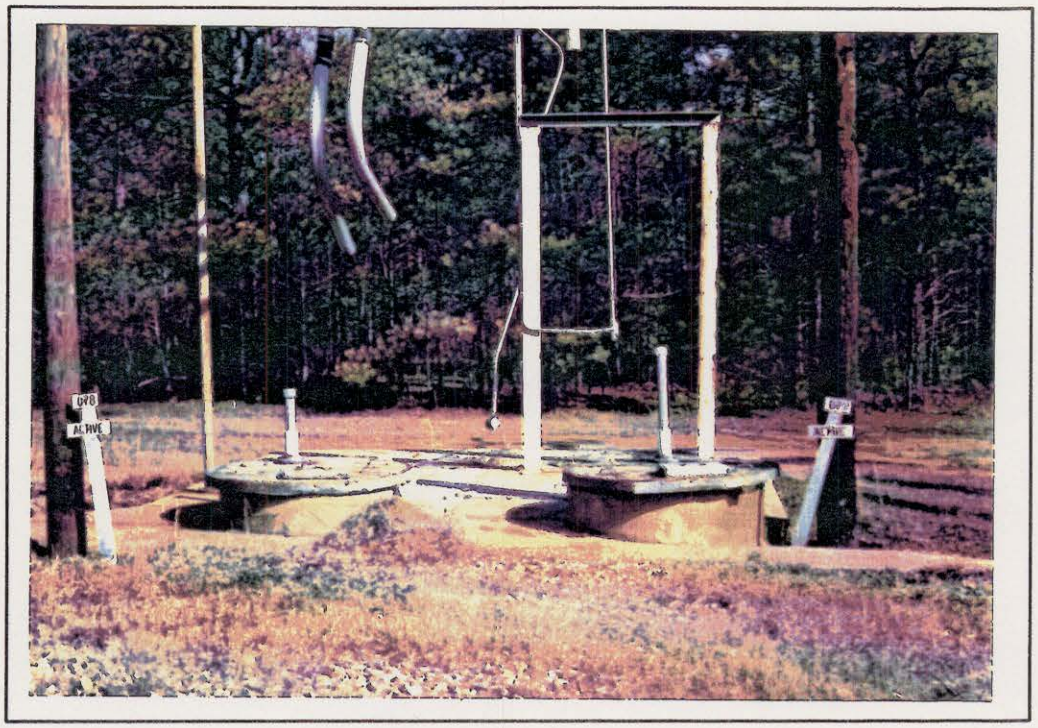
SUMP 075 - BUILDING 54-G



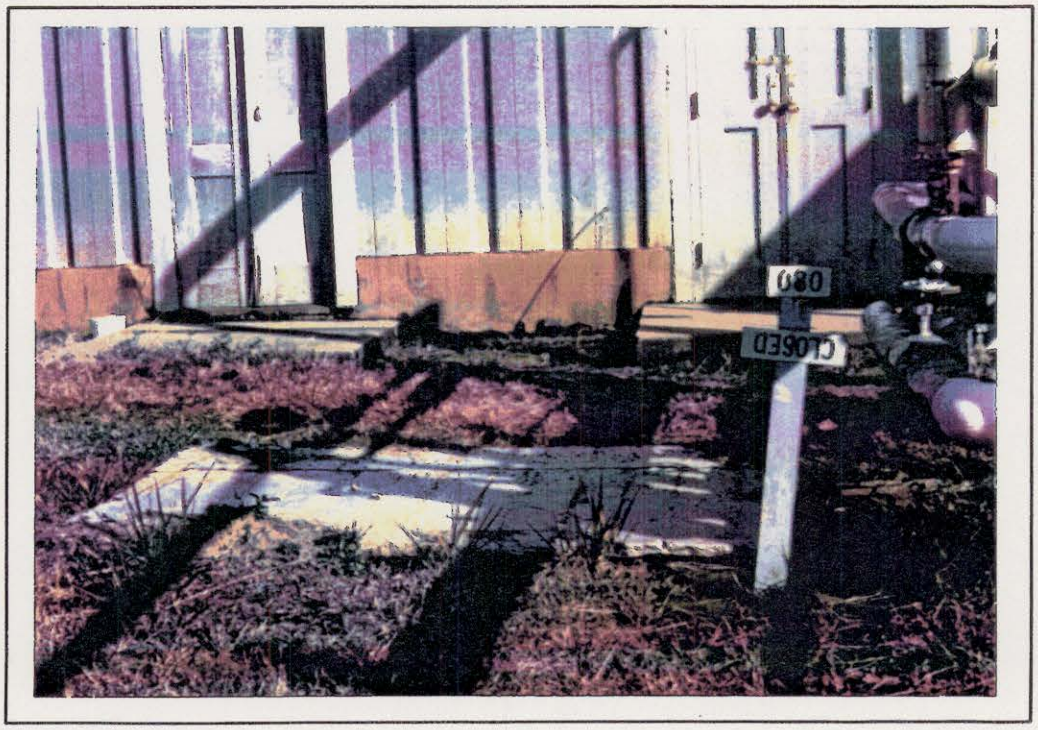
SUMP 076 - BUILDING 54-H



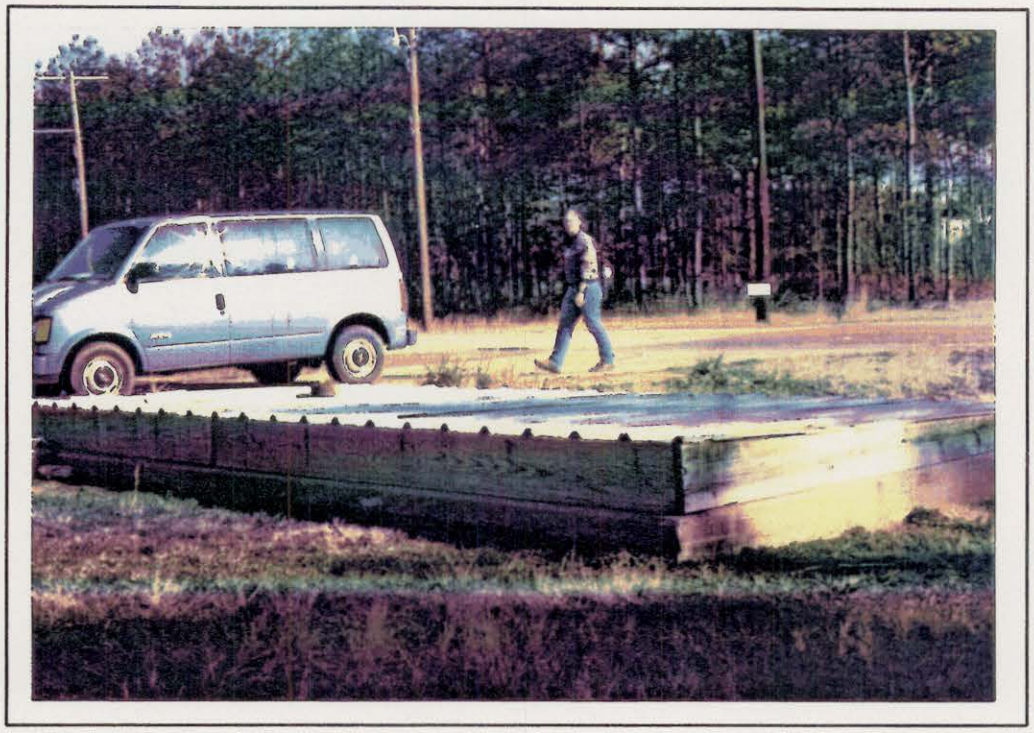
SUMP 077 - BUILDING 54-H



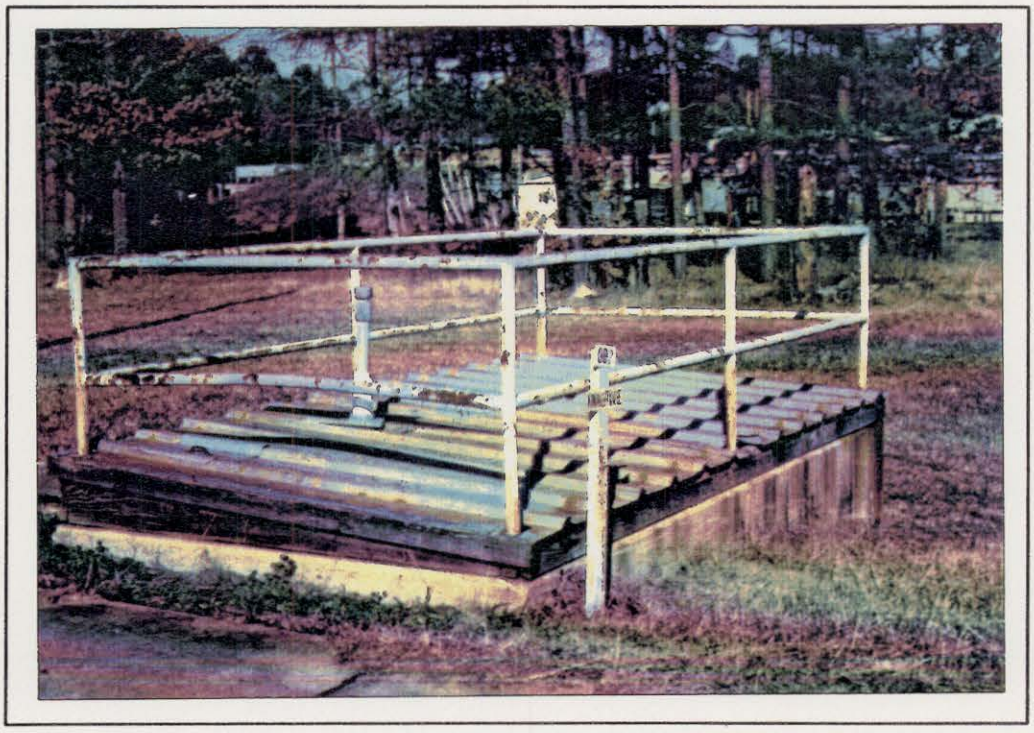
SUMPS 078 & 079 - BUILDING 68-C



SUMP 080 - BUILDING 68-C

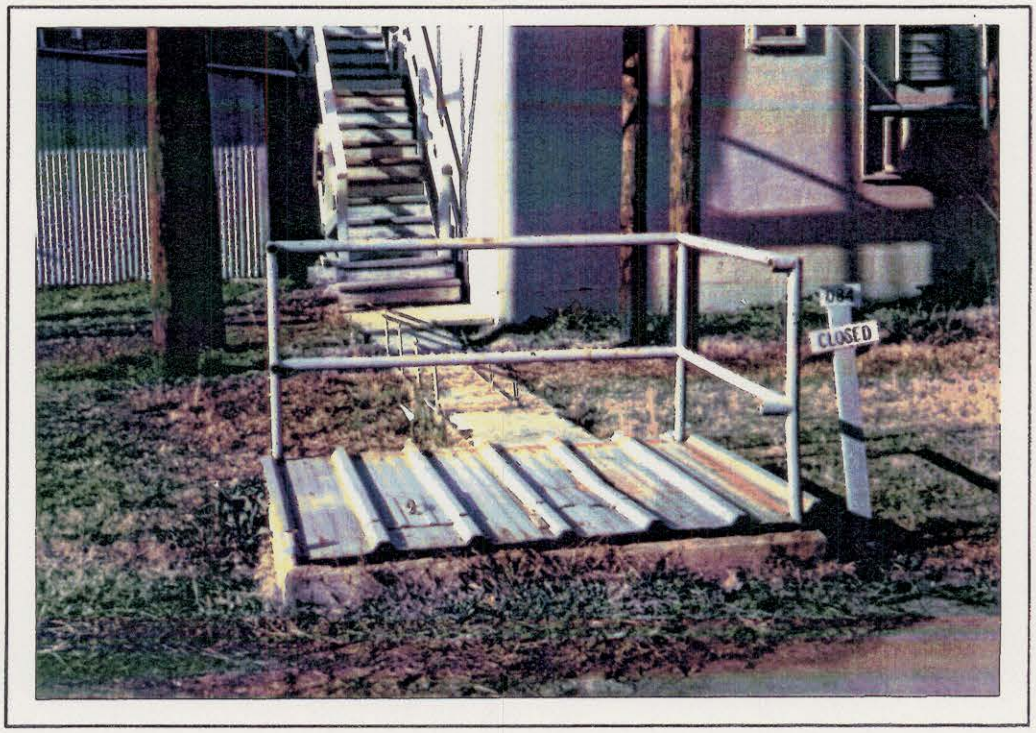


SUMP 081 - BUILDING 68-F

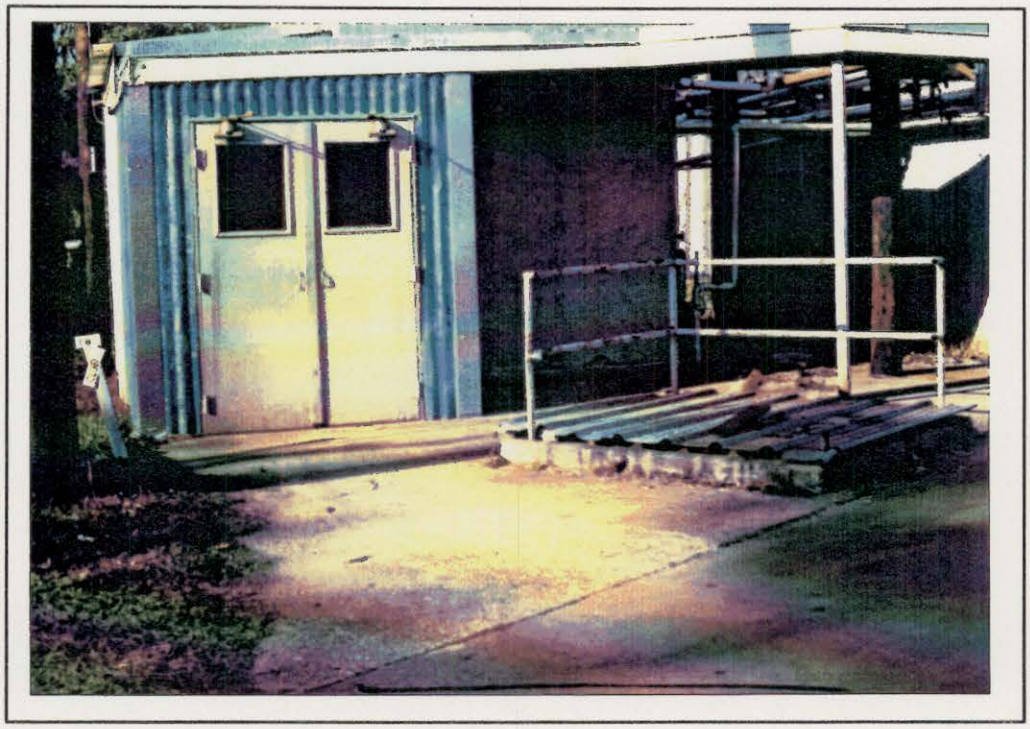


SUMP 082 - BUILDING 68-F

SUMP 083 - BUILDING 68-F

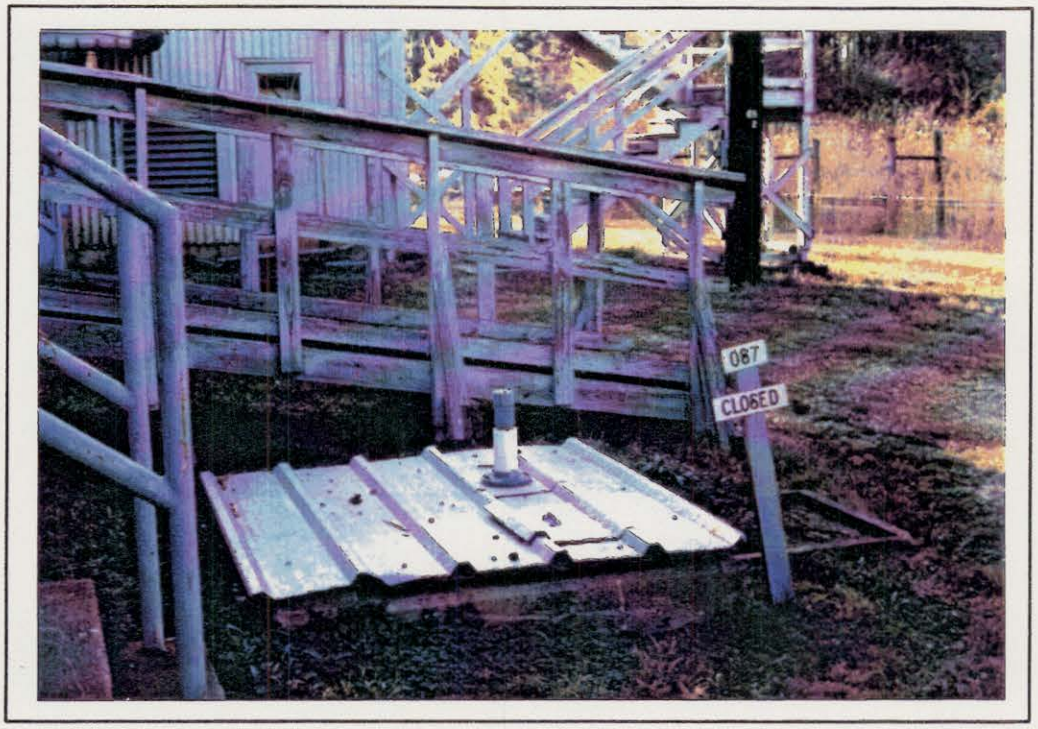


SUMP 084 - BUILDING 68-G



SUMP 085 - BUILDING 68-G

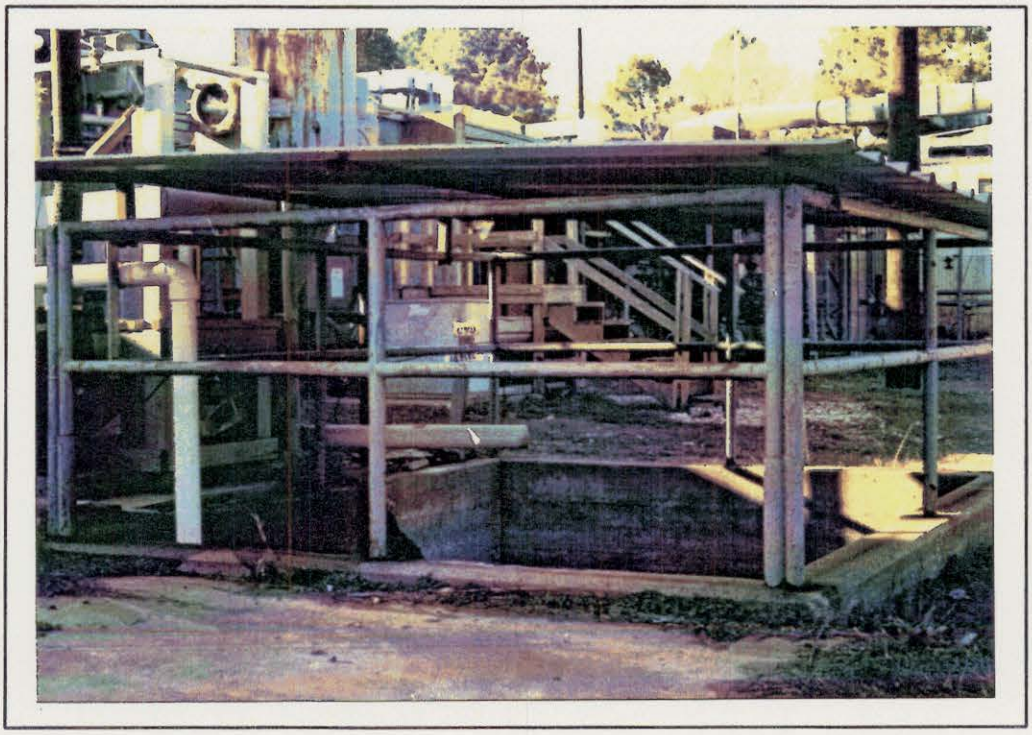
SUMP 086 - BUILDING 68-G



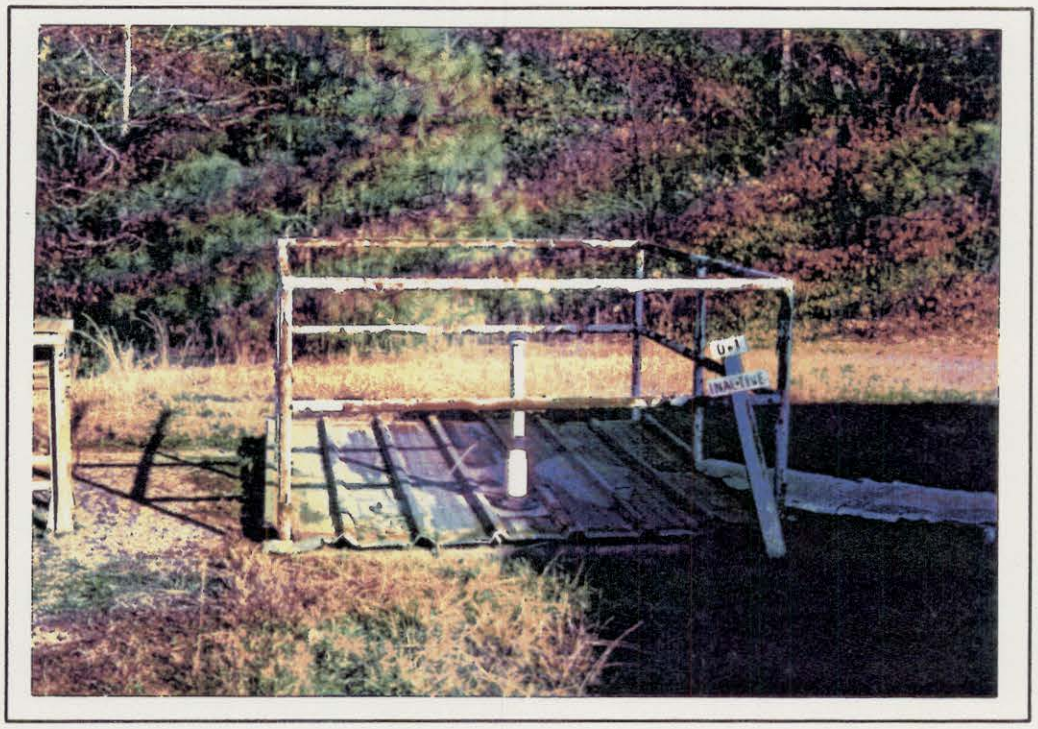
SUMP 087 - BUILDING 68-G

SUMP 088 - BUILDING 68-G

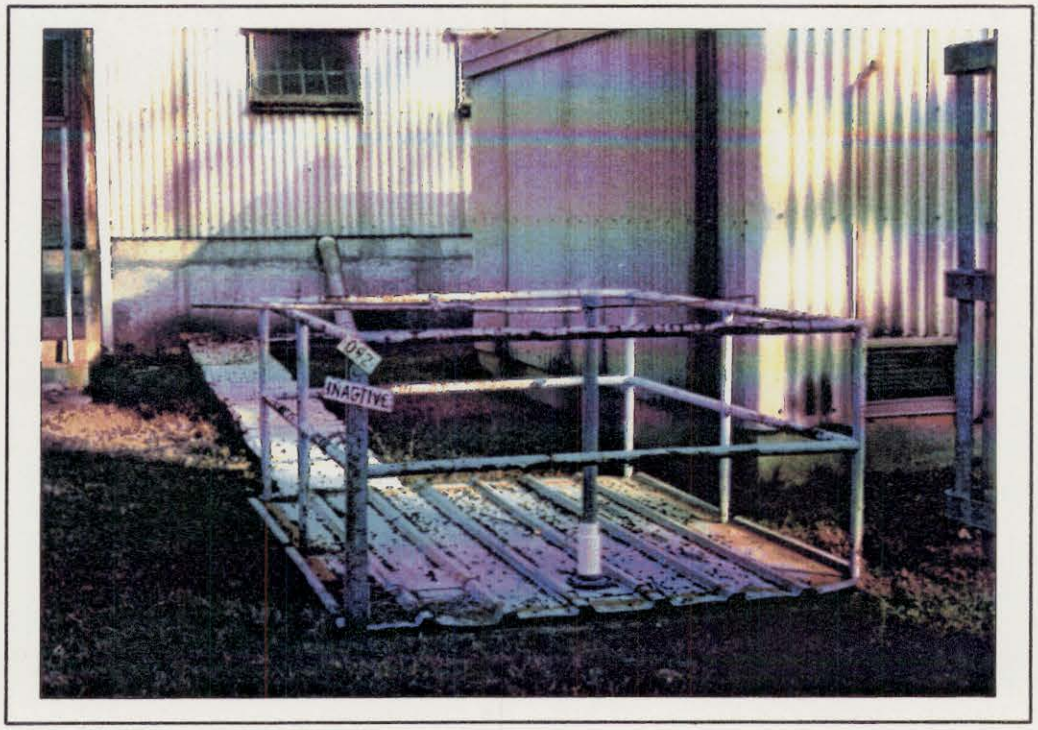
SUMP 089 - BUILDING 68-G



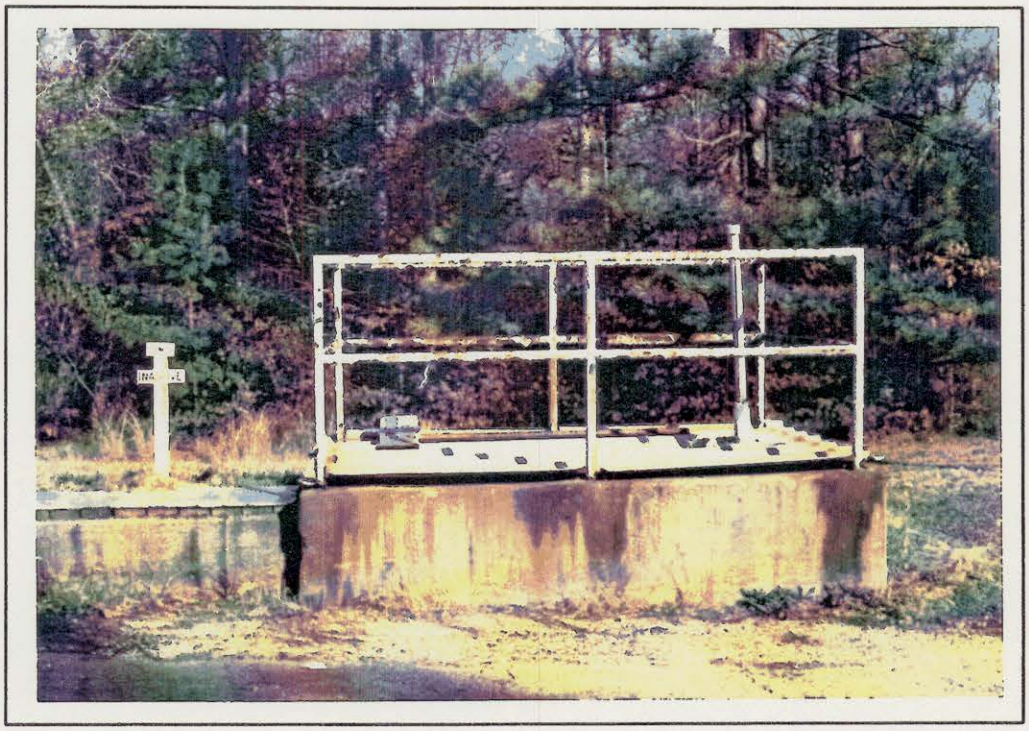
SUMP 090 - BUILDING 68-G



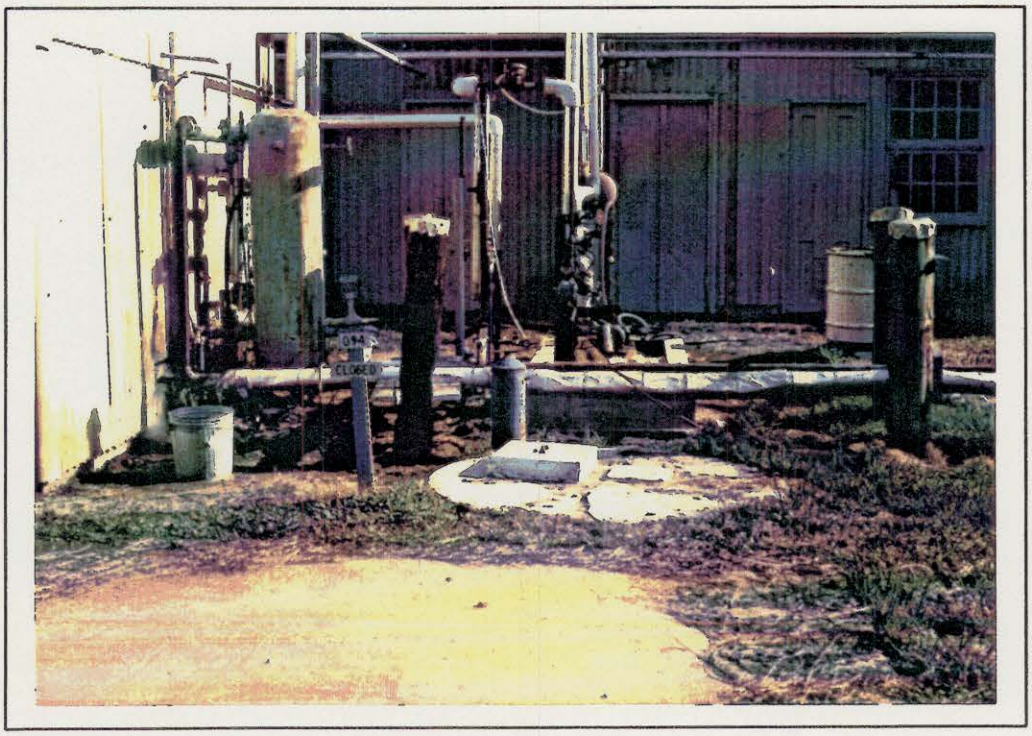
SUMP 091 - BUILDING 75-I



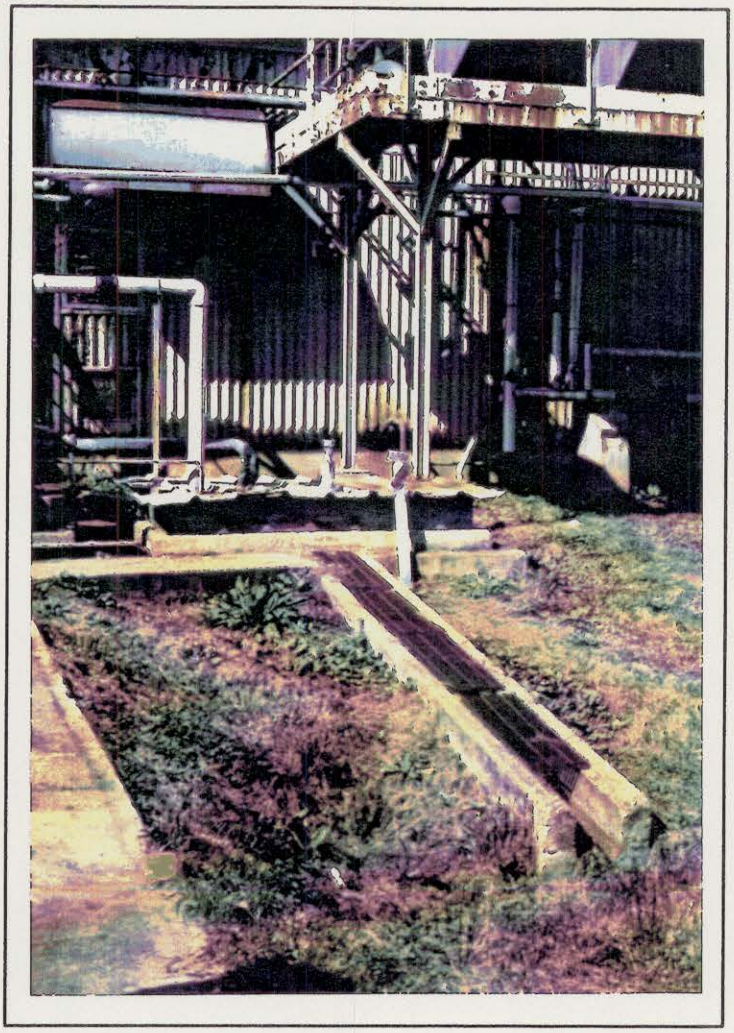
SUMP 092 - BUILDING 75-I



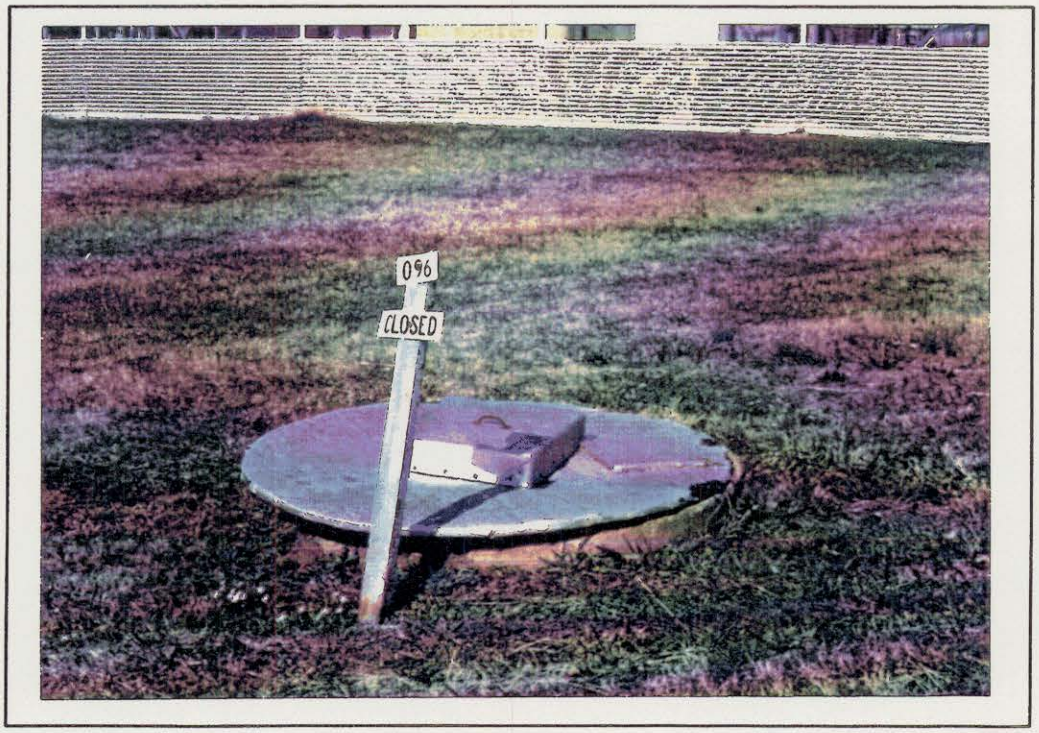
SUMP 093 - BUILDING 75-I



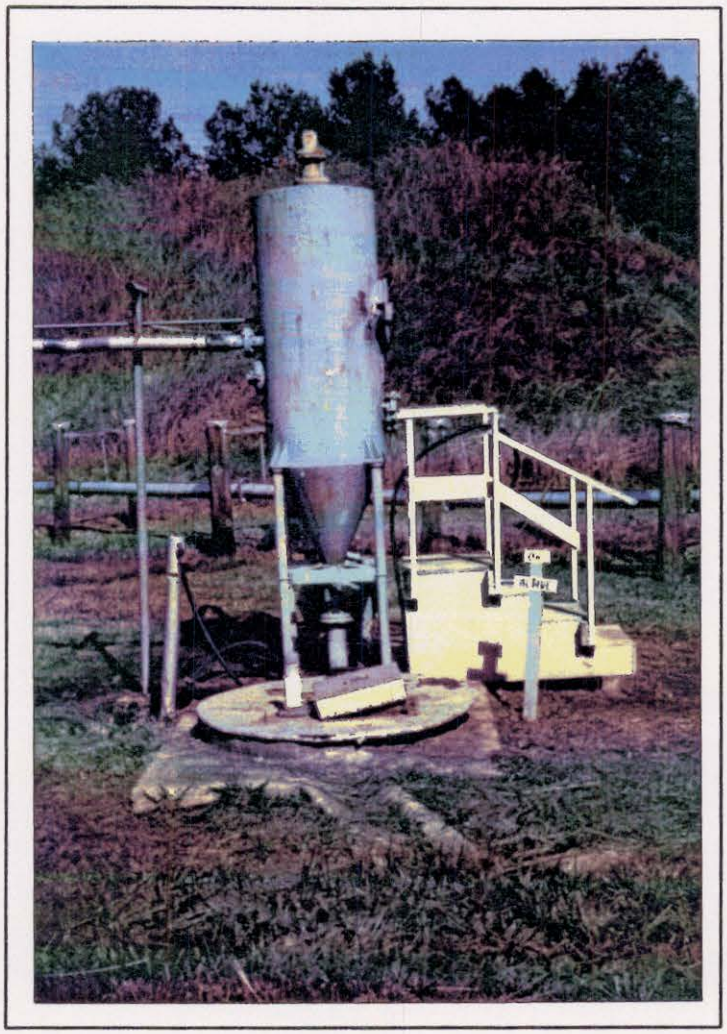
SUMP 094 - BUILDING 16-Y



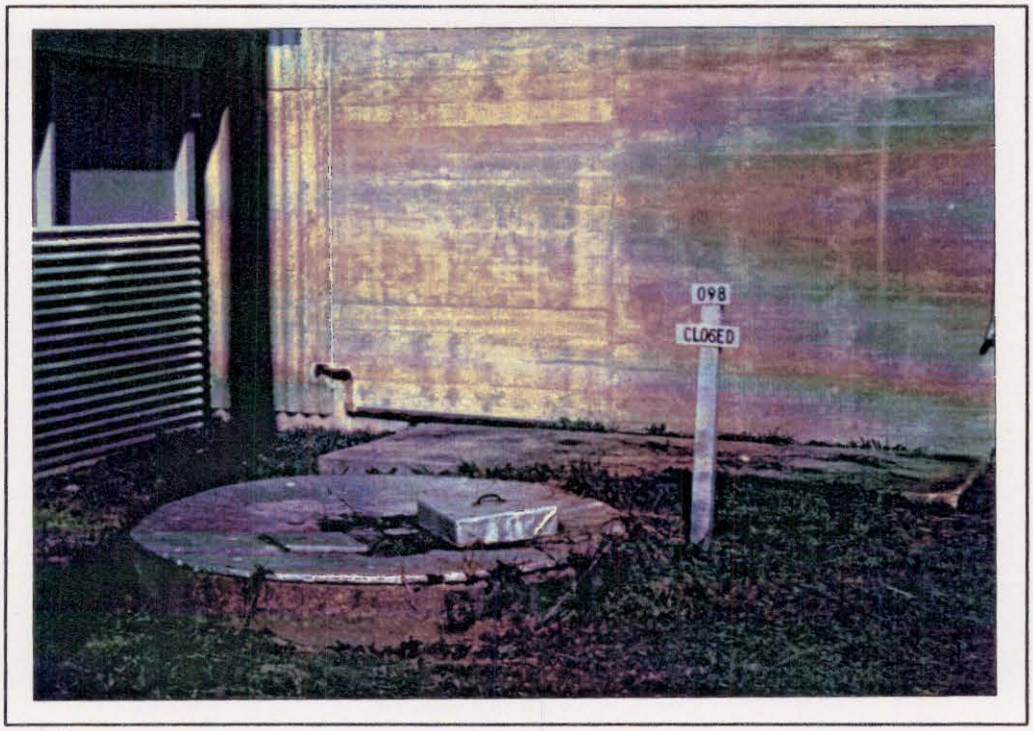
SUMP 095 - BUILDING 34-Y



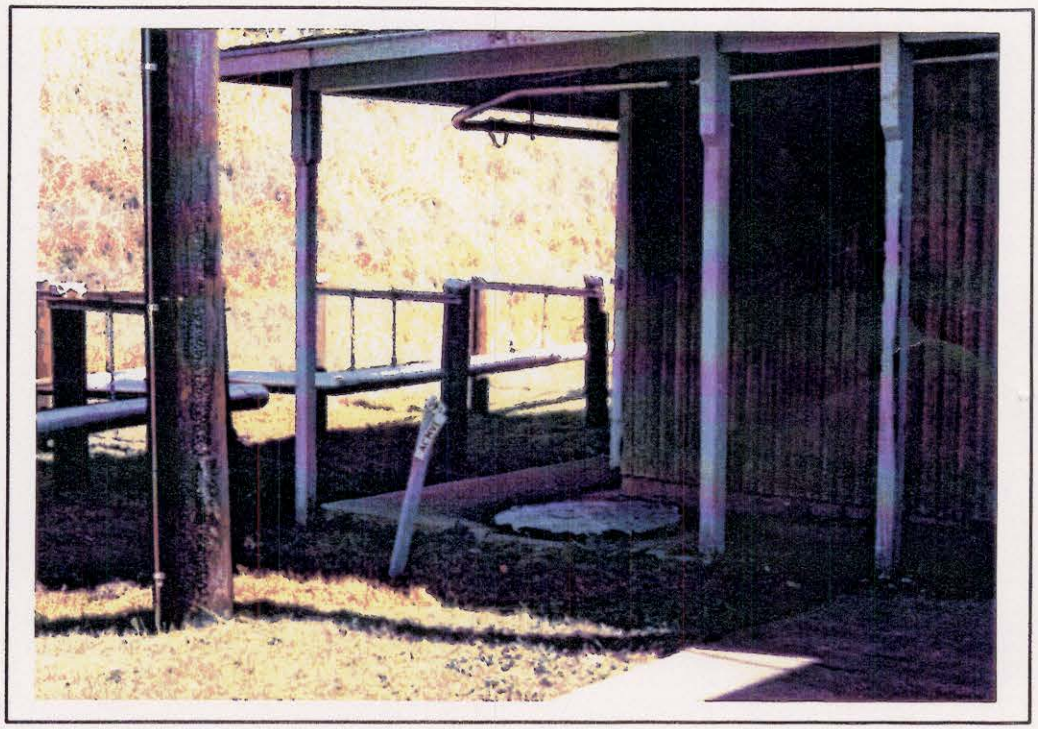
SUMP 096 - BUILDING 34-Y



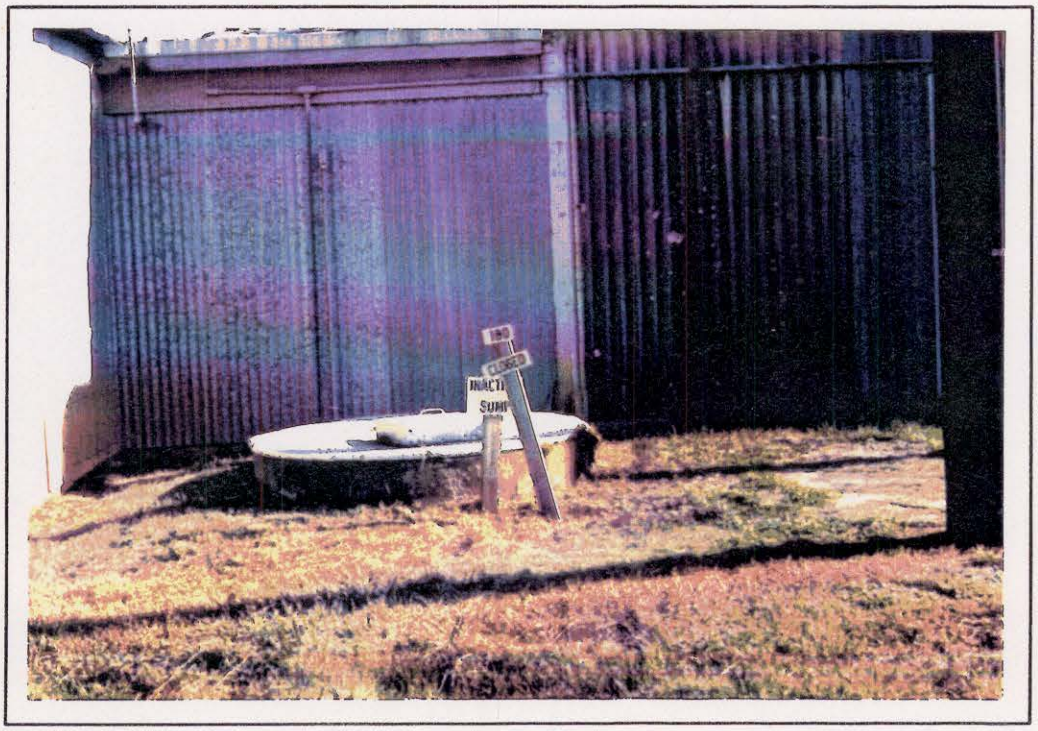
