VIA CERTIFIED MAIL
 # 7004 0550 0000 2079 4762

safety-kleen®

February 15, 2005

Mr. Mark Schollenberger
Illinois Environmental Protection Agency
Bureau of Land
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Re: Safety-Kleen Systems, Inc. Chicago Recycle Center
Tank inspections
ILD 005450697, Permit # 0316000053 - Cook

Dear Mr. Schollenberger:

On December 15, 2004, Jim Bishop, P.E. and the inspection firm Calumet Testing Services, Inc. completed a report on the visual internal and external tank inspections on nineteen (19) hazardous waste storage tanks according to our schedule and the requirements of our part-B operating permit.

A total of nineteen (19) tanks were inspected. Nine (9) of the tanks were initially found to have pitting and/or weld cracks. These tanks were immediately repaired and reinspected before putting the tanks back into hazardous waste service. One of the tanks, T-17 was not repaired at this time. Tank T-17 was immediately taken out of service. The repair and inspection results are included in the report. The inspection results and report dated December 15, 2004 from Mr. Bishop are enclosed.

If you have any questions or require additional information, please contact me at (773) 247-2828.

Sincerely,

Alfred Aghapour
Facility Manager

Enclosures

cc: Karl E. Bremer, USEPA (letter only) # 7004 0550 0000 2079 4786
Kevin M. Laberge, Chicago D.O.E. (letter only) # 7004 0550 0000 2079 4779
file: IEPA 2004 tank inspections

SAFETY-KLEEN CORP.
1445 WEST 42ND STREET CHICAGO, IL 60609 (773) 247-2828 FAX (773) 650-1466

B-PIR

XC

safety-kleen®

January 21, 2005

Mark Schollenberger
Illinois Environmental Protection Agency
1021 N. Grand Avenue East
P.O. Box 19276
Springfield, IL 62704-9276

Re: Safety-Kleen Systems, Inc. Chicago Recycle Center
ILD 005450697, Permit Log # B121-R
Supplemental Information Requested RCRA Part-B Permit:
Withdrawal of Part-B Draft Comment #5.
Remaining Tank Life Calculations for Tanks T-1, T-2, T-3, T-4, T-21.

Dear Mr. Schollenberger,

Attached are the hardcopy originals of the remaining tank life calculations, performed by a third party engineering firm, for the five waste tanks (T-1, T-2, T-3, T-4, & T-21) we faxed to you on December 13, 2004. The engineering firm's stamped cover letter with the appropriate certification language is also included per your request.

In addition, per your telephone discussion with the Chicago Recycle Center EHS Manager Gary Malinowski on January 4, 2005 regarding the Safety Kleen's Comment #5 of Section I (Container Storage) of the RCRA Part-B Draft Permit, and upon further review and discussion, Safety Kleen has decided to withdraw Comment #5 of Section I (Container Storage) of the draft permit submitted and dated September 23, 2004. Please understand that the withdrawal of this comment is specific to the operations at the Safety Kleen Chicago Recycle Center, and does not reflect the storage and/or operating conditions of other Safety Kleen facilities.

If you have any questions or require additional information, please contact me, or Gary Malinowski at (773) 247-2828.

RECEIVED
JAN 25 2005
IEPA-BOL
PERMIT SECTION

SAFETY-KLEEN CORP.
1445 WEST 42ND STREET CHICAGO, IL 60609 (773) 247-2828 FAX (773) 650-1466

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons that manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Alfred Aghapour
Facility Manager

Attachment:

file: IEPA Draft Part B Permit – 2004

PROJECT RESOURCES, INC.
200 EAST 5th AVE, SUITE 126 NAPERVILLE, IL 60563
TELEPHONE: (630) 548-2110 FAX: (630) 548-2443
e-mail: projresource@earthlink.net
website: www. projectresource.com

January 6, 2005

Mr. Joe Nowasielski
SAFETY-KLEEN SERVICES
1445 W. 42nd Street
Chicago, IL 60609

RE: Remaining Life and Continuing Service for T-1, T-2, T-3, T-4, T-21
Our Project C-0415L2

Dear Joe:

Using the available tank inspection data, we calculated the minimum plate thickness and projected the remaining life for T-1, T-2, T-3, T-4 and T-21. We also evaluated thickness and projected remaining life for the weld connecting the shell to cone (T-1, 2, 3 and 4) and connecting the shell to dish (T-21). We see no reason to remove these tanks from service and it is our opinion that the standard 5 year reinspection period will be adequate. Please see Calculations and Tank Inspection Reports attached.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons that manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Very truly yours,

James L. Bishop, P.E.

PROJECT RESOURCES, INC.
200 EAST 5th AVE, SUITE 126 NAPERVILLE, IL 60563
TELEPHONE: (630) 548-2110 FAX: (630) 548-2443
e-mail: projresource@earthlink.net
website: www. projectresource.com

CALCULATION OF MINIMUM PLATE THICKNESS
PREDICTION OF TANK LIFE
TANK FARM #4, TANKS T-1,2,3,4, 21
SAFETY-KLEEN SYSTEMS CHICAGO PLANT

Project Resources, Inc. Contract No. C-0415 December 7, 2004

Objectives

1. Determine if current plate thickness is adequate

2. Project remaining tank life

Data

A. Tanks are 304 SS, vertical, leg supported, store water (SG = 1) and are at atmospheric pressure

B. T-1, 2, 3, 4 are 12' diam. X 16' H. with 60 deg. cone bottoms. T-21 is 42" diam. X 72" with dished bottom

C. See wall thickness readings dated 9/13/04

D. See API 650 Appendix A.4

Note:

Tanks are not designed to API Standards. API is being used as a calculation methodology.

Calculations

Basic Equation is:

H = maximum height of water, feet
E = joint efficiency, = 0.85
D = tank diam., feet
t = minimum thickness, inches
G = specific gravity of stored liquid = 1
CA = corrosion allowance = 0 for 304 SS
t_{min} = 2.6D (H-1) / (0.85) (21,000)

For Tanks T-1, 2, 3, and 4

t_{min} = (2.6 X 12) X (16 –1) / 17,850 = 0.026 in.

CALCULATION OF MINIMUM PLATE THICKNESS
PREDICTION OF TANK LIFE

LIFE = $(t_{2004} - t_{min})$ X 5 years / $(t_{1999} - t_{2004})$

Use the bottom of the cone as the point of maximum stress, ie, maximum height of liquid

For T-1, LIFE = (0.136 – 0.026) X 5 / (0.151 – 0.136) = 0.55 / 0.015 = 36.7 years

For T-2, LIFE = (0.139 – 0.026) X 5 / (0.188 – 0.139) = 0.565 / 0.049 = 11.5 years

For T-3, LIFE = (0.143 – 0.026) X 5 / (0.149 – 0.143) = 0.585 / 0.005 = 117 years

For T-4, LIFE = (0.116 – 0.026) X 5 / (0.188 – 0.116) = 0.45 / 0.072 = 6.3 years

For T-21

While T-21 height is 6', use 16' due to the elevation of the incoming pipe.

$$\mathbf{t_{min} = (2.6 \times 3.5) \times (16 - 1) / 17{,}850 = 0.0076 \text{ in.}}$$

Thickness data for T-21 is inconsistent, but taking the worst case loss from above, 0.072 in. in 5 years, we get:

For T-21, LIFE = (0.110 – 0.0076) X 5 / (0.072) = 0.512 / 0.072 = 7.1 years

PROJECT RESOURCES, INC.
200 EAST 5th AVE, SUITE 126 NAPERVILLE, IL 60563
TELEPHONE: (630) 548-2110 FAX: (630) 548-2443
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website: www. projectresource.com

EVALUATION OF SHELL TO CONE OR DISH WELD STRENGTH
TANK FARM #4, TANKS T-1,2,3,4, 21
SAFETY-KLEEN SYSTEMS CHICAGO PLANT

Project Resources, Inc. Contract No. C-0415 December 7, 2004

Objectives

1. Determine if current weld strength is adequate

2. Project a 5 year loss in weld area and recalculate for adequacy

Data

A. Tanks are 304 SS, vertical, leg supported, store water (SG = 1) and are at atmospheric pressure

B. T-1, 2, 3, 4 are 12' diam. X 16' H. with 60 deg. cone bottoms. T-21 is 42" diam. X 72" with dished bottom

C. See wall thickness readings dated 9/13/04

D. See API 650 Appendix F and in particular Figure F-2, Detail D. Note: Tanks are not designed to API Standards. API is being used as a calculation methodology.

Calculations

Basic Equation is:

P = maximum height of water, inches
A = Weld Area
D = tank diam., feet
t = cone thickness
theta = shell to cone angle

$$A_{min} = D^2 (P-8t) / 30{,}800 (\tan \text{theta})$$

For tanks T-1, 2, 3, 4 t's range between 0.13 and 0.14. As 8t is small relative to P, approximate 8t =1 so that A_{min} becomes a constant.

$A_{min} = (12)^2 \text{ X } ((16 \text{ X } 12) - 1) / 30{,}800 \text{ X } 1.732 = 0.516$ sq. in.

$A = (D_{inner} - D_{outer}) \text{ X tank circumference}$

The difference between the inner and outer diameters can be approximated as the height of the triangle formed by the weld at the juncture formed where the shell meets the cone. See API 650, Figure F-2, Detail d.

Of the four cone bottomed tanks, least average thickness' are 0.1 for sidewall and 0.115 for cone.

$$h = ((b/2)^2 + c^2)^{1/2}$$

$$h = (0.0033 + 0.01)^{1/2} = 0.115 \text{ in}$$

Circumference = Pi X D = 3.14 X 12 X 12 = 452.39 in

A = 452.39 X 0.115 = 52.02 in^2

This is ample, 100:1.

For T-21

$$A_{min} = D^2 (P-8t) / 30{,}800 \text{ (tan theta)}$$

For T-21, t's are about 0.11. As 8t is small relative to P, approximate 8t =1 so that A_{min} becomes a constant.

While T-21 height is 6', use 16' due to the elevation of the incoming pipe.

T-21 has a dished head but use 30 deg. for theta to give a conservative value.

$A_{min} = (3.5)^2$ X ((16 X 12) –1) / 30,800 X 0.577 = 0.131 sq. in.

A = (D_{inner} - D_{outer}) X tank circumference

The difference between the inner and outer diameters can be approximated as the common wall – dish thickness.

t = 0.115 in

Circumference = Pi X D = 3.14 X 6 X 12 = 226.19 in

A = 226.19 X 0.115 = 26.01 in^2

This is ample, 200:1.

Tank Number T-2 2004

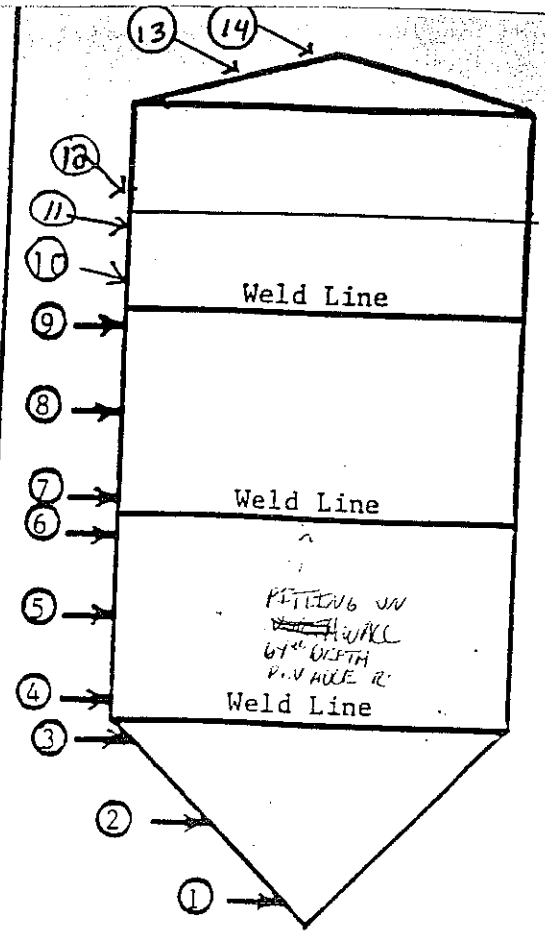
Tank Location TF-#4

Date of Test 9-13-04

Date of Previous Test

Material of Construction S.S.