SUMP 097 - BUILDING 38-Y



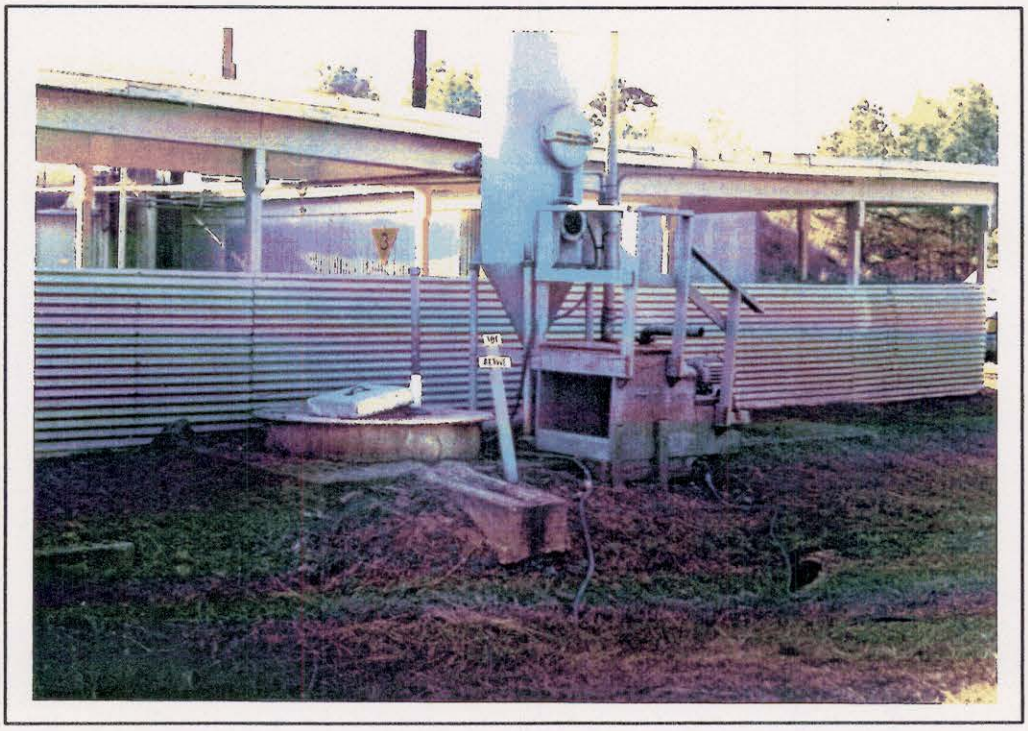
SUMP 098 - BUILDING 38-Y



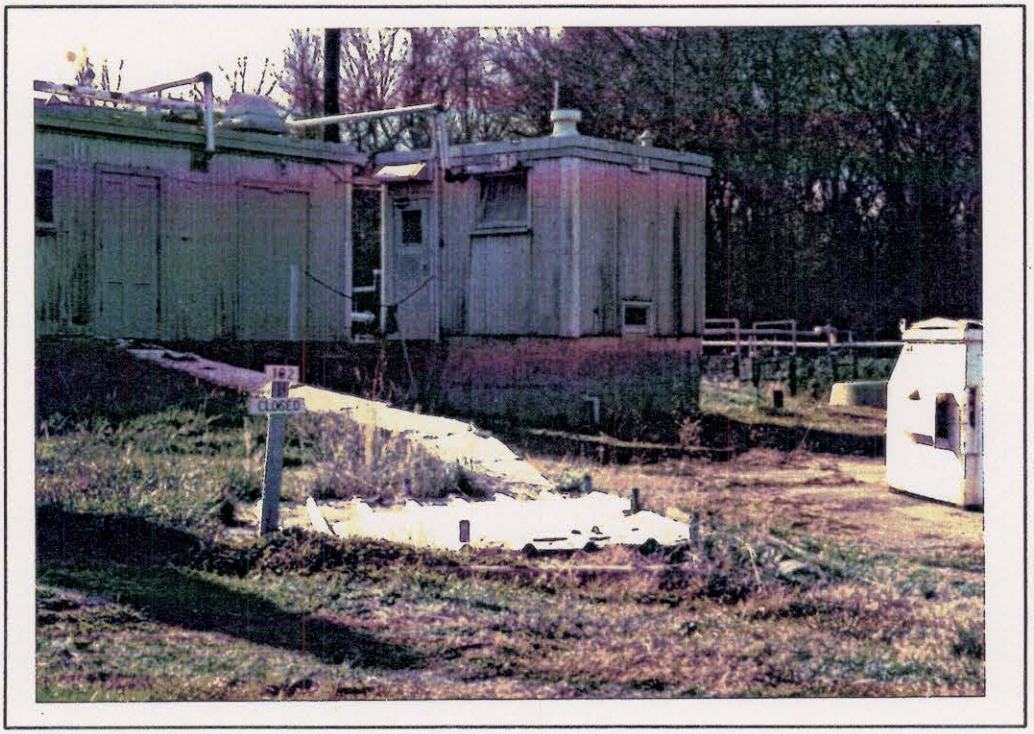
SUMP 099 - BUILDING 38-Y



SUMP 100 - BUILDING 45-Y

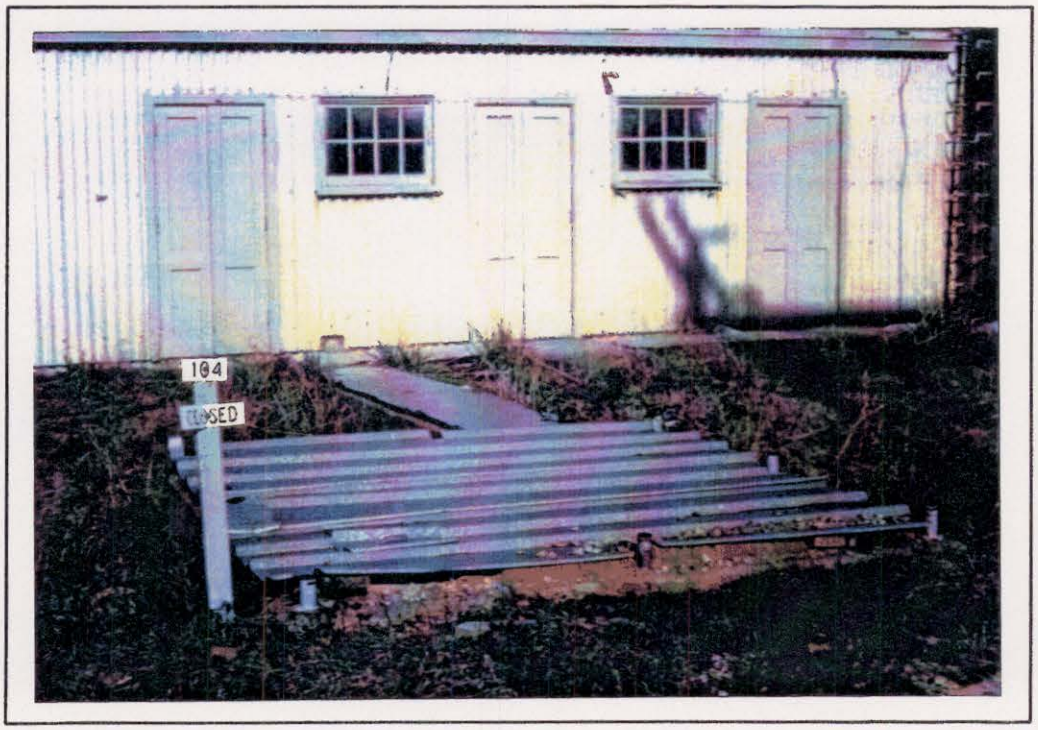


SUMP 101 - BUILDING 45-Y

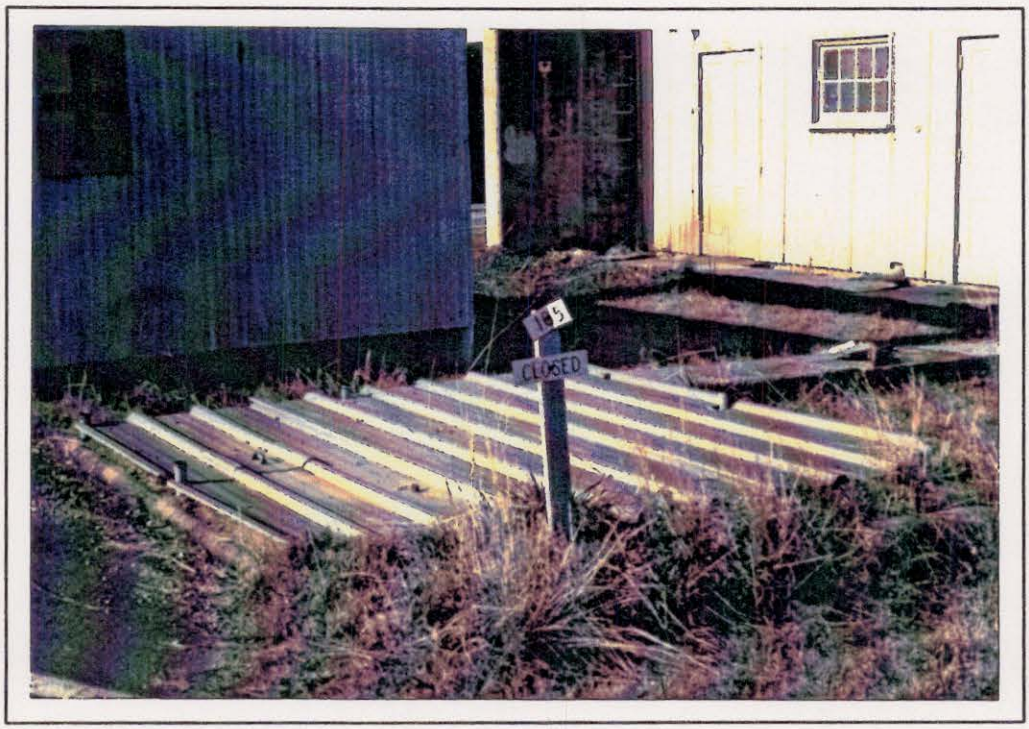


SUMP 102 - BUILDING 16-T

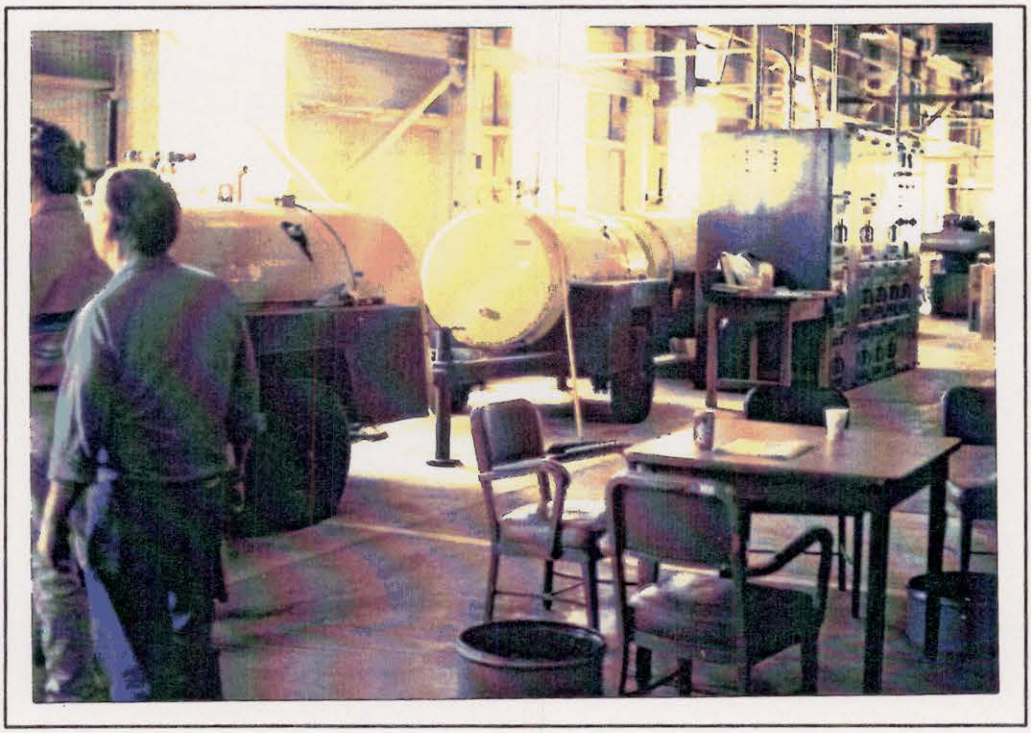
SUMP 103 - BUILDING 16-T



SUMP 104 - BUILDING 16-T

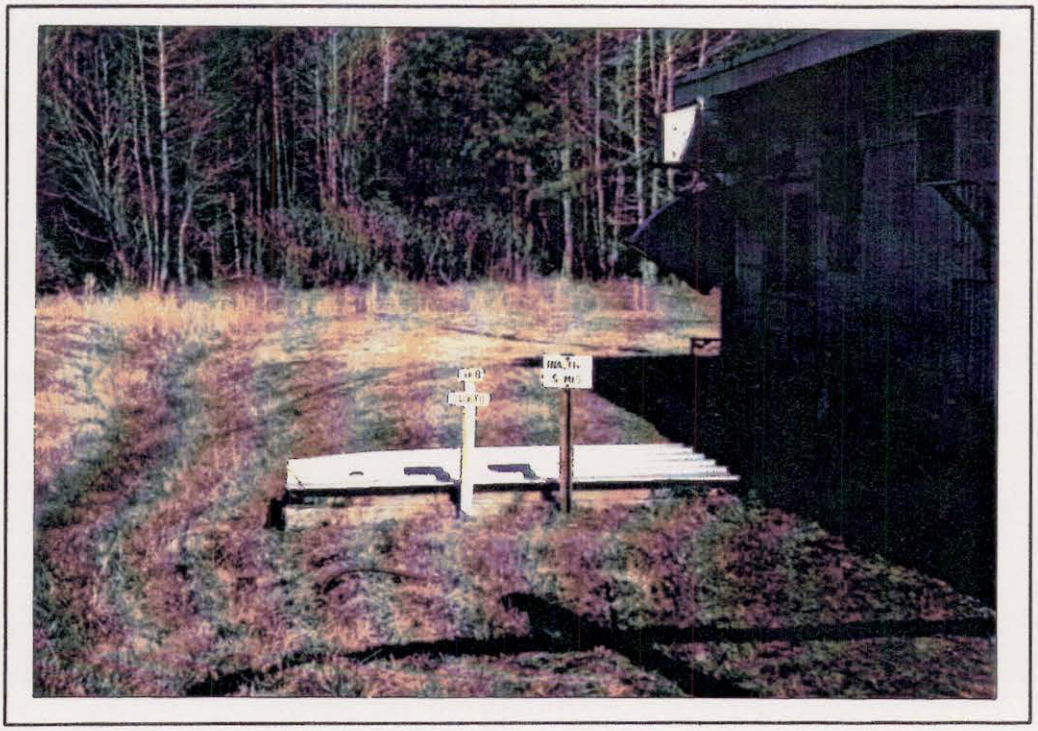


SUMP 105 - BUILDING 16-T



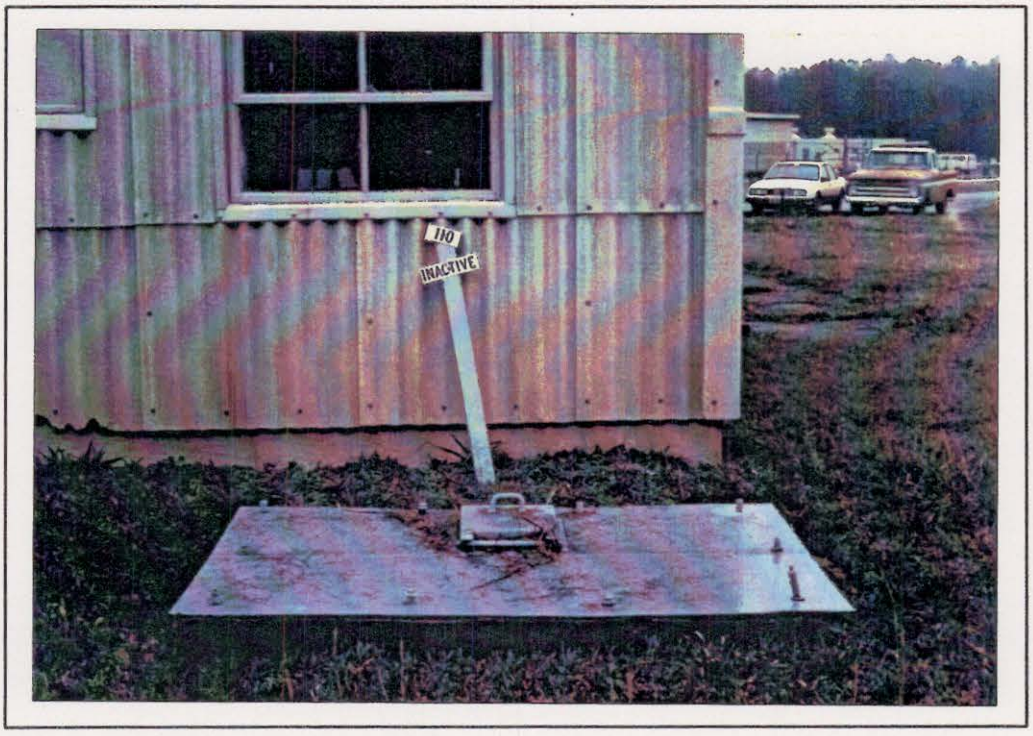
SUMP 106 - BUILDING 401

SUMP 107 - BUILDING 403



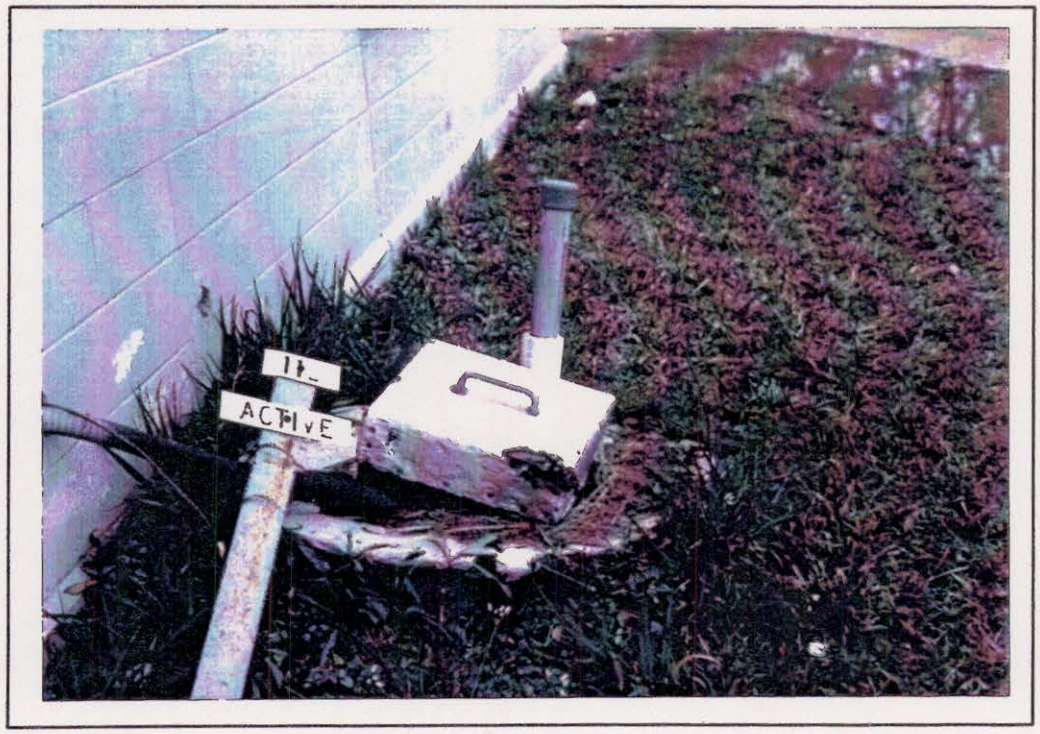
SUMP 108 - BUILDING 406

SUMP 109 - BUILDING 408

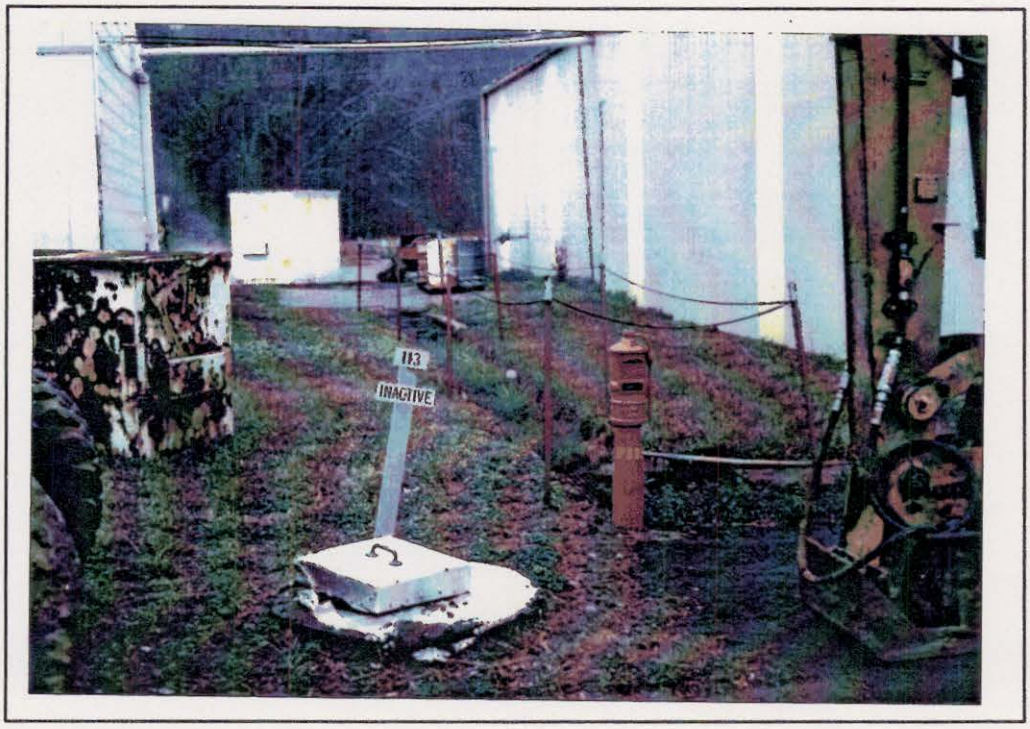


SUMP 110 - BUILDING 207

SUMP 111 - BUILDING 722-P



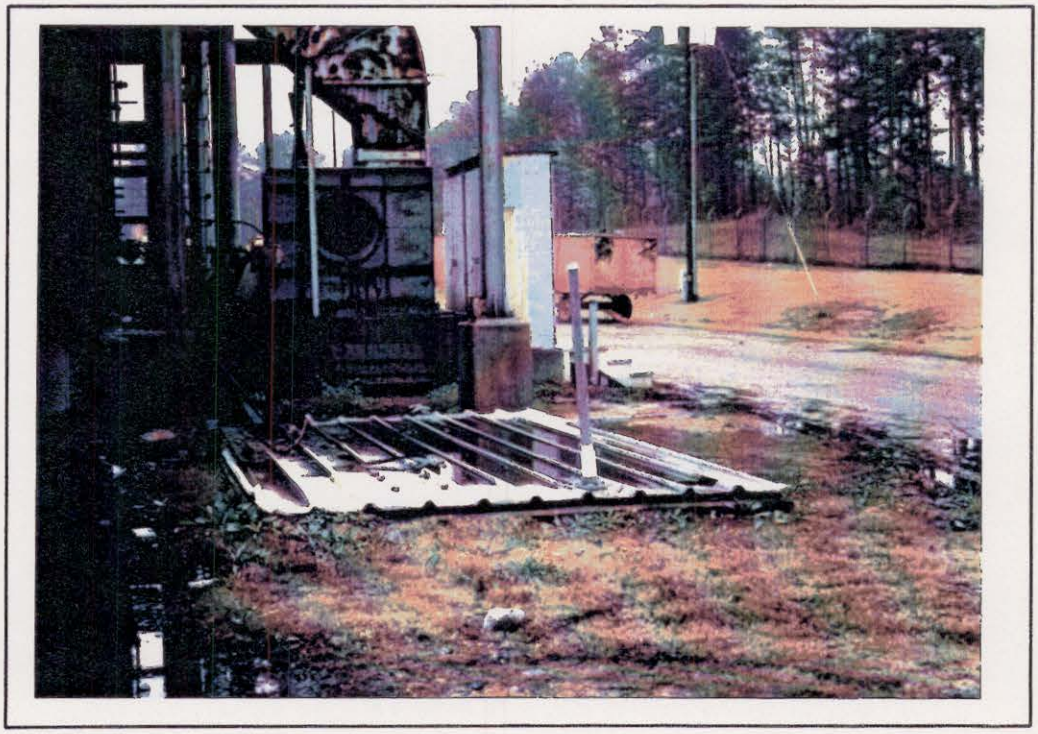
SUMP 112 - BUILDING 722-P



SUMP 113 - BUILDING 744

SUMP 114 - BUILDING 25-X

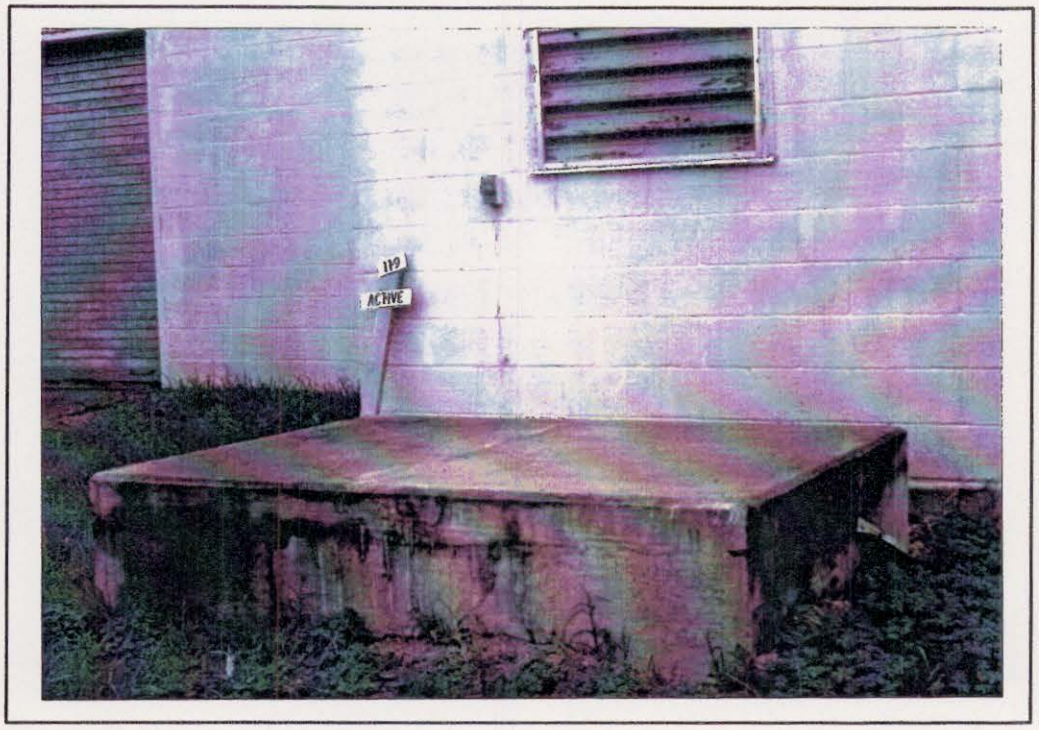
SUMP 115 - BUILDING 33-X



SUMP 116 - BUILDING 37-X

SUMP 117 - BUILDING 744-A

SUMP 118 - BUILDING 813

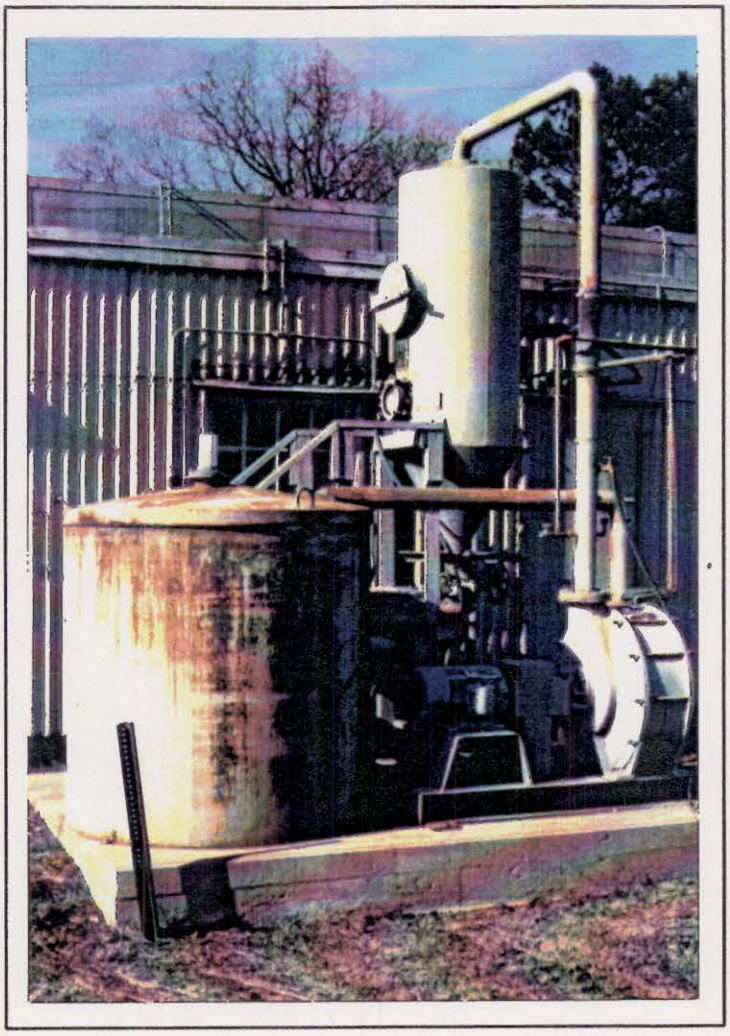


SUMP 119 - BUILDING 725

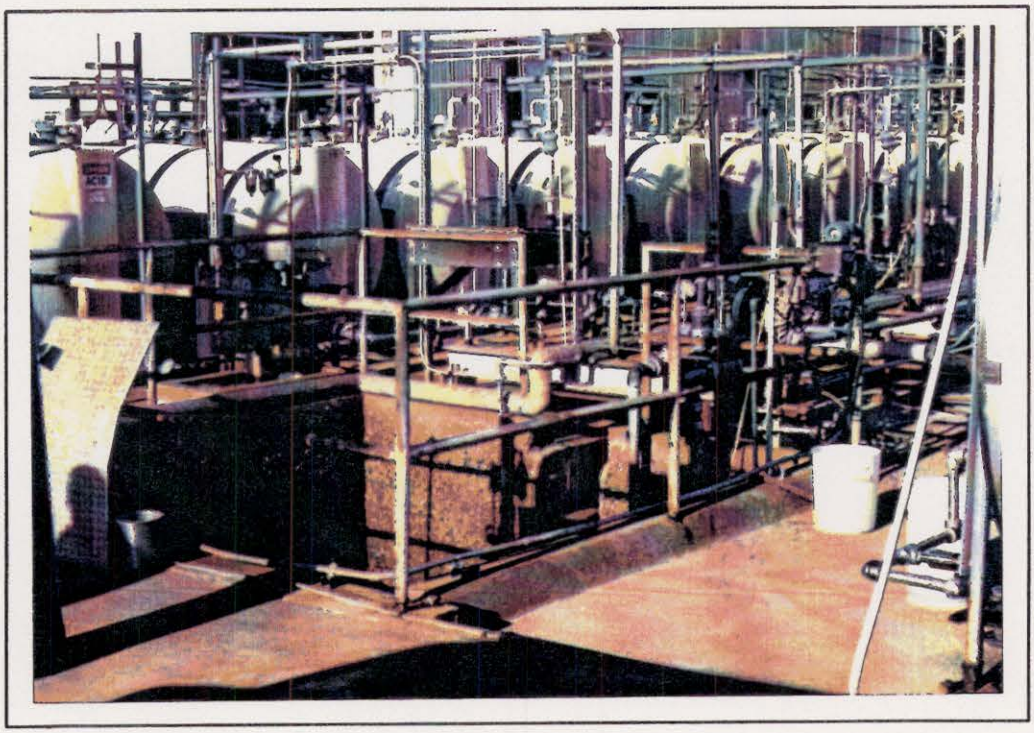
SUMP 120 - BUILDING 725

SUMP 121 - BUILDING 32-H

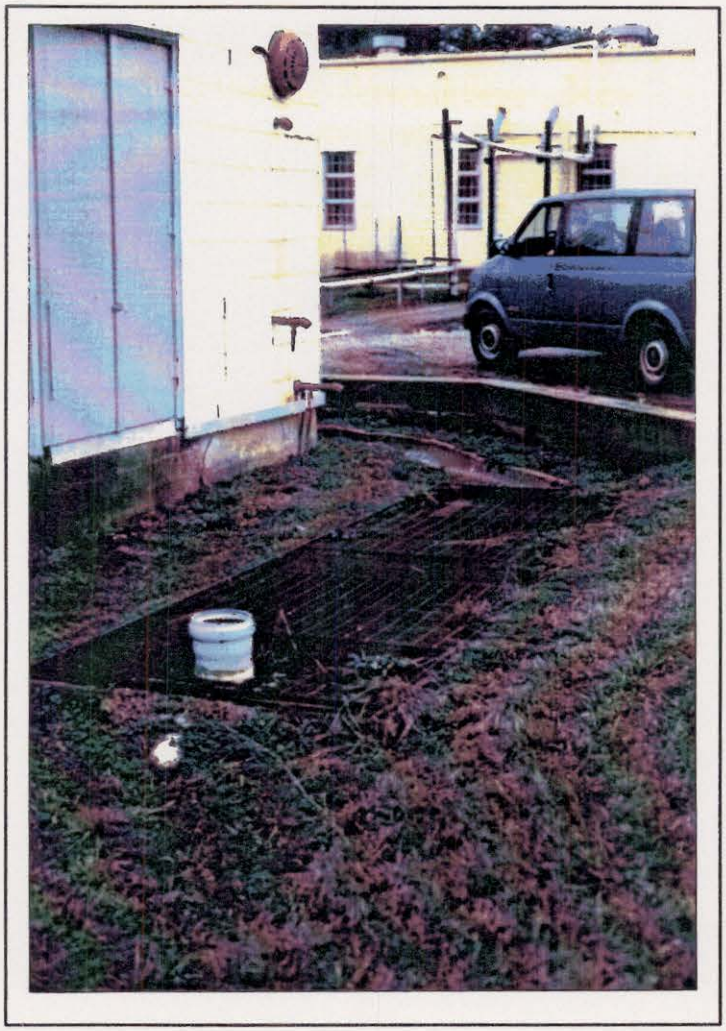
SUMP 122 - BUILDING WTP



SUMP 123 - BUILDING 18-Y

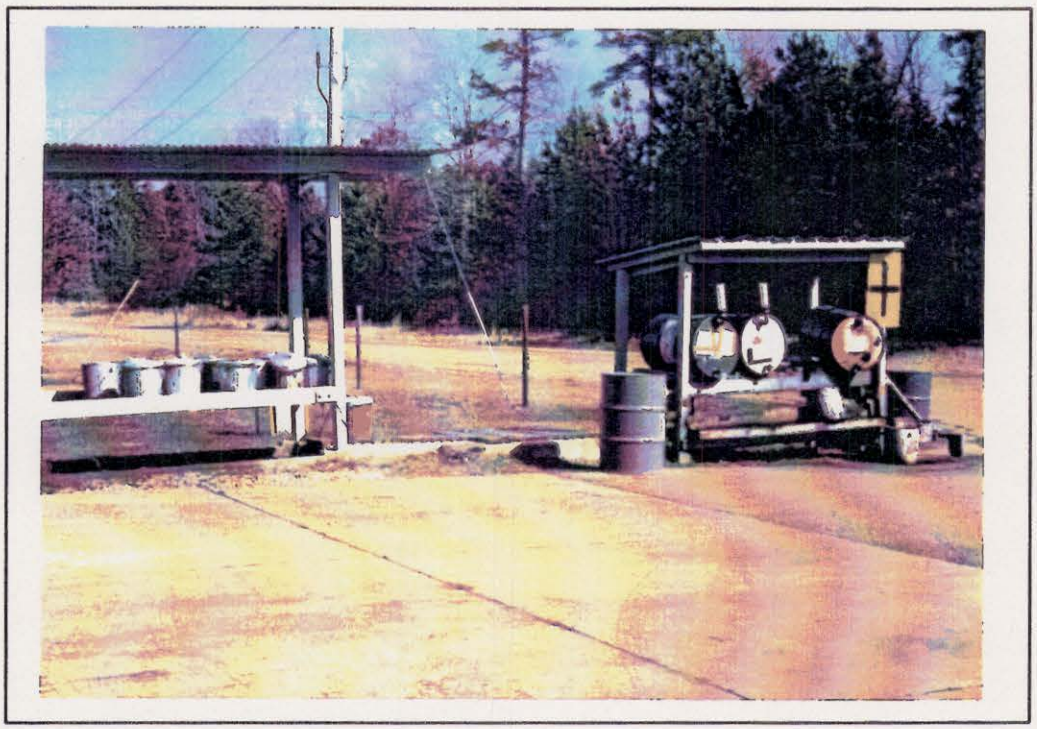


SUMP 800 - BUILDING 23-T

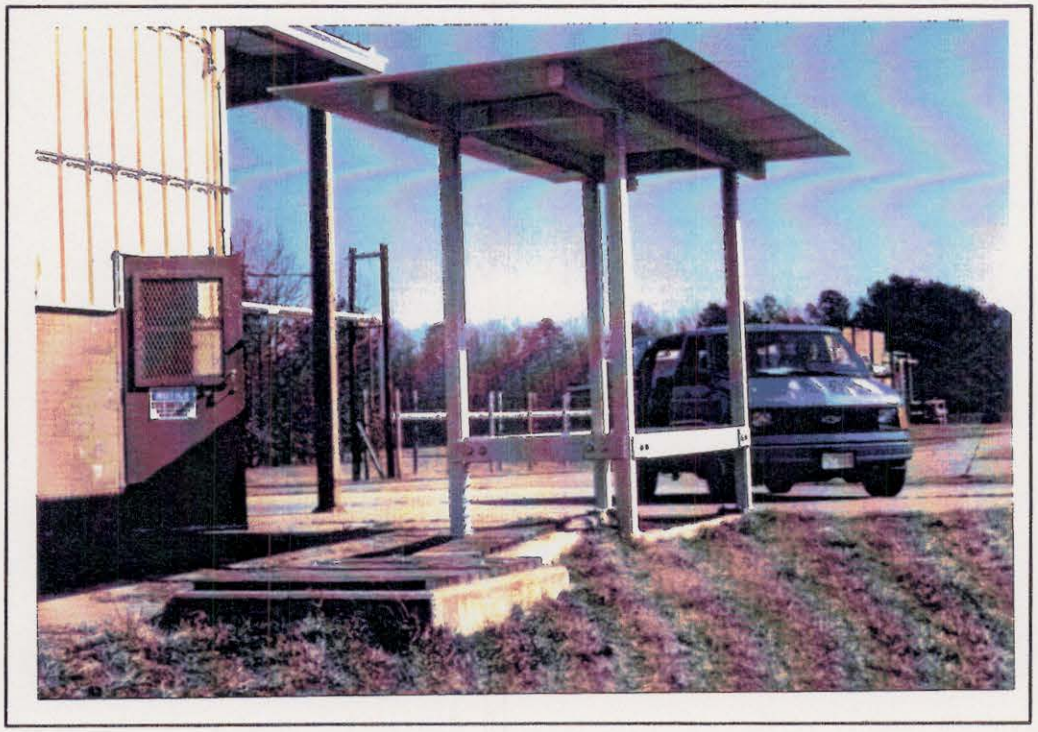


UNNUMBERED SUMP - BUILDING 723

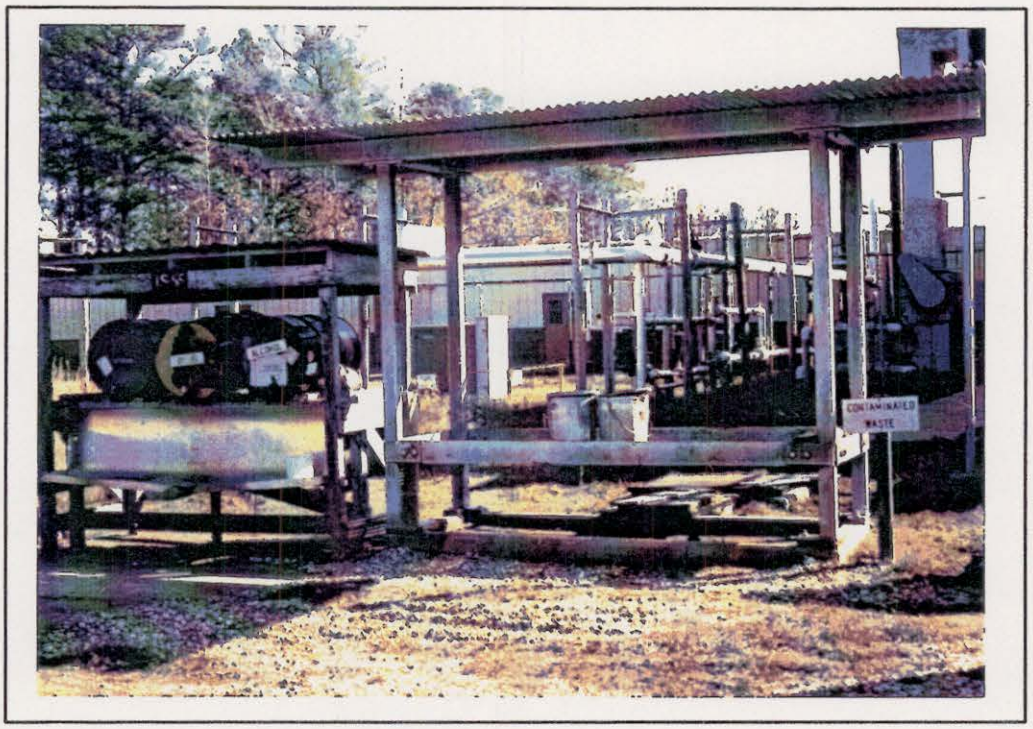
UNCONTAMINATED SUMP -
BUILDINGS 31-W, 33-W, &35-W



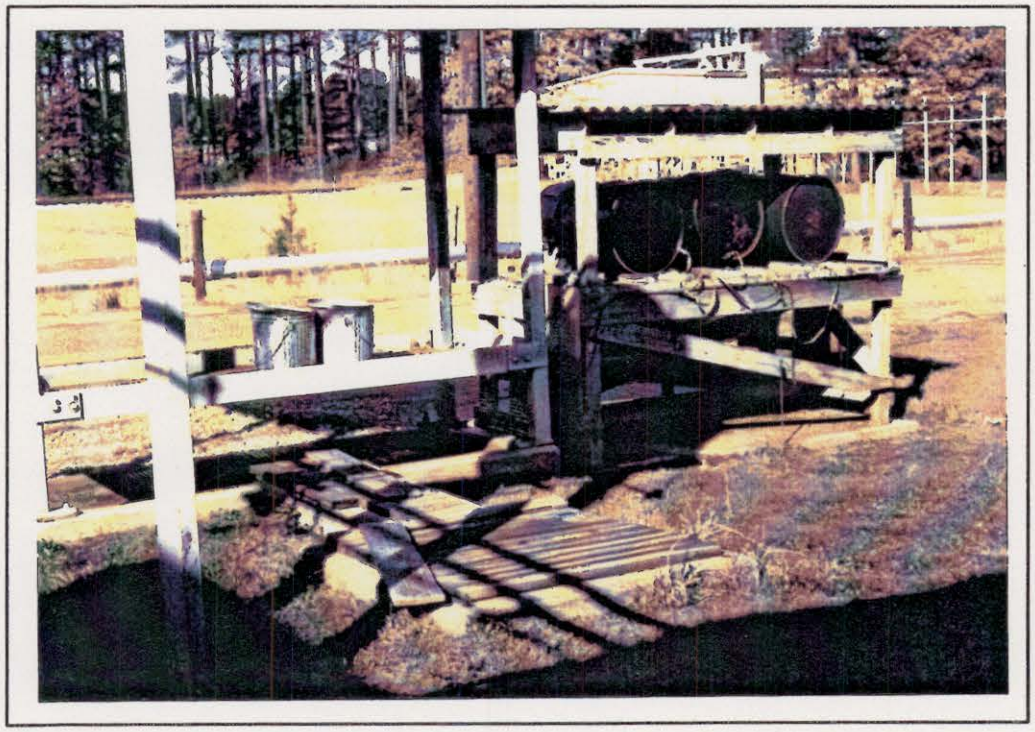
WASTE RACK AND SUMP



WASTE RACK AND SUMP

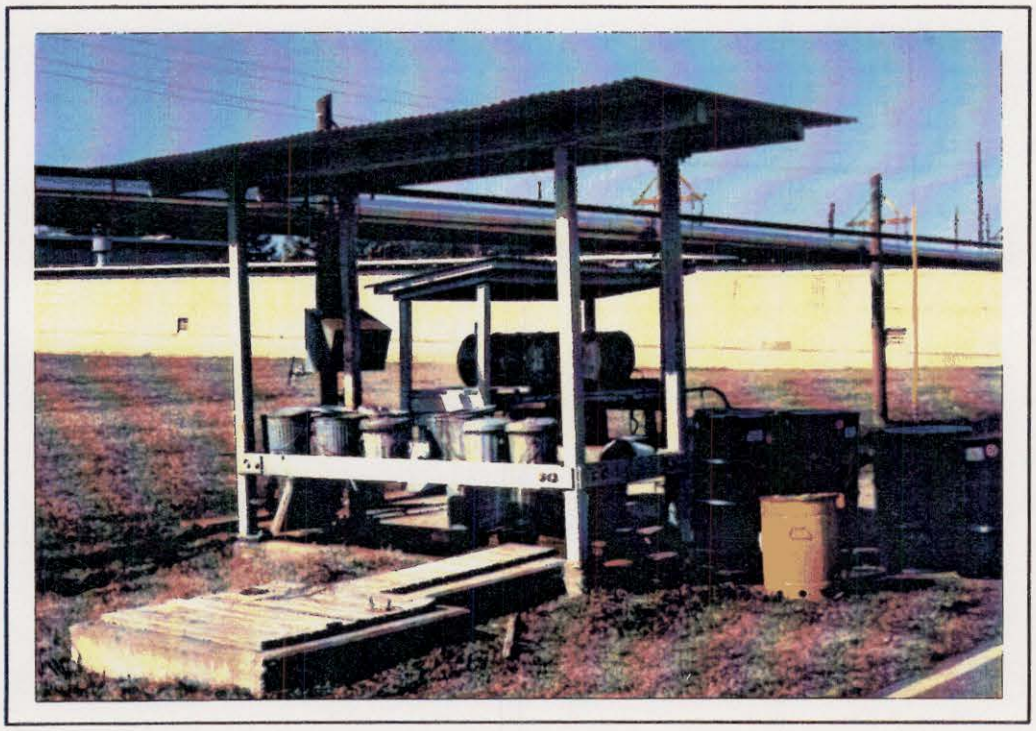


WASTE RACK AND SUMP



WASTE RACK AND SUMP

WASTE RACK AND SUMP

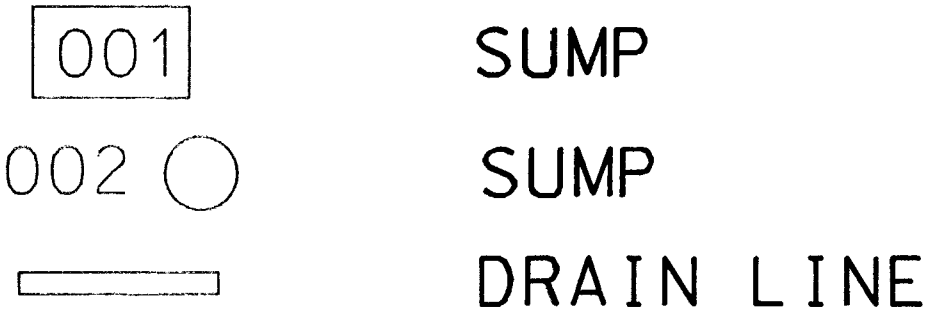


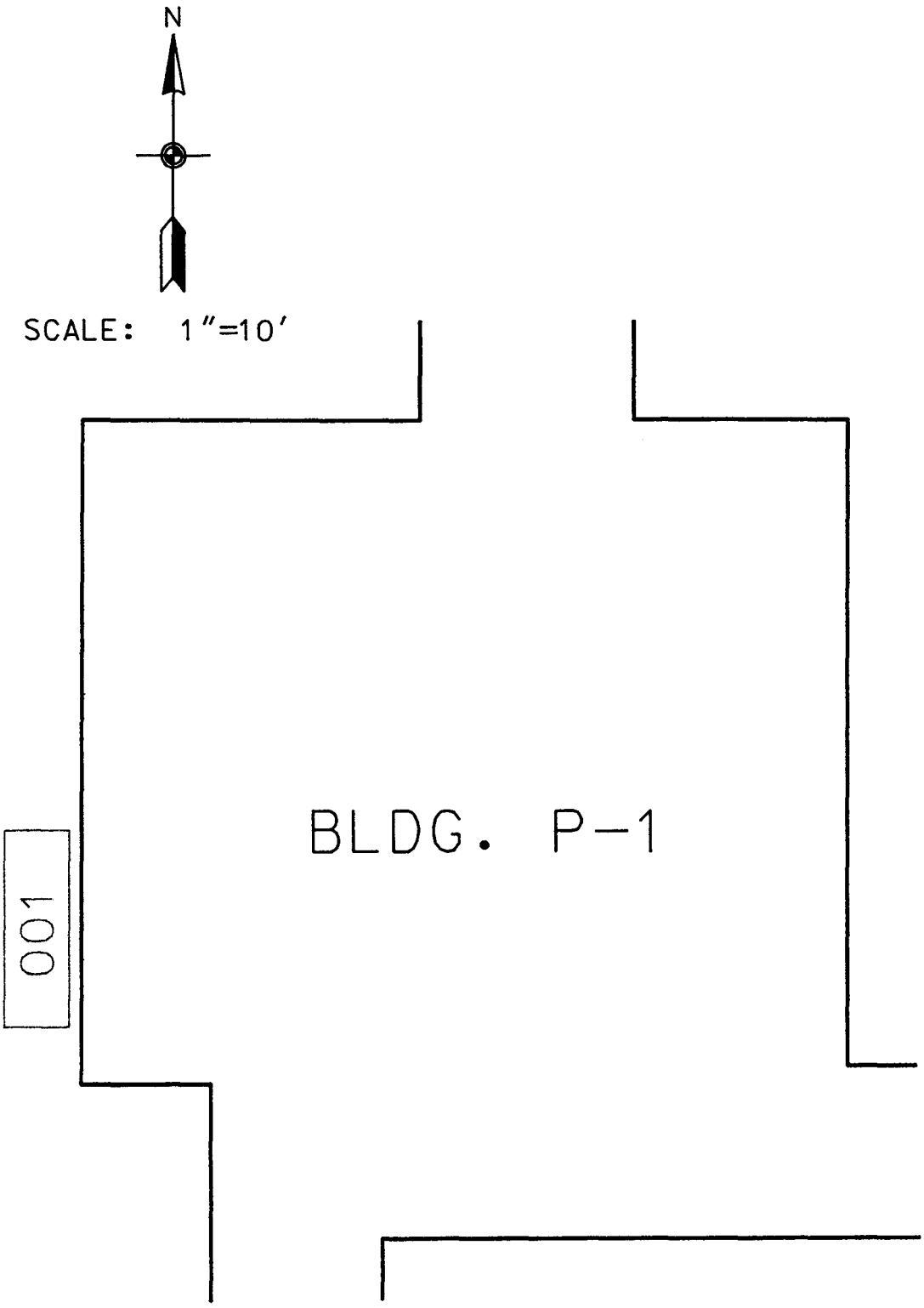
WASTE RACK AND SUMP

APPENDIX B

DIGITIZED DRAWINGS - PRODUCTION BUILDINGS AND ASSOCIATED SUMPS

LEGEND

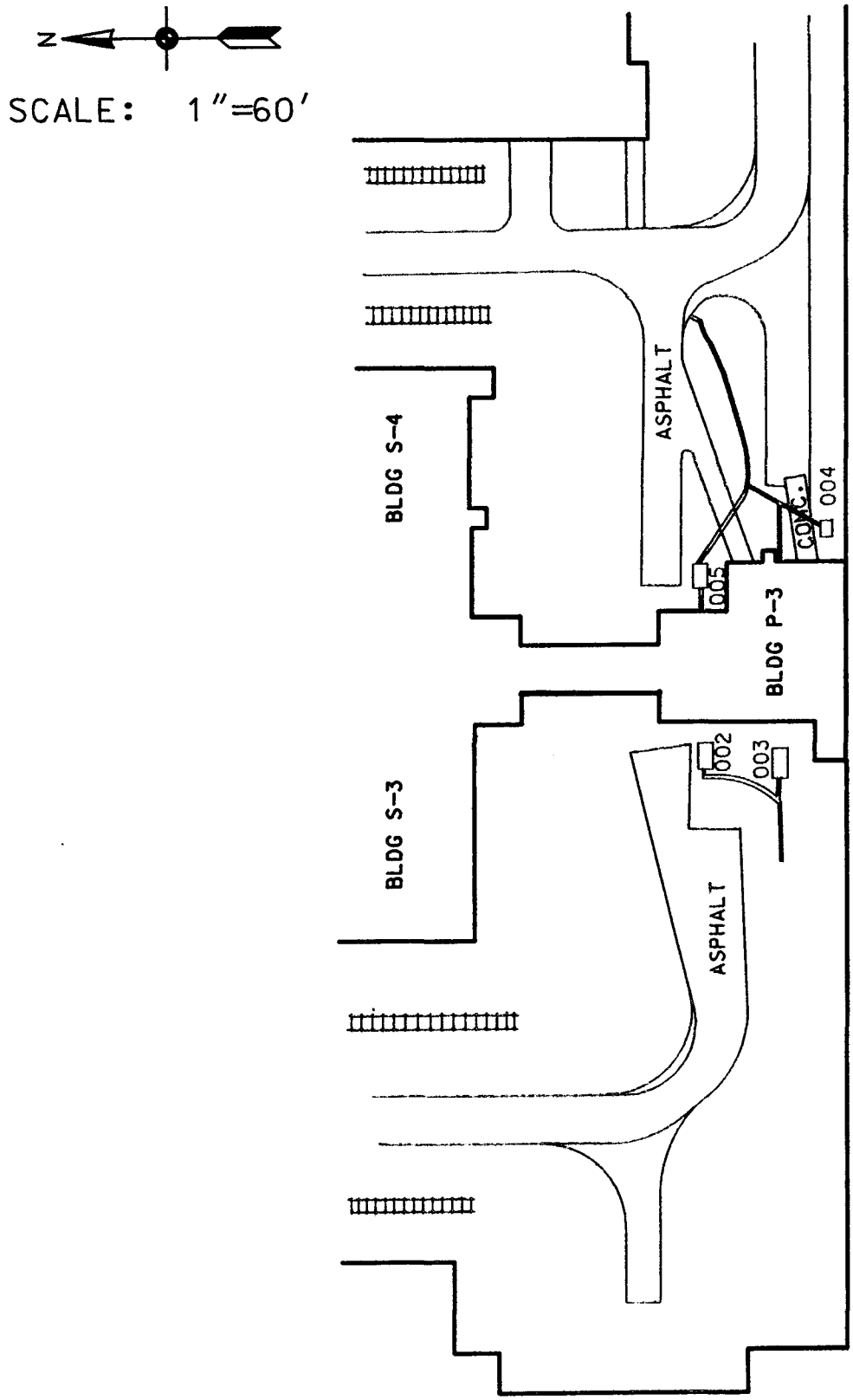




BLDG. P-1
LONGHORN ARMY
AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

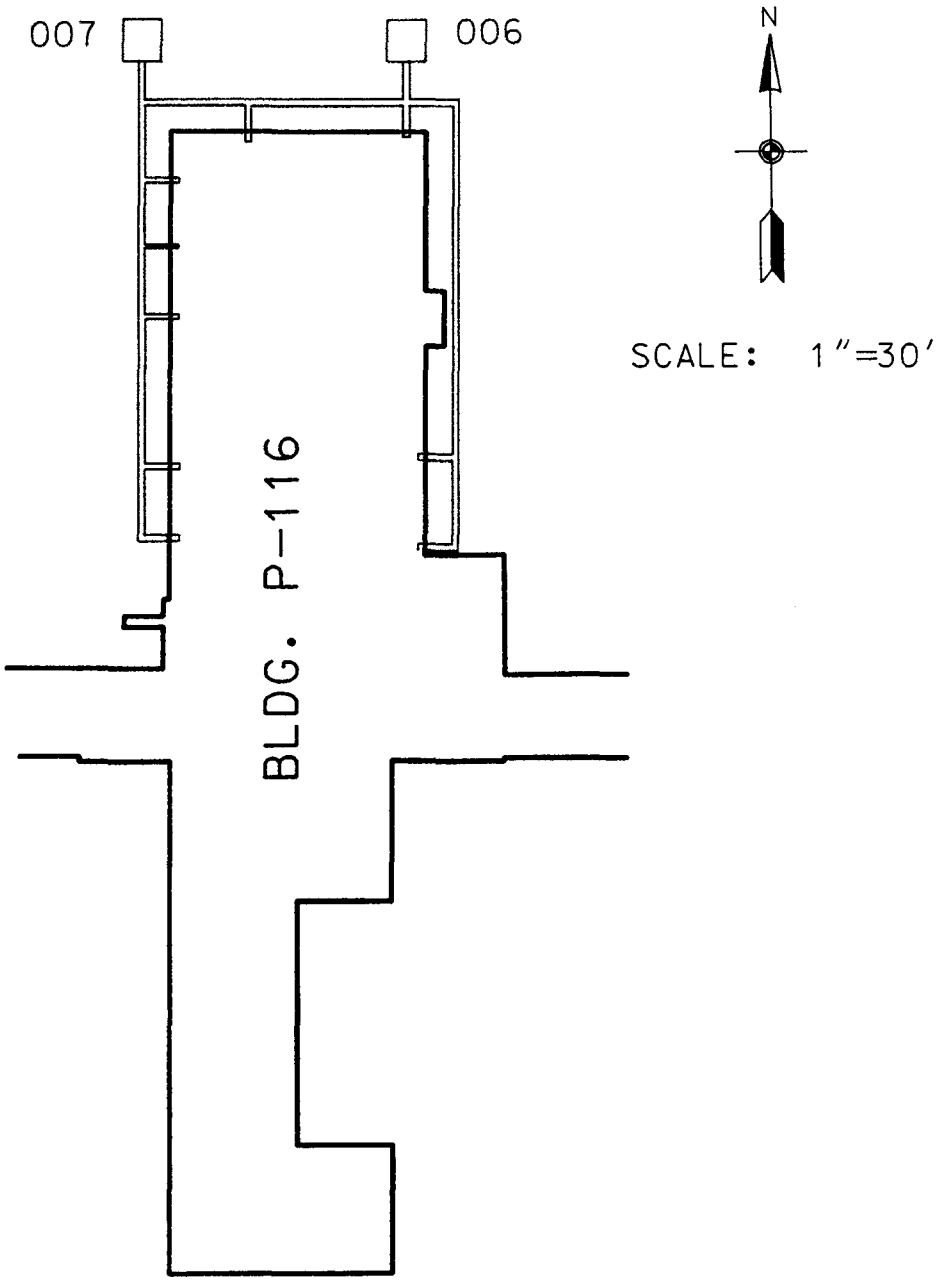
FILE NAME BL_P-1.DGN



BLDG. P-3
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

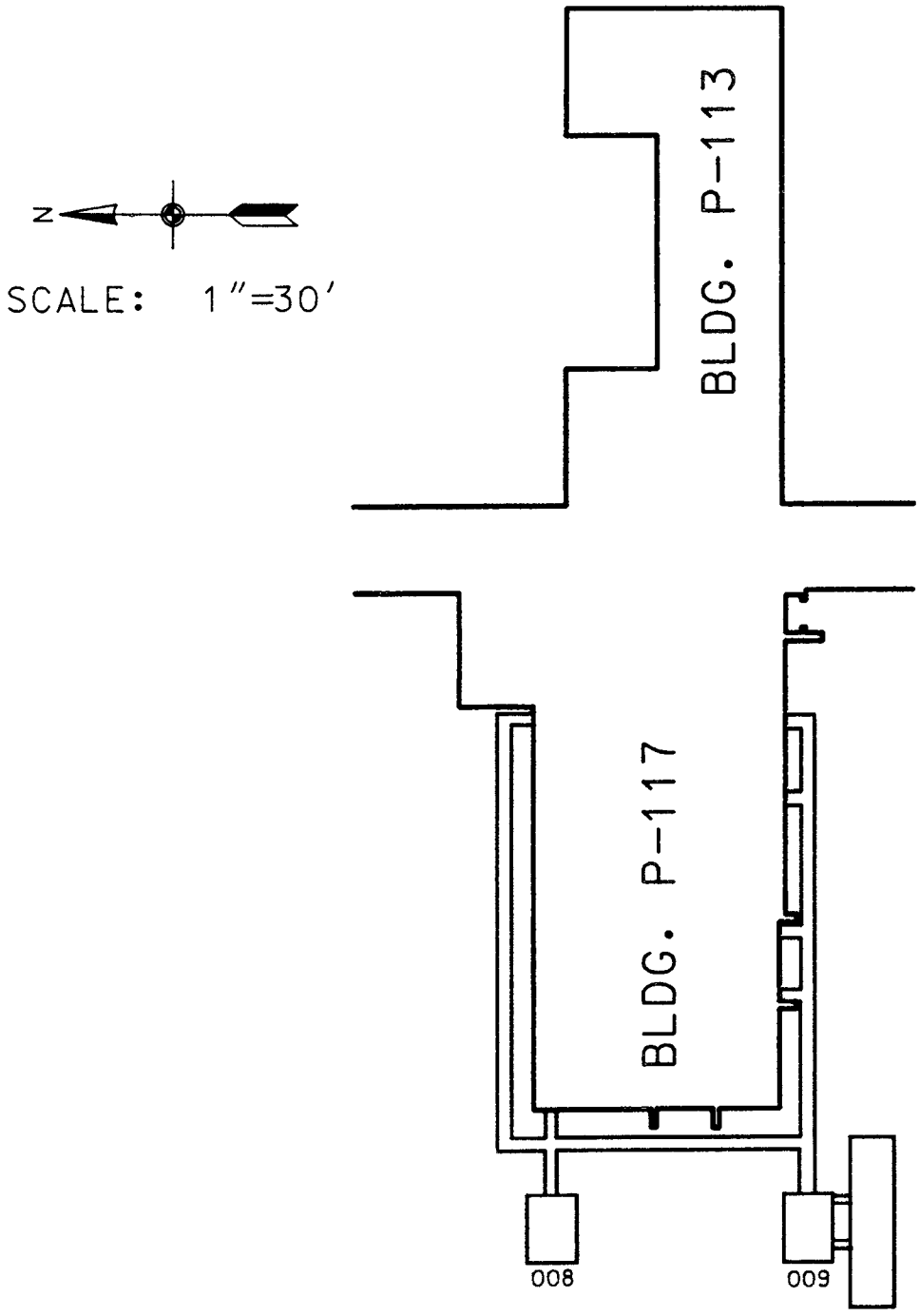
FILE NAME BL_P-3.DGN



BLDG. P-116
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

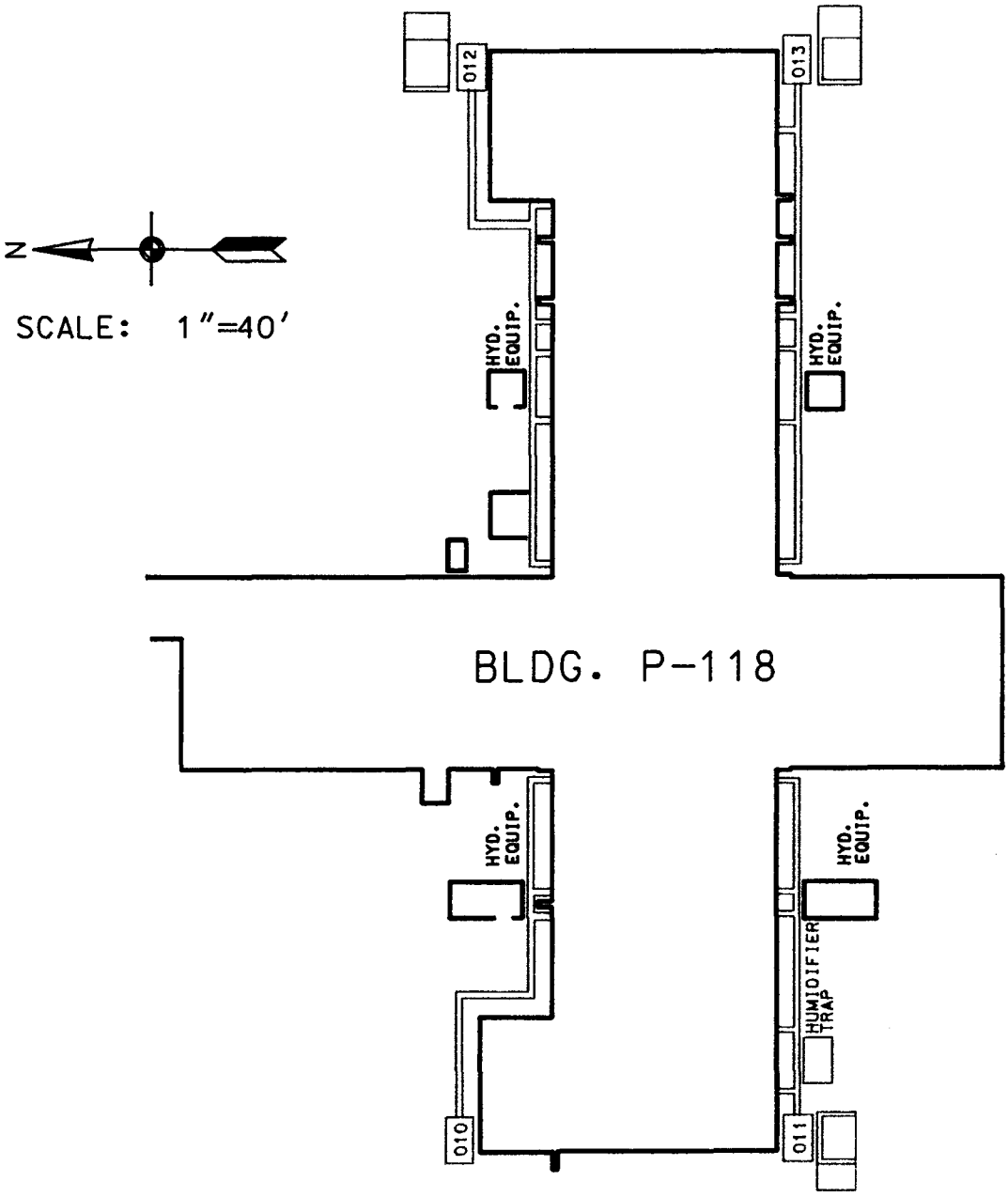
FILE NAME BL_P-116.DGN



BLDG. P-117
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_P-117.DGN

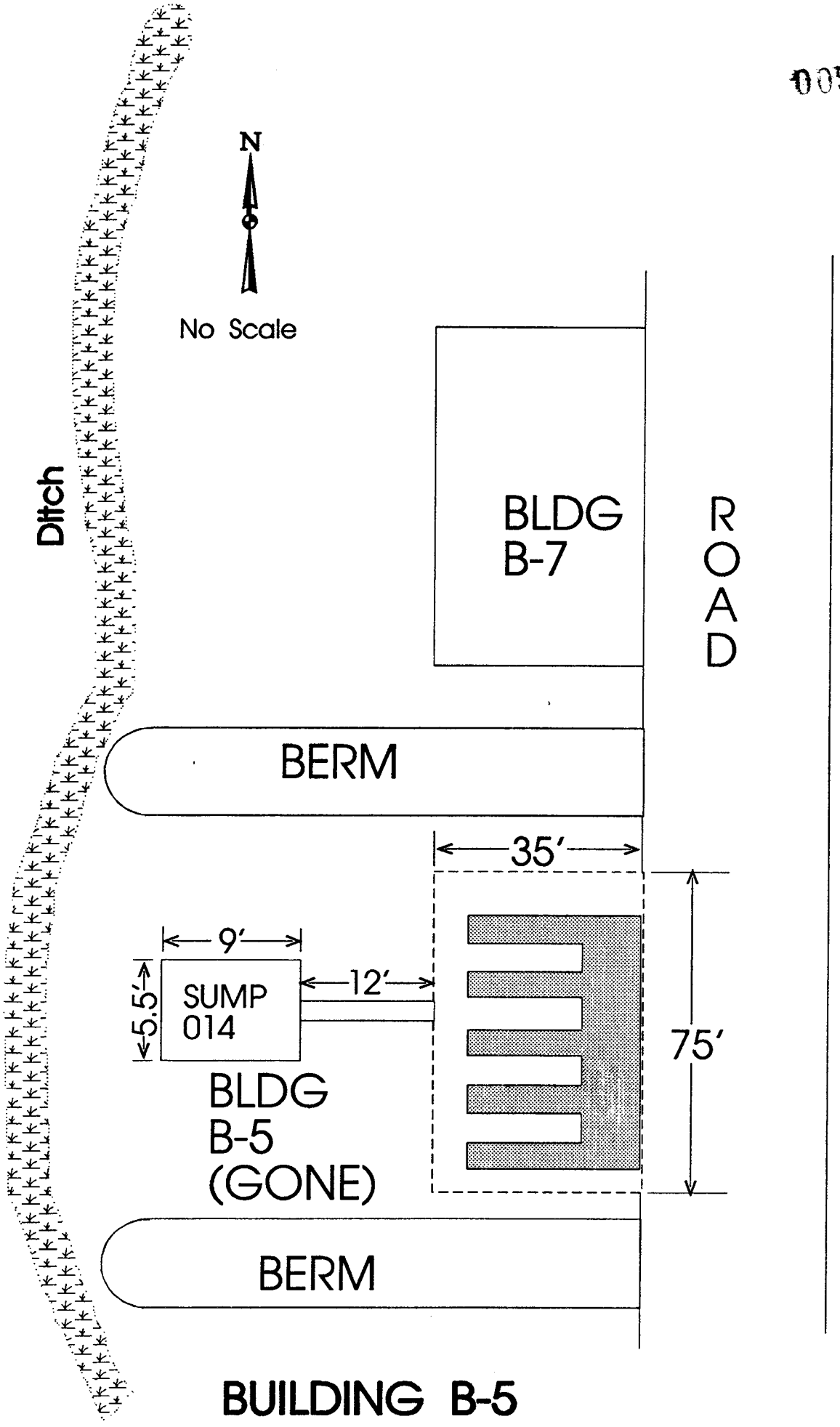


BLDG. P-118

LONGHORN ARMY AMMUNITION PLANT

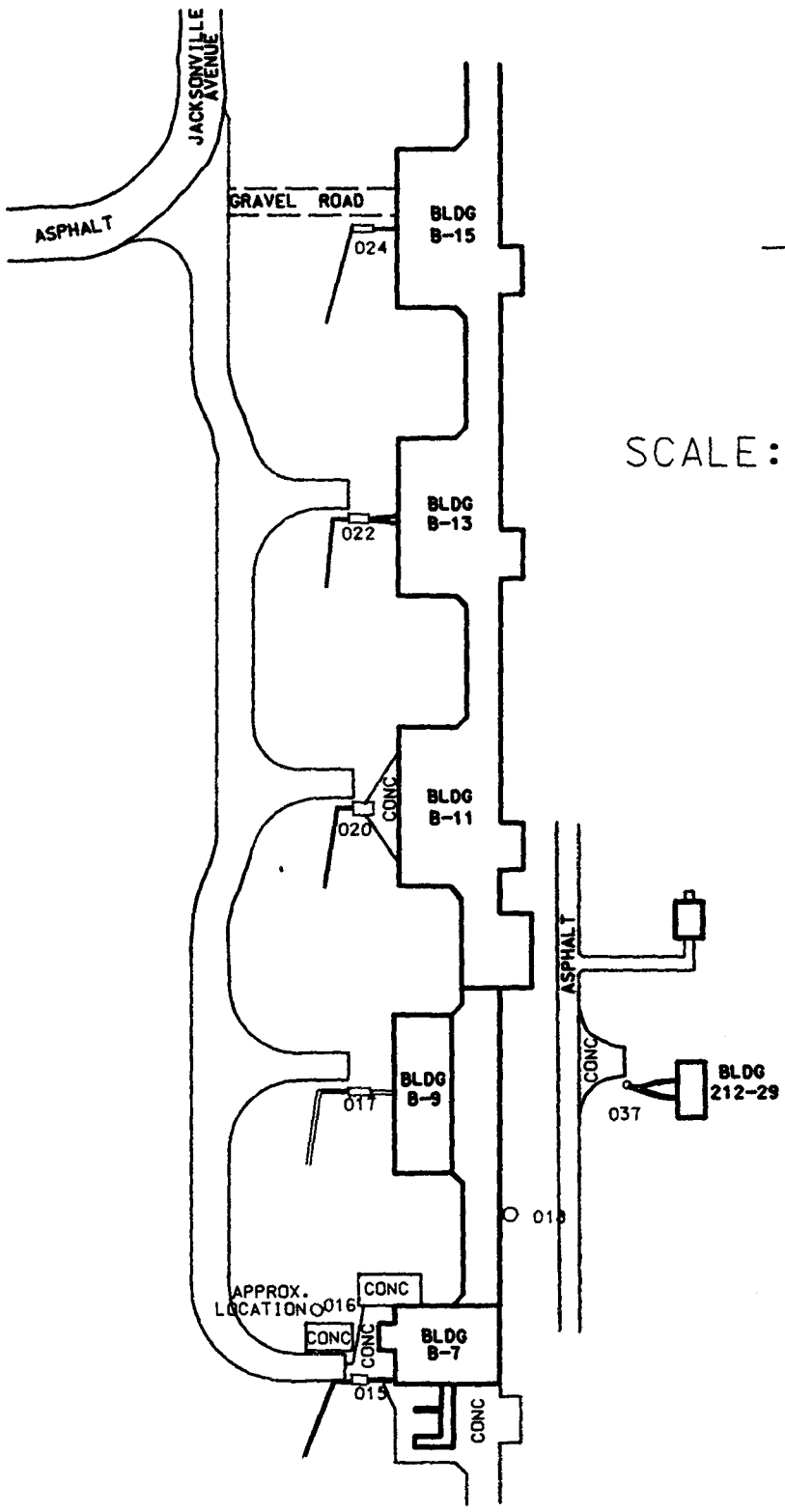
NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_P-118.DGN