Tank Contents



TESTING INSTRUCTIONS

Measure the tank wall thickness using an ultrasonic gauge. Measure at three levels on the cone bottom and on the bottom two rings. Measure three (3) inches from each weld line and in the center of the cone and each measured ring. Make four (4) measurements at each level - north, east, south, and west. Record the readings in the table.

Send one copy to corporate engineering. Retain the original in the plant files.

Write the necessary repairs and the remedial action taken in this space.

LEVEL	NORTH	EAST	SOUTH	WEST
1	.132	.138	.138	.137
2	.136	.138	.137	.137
3	.139	.140	.138	.139
4	.110	.108	.105	.106
5	.108	.112	.109	.109
6	.106	.111	.107	.106
7	.106	.106	.106	.108
8	.110	.110	.108	.110
9	.107	.109	.109	.109
10				
11				.074
12				.072
13	.099	.101		
14	.100	.099		

Tank Inspector

Plant Manager

2084

FLAT BOTTOM TANKS

TANK INSPECTION FOR WALL THICKNESS

Tank Number #3

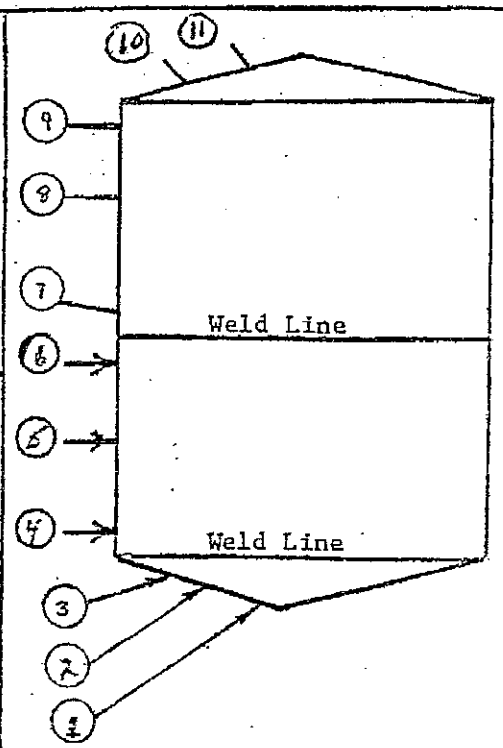
Tank Location TNK FARM #4

Date of Test 9/7/04

Date of Previous Test 11/99

Material of Contruction S/S

Tank Contents HAZ WASTE



TESTING INSTRUCTIONS

Measure the tank wall thickness using an ultrasonic thickners gauge. Measure at three levels on the bottom two rings; three (3) inches from each weld and in the center of the ring. Make four (4) measurements at each level -- north, east, south, and west. Record the readings in the table.

Send one copy to corporate engineering; retain the original in the plant file.

LEVEL	NORTH	EAST	SOUTH	WEST
9				
8				
7				
6				
5	109	109	108	111
4	110	108	107	109
3	145	146	138	144
2	N/A	N/A	N/A	N/A
1	145	146	144	145
10	117	115	112	113
11	113	119	117	115

Write the necessary repairs and the remedial action taken in this space.

Tank Inspector

Plant Manager

1999

CALUMET TESTING SERVICES, INC.
P.O. BOX 1510
HIGHLAND, INDIANA 46322
(219)923-9800 - (312)474-5860

CTS

TANK INSPECTION FOR WALL THICKNESS

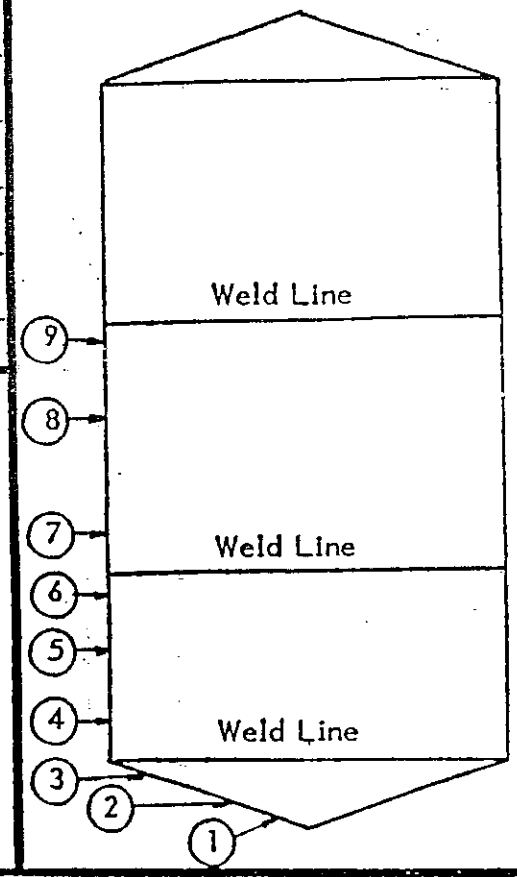
Tank Number T-3

Tank Location SAFETY KLEEN CHICAGO ILL.

Date of Test 11/24/99

Date of Previous Test

Material of Construction STAINLESS



TESTING INSTRUCTIONS

Measure the tank wall thickness using an ultrasonic thickness gauge. Measure at three (3) levels on the bottom two rings; three (3) inches from each weld and in the center of the ring. Make four (4) measurements at each level -- north, east, south, and west. Record the readings in the table.

Send one (1) copy to corporate engineering; retain the original in the plant file.

LEVEL	NORTH	EAST	SOUTH	WEST
9				
8				
7				
6	.122	.121	.124	.126
5	.123	.133	.127	.126
4	.127	.122	.125	.125
3	.148	.150	.146	.150
2	.150	.145	.141	.146
1	.148	.148	.146	.149

Write the necessary repairs and the rem dial action taken in this space.

[illegible]

2004

FLAT BOTTOM TANKS

TANK INSPECTION FOR WALL THICKNESS

Tank Number T-4

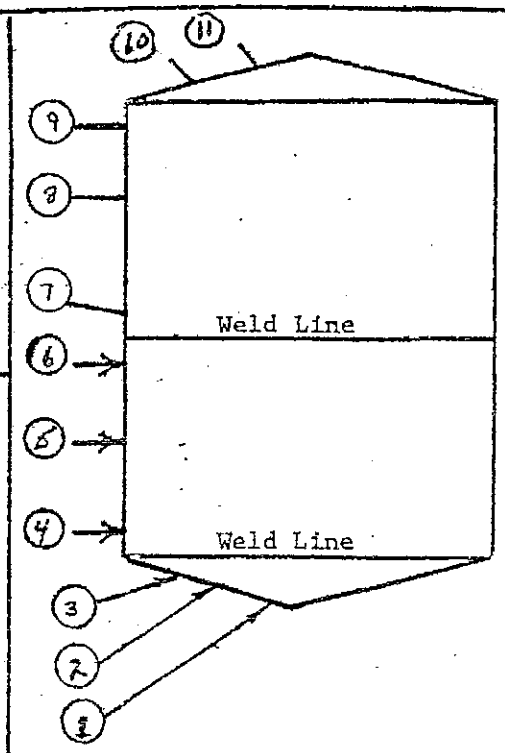
Tank Location TNK FARM #4

Date of Test 9/7/04

Date of Previous Test 11/99

Material of Contruction S/S

Tank Contents HAZ WASTE



TESTING INSTRUCTIONS

Measure the tank wall thickness using an ultrasonic thickners gauge. Measure at three levels on the bottom two rings; three (3) inches from each weld and in the center of the ring. Make four (4) measurements at each level — north, east, south, and west. Record the readings in the table.

Send one copy to corporate engineering; retain the original in the plant file.

LEVEL	NORTH	EAST	SOUTH	WEST
9				
8				
7				
6				
5	115	113	115	116
4	115	118	119	118
3	114	117	115	117
2	122	121	120	123
1	123	122	121	124
10	124	115	116	117
11	121	117	120	118

Write the necessary repairs and the remedial action taken in this space.

Tank Inspector

Plant Manager

TANK INSPECTION FOR WALL THICKNESS 1999 CONE BOTTOM TAN

Tank Number T4

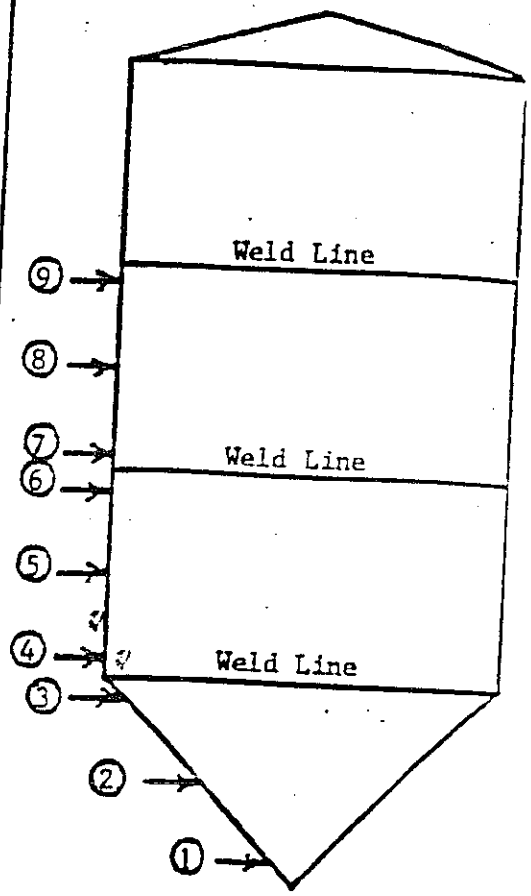
Tank Location SAFETY KLEEN CHICAGO ILL.

Date of Test 11/4/99

Date of Previous Test

Material of Construction STAINLESS

Tank Contents HAZARDOUS WASTE

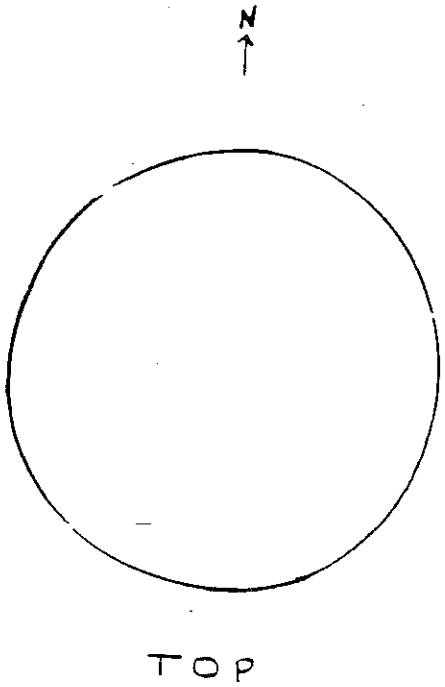


TESTING INSTRUCTIONS

Measure the tank wall thickness using an ultrasonic gauge. Measure at three levels on the cone bottom and on the bottom two rings. Measure three (3) inches from each weld line and in the center of the cone and each measured ring. Make four (4) measurements at each level - north, east, south, and west. Record the readings in the table.