N
No Scale
Ditch
BLDG
B-7
ROAD
BERM
35'
9'
5.5'
SUMP
014
12'
75'
BLDG
B-5
(GONE)
BERM

BUILDING B-5

005709

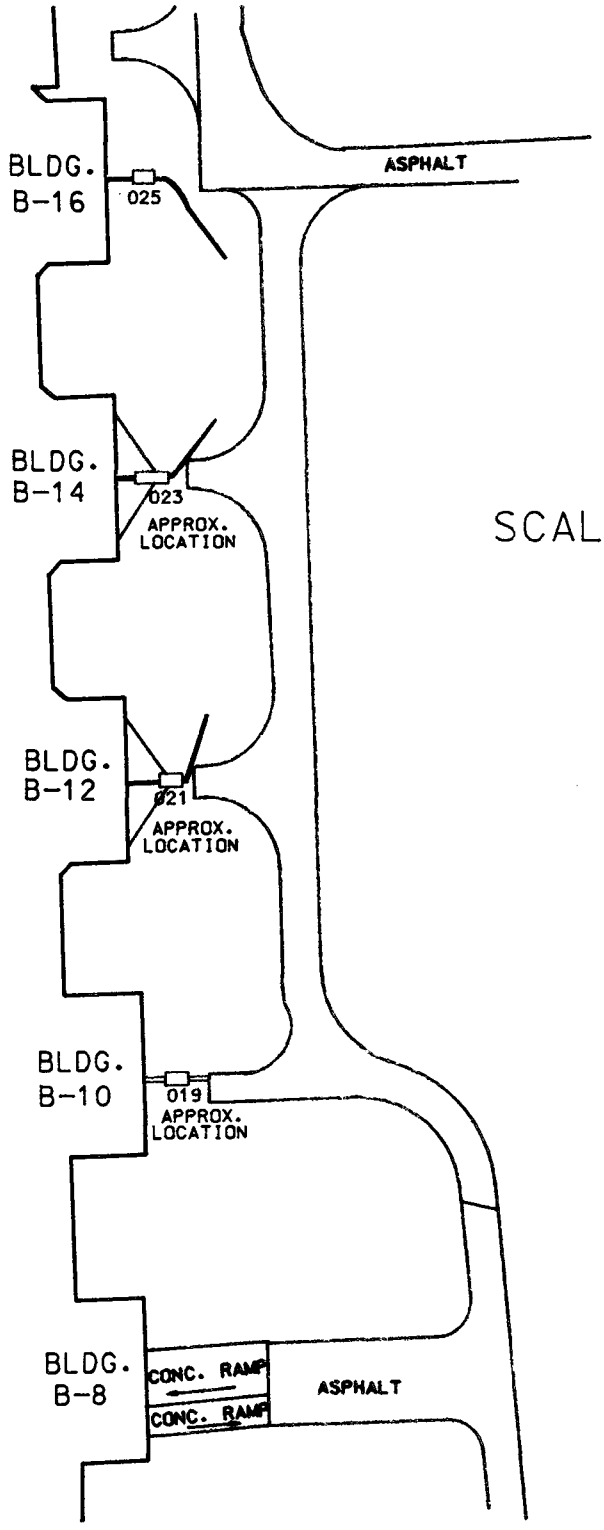


BLDG. B-7 thru B-13 and 212-29

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_7-13.DGN



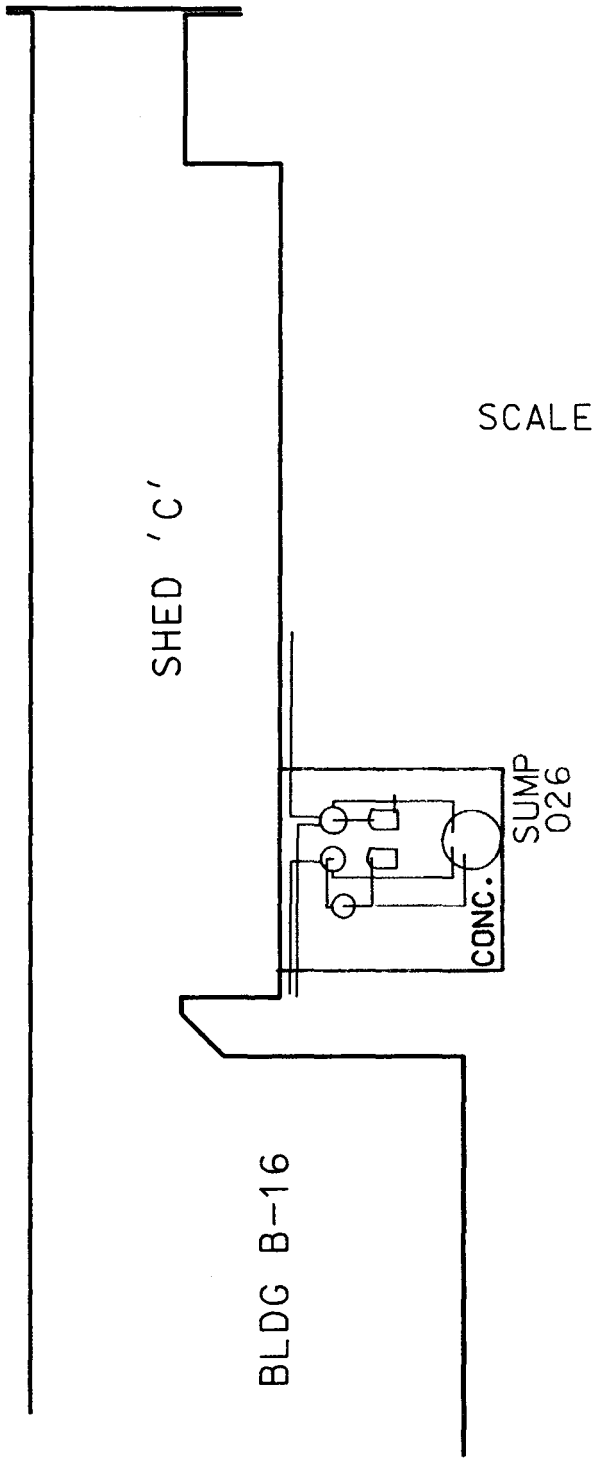
BLDG. B-8 thru B-16

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_8-16.DGN

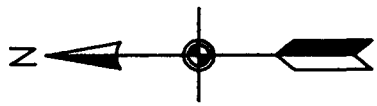
005711



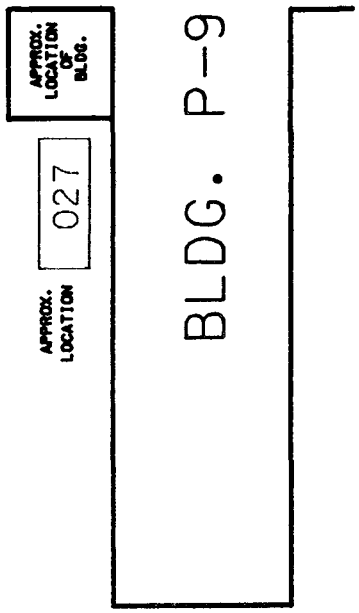
SHED "C"
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_B-16-.DGN



SCALE: 1"=20'



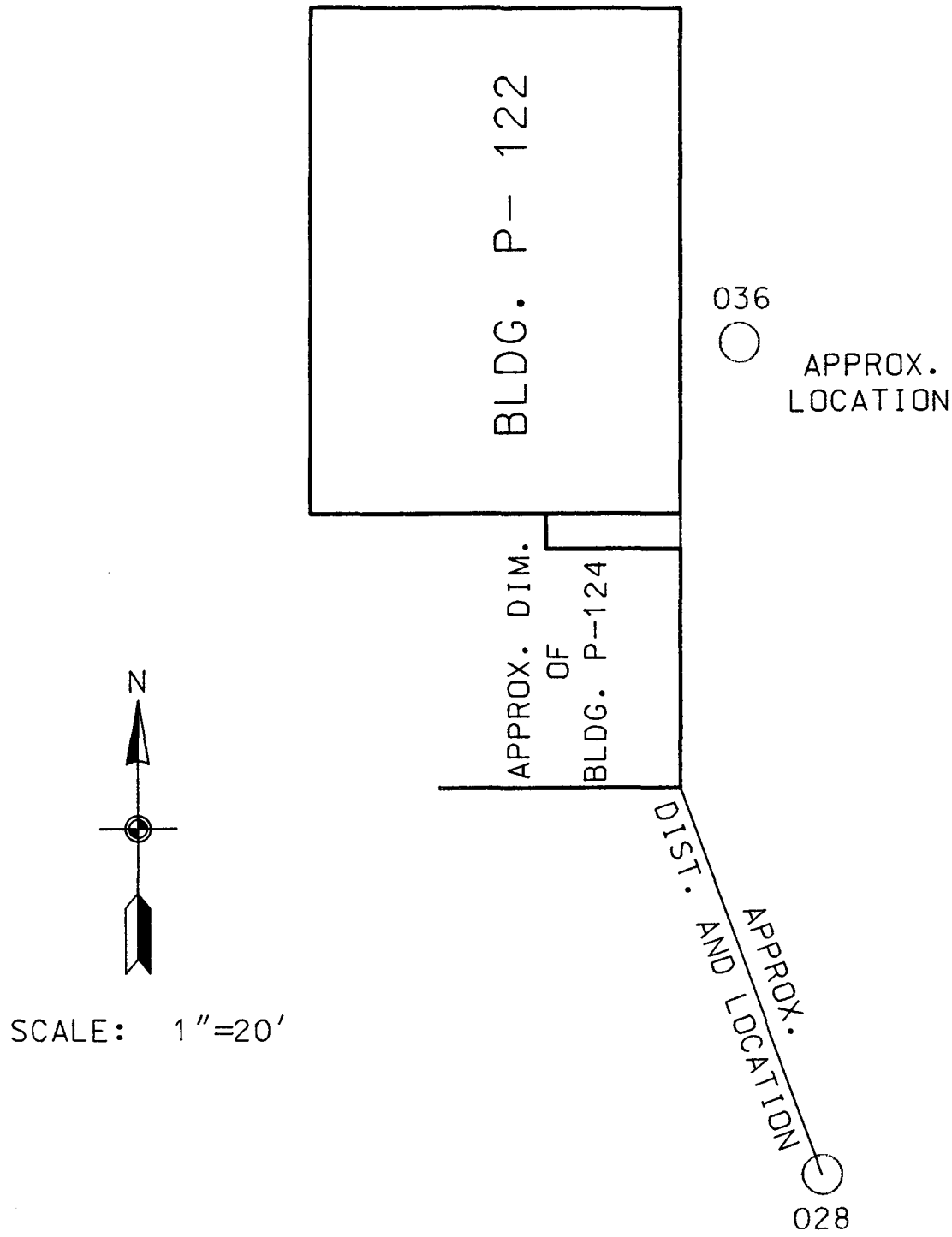
BLDG. P-9

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_P-9.DGN

005713

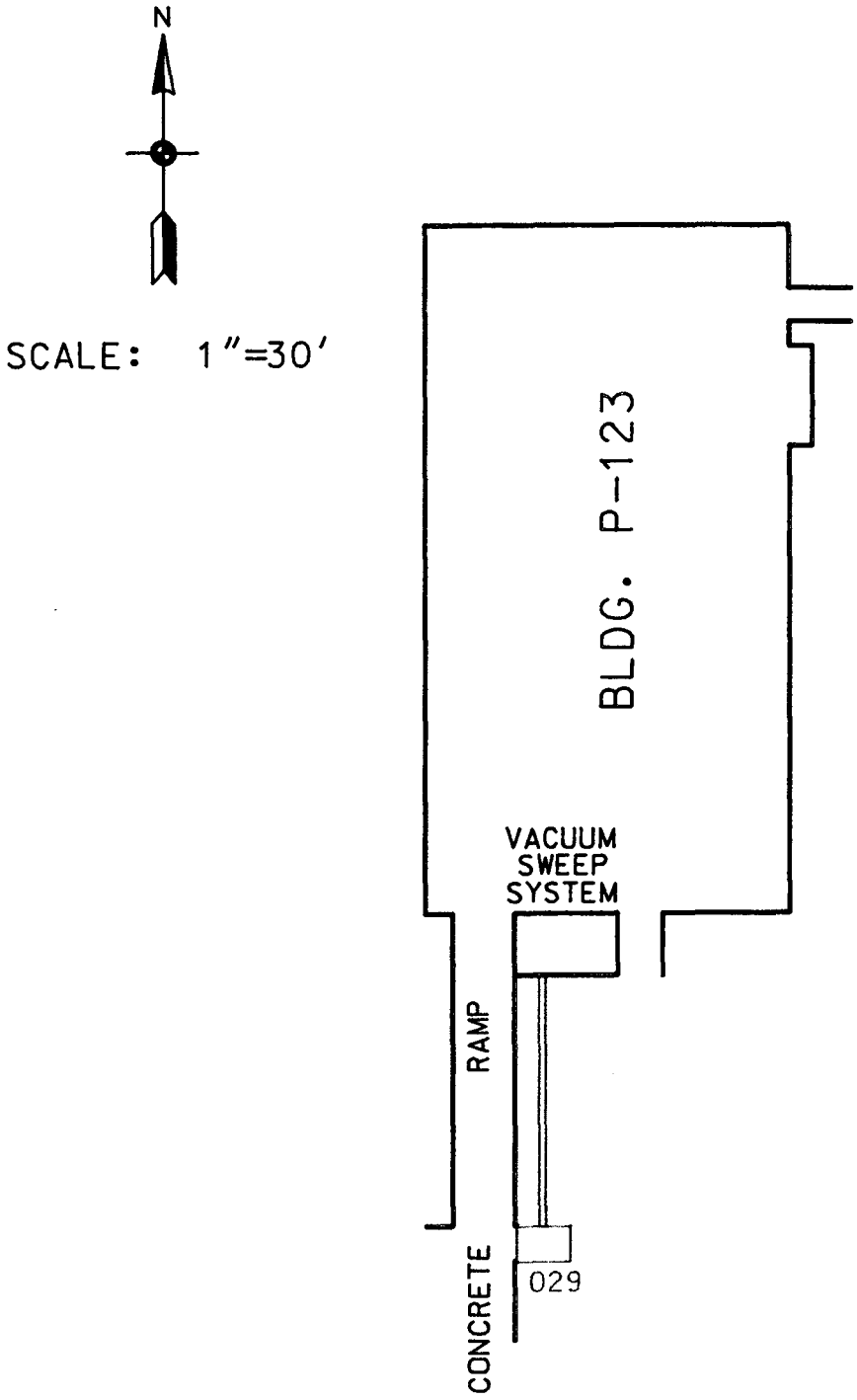


BLDG. P-122 and P-124
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_122.DGN

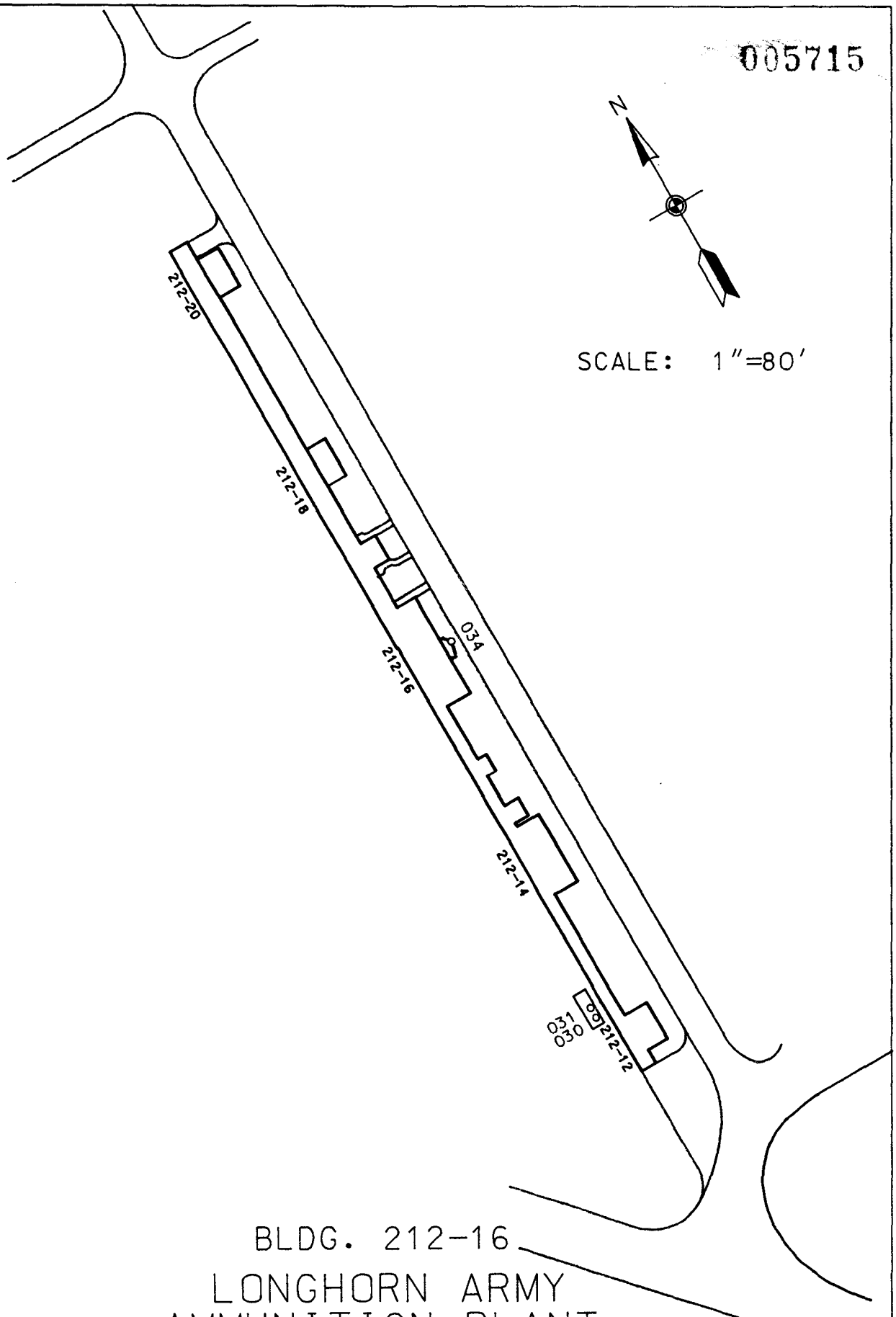
005714



BLDG. P-123
LONGHORN ARMY AMMUNITION PLANT

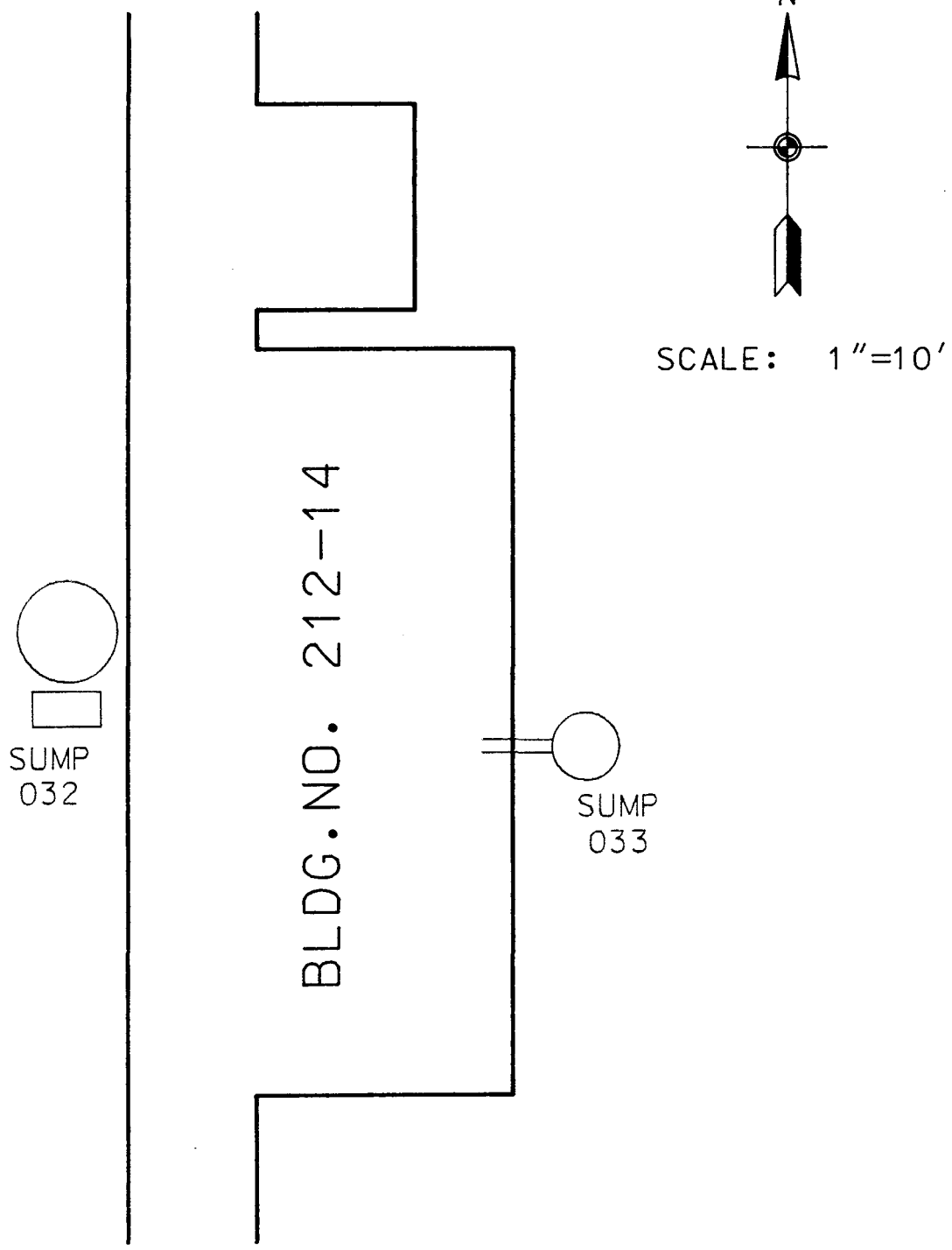
NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_P-123.DGN



NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_12-16.DGN

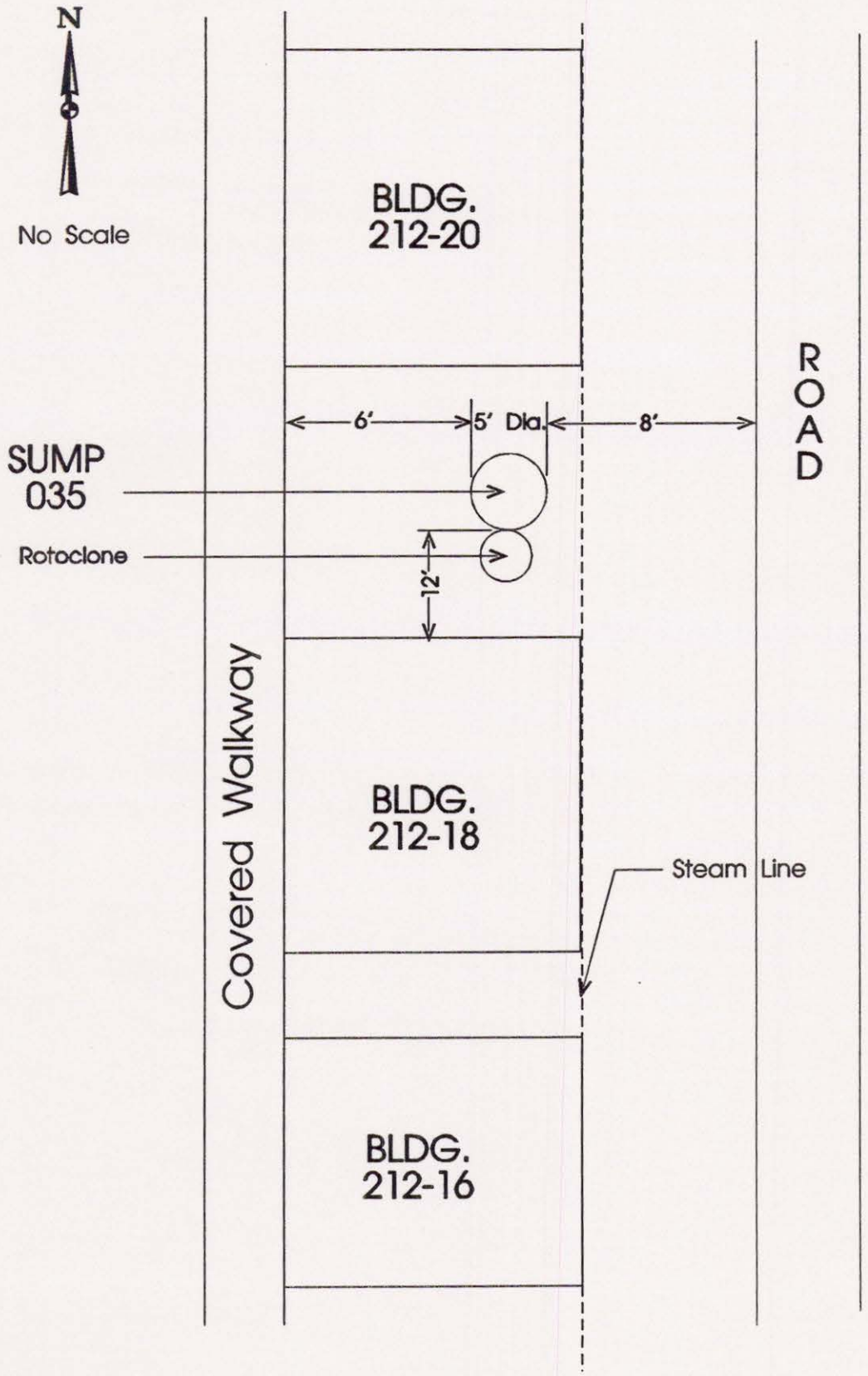


BLDG. 212-14

LONGHORN ARMY
AMMUNITION PLANT

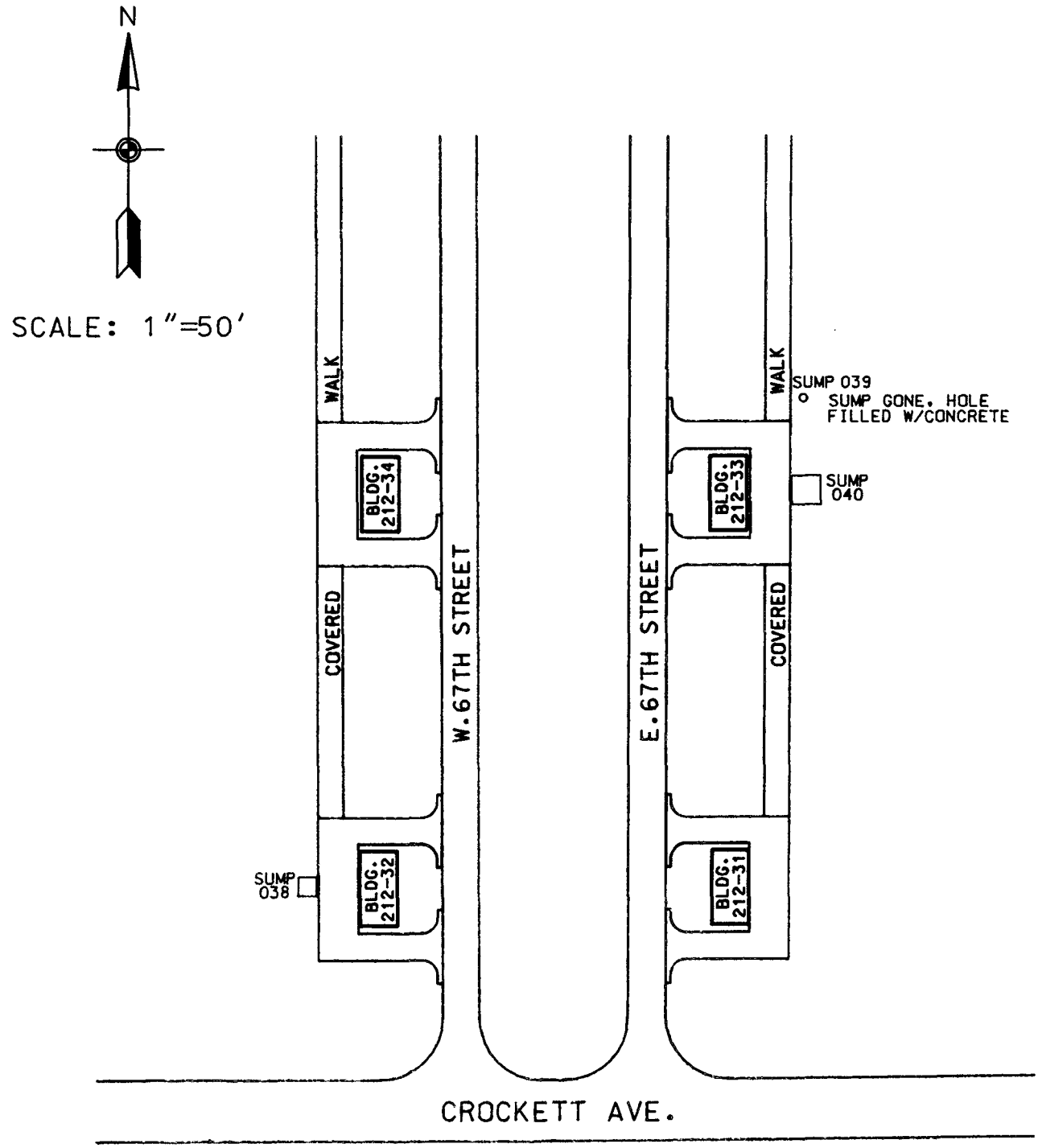
NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_212-1.DGN



BUILDING 212-18

005718



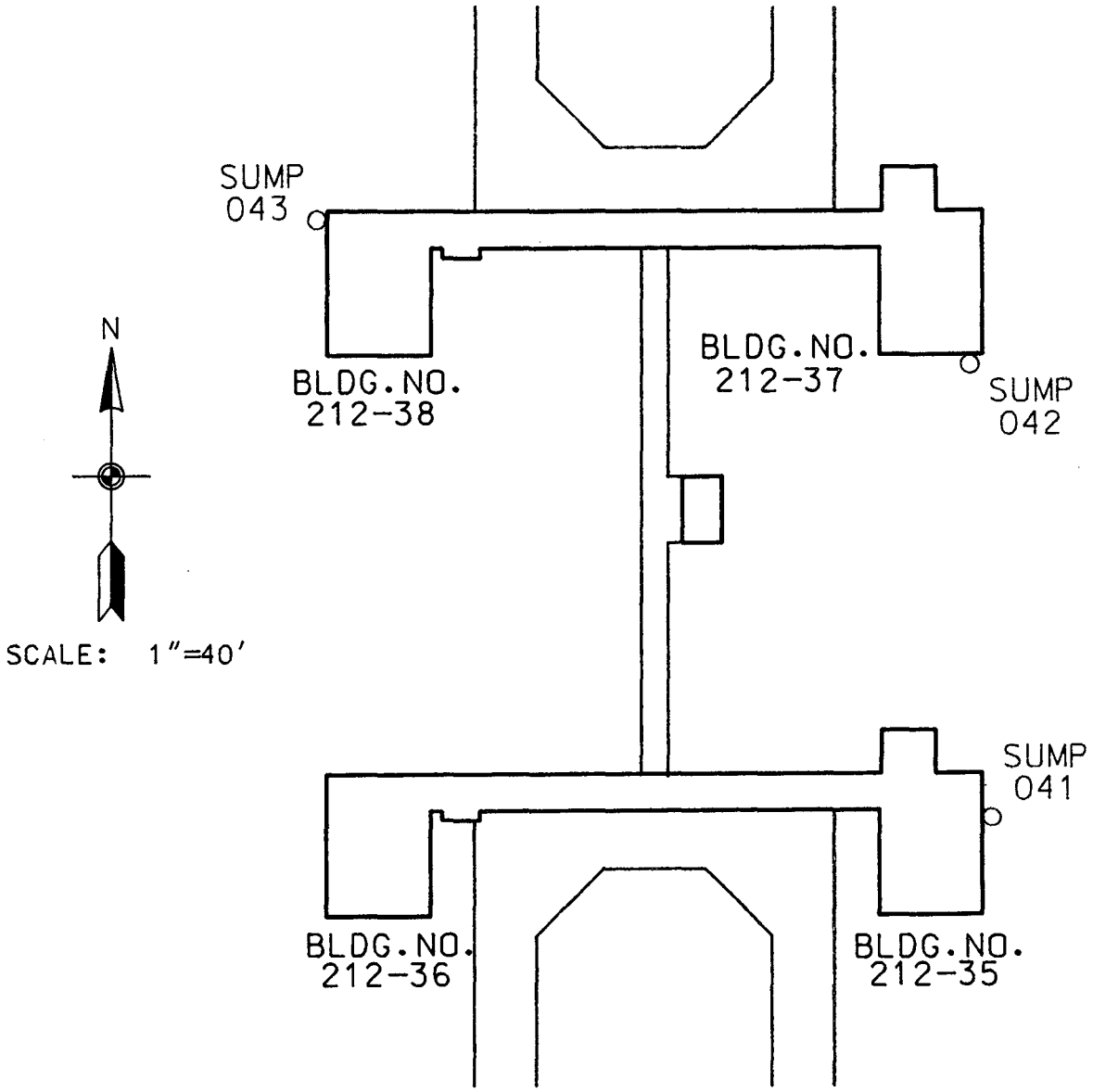
BLDG. 212-31 thru 212-34

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE: BL_212-2.DGN

005719



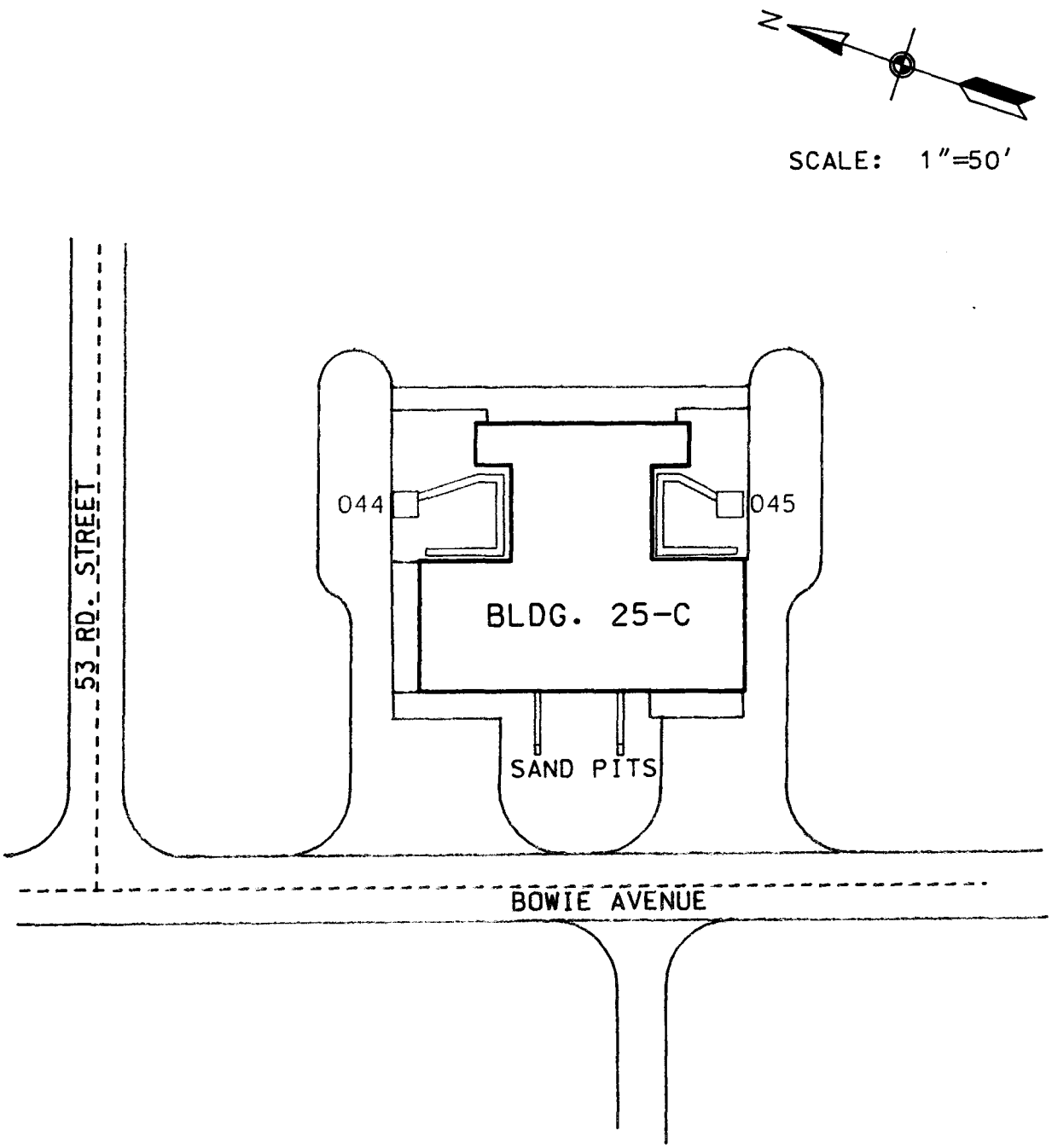
BLDG. 212-35 thru 212-38

LONGHORN ARMY
AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_212-3.DGN

005720



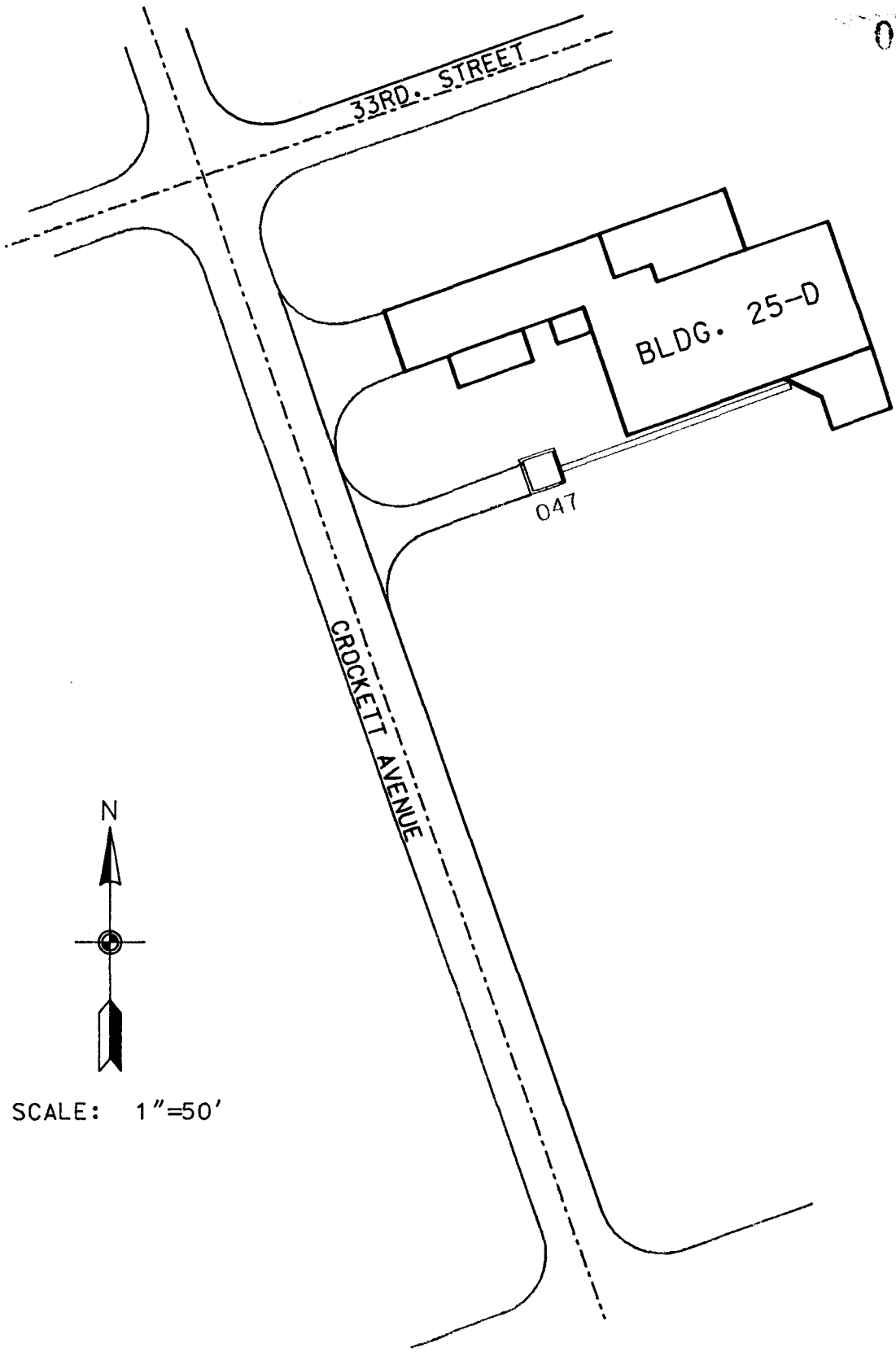
BLDG. 25-C

LONGHORN ARMY
AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_25-C.DGN

005721



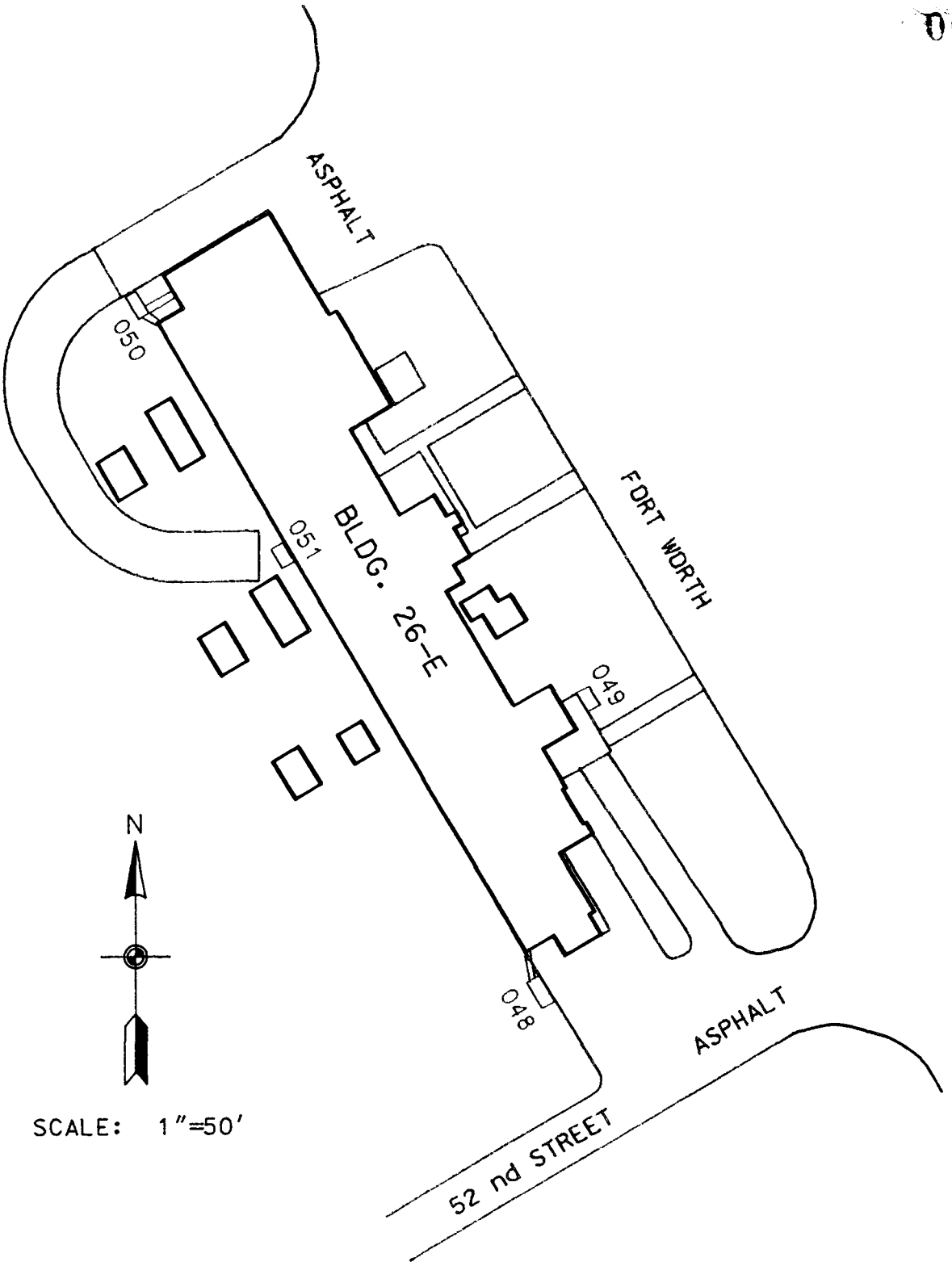
BLDG. 25-D

LONGHORN ARMY
AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_25-D.DGN

005722

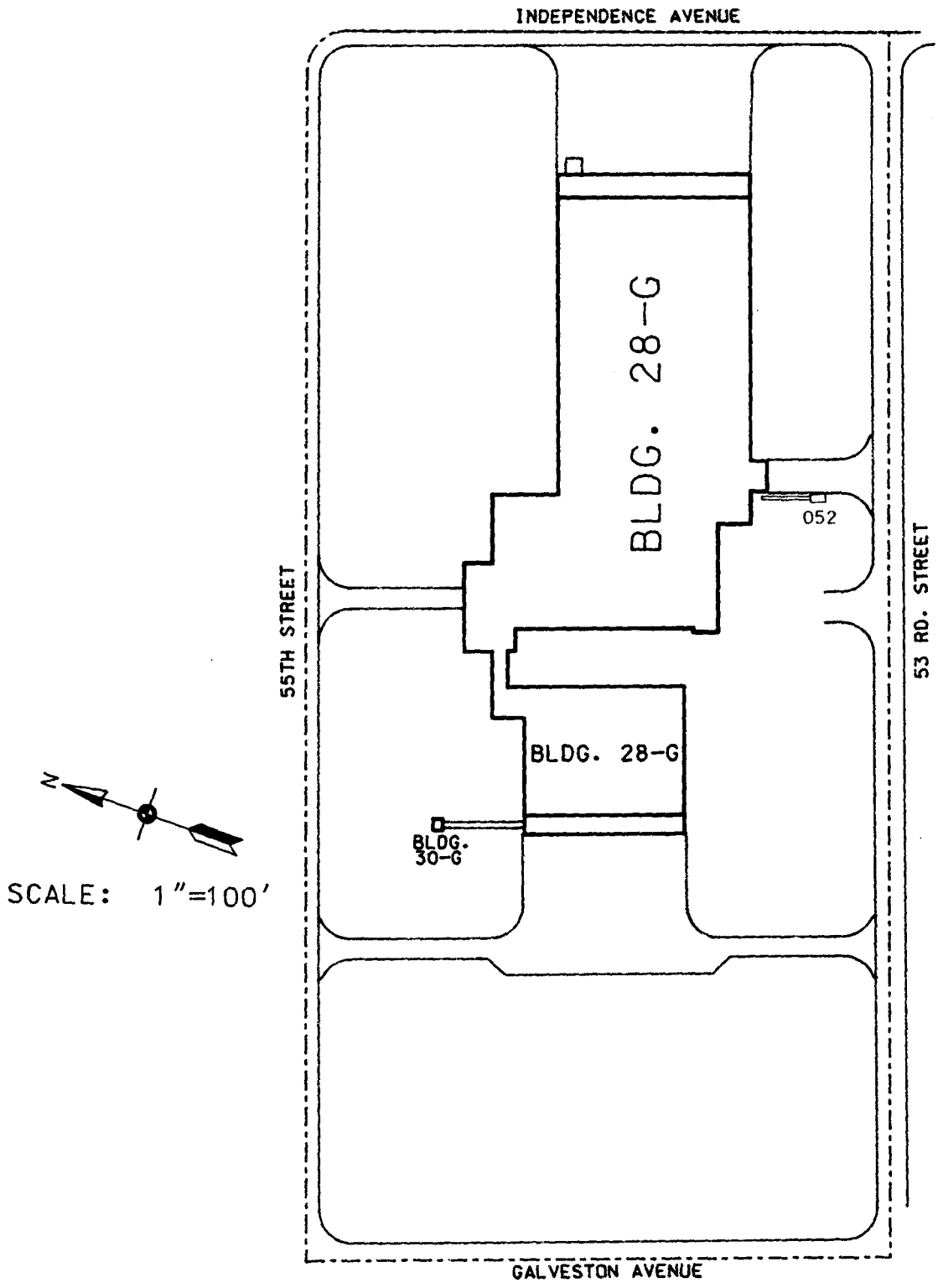


BLDG. 26-E

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

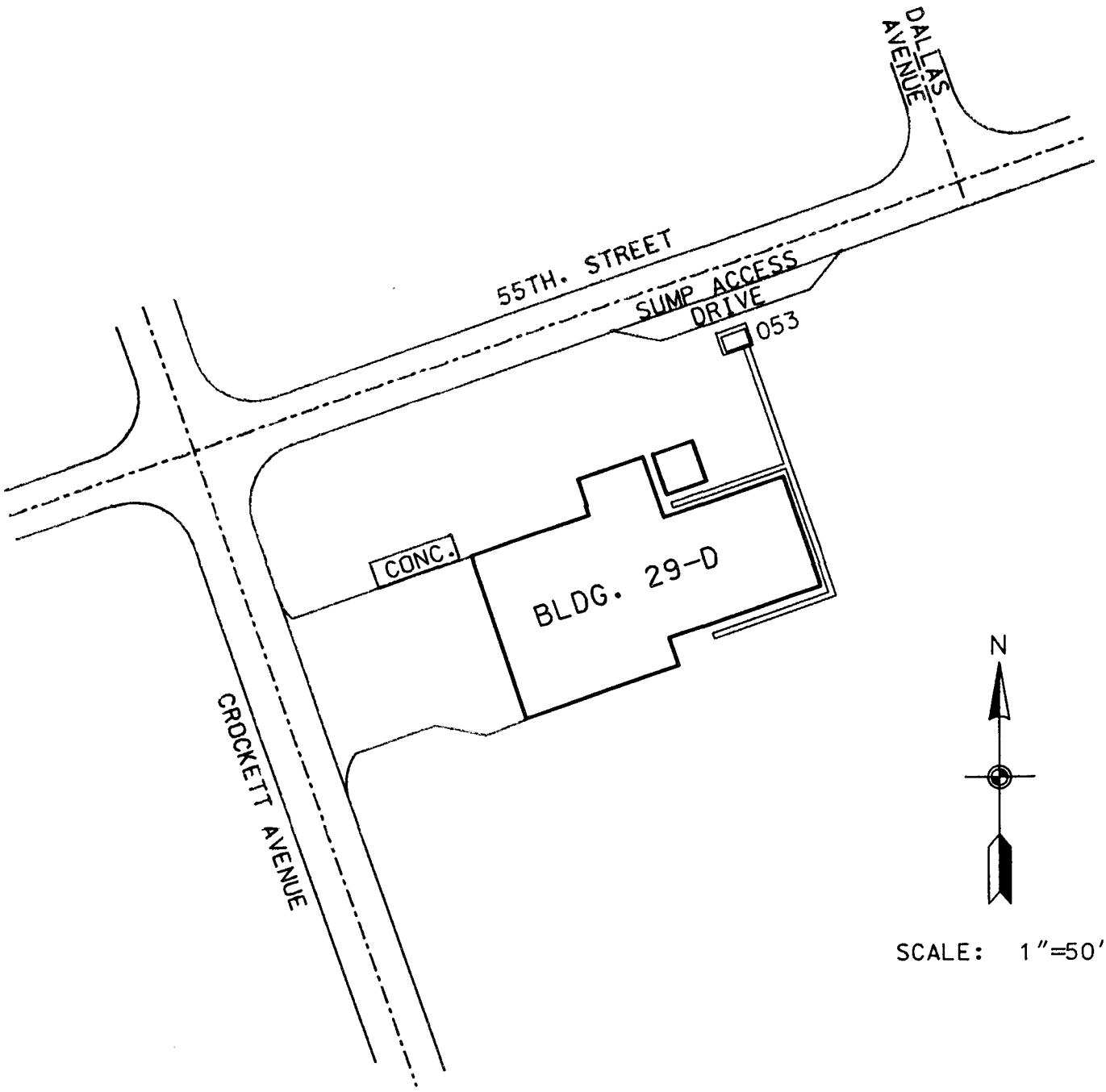
FILE NAME BL_26-E.DGN



BLDG. 28-G
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILENAME BL_28-G.DGN

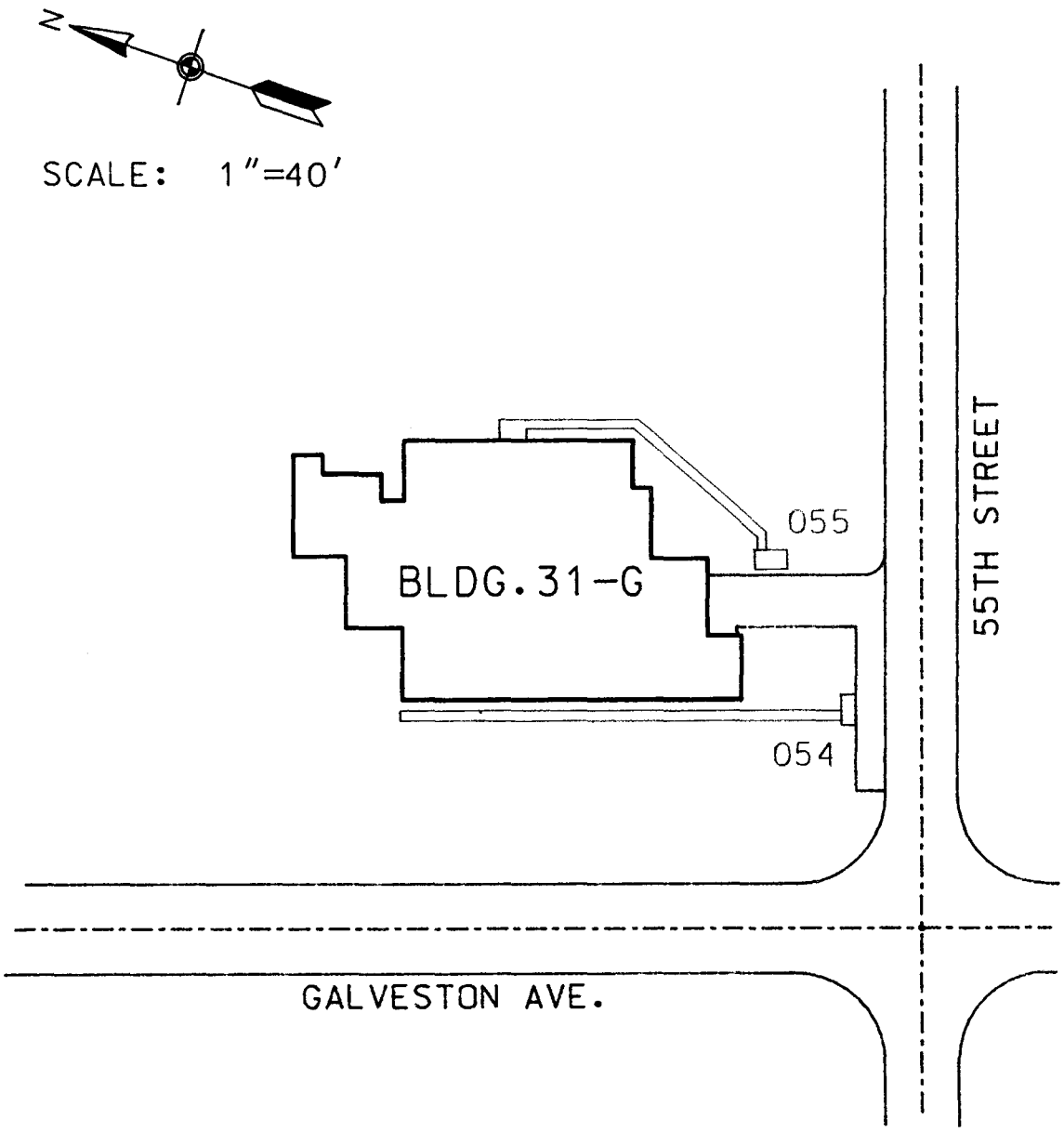


BLDG. 29-D
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_29-D.DGN

005725

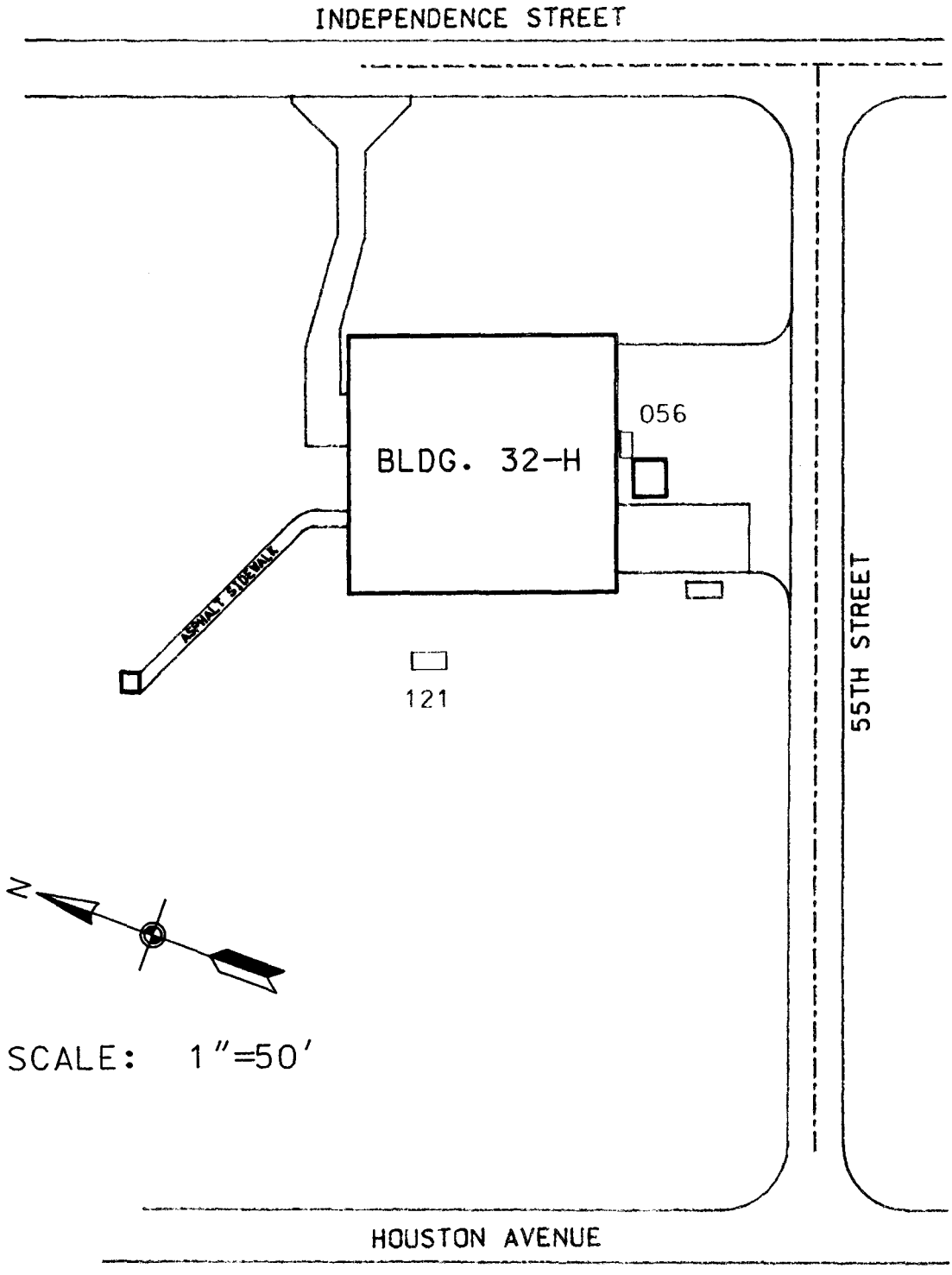


BLDG. 31-G

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILENAME BL_31-G.DGN

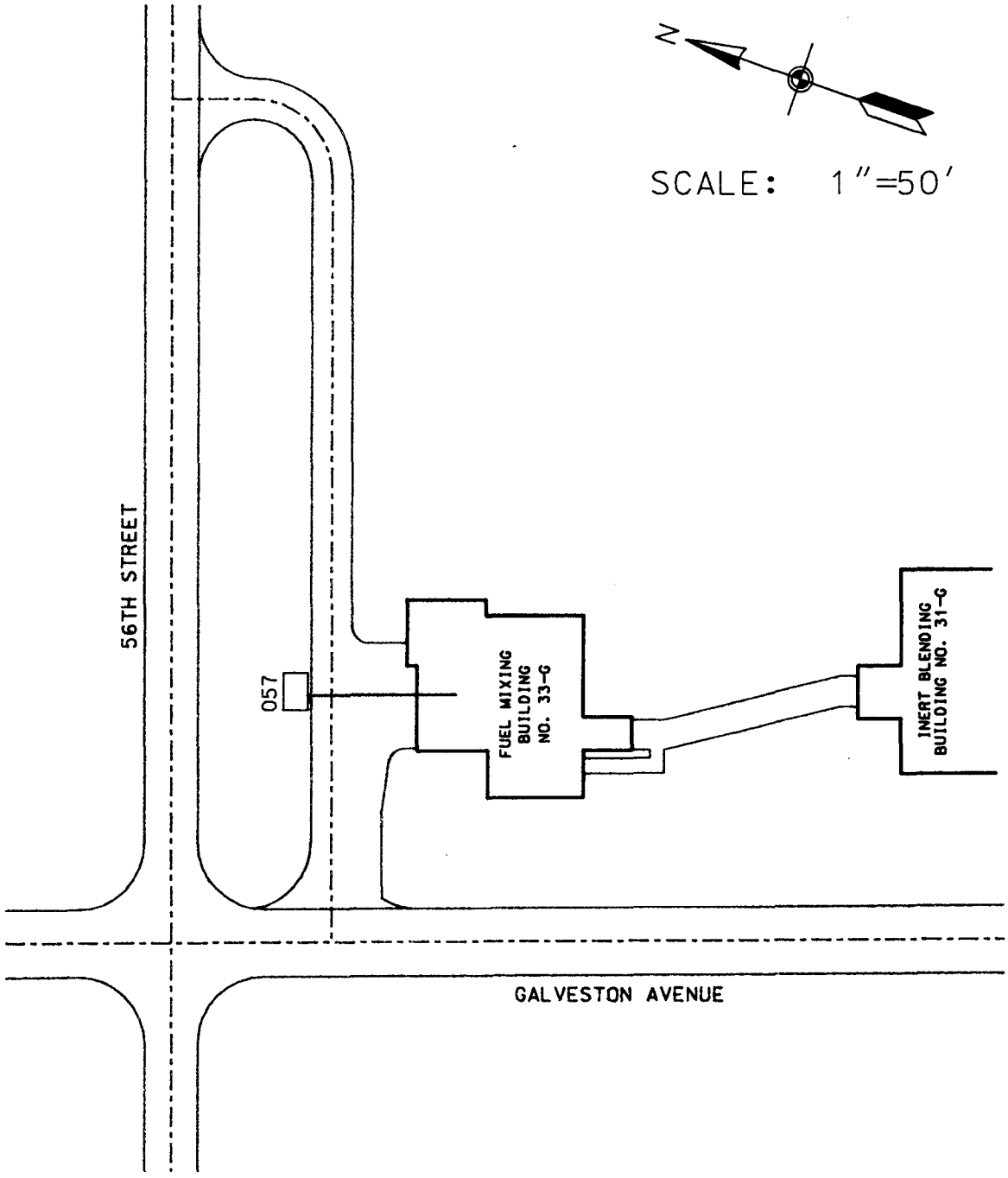


BLDG. 32-H
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILENAME BL_32-H.DGN

005726

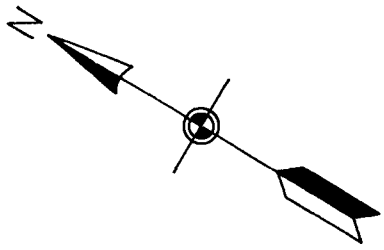


BLDG. 33-G
LONGHORN ARMY AMMUNITION PLANT

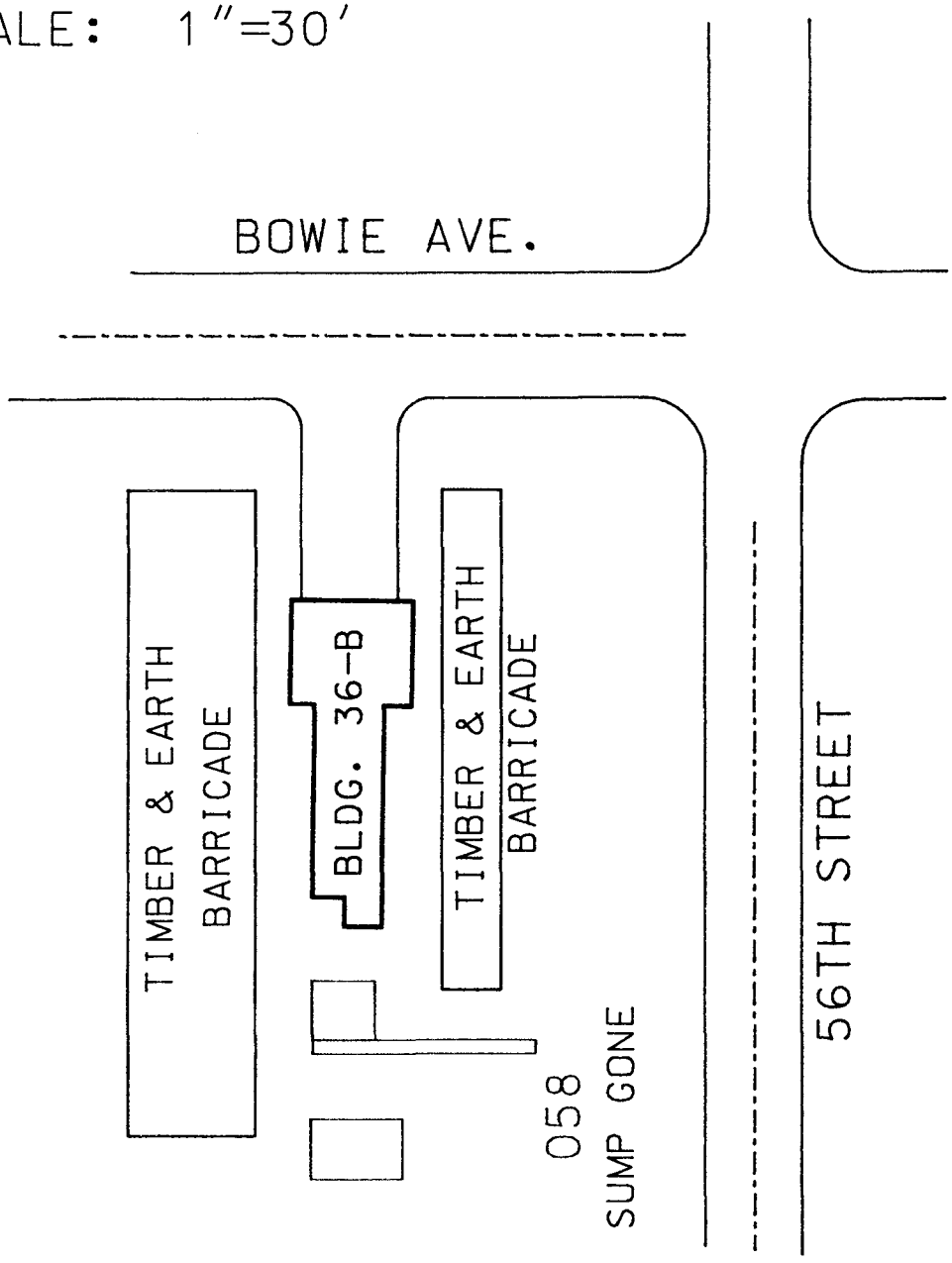
NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE: BL_33-G.DGN

005727



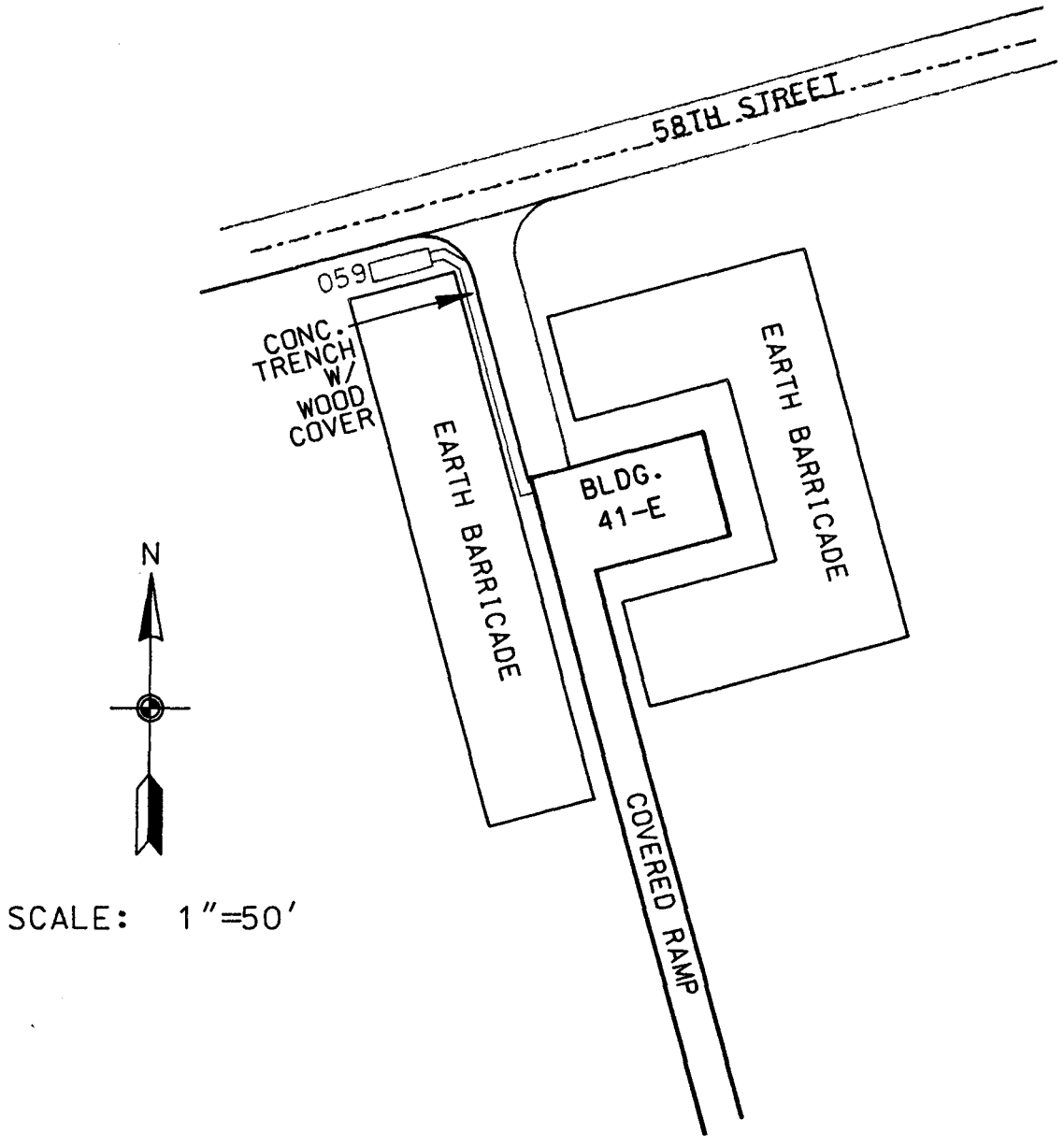
SCALE: 1"=30'