Send one copy to corporate engineering. Retain the original in the plant files.

Write the necessary repairs and the remedial action taken in this space.



LEVEL	NORTH	EAST	SOUTH	WEST
9				
8				
7				
6	.157	.157	.155	.159
5	.159	.157	.156	.157
4	.159	.158	.157	.155
3	.189	.187	.188	.187
2	.184	.187	.183	.182
1	.188	.186	.186	.188

J-004

NK INSPECTION FOR WALL THICKNESS 9 CONE BOTTOM TANKS

ar' Number T-1

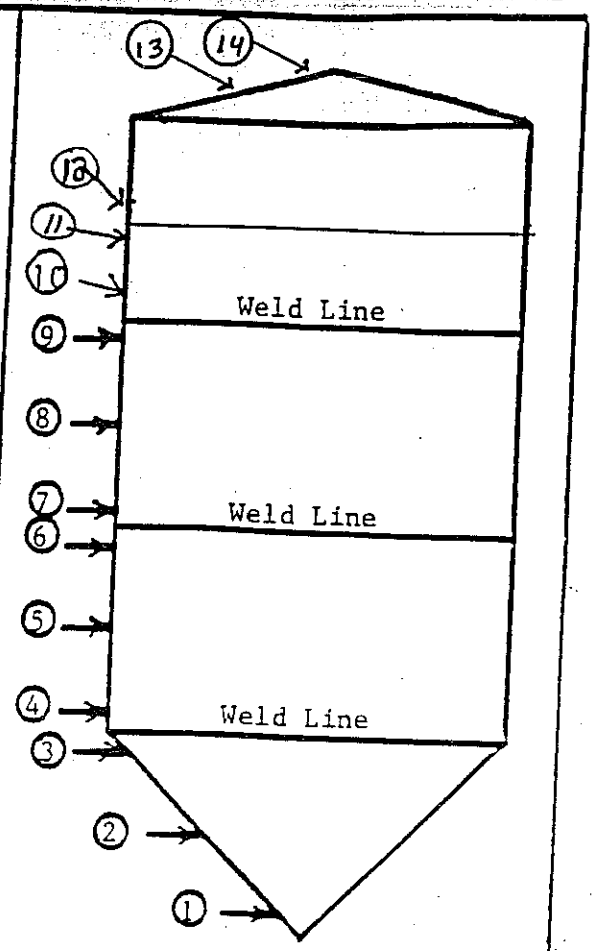
a. ocation TF-#4

ate of Test 9/13/04

ate of Previous Test

aterial of Construction S.S.

ank Contents



STING INSTRUCTIONS

asure the tank wall thickness using an ultrasonic uge. Measure at three levels on the cone bottom d on the bottom two rings. Measure three (3) in-es from each weld line and in the center of the ne and each measured ring. Make four (4) measure-its at each level - north, east, south, and west. cord the readings in the table.

d one copy to corporate engineering. Retain the ginal in the plant files.

te the necessary repairs and the reme-l action taken in this space.

LEVEL	NORTH	EAST	SOUTH	WEST
1	.134	.136	.134	.139
2	.132	.133	.133	.137
3	.134	.136	.133	.136
4	.099	.098	.105	.099
5	.098	.093	.098	.100
6	.102	.098	.097	.102
7	.104	.095	.099	.097
8	.104	.098	.096	.099
9				
10				
11				
12			.071	.113
13	.100	.104		
14	.098	.099		

1999

CALUMET TESTING SERVICES, INC.
P.O. BOX 1510
HIGHLAND, INDIANA 46322
(219)923-9800 - (312)474-5860

CTS

TANK INSPECTION FOR WALL THICKNESS

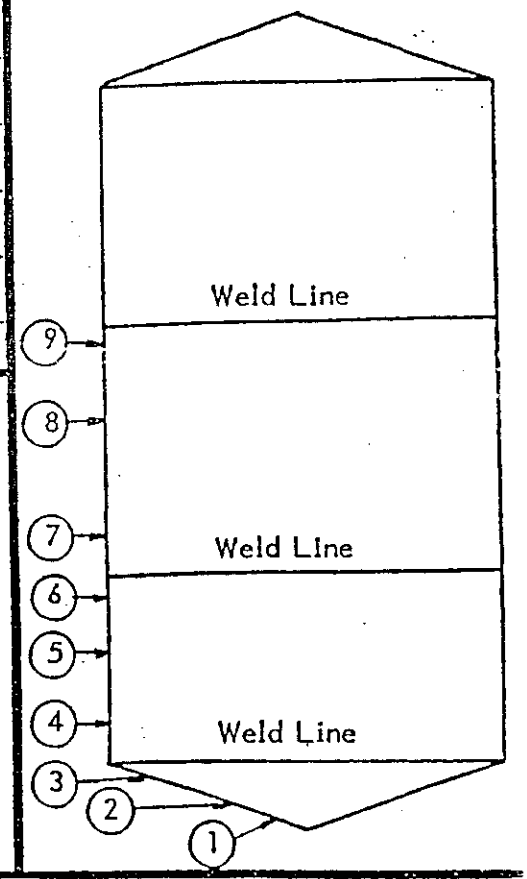
Tank Number T1

Tank Location SAFETY KLEEN CHICAGO ILL.

Date of Test 11/24/99

Date of Previous Test

Material of Construction STAINLESS



TESTING INSTRUCTIONS

Measure the tank wall thickness using an ultrasonic thickness gauge. Measure at three (3) levels on the bottom two rings; three (3) inches from each weld and in the center of the ring. Make four (4) measurements at each level -- north, east, south, and west. Record the readings in the table.

Send one (1) copy to corporate engineering; retain the original in the plant file.

LEVEL	NORTH	EAST	SOUTH	WEST
9				
8				
7				
6	.124	.129	.128	.125
5	.123	.123	.130	.129
4	.127	.121	.125	.133
3	.150	.151	.151	.153
2	.147	.148	.147	.148
1	.151	.149	.152	.150

Write the necessary repairs and the rem dial action taken in this space.

FUHRE/BKOZUR

2004

FLAT BOTTOM TANKS

TANK INSPECTION FOR WALL THICKNESS

Tank Number T-21

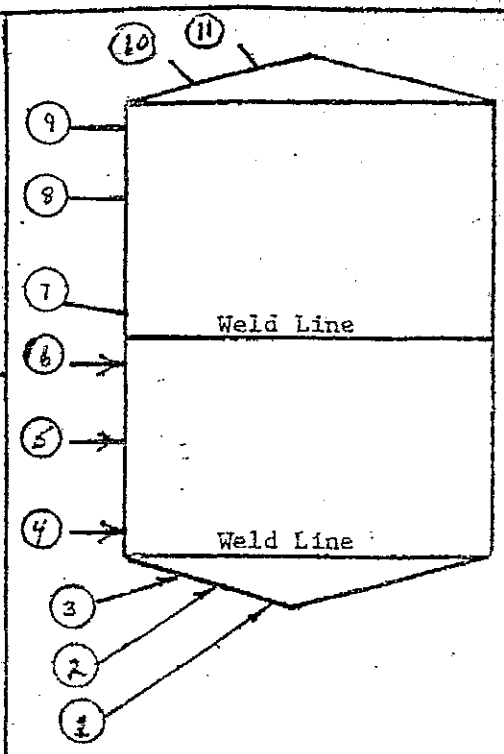
Tank Location TNK FARM #4

Date of Test 9/7/04

Date of Previous Test 11/99

Material of Contruction S/S

Tank Contents HAZ WASTE



TESTING INSTRUCTIONS

Measure the tank wall thickness using an ultrasonic thickners gauge. Measure at three levels on the bottom two rings; three (3) inches from each weld and in the center of the ring. Make four (4) measurements at each level -- north, east, south, and west. Record the readings in the table.

Send one copy to corporate engineering; retain the original in the plant file.

LEVEL	NORTH	EAST	SOUTH	WEST
9				
8				
7	117	114	115	111
6				
5	110	108	110	112
4	113	112	114	115
3				
2	111	112	110	109
1	112	114	116	112
10	114	113	115	112
11	112	115	113	114

Write the necessary repairs and the remedial action taken in this space.

Tank Inspector

Plant Manager

TANK INSPECTION FOR WALL THICKNESS 1999 CONE BOTTOM TAN

Tank Number T2

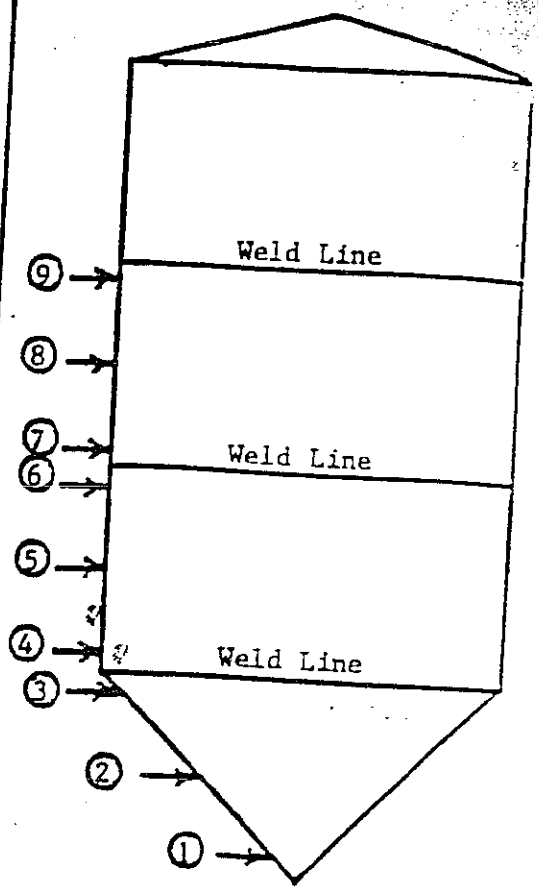
Tank Location SAFETY KLEEN CHICAGO ILL.

Date of Test 11/4/99

Date of Previous Test

Material of Construction STAINLESS

Tank Contents HAZARDOUS WASTE

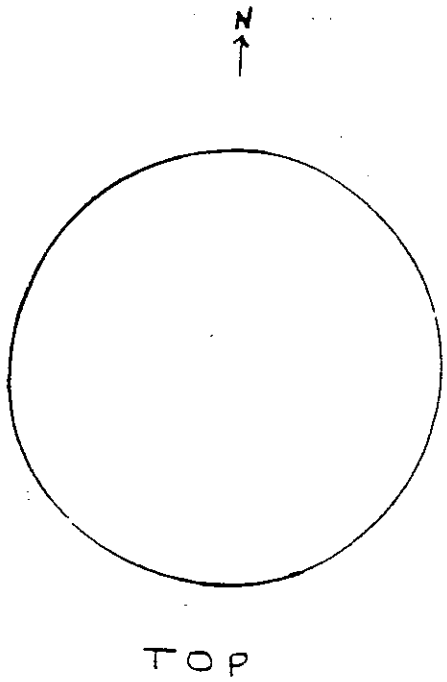


TESTING INSTRUCTIONS

Measure the tank wall thickness using an ultrasonic gauge. Measure at three levels on the cone bottom and on the bottom two rings. Measure three (3) inches from each weld line and in the center of the cone and each measured ring. Make four (4) measurements at each level - north, east, south, and west. Record the readings in the table.

Send one copy to corporate engineering. Retain the original in the plant files.

Write the necessary repairs and the remedial action taken in this space.



LEVEL	NORTH	EAST	SOUTH	WEST
9				
8				
7				
6	.186	.181	.184	.182
5	.187	.187	.183	.184
4	.186	.186	.187	.188
3	.189	.188	.188	.187
2	.184	.183	.186	.184
1	.185	.187	.183	.182

TANK INSPECTION FOR WALL THICKNESS 1999 CONE BOTTOM TAN

Tank Number T-21

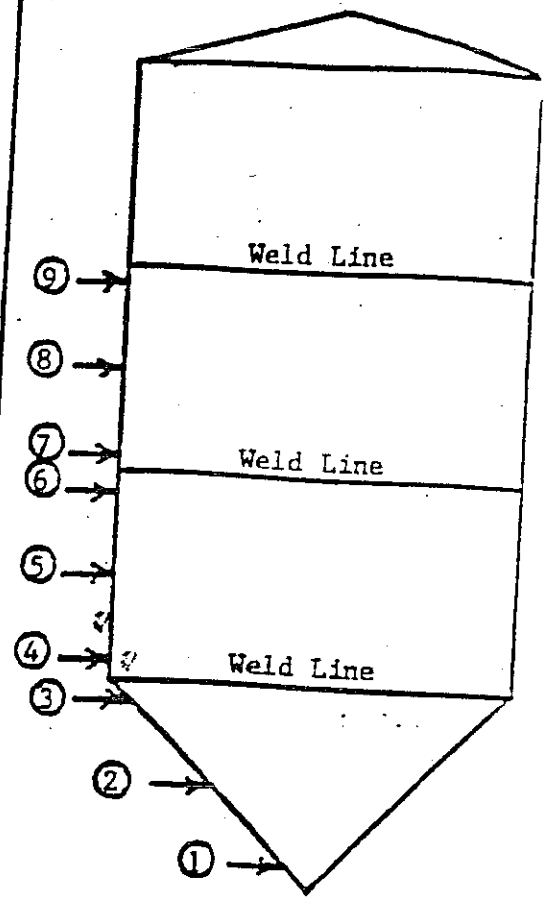
Tank Location SAFETY KLEEN CHICAGO ILL

Date of Test 10/21/99

Date of Previous Test

Material of Construction STAINLESS

Tank Contents HAZARDOUS WASTE

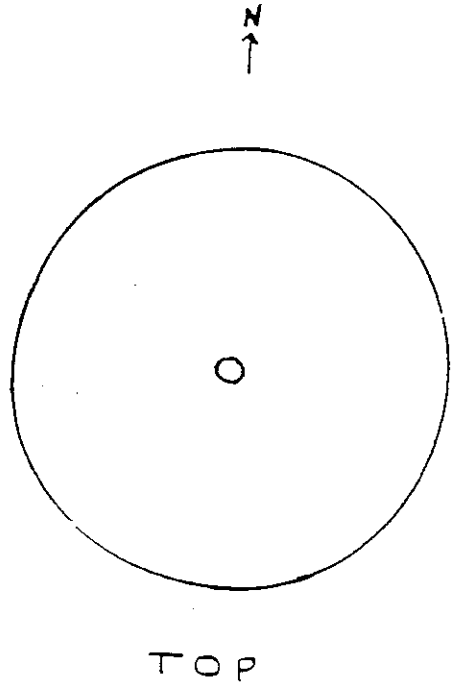


TESTING INSTRUCTIONS

Measure the tank wall thickness using an ultrasonic gauge. Measure at three levels on the cone bottom and on the bottom two rings. Measure three (3) inches from each weld line and in the center of the cone and each measured ring. Make four (4) measurements at each level - north, east, south, and west. Record the readings in the table.

Send one copy to corporate engineering. Retain the original in the plant files.

Write the necessary repairs and the remedial action taken in this space.



LEVEL	NORTH	EAST	SOUTH	WEST
9				
8				
7				
6	.105	.104	.107	.106
5	.102	.107	.106	.105
4	.106	.102	.108	.107
3	.104	.105	.101	.103
2	.103	.100	.102	.101
1	.101	.104	.101	.100

VIA CERTIFIED MAIL
 # 7000 1530 0002 4027 6021

safety-kleen®

Jim B.

December 10, 2003

Mr. Mark Schollenberger
Illinois Environmental Protection Agency
Bureau of Land
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Re: Safety-Kleen Systems, Inc. Chicago Recycle Center
Tank inspections
ILD 005450697, Permit # 0316000053 - Cook

Dear Mr Schollenberger:

On October 29, 2003, Jim Bishop, P.E. and the inspection firm Calumet Testing Services, Inc. completed visual internal and external tank inspections on sixteen (16) hazardous waste storage tanks according to our schedule and the requirements of our part-B operating permit. In addition, tank thickness measurements were made using ultrasonic testing equipment. The work performed was done with the intent of certifying each tank for hazardous waste service.

Three of the tanks, T-178, T-194, and T-195 were initially found to have major pitting and or weld cracks. These tanks were immediately taken out of service and repaired, and were re-inspected. The repairs were successful and the tanks were placed back into hazardous waste service. The repair and inspection results are included in the report. The inspection results and report dated December 5, 2003 from Mr. Bishop are enclosed.

If you have any questions or require additional information, please contact me at (773) 247-2828.

Sincerely,

Alfred Aghapour
Facility Manager

Enclosures

cc: Karl E. Bremer, USEPA (Letter Only)
Maren Prasad, Chicago D.O.E. (Letter Only)
file: IEPA 2003 tank inspections

SAFETY-KLEEN CORP.
1445 WEST 42ND STREET CHICAGO, IL 60609 (773) 247-2828 FAX (773) 650-1466

D.1.4.

RCRA FACILITY ASSESSMENT

Safety-Kleen Corp. - Chicago Recycle Center
Cook County
Chicago, Illinois

USEPA ID No. ILD005450697
IEPA ID No. 0316000053

Donna J. Czech
Illinois Environmental Protection Agency
Division of Land Pollution Control
Field Operations Section

TABLE OF CONTENTS

RECEIVED
- 8 MAR 1990
IEPA/DLPC

LIST OF FIGURES

I. EXECUTIVE SUMMARY

Safety-Kleen Corp. Chicago Recycle Center is a solvent recovery facility which recycles spent solvents and solvent mixtures for industrial and commercial customers. Process operations include distillation, liquid-liquid extraction, fractionation, and neutralization. Waste operations include the processing of hazardous and non-hazardous wastes. For a complete list of hazardous waste codes, see Table III-1.

Based on the information acquired during the Preliminary Review, a tentative list of SWMUs was compiled. The SWMUs included a container storage area, tank farms, truck load/unload stations and process units which manage hazardous wastes. As a result of the Visual Site Inspection, some additional SWMUs were identified, and some tentative SWMUs were eliminated. In addition, spill information from Illinois EPA Land Division files as well as from Safety-Kleen's Part B permit application, increased the number of areas of concern.

Table I-1 presents the final list of SWMUs identified as a result of the Preliminary Review, Visual Site Inspection and supplemental information from the facility. This list includes 102 SWMUs whose locations are shown in Attachment A. Each SWMU is described in Section IV of this report. Descriptions of the areas of concern (AOC) and a map showing the documented spills is shown in Attachment B. Based on a review of the information acquired and summarized for this site, the following generalizations can be made:

- Soil sampling is recommended just north of Container Storage Area #1 (SWMU No. 4). SWMU #4 will be addressed in the Part B permit as a regulated unit.

- No further action is recommended for the truck stations (SWMU Nos. 1-3), Tank #199 (SWMU No. 5), tank farms (SWMU Nos. 6-83), Tanks PCT #3 and PCT #4 (SWMU Nos. 84-85), distillation unit (SWMU No. 86), liquid-liquid extraction units (SWMU Nos. 87-89), fractionation units (SWMU Nos. 90-95), neutralization unit (SWMU No. 96), satellite container accumulation areas (SWMU Nos. 97-100), and laboratory waste containers (SWMU Nos. 101-102).

- The primary concern regarding a source of contamination at the facility which may have impacted soil and groundwater is the area south of Tank Farm #3 and Tank Farm #4. Documented spills have occurred in this area as well as the storage of open drums containing waste material mixed with rain water.

  This report summarizes information acquired during the Preliminary Review and Visual Site Inspection concerning SWMUs and the release potential for hazardous constituents from these units. Following this section, the report has an Introduction (Section II), a General Description (Section III), which includes descriptions of the facility process and waste management operations, and environmental setting; Descriptions of Solid Waste Management Units (Section IV); a Summary of Suggested Further Actions (Section V); and a List of the References used (Section VI). A SWMU Location Map, Areas of Concern and the associated map, Analytical Data, VSI Photograph Log, Field Log Book and VSI Summary are provided as Attachments.

Table I-1

LIST OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN

SAFETY-KLEEN CORP. CHICAGO RECYCLE CENTER
CHICAGO, ILLINOIS

Truck Stations

SWMU No. 1 Truck Station #1
SWMU No. 2 Truck Station #2
SWMU No. 3 Truck Station #3

Container Storage Areas

SWMU No. 4 Container Storage Area #1

Storage Tanks

SWMU No. 5 Tank #199
SWMU Nos. 6-18 Tank Farm #1
SWMU Nos. 19-29 Tank Farm #2
SWMU Nos. 30-35 Tank Farm #3
SWMU Nos. 36-56 Tank Farm #4
SWMU Nos. 57-83 Tank Farm #5
SWMU Nos. 84-85 Tanks PCT #3 and PCT #4

Process Units

SWMU No. 86 Distillation Unit L1
SWMU Nos. 87-89 Liquid-Liquid Extraction Units E1-E3
SWMU Nos. 90-95 Fractionation Units F1-F6
SWMU No. 96 Neutralization Unit

Container Accumulation Areas

SWMU Nos. 97-100 Satellite Accumulation Areas C1-C4

Miscellaneous

SWMU Nos. 101-102 Laboratory Waste Containers

II. INTRODUCTION

This report presents the results of the Preliminary Review/Visual Site Inspection (PR/VSI) phases of a RCRA Facility Assessment (RFA) of the Safety-Kleen Corp. - Chicago Recycle Center (Safety-Kleen CRC) facility located in Chicago, Illinois, in Cook County and listed under USEPA I.D. No. ILD005450697.

The Preliminary Review (PR) of existing file material for Safety-Kleen CRC was conducted to identify the need for additional information and to provide focus for activities to be conducted during the Visual Site Inspection (VSI). The VSI of the facility was conducted on January 19, 1990 as part of the RFA. The objectives of the RFA of the Safety-Kleen CRC facility are to:

1. Identify all solid waste management units (SWMUs) and other areas of concern (AOCs) which are located at the facility.