BLDG. 36-B
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

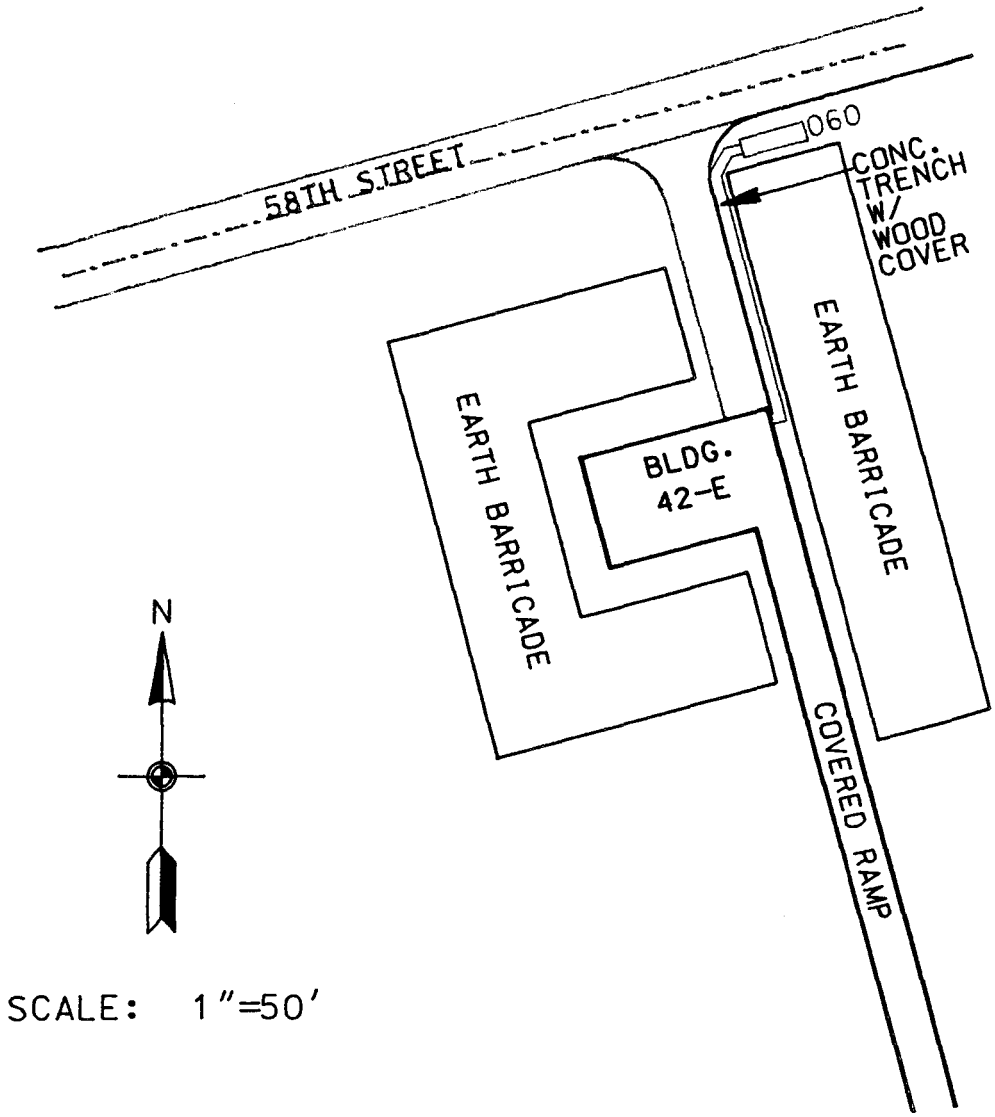
FILE NAME BL_36-B.DGN



BLDG. 41-E
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_41-E.DGN



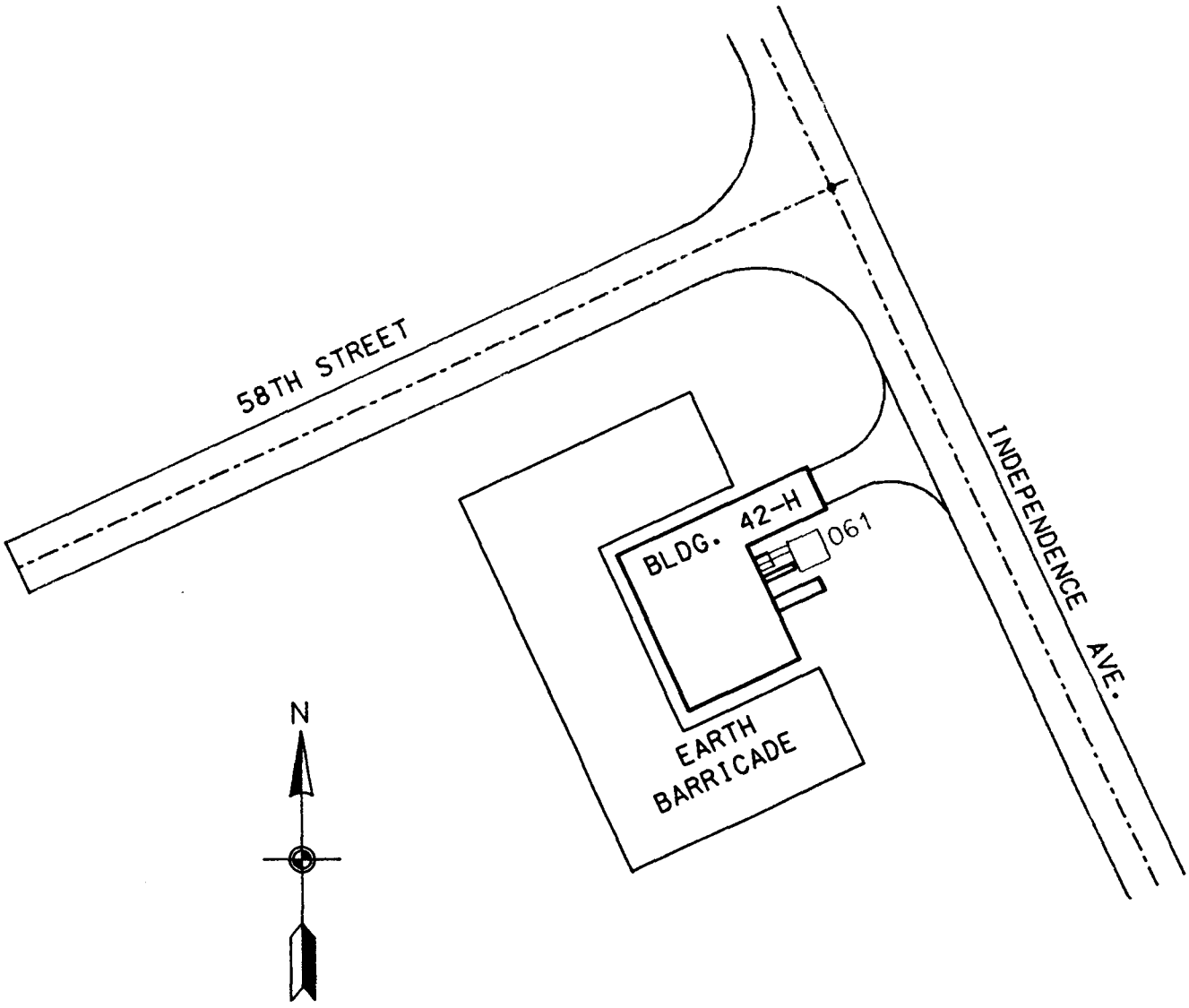
BLDG. 42-E

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_42-E.DGN

005730



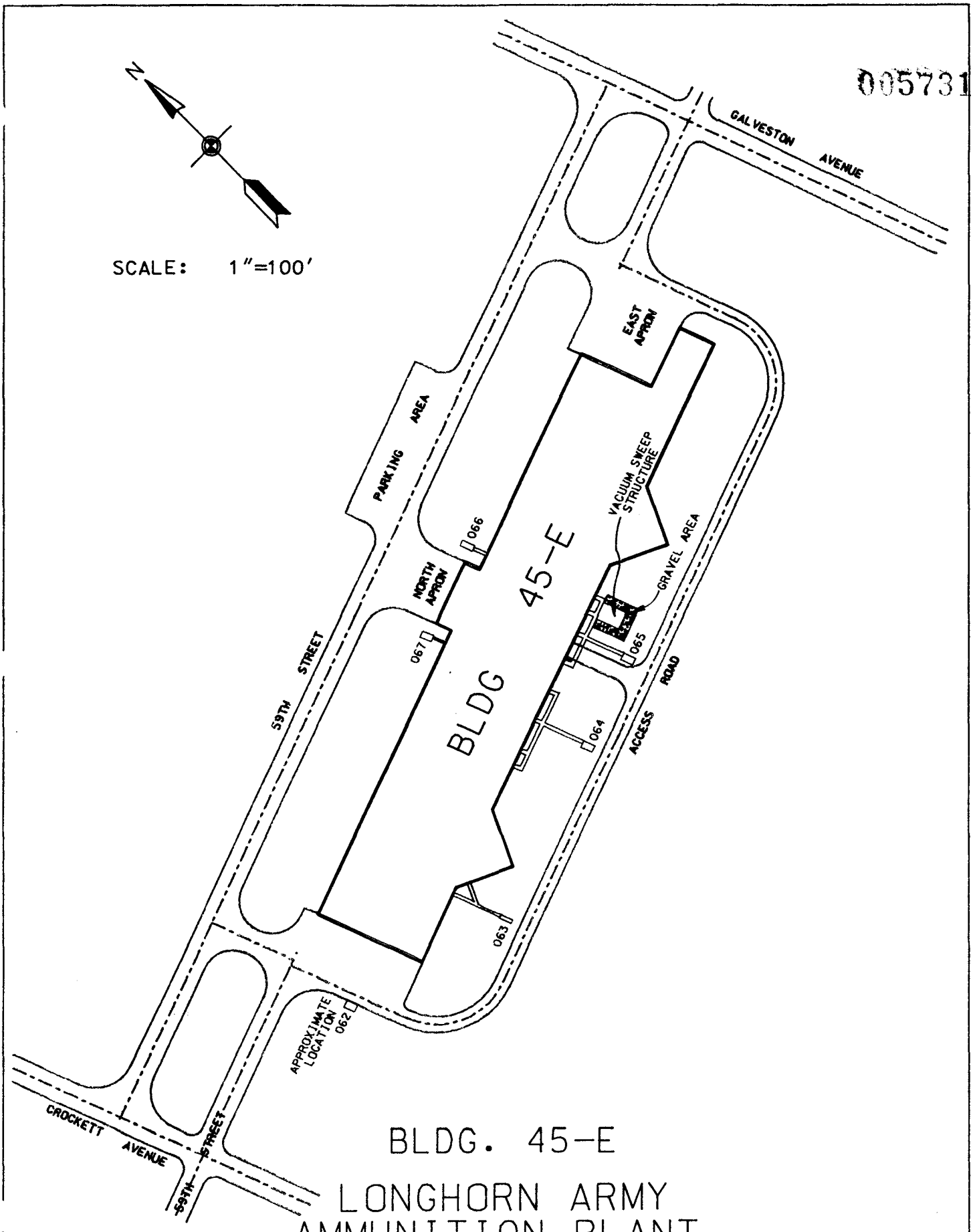
SCALE: 1"=50'

BLDG. 42-H

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILENAME BL_42-H.DGN

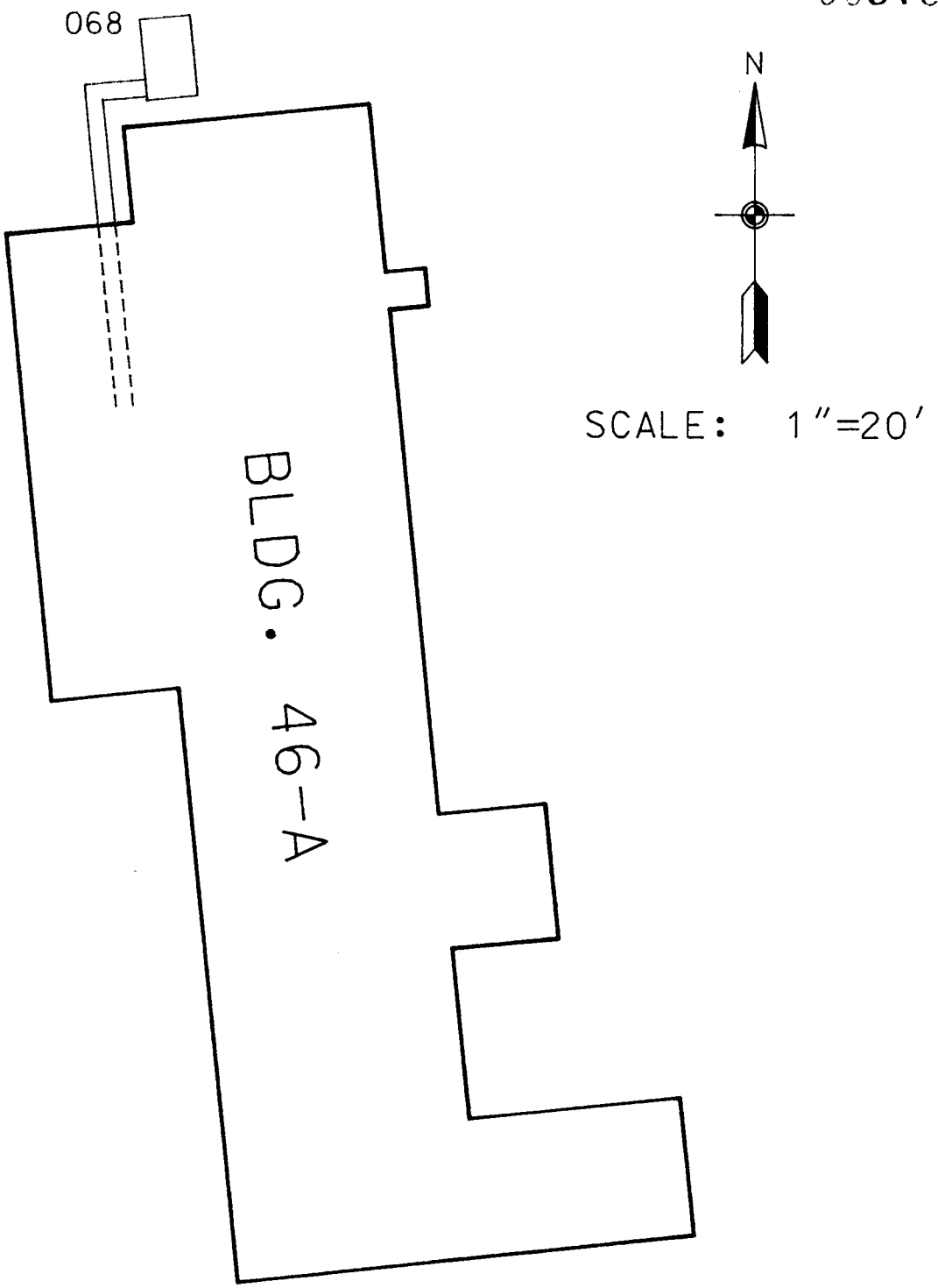


BLDG. 45-E
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_45-E.DGN

005732



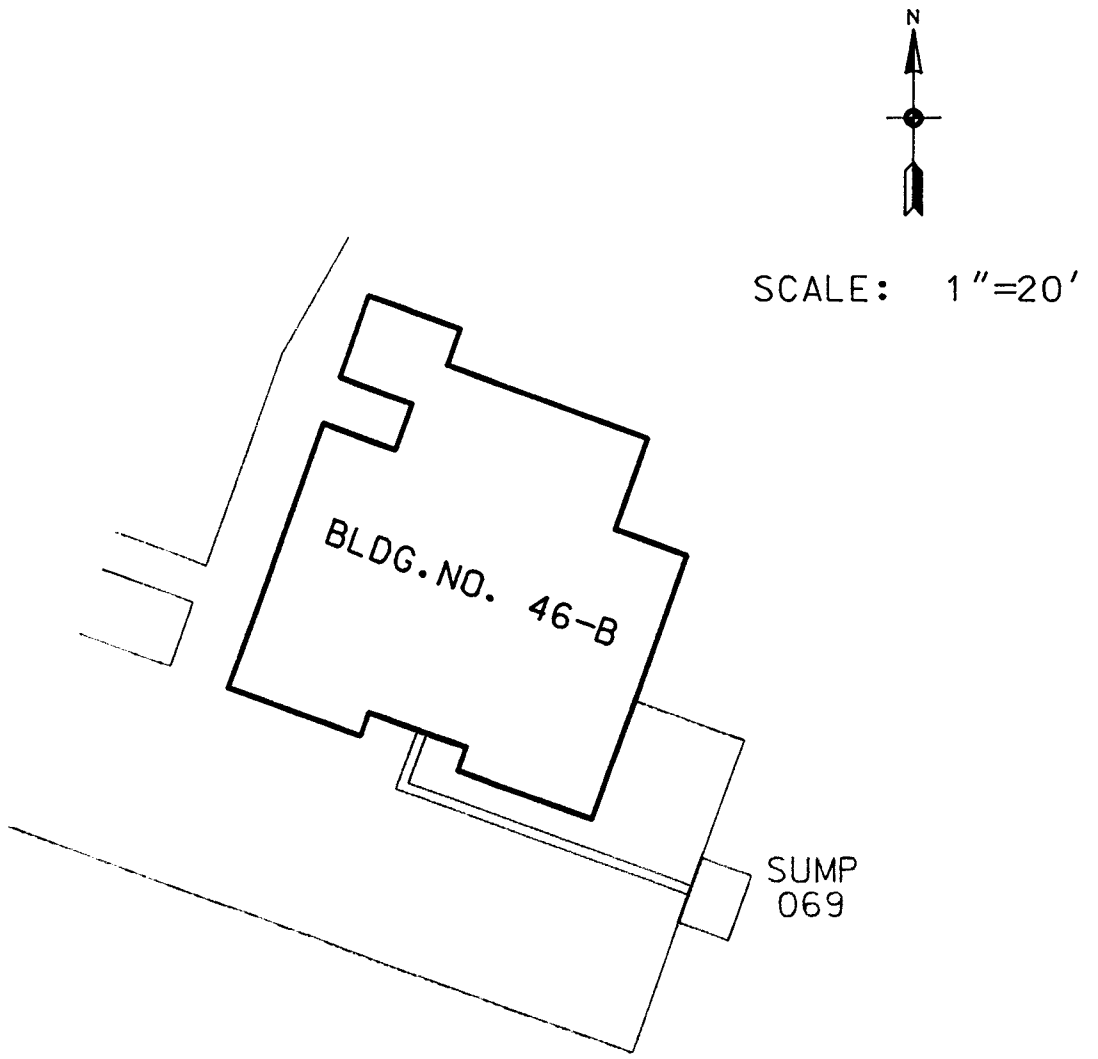
BLDG. 46-A

LONGHORN ARMY
AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_46-A.DGN

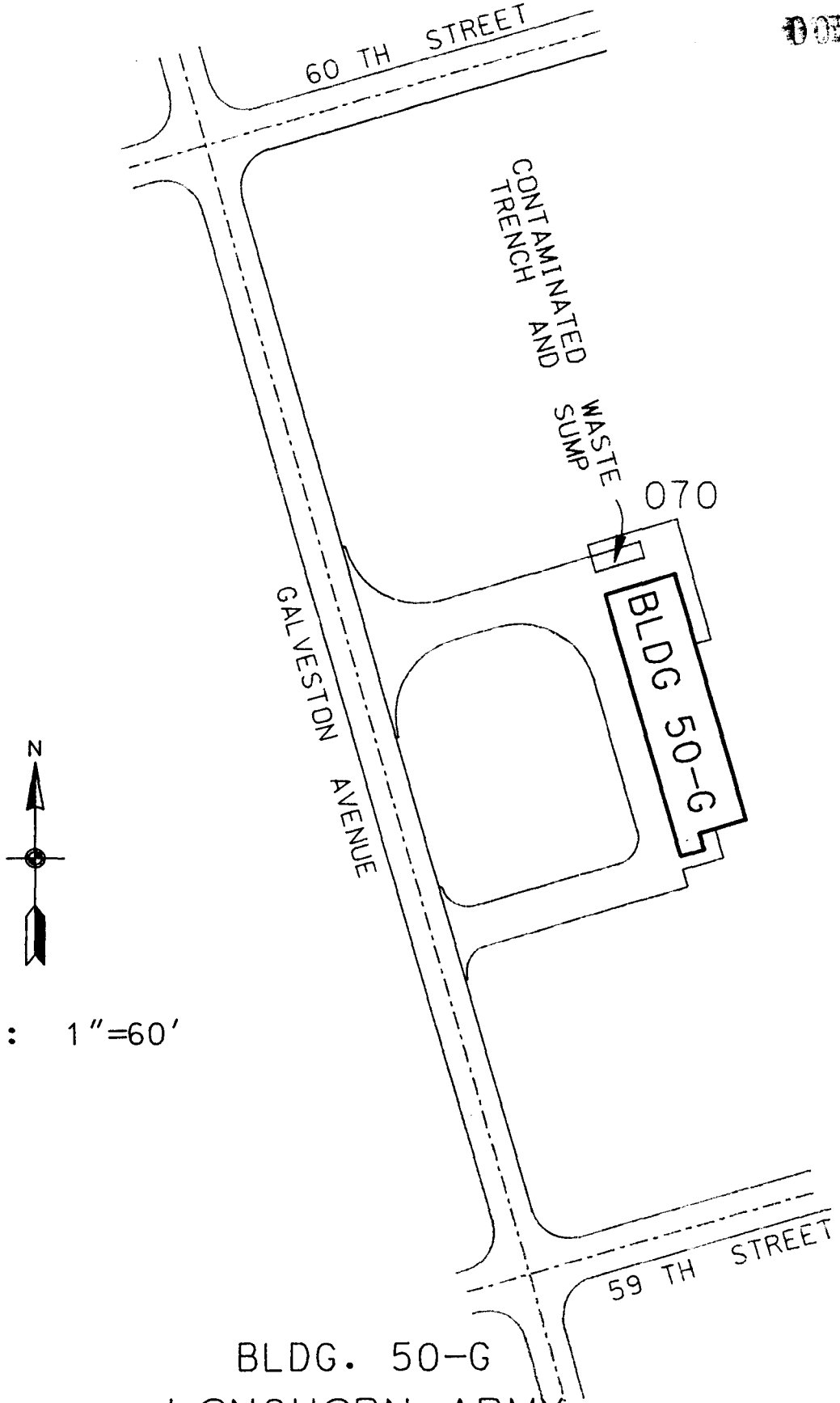
005733



BLDG. 46-B
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_46-B.DGN



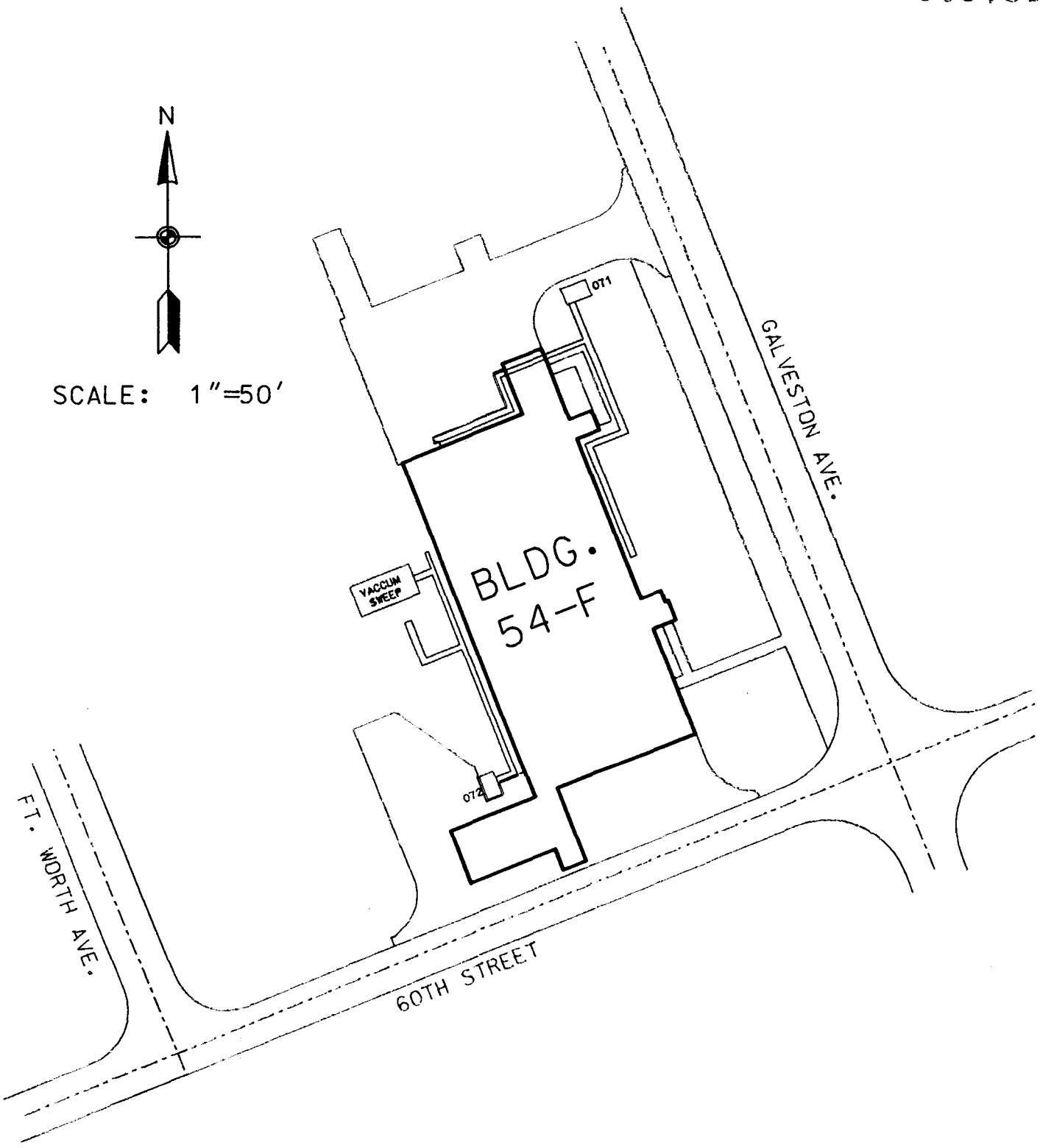
SCALE: 1"=60'

BLDG. 50-G
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_50-G.DGN

005735



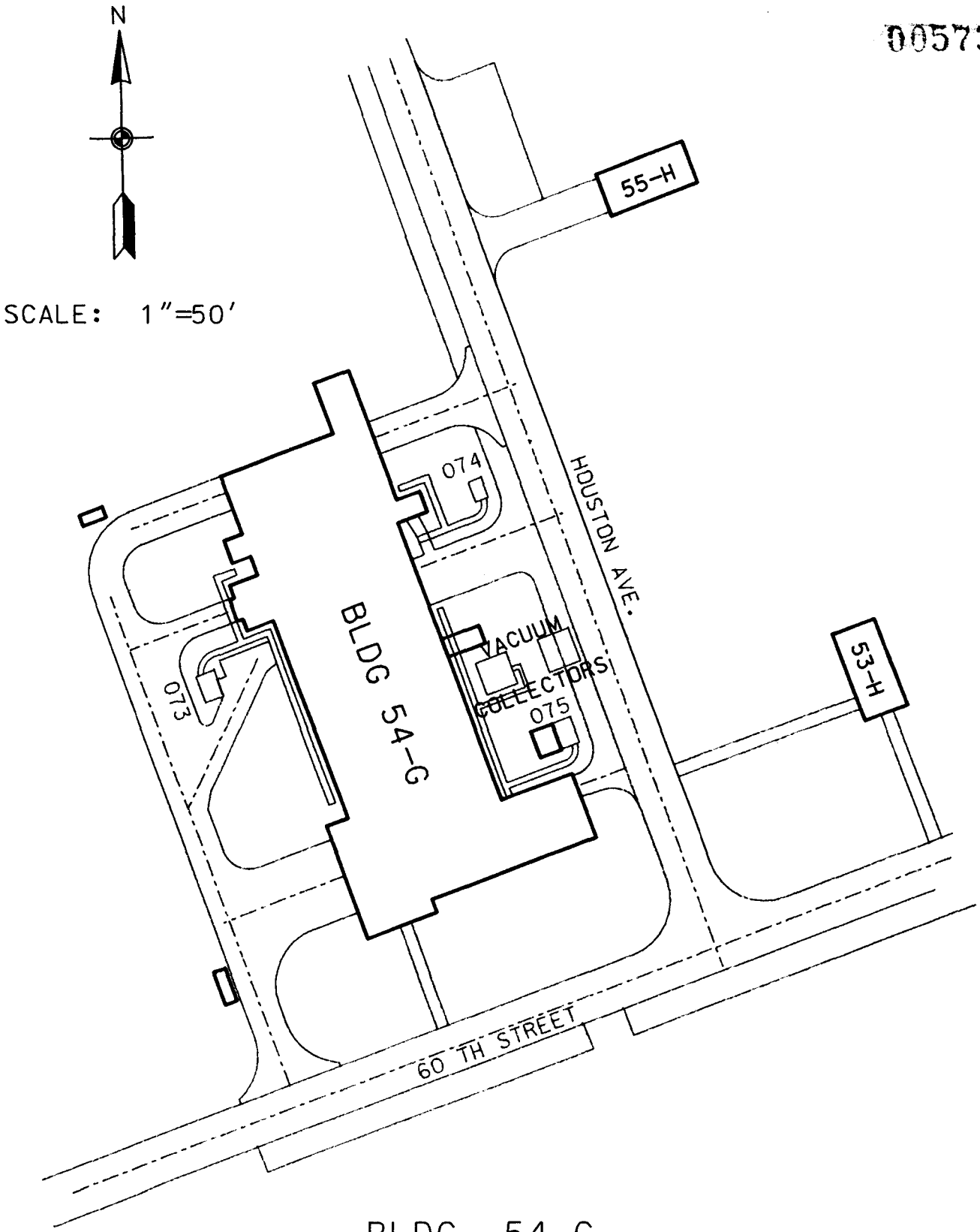
BLDG. 54-F

LONGHORN ARMY
AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILENAME BL_54-F.DGN

005736



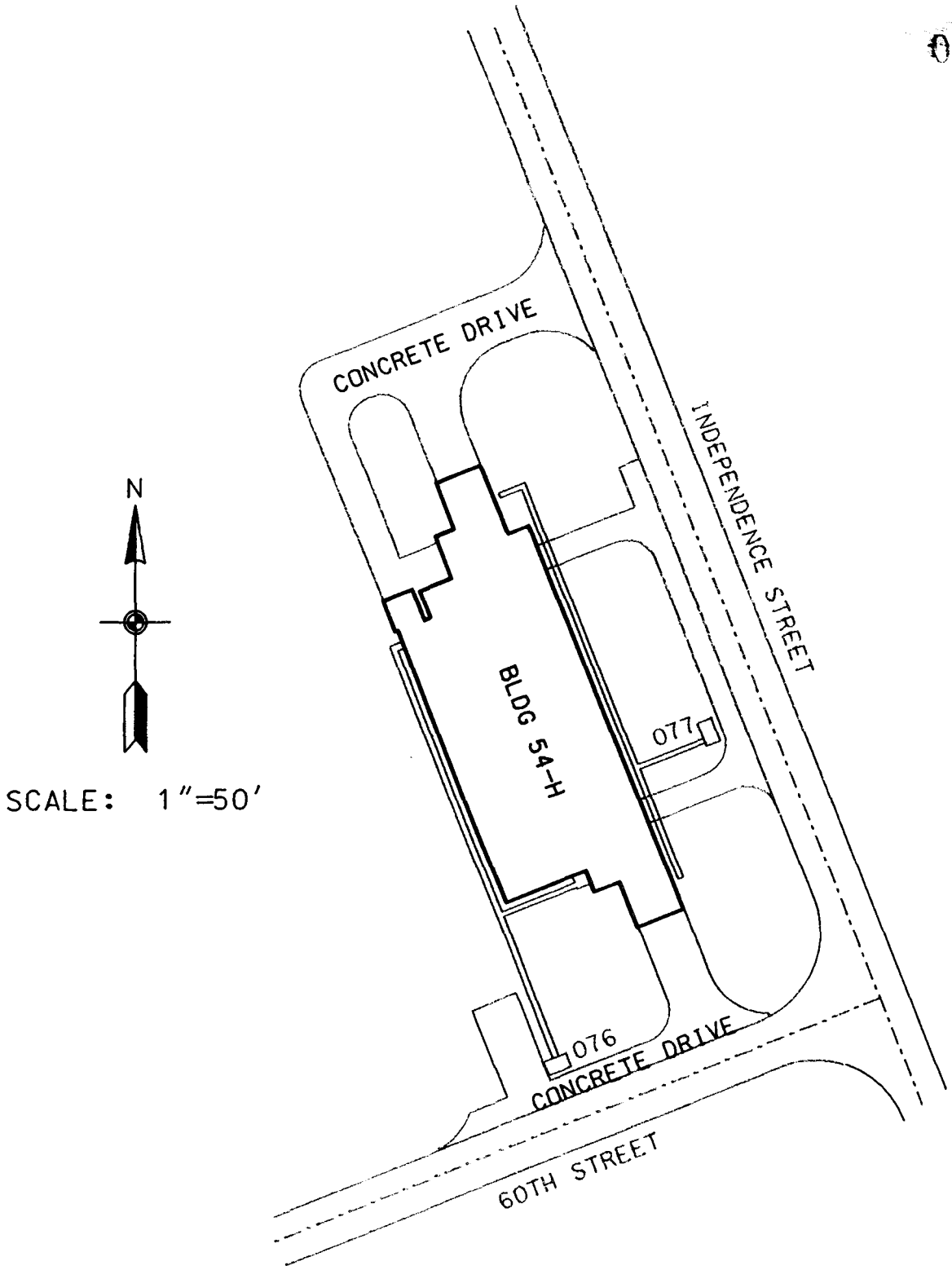
BLDG. 54-G

LONGHORN ARMY
AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILENAME BL_54-G.DGN

005737



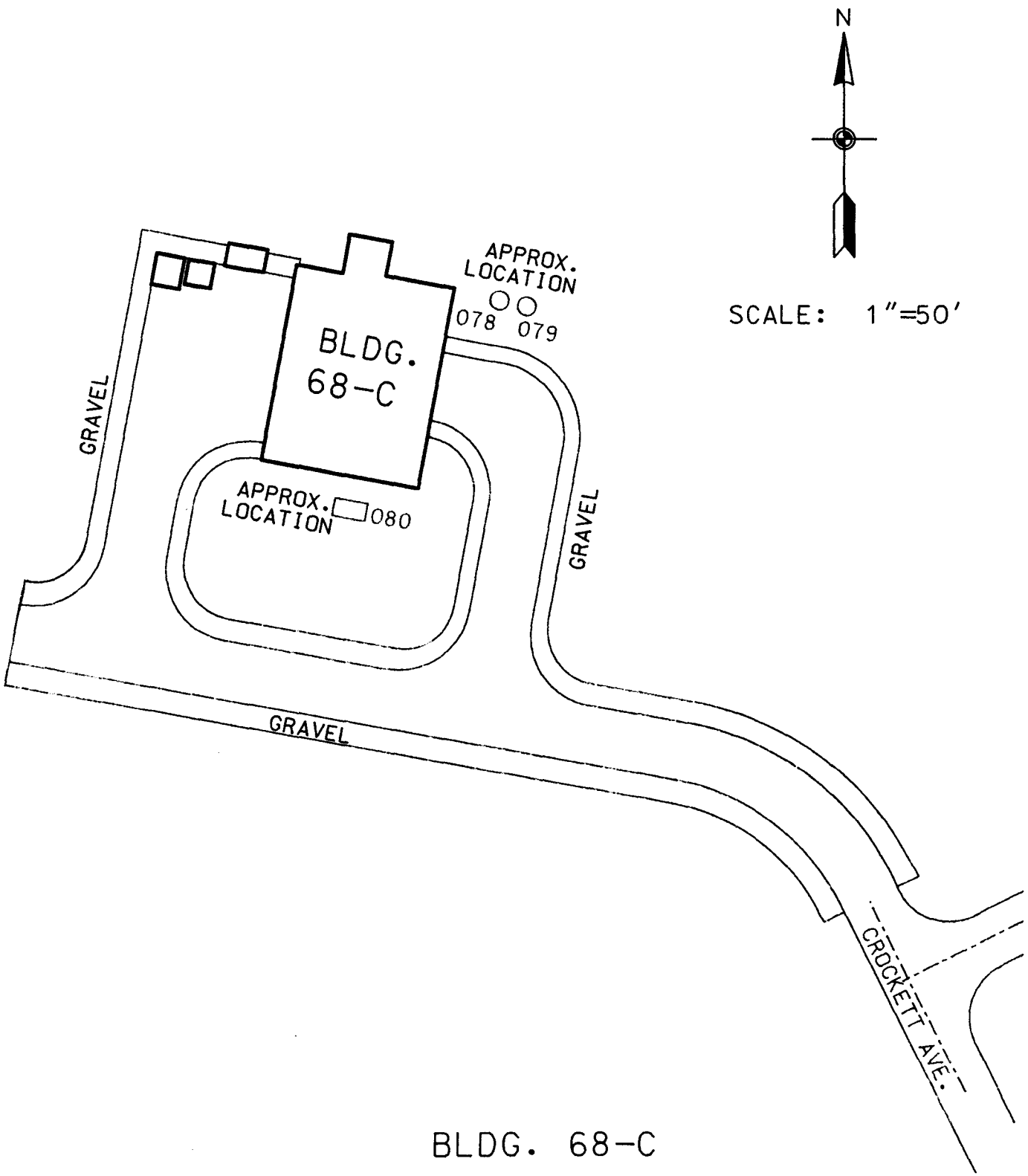
SCALE: 1"=50'

BLDG. 54-H
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILENAME BL_54-H.DGN

005738



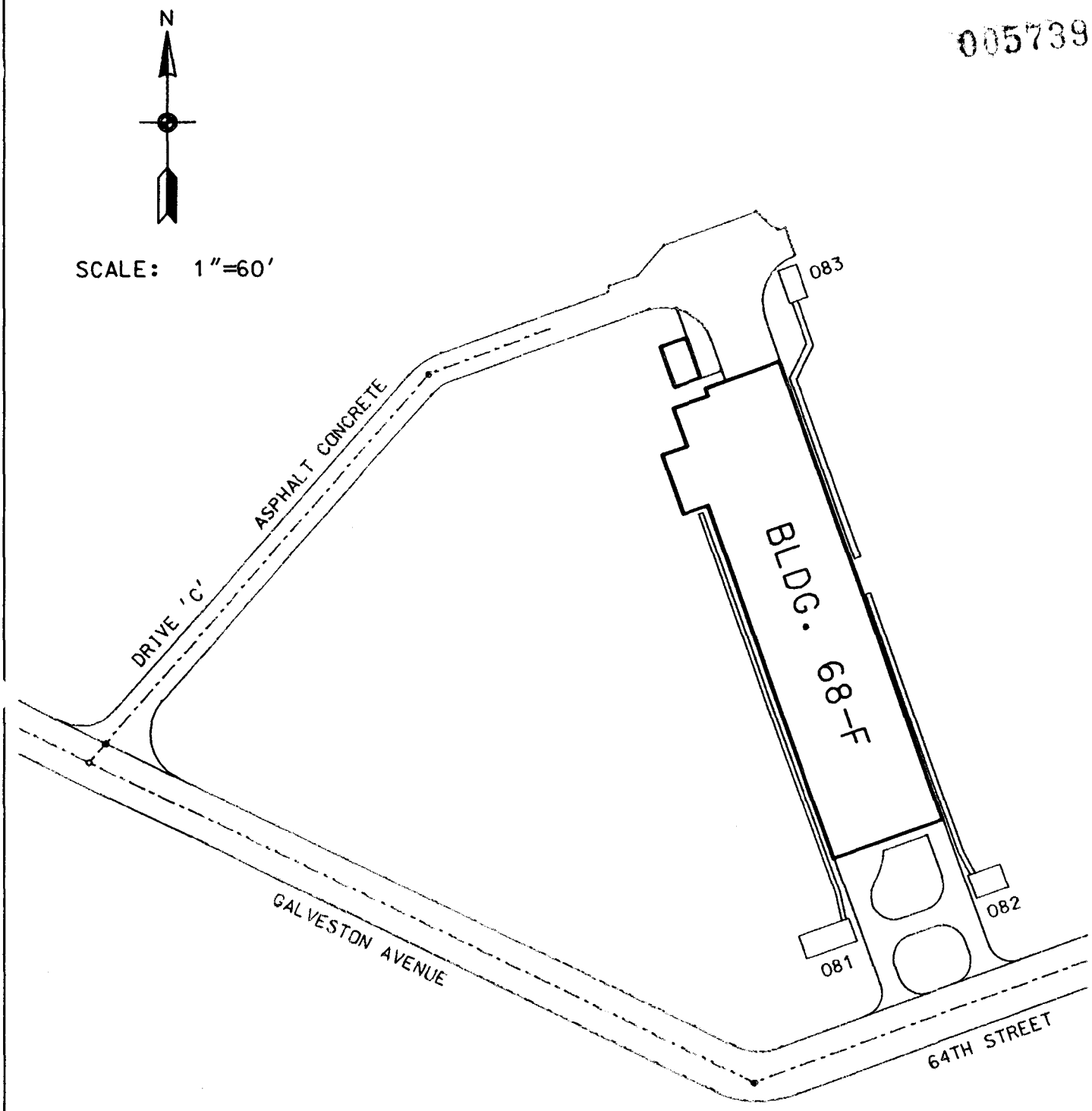
BLDG. 68-C

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_68-C.DGN

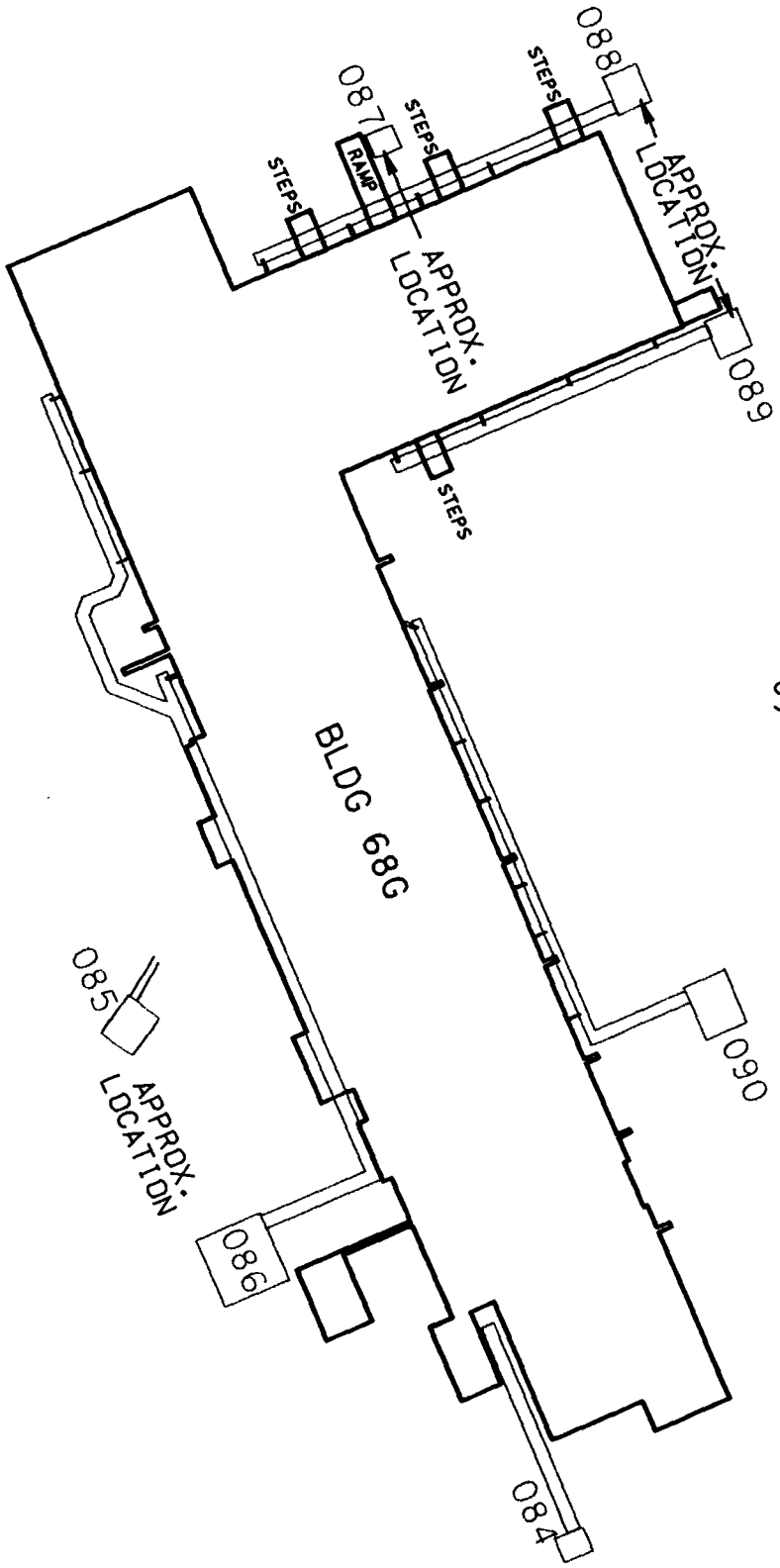
005739



BLDG. 68-F
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_68-F.DGN



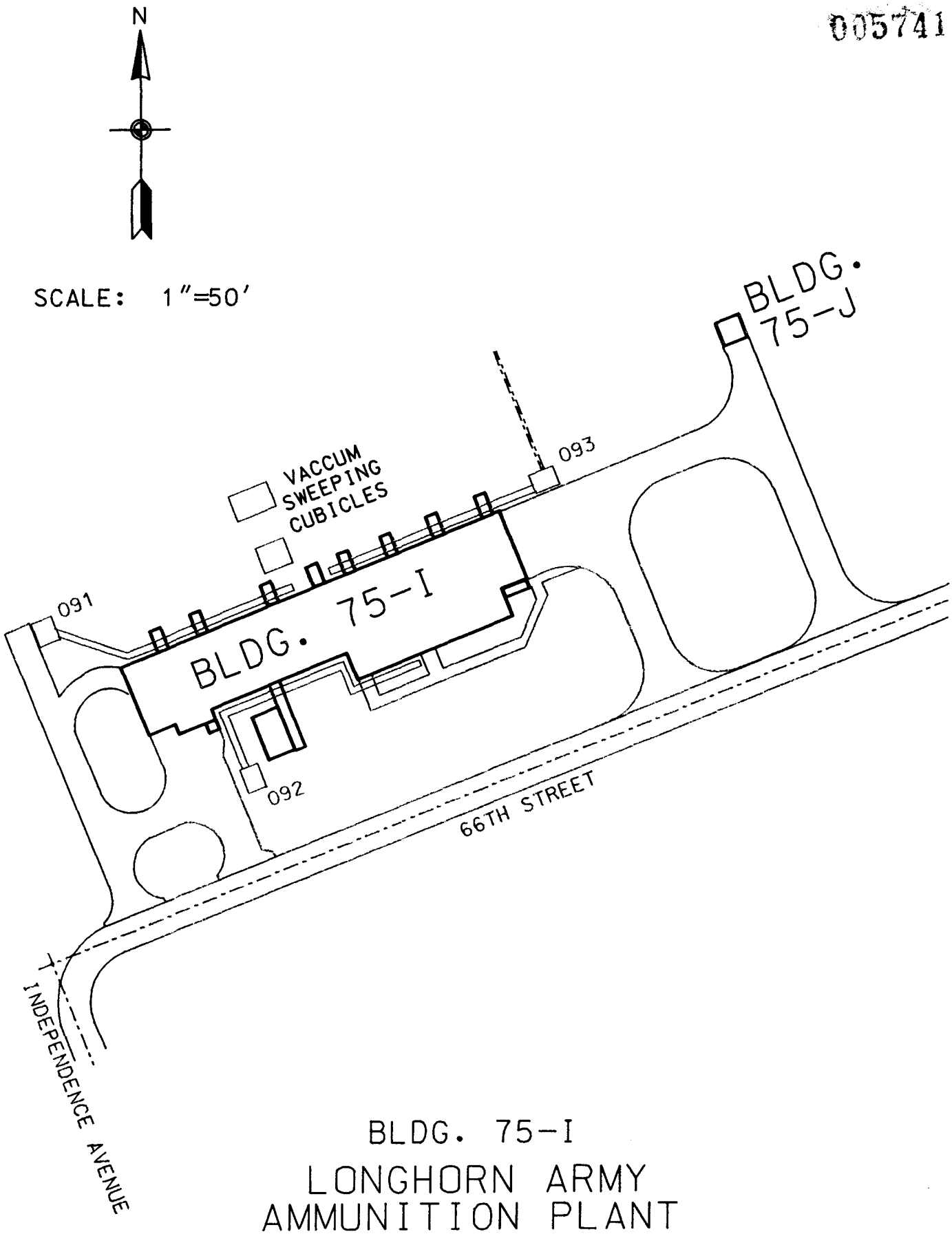
N

SCALE: 1"=40'