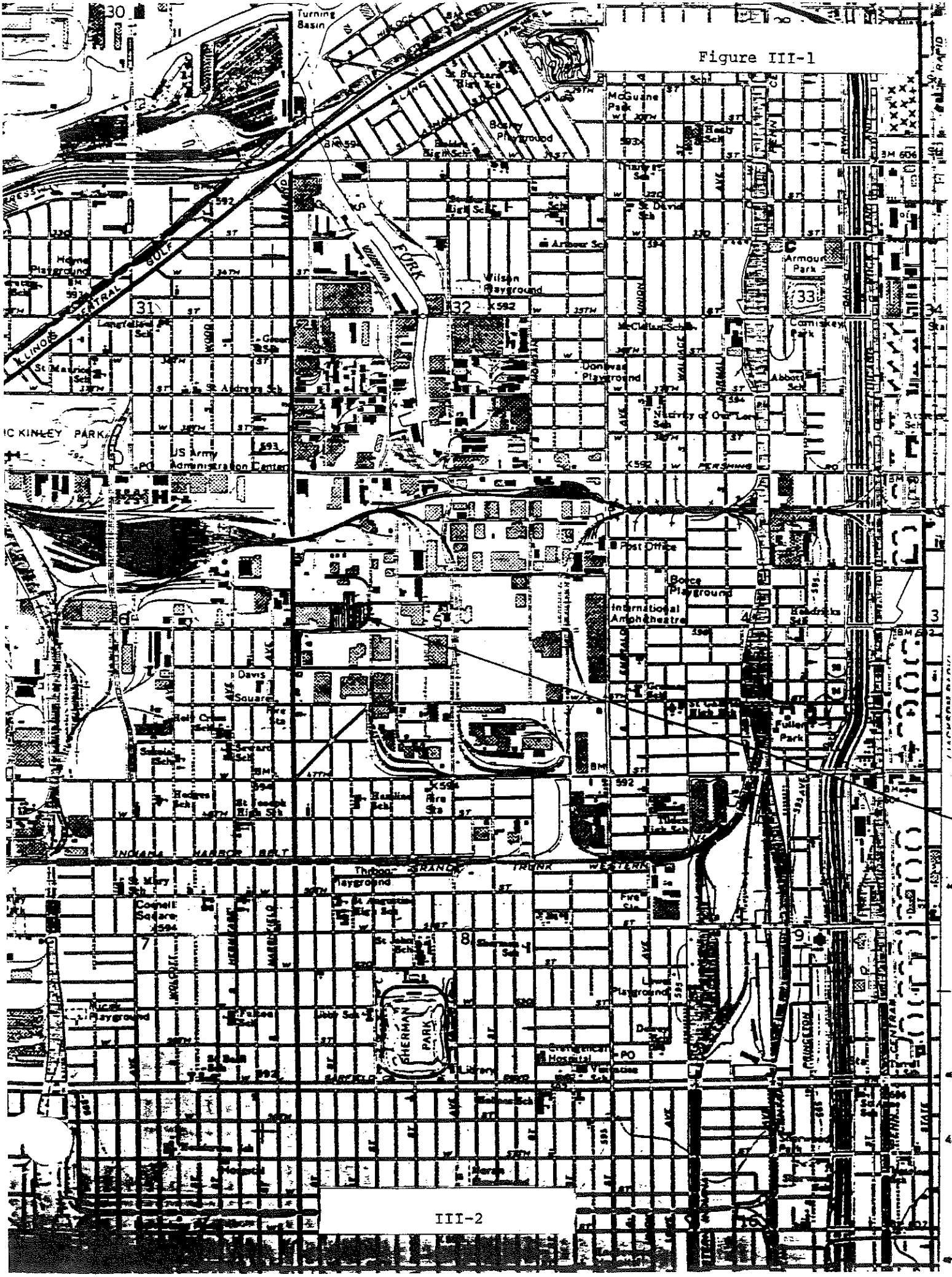
2. Use information obtained from the file review and VSI to assess the potential for release of hazardous waste or hazardous constituents from each SWMU and AOC.

3. For each SWMU and AOC determine what further measures, if any, should be taken to safeguard human health and the environment from a release (if those measures have not already been taken or are underway).

4. Obtain a thorough understanding of the past and present process and waste management operations at Safety-Kleen CRC.

The information used in preparing this report was compiled from the facility's Part B Permit Application, and information obtained from USEPA Region V files, and IEPA Land, Water, and Air Division files. Information was also obtained from the Illinois State Water Survey, IEPA Public Water Supplies, and the Illinois State Geological Survey. In addition, facility representatives provided information during the VSI. A list of the references used is provided in Section VI.

Figure III-1


Turning Basin
S. FORK
Wilson Playground
Armour Park
McGuane Park
Bailey Playground
Donlevy Playground
Post Office
Bocce Playground
International Amphitheatre
Davis Square
Fuller Park
Thibodo Playground
Cornell Square
SHERMAN PARK
US Army Administration Center
McKINLEY PARK
INDIANA HARBOR BELT
GRAND TRUNK WESTERN
ILLINOIS CENTRAL GULF

III. GENERAL DESCRIPTION

A. FACILITY DESCRIPTION

The Safety-Kleen Corp. - Chicago Recycle Center facility is located within the city limits of Chicago, Cook County, Illinois, between 42nd Street and 43rd Street approximately 1,000 feet east of Ashland Avenue. The address of the Chicago Recycle Center is

Safety-Kleen Corp. - Chicago Recycle Center
1445 West 42nd Street
Chicago, Illinois 60609

The facility is situated on six contiguous surveyed parcels comprising approximately eight acres of land. A USGS map showing the location of the facility is included as Figure III-1.

The present Chicago Recycle Center was constructed by Custom Organics, Inc. who operated the facility from 1969 until 1985, when Custom Organics, Inc. was acquired by Safety-Kleen. Custom Organics received spent waste streams from off-site chemical plants. These spent streams were separated and purified on-site after which they were returned to the original plant to be used interchangeably with virgin chemicals. The Chicago Recycle Center and land parcels are owned by Safety-Kleen Corp., headquartered in Elgin, Illinois.

B. PROCESS DESCRIPTION

The Chicago Recycle Center receives used solvents, solvent mixtures, and other solvent-containing liquid and solid wastes from Safety-Kleen service centers, other Safety-Kleen recycle centers, and from industrial and commercial customers. Some of the wastes accepted include organic acids, chlorinated and fluorinated hydrocarbons, amines, alcohols, aliphatic and aromatic compounds, waste oils, and paint wastes. Industries served by the Chicago recycle center include chemical manufacturers, automobile, appliance, and electronics manufacturers, foundries, metal fabrication shops, maintenance shops, and aircraft manufacturers in Illinois and other states. Wastes are received in containers and in bulk shipments by tank trailer. Used solvents, solvent mixtures, and other solvent-containing wastes are recovered by a combination of processes including neutralization, distillation, fractionation, liquid-liquid extraction and drying. Recovered products are either returned to the Safety-Kleen toll customers or marketed as recovered solvent.

1. Container Storage and Handling Operations

When a shipment of containers is accepted at the facility, it is unloaded from the truck trailer using a lift truck. Containers are spread out in the dock staging area so that individual containers can be inspected and sampled. After the containers are counted to ensure agreement with the manifest, they are inspected for structural integrity and later sampled to confirm that the wastes are suited for storage and processing at the Chicago Recycle Center.

There are three liquid-liquid extraction units at the Chicago Recycle Center, designated E1, E2 and E3. The facility also operates an ion-exchange resin bed dryer which dehydrates fluorinated and chlorinated compounds and other waste or product materials as required. A waste solvent feedstock's level of contamination, solids content, water content, and overall quality will dictate the specific process units and the number of unit passes to be used in a processing train in order to produce clean product material.

C. WASTE MANAGEMENT OPERATIONS

1. Wastes Received From Off-Site Facilities

The Chicago Recycle Center specializes in the recovery and recycling of spent solvents and associated wastes and, therefore, the facility accepts a wide variety of spent solvent waste streams. For a complete list of spent solvents received by Safety-Kleen CRC see Table III-1. These waste streams are designated as hazardous by the USEPA due to their ignitability and/or toxicity. In addition, the facility accepts non-hazardous waste streams for processing on-site. The waste streams most frequently handled at the Chicago Recycle Center are discussed below.

The primary solvent handled by Safety-Kleen Corp. is mineral spirits, or petroleum naphtha. This material is hazardous because it exhibits the characteristic of ignitability and is designated D001. The Chicago Recycle Center does not typically receive this waste stream, as it is handled primarily by other Safety-Kleen facilities.

Safety-Kleen also markets a chlorinated solvent blend for its parts washer service. Labeled under the trade name "Immersion Clean" and "Carburetor and Cold Parts Cleaner #609", it is a two-phase system consisting of an upper aqueous (water) phase and a lower non-aqueous (solvent) phase. The water phase consists of water and inhibitors. The solvent phase is composed of methylene chloride, orthodichlorobenzene, cresylic acid, and an amine additive. The constituents of this used solvent are designated F002 and F004. The Chicago Recycle Center does not typically receive this waste stream, as it is handled primarily by other Safety-Kleen facilities.

Dry cleaning solvent wastes are also accepted by the recycle center and processed to recover the solvent content. This solvent is usually perchloroethylene (tetrachloroethylene), but occasionally mineral spirits is used as a solvent by dry cleaners. Perchloroethylene is designated F002, and mineral spirits, as noted above is designated D001. The Chicago Recycle Center does not typically receive this waste stream, as it is handled primarily by other Safety-Kleen facilities.

Another waste stream handled by the Chicago Recycle Center is paint solvent waste and waste lacquer thinner. This waste is generated from the cleaning of painting guns and other equipment. These materials contain a combination of non-halogenated solvents. These solvents, when listed, are designated F003 and F005; if not listed, they are designated D001.

After the waste analyses have been completed, the containers are moved to a designated area assigned by laboratory personnel in conjunction with facility management. The containers of waste are stored until subsequent emptying into the process units or into a storage tank. Containers are transported within the facility via lift trucks.

Containers of waste to be processed through the facility's recycling units are emptied by one of several procedures, depending on the characteristics of the waste material. Liquid waste materials in containers are transferred into waste storage tanks using pumps. Pumpable containerized wastes are pumped to bulk inventory, generally a tanker truck, before being pumped to waste storage tanks in a tank farm. Wastes that are not pumpable are currently poured from open drums into bulk inventory.

2. Tank Storage Operations

The storage tanks at the Chicago Recycle Center are used for several purposes including product storage, in-process materials storage, hazardous waste storage, and wastewater storage. When a tanker loaded with waste is accepted at the facility, the manifest is examined and the contents of the tanker are sampled to ensure that the wastes are suited for storage and processing at the Chicago Recycle Center. Bulk shipments of wastes are accepted for processing through the solvent recovery and recycling operations and for transfer to other Safety-Kleen facilities or to Safety-Kleen customers.

After the waste analyses have been completed, wastes in an incoming tanker are pumped to a storage tank designated by laboratory personnel in conjunction with facility management. Occasionally, the contents of a tanker may be transferred directly to the process units. Material is transferred into and out of tanks using pumps. Tanks are usually filled at the top and emptied from the bottom, although some cone-bottom tanks have a second fitting near the bottom of the straight side which can also be used for filling and emptying. Occasionally, materials may be circulated in and out of certain tanks to promote mixing, which can improve the homogeneity of the material.

3. Solvent Recovery and Recycling Operations

The Chicago Recycle Center receives waste materials in bulk shipments and in containers from off-site industrial and commercial facilities for processing and recovery of clean material. The Chicago Recycle Center has two types of customers. For its toll waste customers, Safety-Kleen receives waste solvents from industrial and commercial users, processes the waste to recover product material, and then returns the product to the customers. For its solvent reclamation customers, Safety-Kleen receives and processes waste solvent materials from industrial users, but sells the recovered product on the market rather than returning it to the original generator.

There is one simple distillation unit at the Chicago Recycle Center. This unit is the LUWA thin film evaporator and is designated L1. The facility has six fractionation units. The columns on these units are multiple-stage fractionation columns and are designated F1 through F6. Batch neutralization of some acidic wastes is done in tanks and other process equipment. A neutralization unit is used for in-line neutralization.

Other wastes resulting from the use of organic solvents are also handled at the Chicago Recycle Center. These include the solids and sludges that settle out of a used solvent during handling and processing. Lint, paper, and oils settle or separate out of spent dry cleaning solvent. Oils, greases, carbons and metals settle out of solvents used in metal parts cleaning and degreasing. In addition to other waste codes, these wastes may exhibit the characteristic of EP Toxicity and may be designated D008 (Lead), for example.

Spent industrial solvent wastes received at the Chicago Recycle Center are classified as characteristic wastes (D-wastes), non-specific source wastes (F-wastes), listed wastes from specific sources (K-wastes), and commercial chemical products, manufacturing intermediates, or off specification commercial chemical products (U-wastes).

The Chicago Recycle Center uses gravity separation, distillation, liquid-liquid extraction, fractionation, and blending to recover and recycle organic solvents and similar materials. Certain components separated by processing, residuals from recycling, and some materials received at the site for storage that are not amenable to processing at the facility are sent off-site for additional processing, re-use, burning for energy recovery, incineration, or disposal.

2. Wastes Generated On-Site

Solid and liquid wastes are generated by the solvent recovery operations at the Chicago Recycle Center. Distillation and fractionation of waste solvents generate still bottoms, which are generally a heavy, oily waste with significant BTU value and which may contain up to 40 percent solids. These wastes are shipped off-site to be processed into industrial furnace fuel. Solid wastes with no significant BTU value or which otherwise cannot be processed into fuel are shipped off-site for incineration.

Liquid-liquid extraction, decanting and drying of aqueous/solvent mixtures and distillation of some wastes with high water content generate wastewater that may contain organic chemicals or metals. Wastewater generated by the Chicago Recycle Center is currently piped to the sanitary sewer system under approval from the Metropolitan Water Reclamation District of Chicago.

Miscellaneous drummed wastes are also generated as a result of several on-site activities such as: 1) drippings into buckets after removal of a hose line 2) cleaning out tanks 3) used oil dry and 4) drums that must be cut open in order to scrape solid residual material from the bottom. Pumpable materials are transferred into the tank which contains still bottoms destined for the fuels program at the Safety-Kleen facility in Dolton, Illinois. Waste materials which cannot be processed at the Dolton facility are shipped to Rollins in Deerpark, Texas for incineration. Drums containing solid residuals are shipped to Safety-Kleen in Dolton to be cut open and scraped clean.

Waste filters are also generated on-site, as they are used to purify hazardous wastes as they are pumped into tanks. These filters are shipped to Rollins in Deerpark, Texas for incineration.

D. ENVIRONMENTAL SETTING

1. Geology

The uppermost soil material at the Chicago Recycle Center facility (which is present over 25-35 percent of the area) is the Carmi Member of Equality Formation. This material consists of largely bedded silt with some fine sand frequently laminated, and containing beds of clay of glacial lakes. This material overlies Wadsworth Till Member of the Wedron Formation, which is mostly gray clayey and silty clay till. This layer extends to a depth of 20 feet or more. Other glacial materials are found beneath this layer. The bedrock is Silurian dolomite and is encountered approximately 50 feet below ground surface.

2. Groundwater

Groundwater in dolomite would tend to migrate eastward toward Lake Michigan. The top of the zone of saturation fluctuates seasonally five to ten feet below ground level (depending on the time of year and the amount of rainfall). Shallow groundwater would flow northward toward the south fork of the South Branch of the Chicago River.

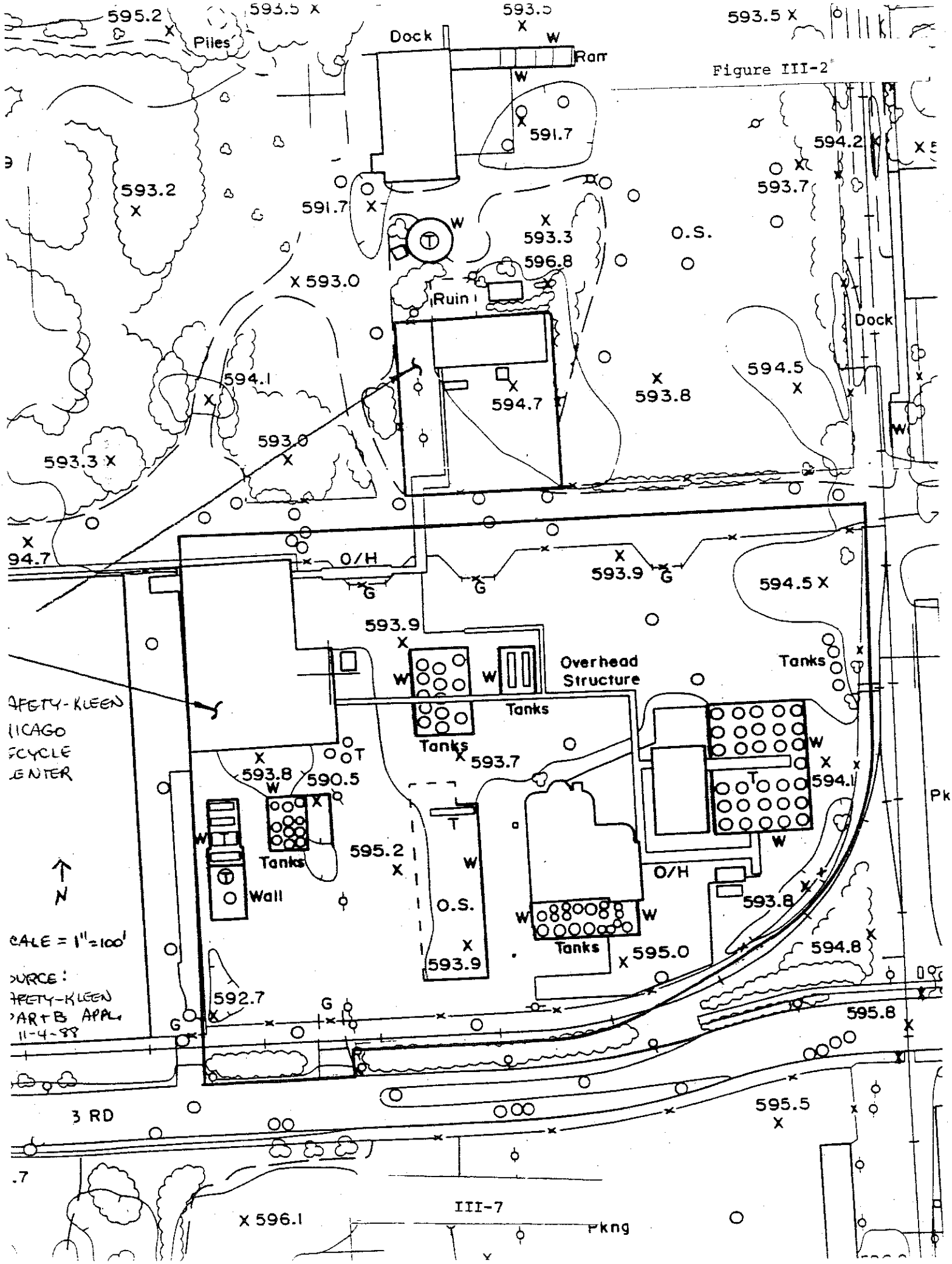
(For groundwater analytical data see Appendix C).

3. Flood Plain and Surface Waters

The Chicago Recycle Center is not located within any 100 year floodplain. This facility does not conduct any on-site disposal of waste and is, therefore, not required to meet floodplain standards for disposal facilities. A topographic map showing the land elevation at the facility is included as Figure III-2.

The nearest surface water to the facility is the South Branch of the Chicago River, which is approximately 1 1/2 - 2 miles north of the facility.

Figure III-2


595.2
593.5
Piles
Dock
593.5
Ramp
593.5
591.7
594.2
593.7
593.2
591.7
593.3
596.8
O.S.
593.0
Ruin
Dock
594.1
594.7
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593.0
593.3
O/H
593.9
594.5
593.9
Overhead Structure
Tanks
Tanks
Tanks
593.7
593.8
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594.1
595.2
Tanks
Wall
O.S.
O/H
593.8
593.9
Tanks
595.0
594.8
592.7
595.8
595.5
3 RD
596.1
Pkng
SAFETY-KLEEN
CHICAGO
RECYCLE
CENTER
SCALE = 1" = 100'
SOURCE:
SAFETY-KLEEN
PART B APPL.
11-4-88
N

Source: Part B Application
Date: November 4, 1988

TABLE III-1

IT SOLVENTS RECEIVED AT THE CHICAGO RECYCLE CENTER

Description

lowing spent halogenated solvents used in degreasing:
loroethylene, trichloroethylene, methylene chloride,
richloroethane, carbon tetrachloride, chlorinated
arbons, spent solvent mixtures/blends used in
ing, and still bottoms from the recovery of these
olvents and spent solvent mixtures.

lowing spent halogenated solvents: tetrachloro-
e, methylene chloride, trichloroethylene, 1,1,1-
roethane, chlorobenzene, 1,1,2-trichloro-1,2,2-
roethane, orthodichlorobenzene, trichlorofluoro-
, 1,1,2-trichloroethane, spent solvent mixtures and
and the still bottoms from the recovery of these
olvents and spent solvent mixtures.

lowing spent non-halogenated solvents: xylene,
, ethyl acetate, ethyl benzene, ethyl ether, methyl
l ketone, n-butyl alcohol, cyclohexanone, methanol,
olvent mixtures and blends, and the still bottoms from
overy of these spent solvents and spent solvent
s.

lowing spent non-halogenated solvents: cresols and
acid, nitrobenzene, spent solvent mixtures and
and still bottoms from the recovery of these spent
and spent solvent mixtures.

owing spent non-halogenated solvents: toluene,
thyl ketone, carbon disulfide, isobutanol, pyridine,
2-ethoxyethanol, 2-nitropropane, spent solvent
and blends, and the still bottoms from the recovery
spent solvents and spent solvent mixtures.

ste that exhibits the characteristic of ignitability,
ot listed as a hazardous waste.

ste that exhibits the characteristic of corrosivity,
ot listed as a hazardous waste.

ste exhibiting the characteristic of EP toxicity for
t 100 mg/l or more.

TABLE III-1
(Continued)

CATEGORIES OF SPENT SOLVENTS RECEIVED AT THE CHICAGO RECYCLE CENTER

Waste No.	Description
D006	Solid waste exhibiting the characteristic of EP toxicity for cadmium at 1.0 mg/l or more.
D007	Solid waste exhibiting the characteristic of EP toxicity for chromium at 5.0 mg/l or more.
D008	Solid waste exhibiting the characteristic of EP toxicity for lead at 5.0 mg/l or more.
D009	Solid waste exhibiting the characteristic of EP toxicity for mercury at 0.2 mg/l or more.
K022	Distillation bottom tars from the production of phenol/acetone from cumene.
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane.
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.
K048	Dissolved air flotation float from the petroleum refining industry.
K049	Slop oil emulsion solids from the petroleum refining industry.
K052	Tank bottoms (leaded) from the petroleum refining industry.
K085	Distillation or fractionation column bottoms from the production of chlorobenzene.
K086	Solvent washes and sludges, caustic washes and sludges or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps and stabilizers containing chromium and lead.
K095	Distillation bottoms from the production of 1,1,1-trichloroethane.
K096	Heavy ends from the heavy ends column from the production of trichloroethane.