BLDG. 68G
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

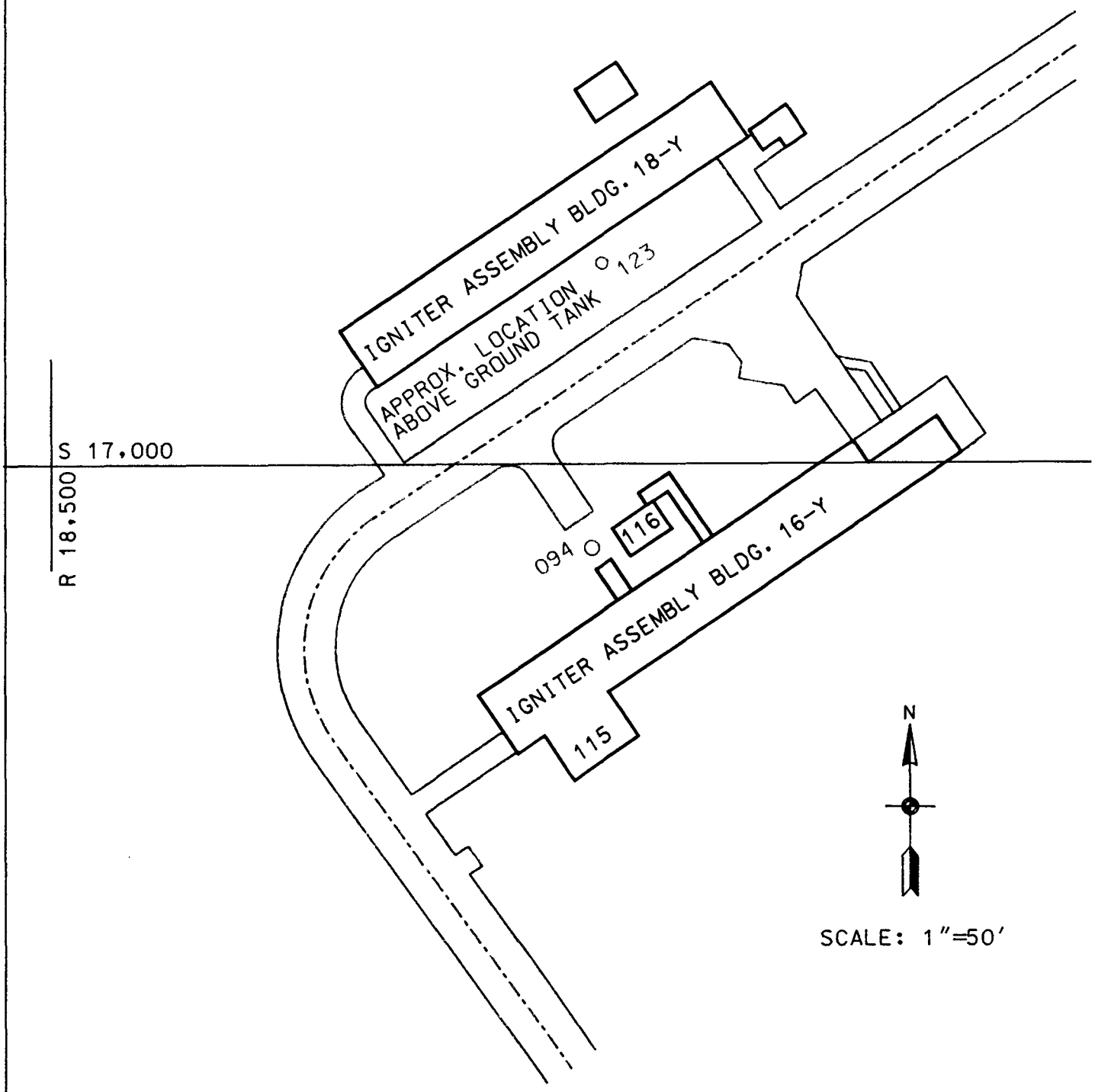
FILE NAME BL_68G.DGN



BLDG. 75-I
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_75-I.DGN

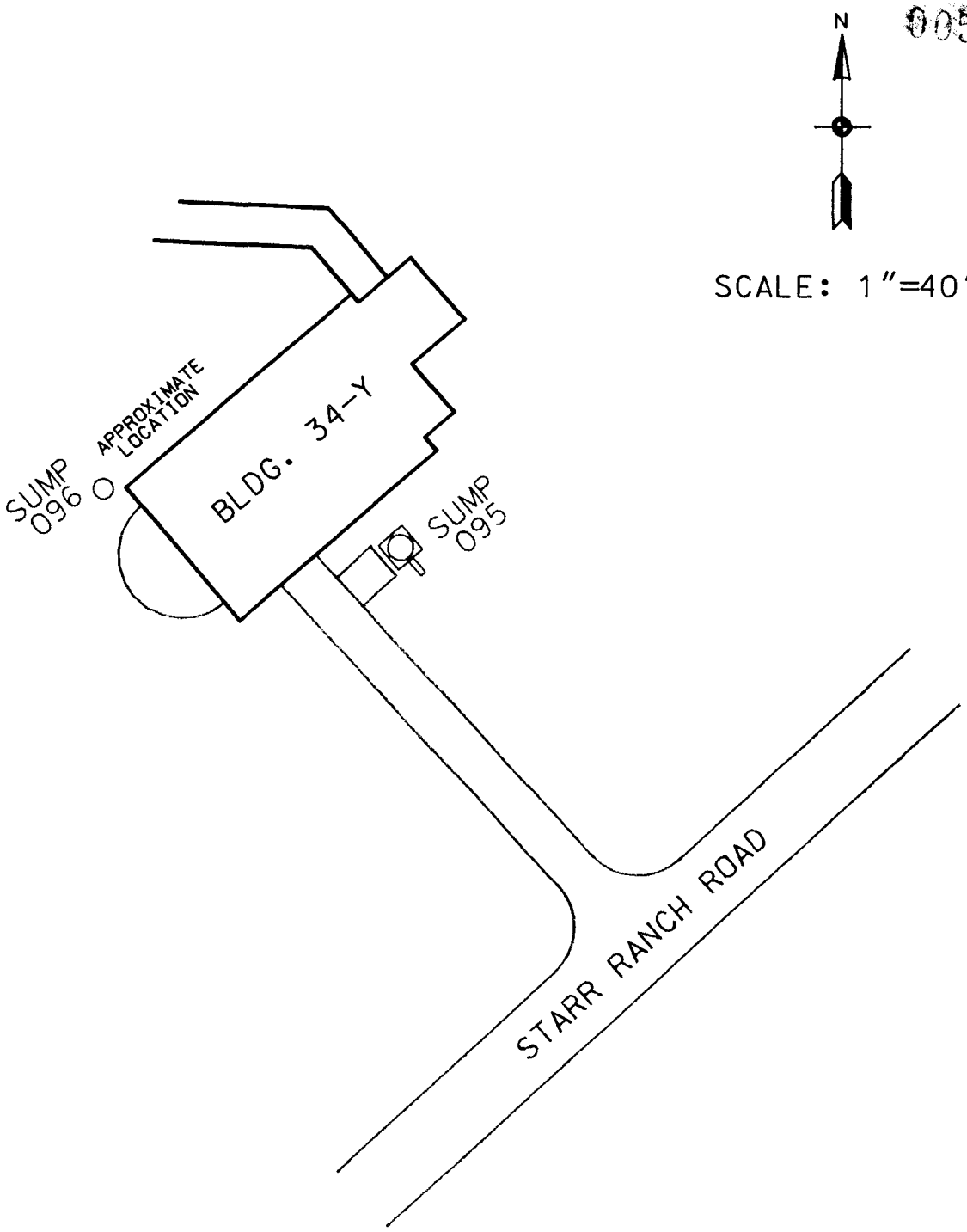


BLDG. 16-Y and 18-Y

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_18-Y.DGN



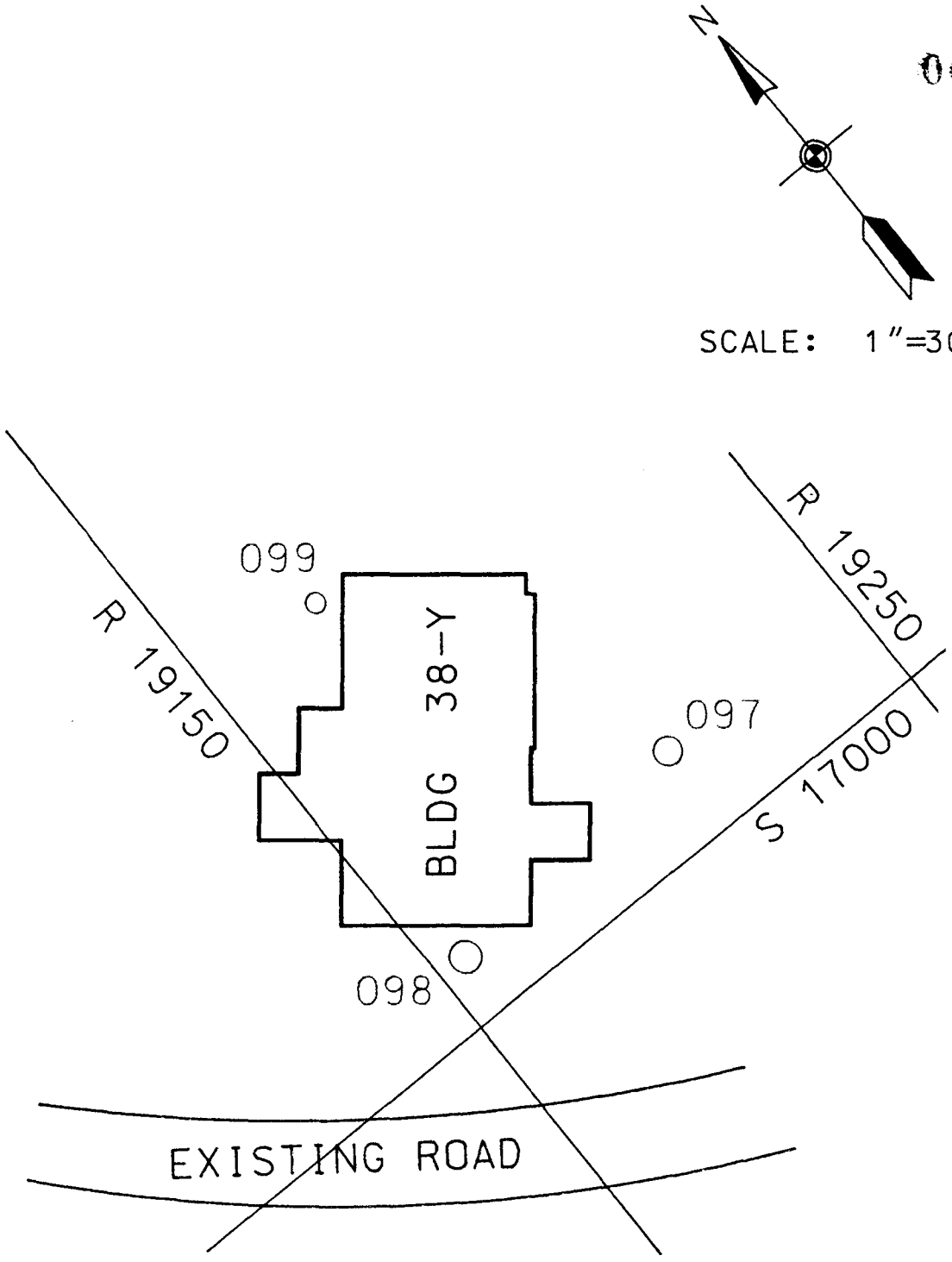
BLDG. 34-Y

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE: BL_34-Y.DGN

005744



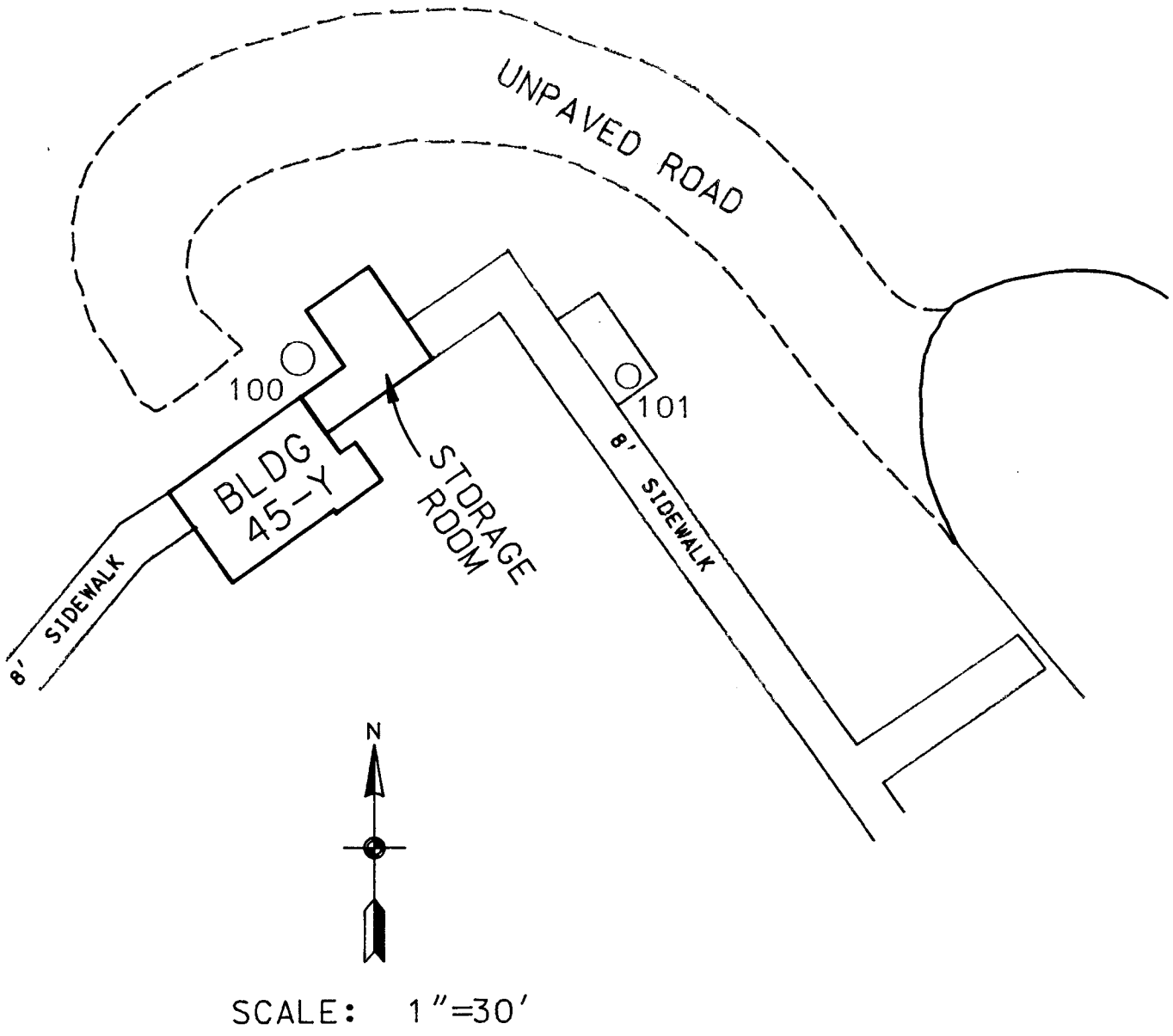
BLDG. 38-Y

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME: BL_38-Y.DGN

005745



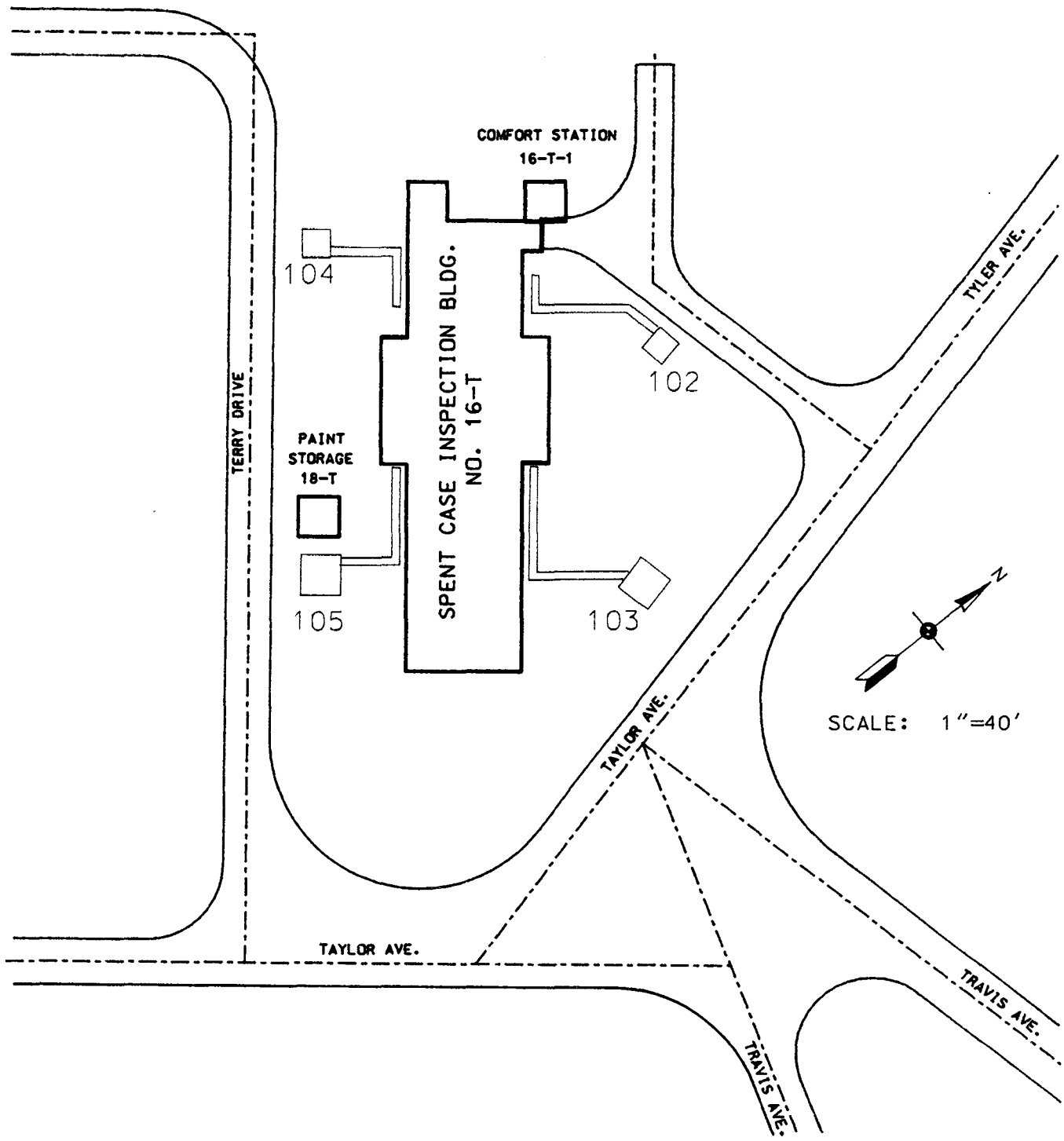
SCALE: 1"=30'

BLDG. 45-Y
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_45-Y.DGN

005746

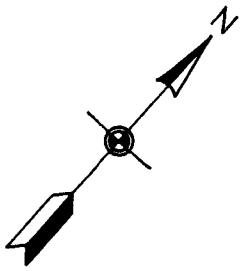


BLDG. 16-T

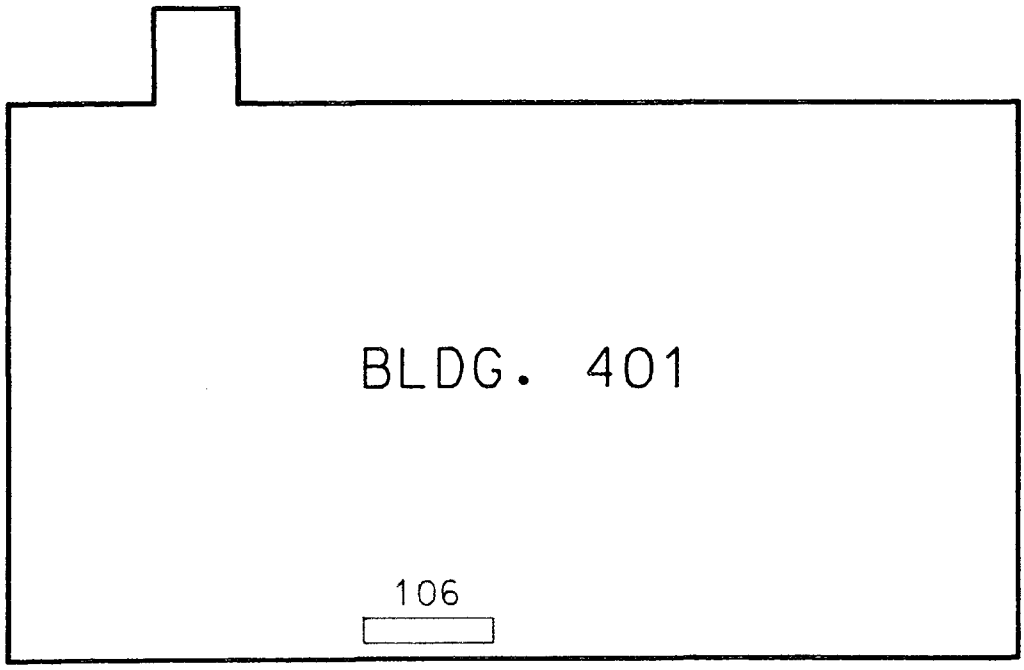
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME: BL_16-T.DGN



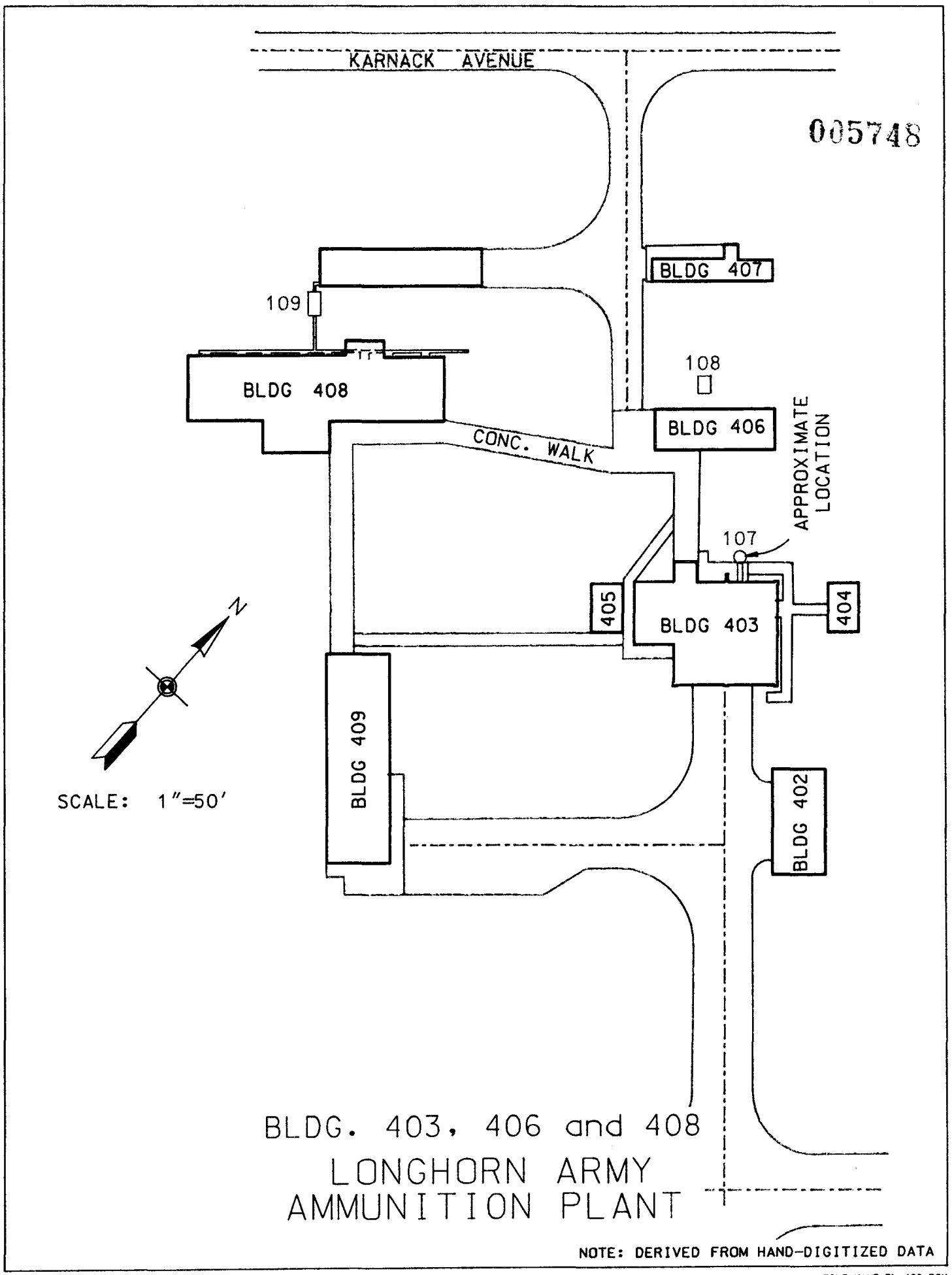
SCALE: 1"=40'

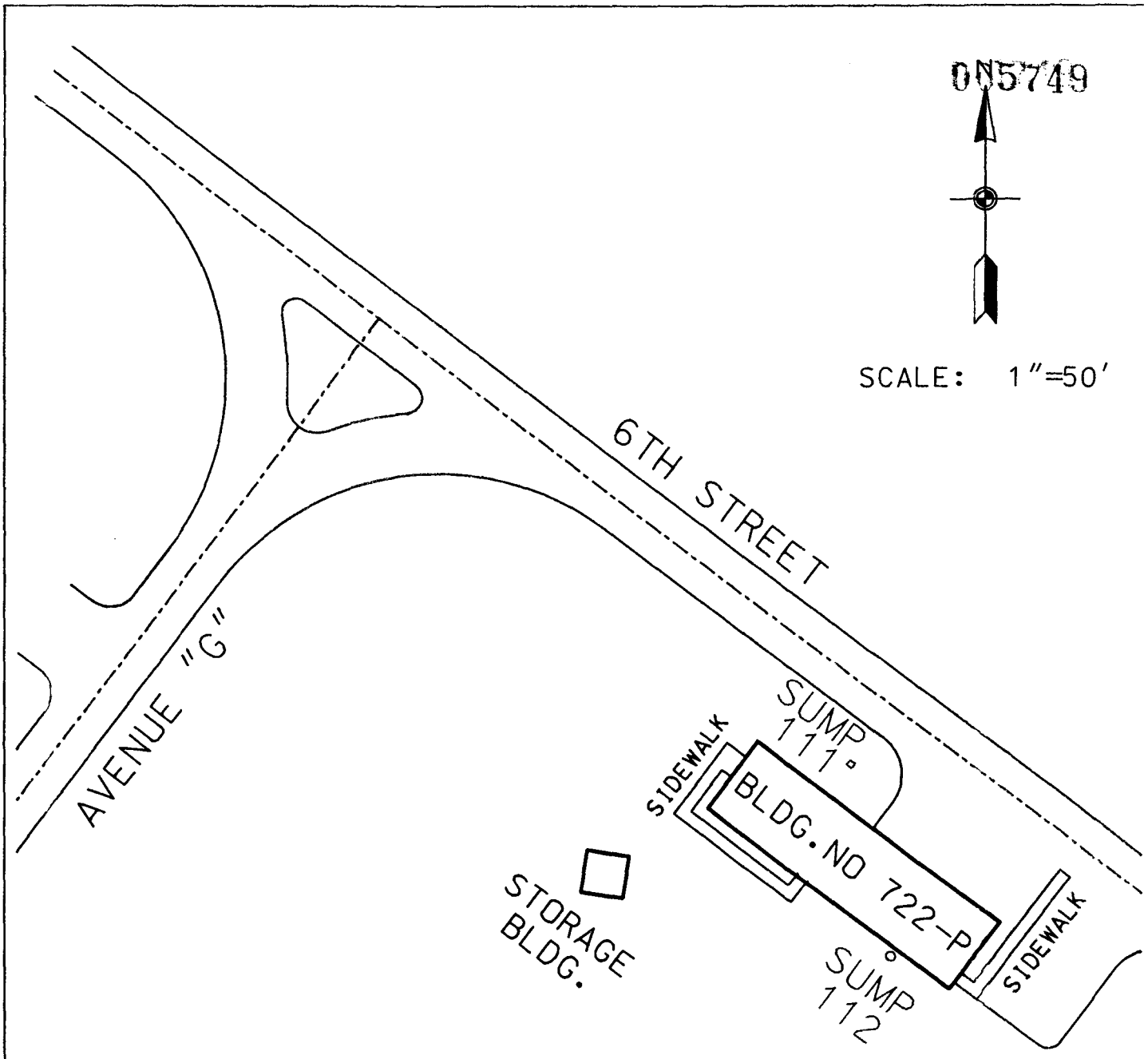


BLDG. 401
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_401.DGN


KARNACK AVENUE
005748
BLDG 407
109
108
BLDG 408
BLDG 406
CONC. WALK
APPROXIMATE LOCATION
107
405
BLDG 403
404
N
SCALE: 1"=50'
BLDG 409
BLDG 402
BLDG. 403, 406 and 408
LONGHORN ARMY AMMUNITION PLANT
NOTE: DERIVED FROM HAND-DIGITIZED DATA
FILE NAME BL_408.DGN



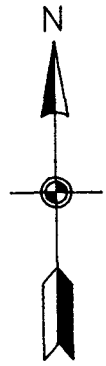
BLDG. 722-P

LONGHORN ARMY AMMUNITION PLANT

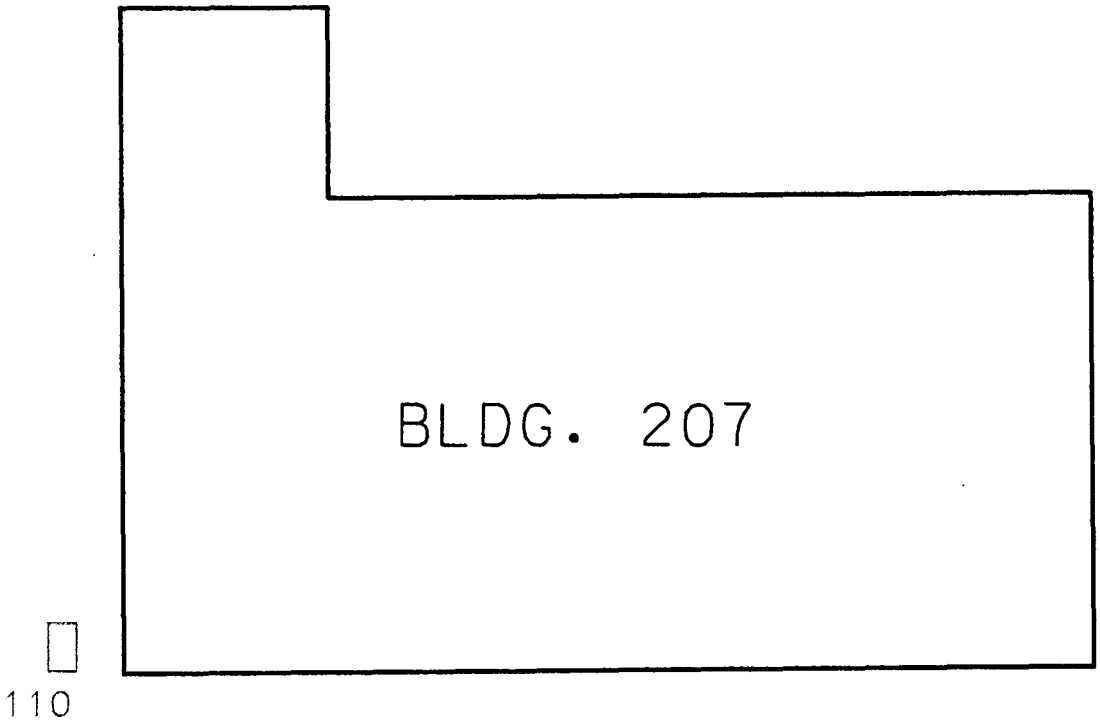
NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_722-P.DGI

005750



SCALE: 1:=20'