TABLE III-1
(Continued)

CATEGORIES OF SPENT SOLVENTS RECEIVED AT THE CHICAGO RECYCLE CENTER

Waste No.	Description
U001	Acetaldehyde
U002	Acetone
U003	Acetonitrile
U009	Acrylonitrile
U019	Benzene
U031	1-Butanol
U037	Chlorobenzene
U043	Ethane, chloro-
U044	Chloroform
U051	Creosote
U052	Cresols
U055	Cumene
U056	Cyclohexane
U057	Cyclohexanone
U068	Methane, dibromo-
U069	Dibutyl phthalate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U075	Dichlorodifluoromethane
U077	Ethane, 1,2-dichloro-
U078	1,1-Dichloroethylene
U079	1,2-Dichloroethylene
U080	Methylene Chloride
U083	1,2-Dichloropropane
U084	1,3-Dichloropropene
U107	Di-n-octyl phthalate
U108	1,4-Dioxane
U110	Dipropylamine
U112	Ethyl acetate
U113	Ethyl acrylate
U117	Ethyl ether
U118	Ethyl methacrylate
U121	Trichloromonofluoromethane
U124	Furan
U125	Furfural
U140	Isobutyl alcohol
U154	Methanol
U159	Methyl ethyl ketone
U161	Methyl isobutyl ketone

TABLE III-1
(Continued)

CATEGORIES OF SPENT SOLVENTS RECEIVED AT THE CHICAGO RECYCLE CENTER

Waste No.	Description
U162	Methyl methacrylate
U165	Naphthalene
U169	Nitrobenzene
U171	2-Nitropropane
U188	Phenol
U191	2-Picoline
U196	Pyridine
U210	Tetrachloroethylene
U211	Methane, tetrachloro-
U213	Tetrahydrofuran
U220	Toluene
U226	1,1,1-Trichloroethane
U227	1,1,2-Trichloroethane
U228	Trichloroethylene
U239	Xylene
U359	2-Ethoxyethanol

IV. SOLID WASTE MANAGEMENT UNIT DESCRIPTIONS AND RELEASE ASSESSMENTS

This section presents detailed descriptions and release assessments of each solid waste management unit identified during the PR and VSI. The descriptions include unit functional and physical descriptions, dates of operation, waste managed and release controls. The release assessments include history of releases and conclusions regarding the release potential to soil/groundwater, surface water, air, and regarding the potential to generate subsurface gas.

Any of the wastes listed in Table III-1 could conceivably be managed in any of the storage or process units described as SWMUs in this report. The method of storage and processing to be used for any particular waste stream is determined on an individual basis when the waste is received. Facility representatives could not provide a detailed list of wastes which are handled solely in any particular unit.

Unit No: SWMU No. 1

Unit Name: Truck Station #1 (Photos 20, 21)

Unit Description: The unit is located directly west of Tank Farm #5. The unit is an existing covered dual-tanker load/unload structure on reinforced concrete. The unit is 37 feet wide by 75 feet long with a 16-foot high roll-up door at each end. The entrance ramp slopes toward the center at 4 inches per 6 feet. The remaining pad slope is 1 inch per 8 feet. Wastes are transferred from Truck Station #1 to the main tank farm distribution station via overhead steel pipe. Pumps and flexible hoses associated with Truck Station #1 are located within secondary containment systems. Permanent piping associated with the truck station is of continuous weld construction and the pipe connections are made using welded flanges. The concrete floor, curbs, and walls of Truck Station #1 provide impervious containment for any material involved in a spill or leak from a tanker. The roof over the truck station prevents stormwater from being collected in the secondary containment system, and rain water run-on is prevented by a concrete curb around the truck station. Stormwater from the roof of Truck Station #1 is segregated to prevent contact with any hazardous wastes or contaminated areas. Stormwater from the roof drains of Truck Station #1 is handled as non-contact material and is discharged to the storm sewer.

Age of Unit: This unit has been in operation since 1987.

Date of Closure: This unit is presently active and there is no anticipated date of closure.

Wastes Managed: Hazardous and non-hazardous wastes are managed at this unit.

Release Controls: Secondary containment includes concrete floor, curbs and walls. The roof over the truck station prevents the occurrence of contaminated stormwater run-on and run-off.

History of Releases: There is no documented history or visual evidence of releases associated with this unit.

Conclusions: Soil/Groundwater: The release potential to the soil/groundwater is low due to unit design.

Surface Water: The release potential to surface water is low due to unit design.

Air: The release potential to the air is low as waste is generally contained during the loading/unloading operations.

Subsurface Gas: The potential for the generation of subsurface gas is low due to the unit design.

Unit No:	SWMU Nos. 2 & 3
Unit Name:	Truck Station #2 (Photo 37) Truck Station #3 (Photo 30)
Unit Description:	Truck Station #2 is located immediately west of Tank Farm #1. This truck station is 18.3 feet wide by 100 feet long. Truck Station #3 is located immediately east of Tank Farm #1, and is approximately 25.8 feet wide by 100 feet long. These two truck stations are existing facilities used for the loading and unloading of containers from truck trailers. Each truck station consists of an uncovered, reinforced concrete pull-through ramp and concrete pad. Each truck station is designed to hold two truck trailers during loading or unloading. The truck station concrete pads slope to a center sump at 1 inch per 16 feet, although the entrance ramp slope is steeper for both truck stations. The concrete floor, curbs, and walls of Truck Stations #2 and #3 provide impervious containment for stormwater and for any material involved in a spill or leak from a container located on a truck trailer.
Age of Unit:	These units have been in operation since 1987.
Date of Closure:	These units are presently active and there is no anticipated date of closure.
Wastes Managed:	Hazardous and non-hazardous wastes are managed at these units.
Release Controls:	Secondary containment includes concrete floor, curbs, and walls.
History of Releases:	There is no documented history or visual evidence of releases associated with these units.
Conclusions:	<u>Soil/Groundwater</u>: The release potential to the soil/groundwater is low due to unit design. <u>Surface Water</u>: The release potential to surface water is low due to unit design. <u>Air</u>: The release potential to the air is low as waste is containerized during the loading/unloading operations. <u>Subsurface Gas</u>: The potential for the generation of subsurface gas is low due to the unit design.

Unit No: SWMU No. 4

Unit Name: Container Storage Area #1 (Photos 13,14,15,16)

Unit Description: Container Storage Area #1 is located just west of Process Building #2. The storage area consists of an uncovered, reinforced concrete pad with perimeter curbs. The approximate dimensions of this area are 148.5 feet by 57.5 feet. The perimeter curbs on all four sides of the concrete pad are 6 inches wide and 6 inches high poured reinforced concrete. Tank #199 (SWMU No. 5), a 7,600-gallon horizontal carbon steel waste storage tank, is located in this storage area. The concrete floor of this storage area slopes to a 2-foot wide trench running the entire length of the east side of the storage area. The trench slopes into a 540-gallon cistern. The secondary containment structure provides containment for Tank #199 and the stored containers. The storage capacity of this area is 180,850 gallons, equivalent to 3,150 55-gallon drums plus Tank #199. Containers are stored upright, on pallets or not, depending upon how they are received. Containers are stored in triple-stacked double rows, with at least two-foot aisles between rows to allow access for inspection.

Age of Unit: This unit has been in operation for approximately 7 years.

Date of Closure: This unit is presently active and there is no anticipated date of closure.

Wastes Managed: Hazardous and non-hazardous wastes are stored at this unit.

Release Controls: Secondary containment consists of concrete pad with perimeter curbs.

History of Releases: Safety-Kleen reported a spill of 20 gallons of mineral spirits bottoms oil outside the containment area of this unit (north of T-199) on 7/16/87. (See Pt. B app., Sec. 2). There was no visual evidence of release associated with this unit.

Conclusions: Soil/Groundwater: Past release to the soil north of this unit has been documented. (See History of Releases above). This spill was reportedly due to a break in the transfer line and is not directly associated with SWMU #4.

The release potential from the unit itself to the soil/groundwater is low due to the current unit design and the fact that all wastes managed are containerized.

Surface Water: The release potential to surface water is low due to unit design and all wastes managed are containerized. The nearest body of surface water is 1 1/2-2 miles away.

Air: The release potential to the air is low as all wastes managed are containerized.

Subsurface Gas: The potential for the generation of subsurface gas is low due to the unit design.

Unit No:	SWMU No. 5
Unit Name:	Tank #199 (Photo 12)
Unit Description:	Tank #199 is an existing 7,600-gallon horizontal carbon steel tank located in Container Storage Area #1. Tank #199 may be used to store waste, in-process, or product material as needed. The secondary containment structure of Container Storage Area #1 provides containment for Tank #199. Tank #199 is a RCRA-regulated tank. This tank has been emptied and decontaminated in anticipation of final closure.
Age of Unit:	This tank is approximately 15 years old.
Date of Closure:	This tank is expected to be closed by March 1, 1990.
Wastes Managed:	Hazardous and non-hazardous wastes have been stored in this unit.
Release Controls:	Tank #199 is located in Container Storage Area #1 which provides secondary containment for this tank.
History of Releases:	There is no documented history or visual evidence of releases associated with this unit.
Conclusions:	Soil/Groundwater: The release potential to the soil/groundwater is low as the unit has been emptied of waste material and decontaminated in anticipation of closure. Surface Water: The release potential to the surface water is low as the unit has been emptied of waste material and decontaminated in anticipation of closure. Air: The release potential to the air is low as the unit has been emptied of waste material and decontaminated in anticipation of closure. Subsurface Gas: The potential for the generation of subsurface gas is low as the unit has been emptied of waste material and decontaminated in anticipation of closure.

Unit No: SWMU Nos. 6-18

Unit Name: Tank Farm #1 containing Tanks #102-#114 (Photo 11)

Unit Description: Tank Farm #1 is an existing facility located east of Process Building #1. Tanks #100 and #101 are dedicated exclusively to the storage of product material and are separately contained from Tanks #102-#114. The total storage capacity of the waste tanks in Tank Farm #1 is 158,000 gallons. With the exception of Tanks #100 and #101, the tanks in Tank Farm #1 are used to store hazardous waste and are RCRA regulated units. Tank Farm #1 is constructed of reinforced concrete with perimeter and internal dikes to prevent migration of spillage, leakage, or contaminated stormwater. The existing dikes are constructed of reinforced concrete, and proposed dike upgrades will also be constructed of reinforced concrete. The existing and proposed containment structures will be coated with an impermeable coating compatible with the organic materials handled within the storage and process units. A proposed upgrade to the Tank Farm #1 secondary containment system will add new containment structures to the tank farm. Tanks #105 through #114 in Tank Farm #1 will be separately contained from Tanks #102, #103, and #104.

(See Table IV-1 for a unit description of each storage tank in Tank Farm #1).

Age of Unit: This tank farm has been in operation since 1978-1980.

Date of Closure: Tanks #105 through #114 are presently active but are expected to be closed by March 1, 1990. Tanks #102 through #104 are presently active and there is no anticipated date of closure.

Wastes Managed: Hazardous and non-hazardous wastes are stored in these units.

Release Controls: Secondary containment consists of a reinforced concrete pad with perimeter and internal dikes coated with an impermeable coating.

History of Releases: There is no documented history or visual evidence of releases associated with these units.

Conclusions: Soil/Groundwater: The release potential to the soil/groundwater is low due to unit design.

Surface Water: The release potential to surface water is low due to unit design.

Air: The release potential to the air is moderate to high due to the volatile organic constituents of the wastes managed.