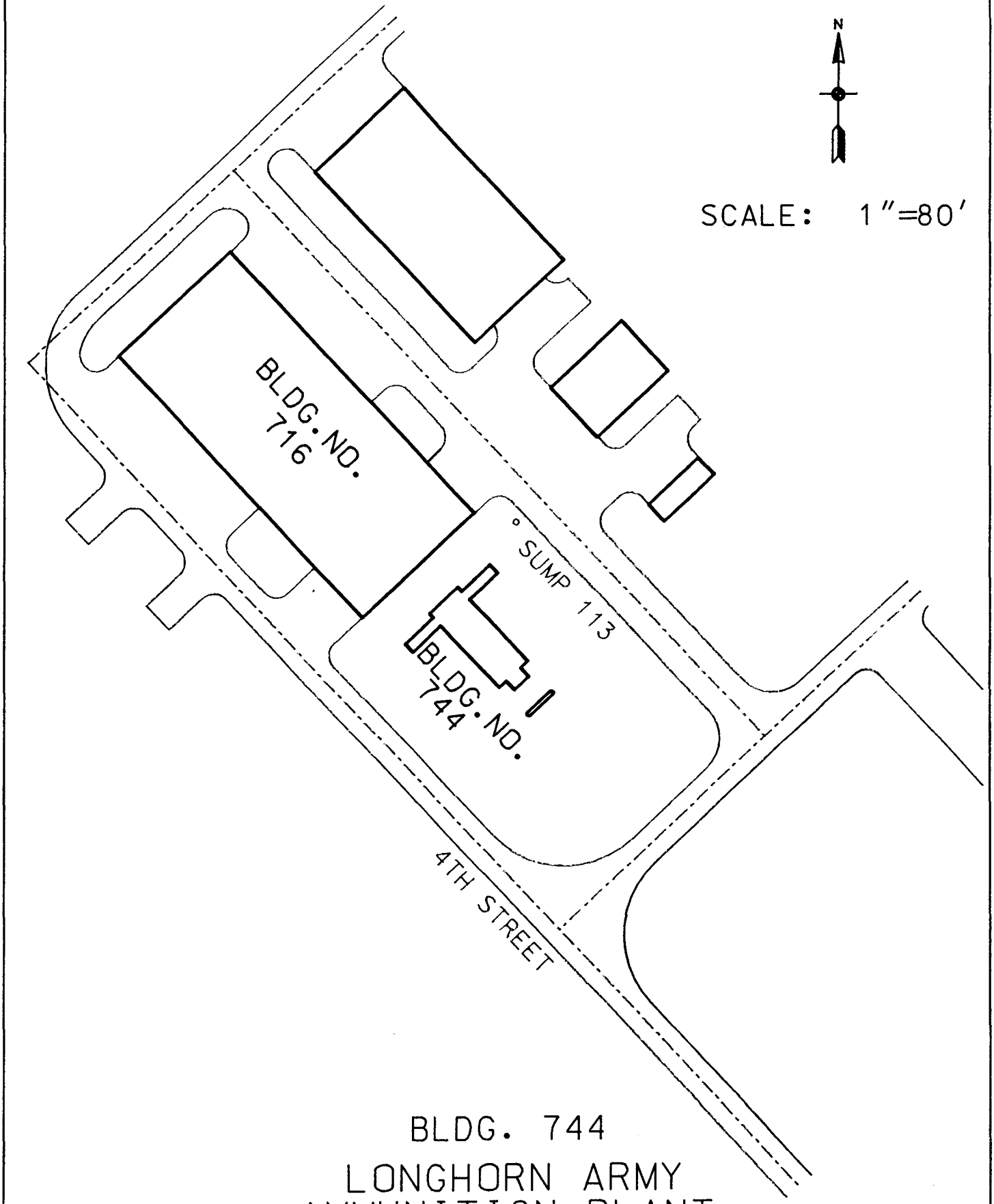
BLDG. 207

LONGHORN ARMY
AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_207.DGN

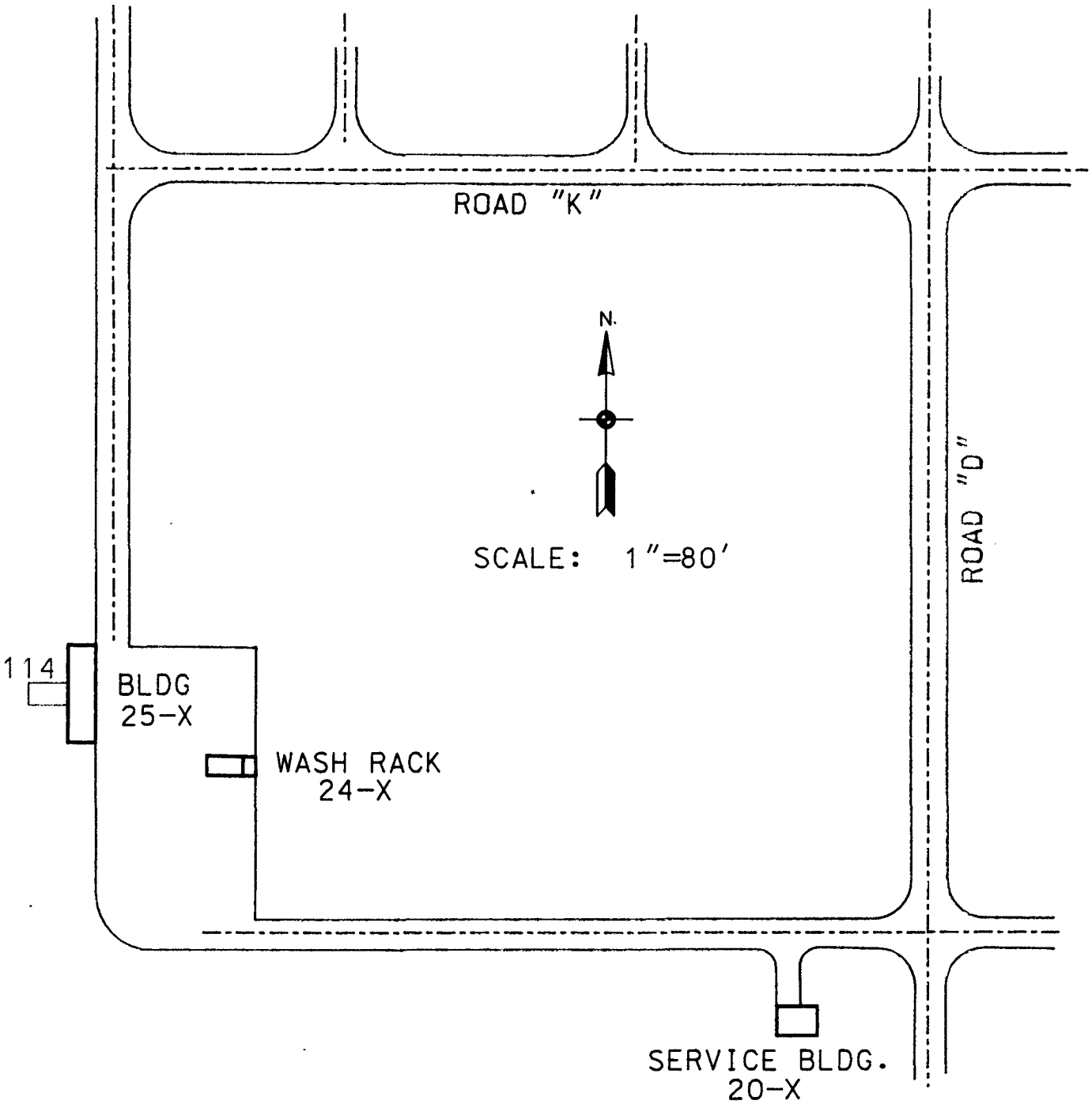
005751



BLDG. 744
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_744.DGN

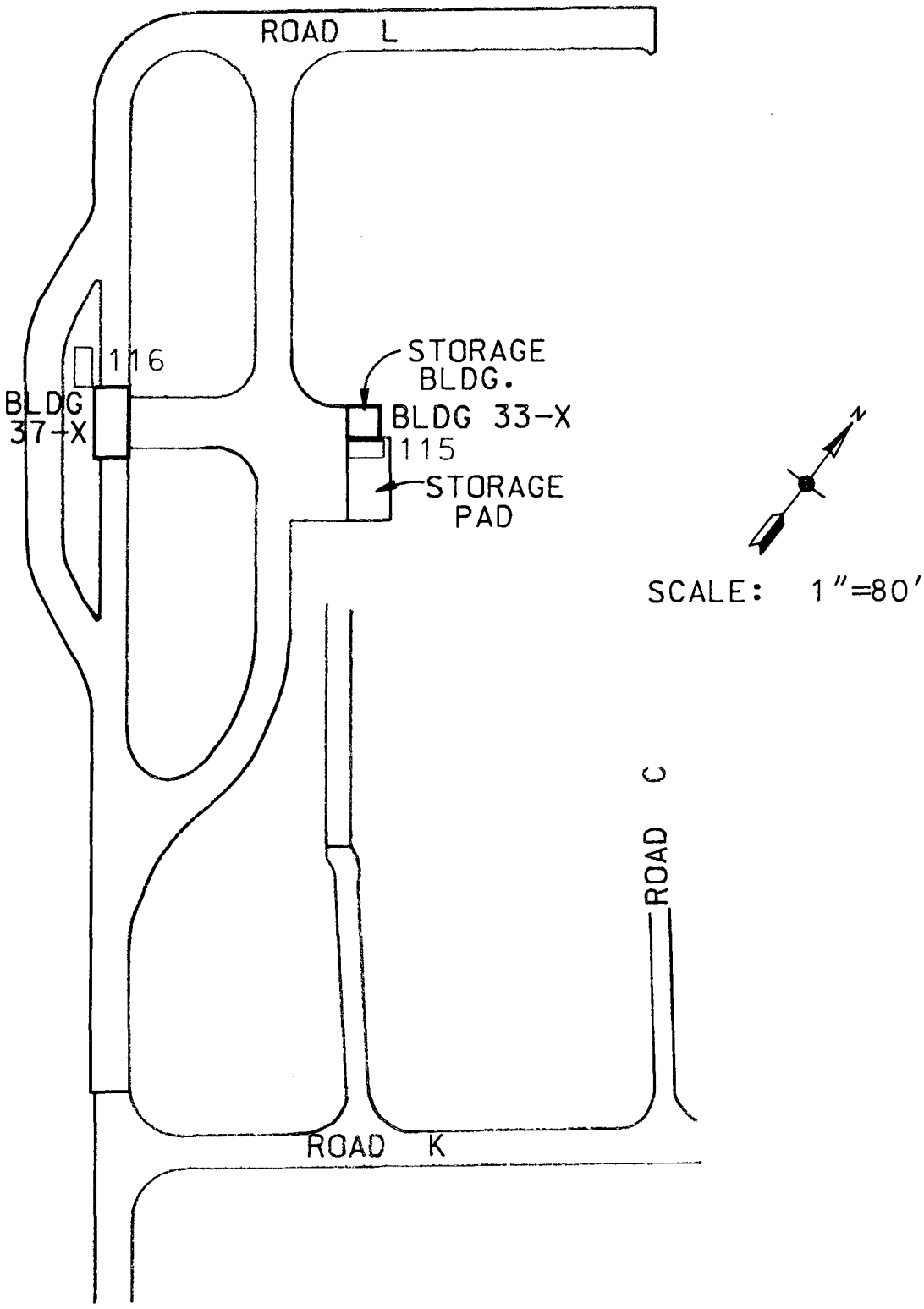


BLDG. 25-X

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_25-X.DGN

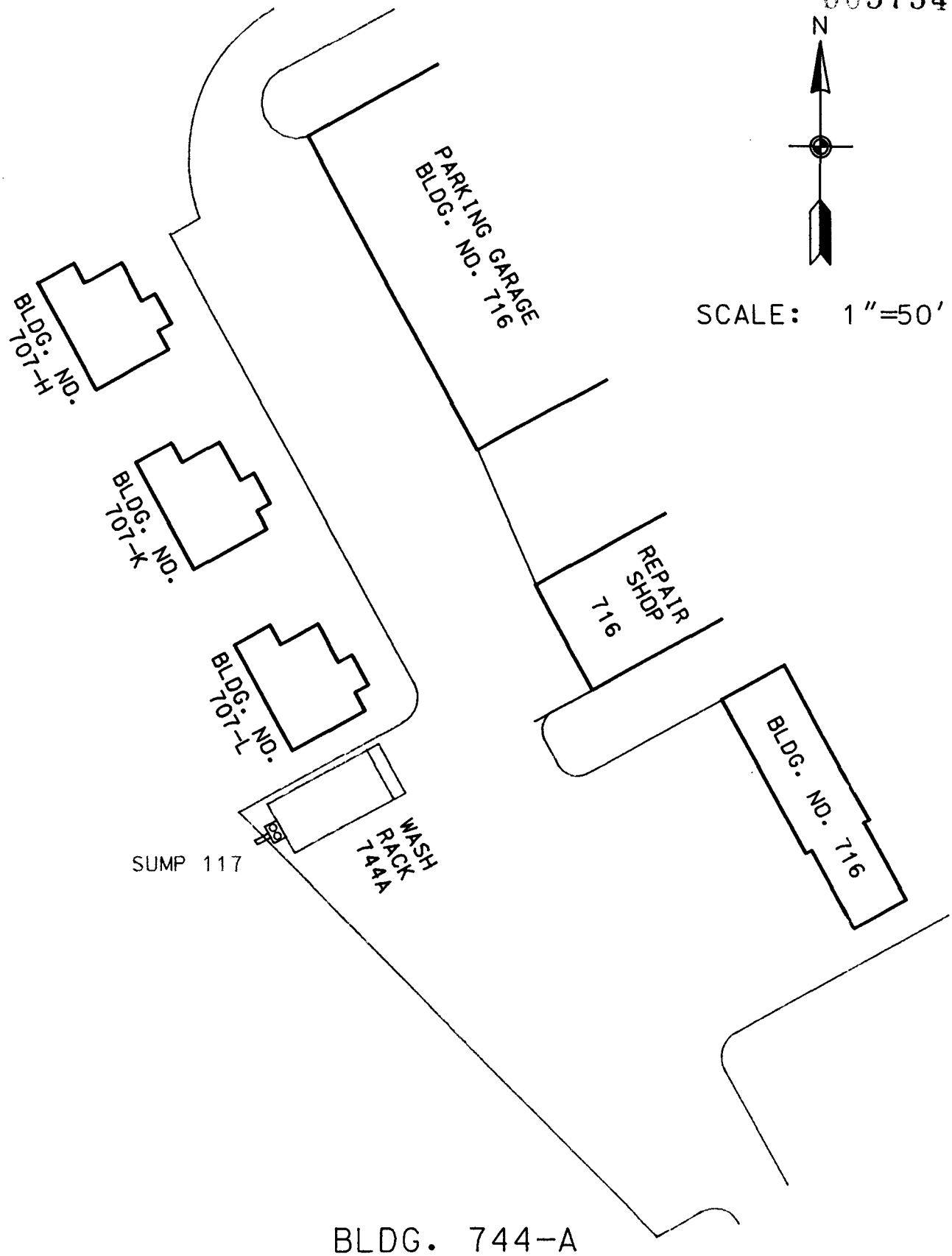


BLDG. 37-X

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_37-X.DGN

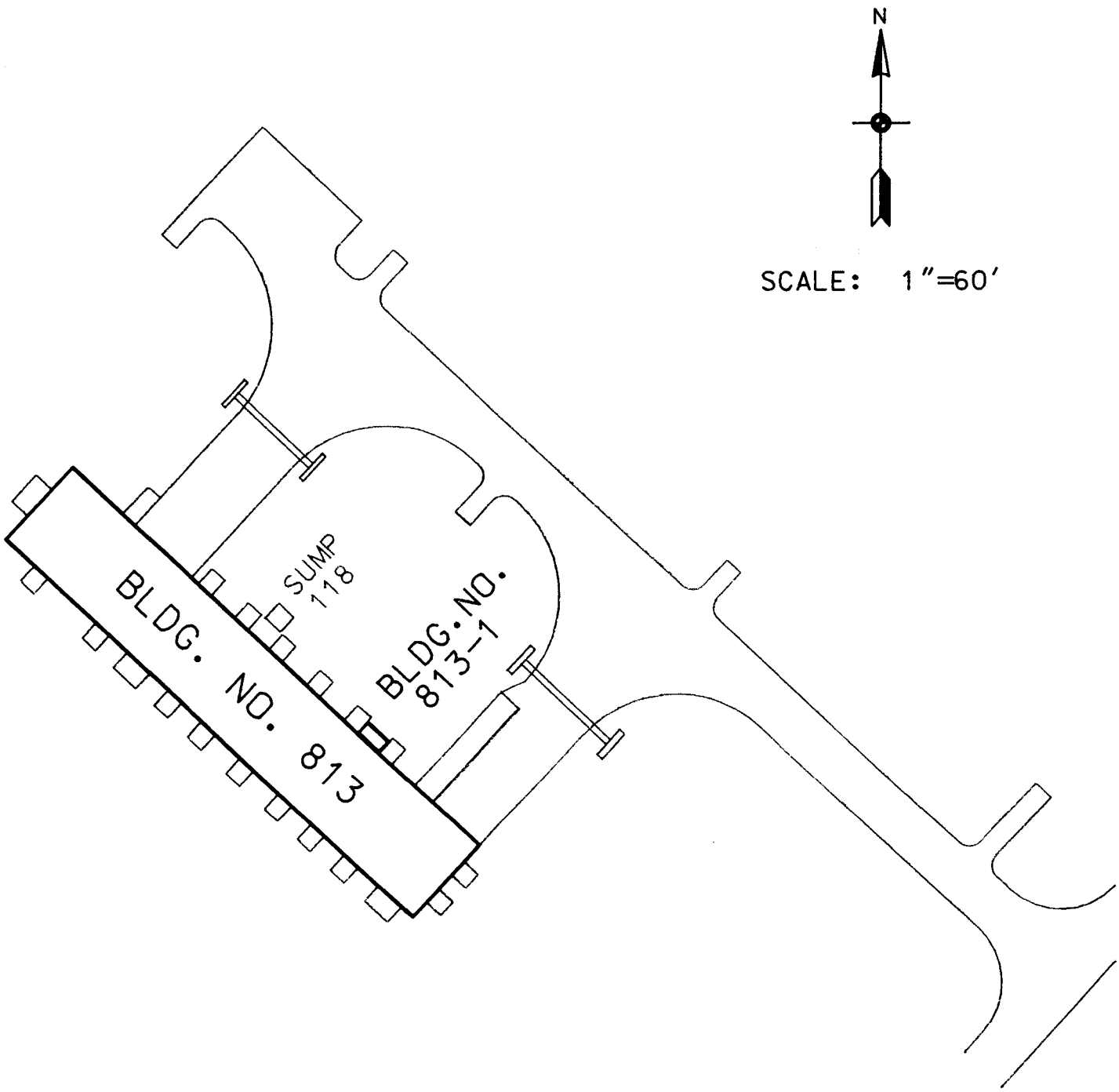


BLDG. 744-A

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

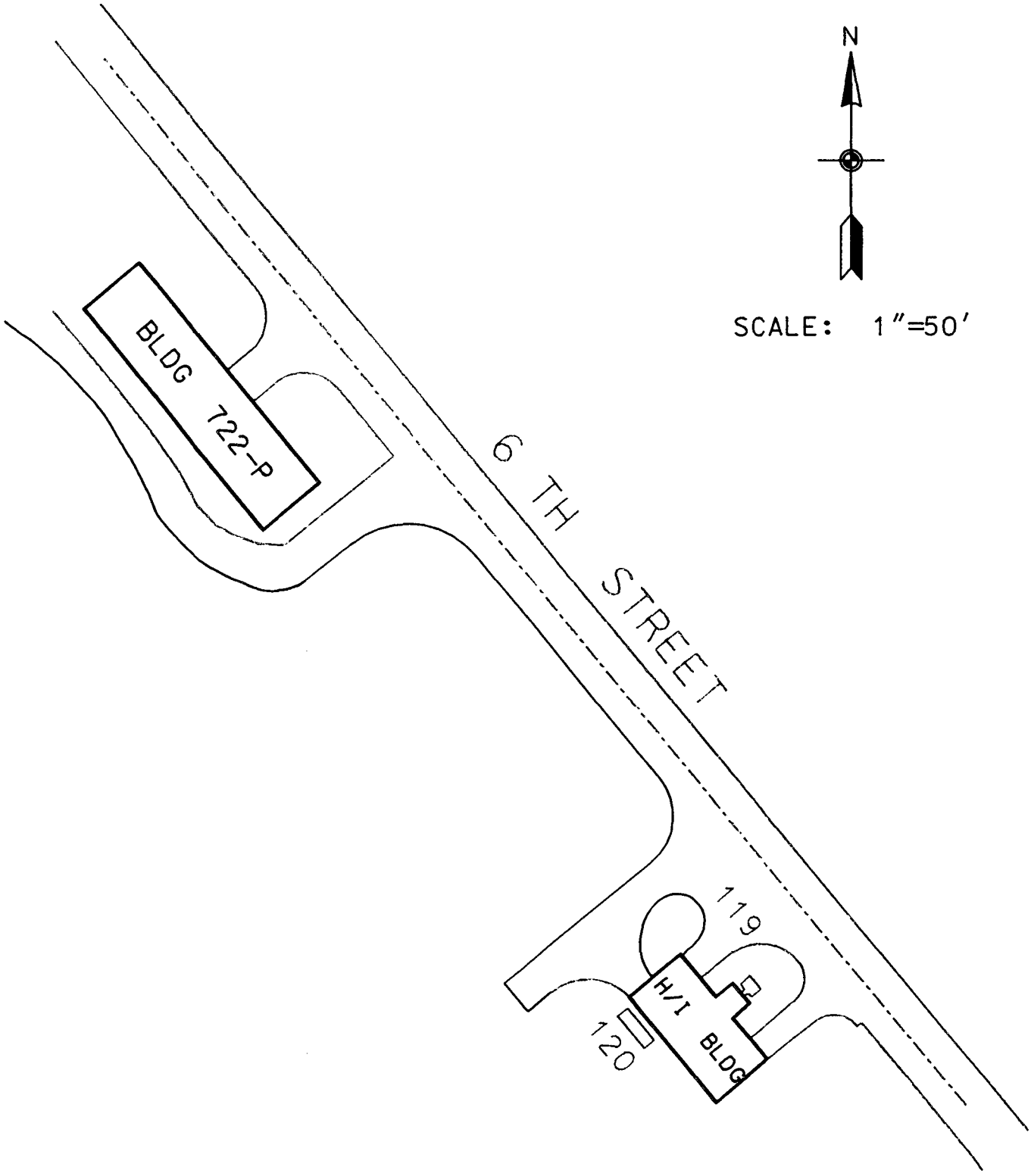
FILE NAME BL_744-A.DGN



BLDG. 813
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

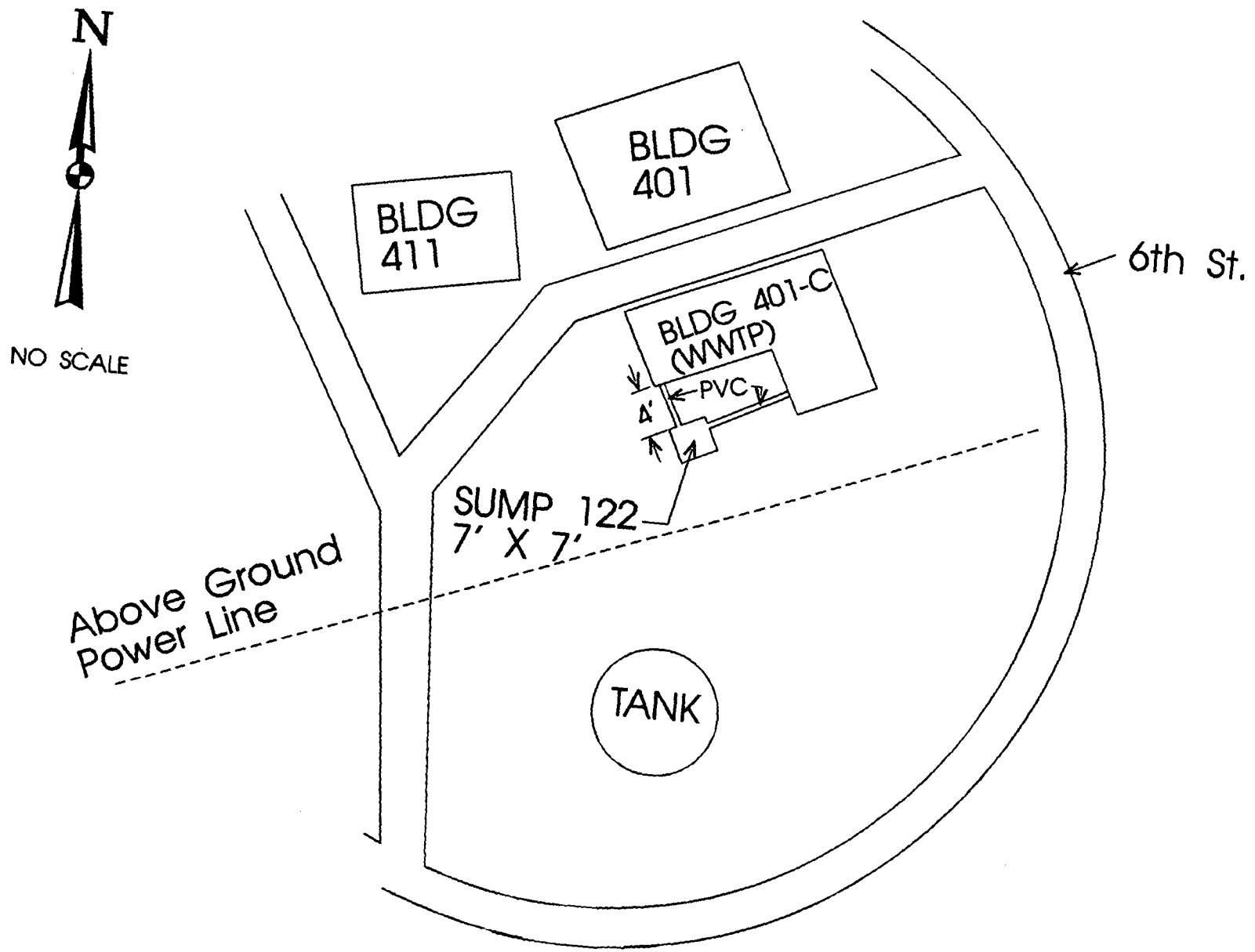
FILE NAME BL_813.DGN



BLDG. 725
LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

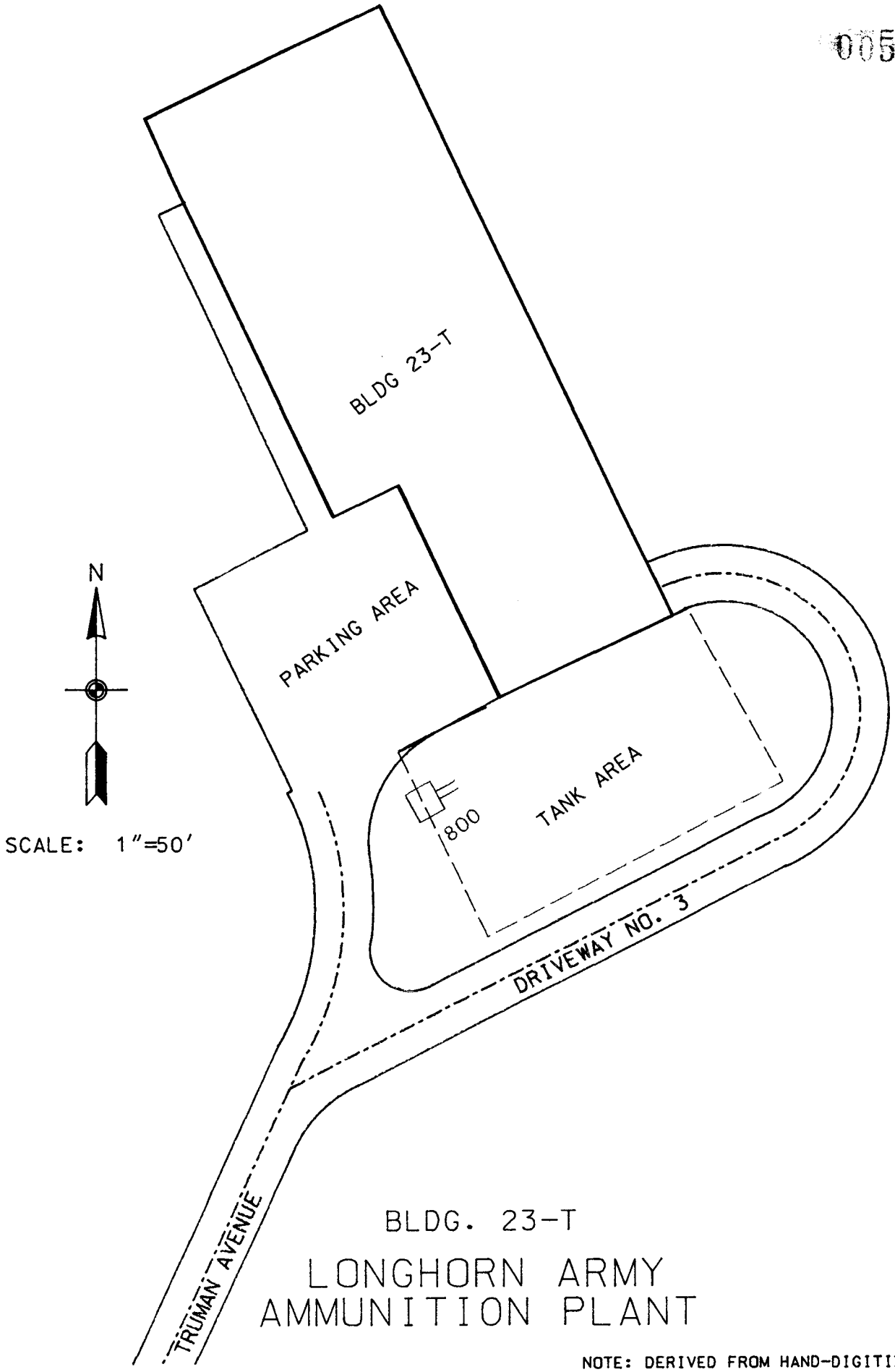
FILE NAME BL_725.DGN



BUILDING 401-C
(WWTP)

B-56

005758

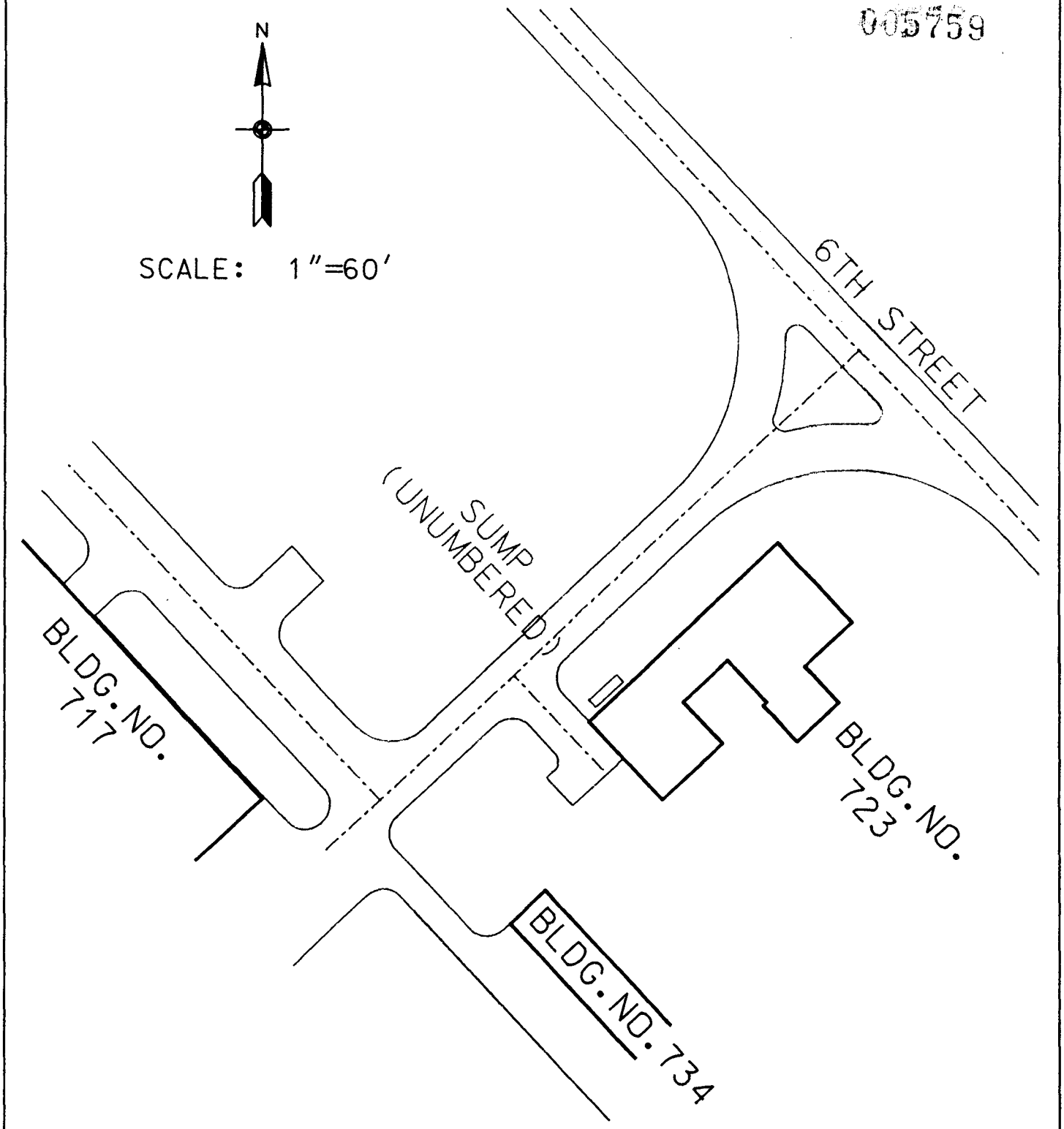


BLDG. 23-T

LONGHORN ARMY AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME: BL_23-T.DGN



BLDG. 723

LONGHORN ARMY
AMMUNITION PLANT

NOTE: DERIVED FROM HAND-DIGITIZED DATA

FILE NAME BL_723.DGN

APPENDIX C

LONGHORN ARMY AMMUNITION PLANT CHEMICALS

LONGHORN ARMY AMMUNITION PLANT CHEMICALS
(exclusive of fuels, oils, lubricants)

CHEMICAL	SOURCE(S)*
acetone	BC/SI/IML/DML
adhesives, misc.	DML
aluminum	BC/SI/DML
aluminum sulfate	IML
amine binding agent	DML
amino phenols	SI
ammonia hydroxide	IML
ammonium perchlorate	SI/DML
antimony sulfide	SI
asbestos floats	SI
barium chromate	BC/SI/DML
barium nitrate	BC/SI/DML
barium oxylate	BC
black powder	BC/SI/DML
boron	BC/SI/DML
butyl acetate	DML
calcium hypochlorite	IML
calcium phosphate	DML
calcium oxylate	BC
carbon black	BC/SI/DML
carbon disulfide	IML
cellulose nitrate	SI
chromium 2-ethyl hexoate	SI
cobalt napthenate	BC/SI/DML
cupric oxide	DML
dechlorane plus	BC/DML
di-2-ethyl-azelate	DML
di-2-ethylhexyl azelate	BC
diammonium phosphate	SI
dibutyl carbitol formal	SI
diethylentriamin	DML
diisocyanate	DML
dioctyl sebacate	SI
DOA	BC
drierite indicator	IML
ether, anhydrous	IML
ether, polyoxyethylene	IML
ethyl acetate	IML
ethyl alcohol	BC/SI/IML/DML
ethylene glycol	IML
fluoroelastomer solution	BC
gallic acid	IML
glacial acetic acid	IML
graphite	BC
hexachlorobenzene	BC
hexane	DML
hmx	BC
hydrochloric acid	IML

LONGHORN ARMY AMMUNITION PLANT CHEMICALS (Continued)
(exclusive of fuels, oils, lubricants)

CHEMICAL	SOURCE(S)*
hydrogen peroxide	IML
HTPB-R45M	BC
HX-752	BC
imine, liquid	SI
inks, misc.	DML
iron oxide	BC/SI
isophorone diisocyanate (IPDI)	BC
isopropyl alcohol	IML/DML
kerosene	IML
lacquers, misc.	DML
laminac 4116 polyester resin	BC
lead chromate	SI
lead oxide	BC
lecithin	BC
lime, hydrated	IML
lupersol	BC
magnesium	BC/SI/DML
magnesium carbonate	BC/DML
magnesium oxide	BC/DML
manganese	BC/SI
methanol	SI
4,4 methylene bis-	DML
methyl ethyl ketone peroxide	SI/IML/DML
methylene chloride	SI/IML
muriatic acid	IML
n,n dimethyl formamide	IML
nitric acid	IML
oxamide	BC/DML
paints, misc.	IML/DML
phenolphthalein indicator	IML
phosphoric acid	IML
polychloroprene	SI
polyester resin	SI
polytetrafluoroethylene	BC/SI
polyvinyl chloride	BC/DML
potassium chlorate	BC/DML
potassium chromate	IML
potassium iodine	IML
potassium nitrate	BC/SI/DML
potassium perchlorate	BC/SI/DML
potassium sulfate	DML
pyridine	IML
red phosphorus	BC
resin epoxies, misc.	DML
sealants, misc.	DML
silicon	BC/SI/DML
silver nitrate	IML
sodium bicarbonate	BC/IML/DML

LONGHORN ARMY AMMUNITION PLANT CHEMICALS (Continued)
(exclusive of fuels, oils, lubricants)

CHEMICAL	SOURCE(S)*
sodium chloride	IML
sodium nitrate	SI/DML
sodium sulphite	IML
strontium nitrate	BC/SI/DML
sulfur	BC/SI/DML
sulfuric acid	IML
talc powder	SI
tetrafluroethylene	SI
tetranitrocarbazole	BC/SI/DML
thermax	BC
titanium dioxide	SI
toluene	IML
1,1,1 trichloroethane	SI/IML
1,1,1 trichloroethylene	SI
triphenyl bismuth	BC/DML
tungsten	BC/SI/DML
urethane liquid polymer	SI
VAAR/bakelite	BC
versamid 140	DML
vinyl acetate alcohol resin	SI
viton	BC
zinc oxide	SI
zirconium	BC
zirconium carbide	BC/DML
zirconium hydride	BC/SI/DML

* Denotes source of chemical identification as follows:
BC = production batch cards
SI = sump inventory (1974)
IML = indirect material listing
DML = direct material listing

DEPARTMENT OF THE ARMY
LONGHORN/LOUISIANA ARMY AMMUNITION PLANTS
MARSHALL, TEXAS 75671-1059

005764

REPLY TO
ATTENTION OF

April 1, 1993

SMCLO-EV

Ms. Lisa Price
Environmental Protection Agency
1445 Ross Ave.
Dallas, TX 75202

Dear Ms. Price:

Reference the Longhorn Army Ammunition Plant - Remedial Investigation Work Plan. We request the quantitation limits for low-level water high explosives analyses, Table B-7, Page B-8 of the Chemical Data Acquisition Plan be raised to the values shown on the enclosed proposed revision sheet for Table B-7.

The reason for the change is the inability of many commercial laboratories to achieve the original quantitation limits without specific instrumentation. We feel the higher quantitation limits will provide adequate sensitivity to achieve the objectives of the investigation. An additional benefit will be that analytic services will be available from a wider variety of sources; thereby, lowering cost and providing data comparable to other similar investigations in industry and government across the nation.

If there are any questions, contact Mr. Lynn Muckelrath at (903) 679-2980.

Sincerely,

Robert W. Bringman
Lieutenant Colonel, U. S. Army
Commanding Officer

Enclosure

005765

TABLE B.7 QUANTITATION LIMITS FOR EXPLOSIVES IN SOIL AND WATER BY METHOD 8330*

PARAMETER	WATER (ug/l)	LOW-LEVEL SOIL/SEDIMENT (ug/g)
	EXPLOSIVES	
HMX	0.50	2.2
RDX	0.85	1.0
1,3,5-TNB	0.55	0.25
1,3-DNB	0.25	0.25
Tetryl	0.70	0.65
NB	0.80	0.26
2,4,6-TNT	0.55	0.25
4-Am-DNT	-	-
2-Am-DNT	-	-
2,6-DNT	0.45	0.26
2,4-DNT	0.55	0.25
2-NT	0.70	0.25
4-NT	0.50	0.25
3-NT	0.50	0.25

* Quantitation limits revised from those shown in Method 8330.