Subsurface Gas: The potential for the generation of subsurface gas is low due to the unit design.

Unit No:	SWMU Nos. 19-29
Unit Name:	Tank Farm #2 containing Tanks #170-#180 (Photo 6)
Unit Description:	Tank Farm #2 is an existing facility located directly south of Process Building #1 and east of existing Tank Farm #3. This tank farm contains 11 stainless steel tanks with a total capacity of 55,030 gallons. Tanks in Tank Farm #2 are used or available to store waste, in-process or product material and, therefore, are RCRA regulated units. Tank Farm #2 is constructed of reinforced concrete with perimeter and internal dikes to prevent migration of spillage, leakage, or contaminated stormwater. The existing dikes will be coated with an impermeable coating compatible with the organic materials handled within the storage and process units. (See Table IV-2 for a unit description of each storage tank in Tank Farm #2).
Age of Unit:	This tank farm has been in operation since 1975.
Date of Closure:	This tank farm is presently active and there is no anticipated date of closure.
Wastes Managed:	Hazardous and non-hazardous wastes are stored in these units.
Release Controls:	Secondary containment consists of a reinforced concrete pad with perimeter and internal dikes coated with an impermeable coating.
History of Releases:	There is no documented history or visual evidence of release from these units.
Conclusions:	Soil/Groundwater: The release potential to the soil/groundwater is low due to unit design. Surface Water: The release potential to surface water is low due to unit design. Air: The release potential to the air is moderate to high due to the volatile organic constituents of the wastes managed. Subsurface Gas: The potential for the generation of subsurface gas is low due to the unit design.

Unit No:	SWMU Nos. 30-35
Unit Name:	Tank Farm #3 containing Tanks #190-#195 (Photo 5)
Unit Description:	Tank Farm #3 is an existing facility located directly south of Process Building #1 and west of Tank Farm #2. The tanks in Tank Farm #3 are currently used to store wastewater prior to discharge, and are scheduled to be removed from service. After the removal of Tank Farm #3, process wastewater will be stored in Tank Farm #5 prior to disposal. These tanks are RCRA regulated units. The total storage capacity for Tank Farm #3 is 73,020 gallons. (See Table IV-3 for a unit description of each storage tank in Tank Farm #3).
Age of Unit:	This tank farm has been in operation since 1970-1971. An extension was added in 1976.
Date of Closure:	This tank farm is presently active and a date of closure has not yet been established.
Wastes Managed:	Hazardous and non-hazardous wastewaters are stored in these units.
Release Controls:	Secondary containment consists of a reinforced concrete pad with perimeter and internal dikes coated with an impermeable coating.
History of Releases:	There is no documented history or visual evidence of release from these units.
Conclusions:	Soil/Groundwater: The release potential to the soil/groundwater is low due to unit design. Surface Water: The release potential to surface water is low due to unit design. Air: The release potential to the air is moderate to high due to the volatile organic constituents of the wastes managed. Subsurface Gas: The potential for the generation of subsurface gas is low due to the unit design.

Unit No: SWMU Nos. 36-56

Unit Name: Tank Farm #4 containing Tanks #1-#6, #11-#23, and PCT #1 and PCT #2 (Photos 17, 18)

Unit Description: Tank Farm #4 is an existing facility located immediately south of Process Building #2. This tank farm contains 19 stainless steel tanks with a total storage capacity of 106,000 gallons, as well as two carbon steel process tanks (PCT #1 and PCT #2). The stainless steel tanks in Tank Farm #4 may be used to store waste, in-process, or product material as needed, and therefore, are RCRA regulated units. Tank Farm #4 is constructed of reinforced concrete with perimeter and internal dikes to prevent migration of spillage, leakage, or contaminated stormwater. The existing dikes will be coated with an impermeable coating compatible with the organic materials handled within the storage and process units. These coatings have not yet been applied.

(See Table IV-4 for a unit description of each storage tank in Tank Farm #4).

Age of Unit: This tank farm has been in operation since 1983.

Date of Closure: This tank farm is presently active and there is no anticipated date of closure.

Wastes Managed: Hazardous and non-hazardous wastes are stored in these units.

Release Controls: Secondary containment consists of reinforced concrete with perimeter and internal dikes which are proposed to be coated with an impermeable coating.

History of Releases: Safety-Kleen reported a leak of 300 gallons of product methylene chloride from a tank in TF #4. The leak was contained by the secondary containment system. (See Pt. B app., Sec. 2). There was no visual evidence of release associated with this unit.

Conclusions: Soil/Groundwater: The release potential to the soil/groundwater is low due to unit design.

Surface Water: The release potential to surface water is low due to unit design.

Air: The release potential to the air is moderate to high due to the volatile organic constituents of the wastes managed.

Subsurface Gas: The potential for the generation of subsurface gas is low due to unit design.

Unit No: SWMU Nos. 57-83

Unit Name: Tank Farm #5 containing Tanks #30-#41B, #46A-#47B, and #51-#53B (Photos 22, 23)

Unit Description: Tank Farm #5 is a recently completed facility that has only recently been used to store hazardous waste. This tank farm is located east-northeast of Process Building #2 and directly east of Truck Station #1. This tank farm includes 11 carbon steel tanks and 20 stainless steel tanks. Twenty-seven of the tanks in this tank farm may be used to store waste, in-process, or product material as needed, and therefore, these tanks are RCRA regulated units. Other tanks in this tank farm are dedicated to storage of in-process or product materials only. The total capacity of the waste tanks in Tank Farm #5 is 255,000 gallons. Tank Farm #5 is constructed of reinforced concrete with perimeter and internal dikes to prevent migration of spillage, leakage, or contaminated stormwater. The existing dikes are constructed of reinforced concrete, and will be coated with an impermeable coating compatible with the organic materials handled within the storage and process units.

(See Table IV-5 for a unit description of each storage tank in Tank Farm #5).

Age of Unit: This tank farm has been in operation since 1987.

Date of Closure: This tank farm is presently active and there is no anticipated date of closure.

Wastes Managed: Hazardous and non-hazardous wastes are stored in these units.

Release Controls: Secondary containment consists of reinforced concrete with perimeter and internal dikes coated with an impermeable coating.

History of Releases: There is no documented history or visual evidence of release from these units.

Conclusions: Soil/Groundwater: The release potential to the soil/groundwater is low due to unit design.

Surface Water: The release potential to surface water is low due to unit design.

Air: The release potential to the air is moderate to high due to the volatile organic constituents of the wastes managed.

Subsurface Gas: The potential for the generation of subsurface gas is low due to unit design.

Unit No:	SWMU Nos. 84-85
Unit Name:	Tanks PCT #3 and PCT #4 (Pollution Control Tanks) (Photo 8)
Unit Description:	PCT #3 and PCT #4 are two carbon steel process tanks which are located outside at the southeast corner of Process Building #1. These tanks, just as PCT #1 and PCT #2, are a part of the facility's wastewater treatment system. These tanks each have a 10,000-gallon capacity. These tanks are used to store wastewater during the decanting process of the wastewater treatment system.
Age of Unit:	These tanks began operating in approximately 1984 or 1985.
Date of Closure:	These tanks are presently active and there is no anticipated date of closure.
Wastes Managed:	Hazardous and non-hazardous wastewaters are stored in these tanks.
Release Controls:	These tanks are situated on a concrete pad.
History of Releases:	There is no documented history or visual evidence of release from these units.
Conclusions:	Soil/Groundwater: The release potential to the soil/groundwater is moderate to high due to the lack of secondary containment associated with these units. Surface Water: The release potential to surface water is low as the nearest body of surface water is 1 1/2 miles away. Discharge from the wastewater treatment system is regulated by a permit issued by the Illinois EPA, Division of Water Pollution Control and by the Metropolitan Water Reclamation District of Chicago. Air: The release potential to the air is moderate to high due to the volatile organic constituents of the wastes managed. Subsurface Gas: The potential for the generation of subsurface gas is low due to unit design.

Source: Part B Application
Date: November 4, 1988

TABLE IV-1

TANK SCHEDULE - TANK FARM #1 AND CONTAINER STORAGE AREA #1

SWMU No.	Tank Number	Type of Tank	Capacity (Gallons)	Normal Assigned Storage Use	RCRA Regulated
6	#102	SS/FB	12,500	Waste, In Process Material, or Product	X
7	#103(E11)	SS/DB	12,500	Waste, In Process Material, or Product	X
8	#104(E12)	SS/CB	8,000	Waste, In Process Material, or Product	X
9	#105(E10)	SS/FB	12,500	Waste, In Process Material, or Product	X
10	#106(E8)	SS/FB	12,500	Waste, In Process Material, or Product	X
11	#107(E6)	SS/FB	12,500	Waste, In Process Material, or Product	X
12	#108(E4)	SS/FB	12,500	Waste, In Process Material, or Product	X
13	#109(E2)	SS/FB	12,500	Waste, In Process Material, or Product	X
14	#110(E9)	SS/FB	12,500	Waste, In Process Material, or Product	X
15	#111(E7)	SS/FB	12,500	Waste, In Process Material, or Product	X
16	#112(E5)	SS/FB	12,500	Waste, In Process Material, or Product	X
17	#113(E3)	SS/FB	12,500	Waste, In Process Material, or Product	X
18	#114(E1)	SS/FB	12,500	Waste, In Process Material, or Product	X

SWMU No.	Tank Number	Location	Type of Tank	Capacity (Gallons)	Normal Assigned Storage Use	RCRA Regulated
	#100(FP2)	Freon Dike	CS/H	11,000	Freon	
	#101(FP1)	Freon Dike	CS/H	11,000	Freon	
5	#199	Container Storage Area #1	CS/H	7,600	Waste	X

SS - Stainless Steel Material
CS - Carbon Steel Material
CB - Cone Bottom Tank
DB - Dish Bottom Tank
B - Flat Bottom Tank
PB - Piggy Back (Double Tank)
H - Horizontal Tank

Source: Part B Application
Date: November 4, 1988

TABLE IV-2

TANK SCHEDULE - TANK FARM #2

SWMU No.	Tank Number	Type of Tank	Capacity (Gallons)	Normal Assigned Storage Use	RCRA Regulated
19	#170(OST6)	SS/CB	3,500	Waste, In Process Material, or Product	X
20	#171(OST9)	SS/CB	3,095	Waste, In Process Material, or Product	X
21	#172(OST11)	SS/CB	5,335	Waste, In Process Material, or Product	X
22	#173(OST13)	SS/CB	5,335	Waste, In Process Material, or Product	X
23	#174(OST7)	SS/CB	4,500	Waste, In Process Material, or Product	X
24	#175(OST8)	SS/CB	3,095	Waste, In Process Material, or Product	X
25	#176(OST10)	SS/CB	5,335	Waste, In Process Material, or Product	X
26	#177(OST12)	SS/CB	5,335	Waste, In Process Material, or Product	X
27	#178	SS/CB	6,500	Waste, In Process Material, or Product	X
28	#179	SS/CB	6,500	Waste, In Process Material, or Product	X
29	#180	SS/CB	6,500	Waste, In Process Material, or Product	X

SS - Stainless Steel Material
CS - Carbon Steel Material
CB - Cone Bottom Tank
DB - Dish Bottom Tank
FB - Flat Bottom Tank
PB - Piggy Back (Double Tank)
H - Horizontal Tank

Source: Part B Application
Date: November 4, 1988

TABLE IV-3

TANK SCHEDULE - TANK FARM #3*

SWMU No.	Tank Number	Type of Tank	Capacity (Gallons)	Normal Assigned Storage Use	RCRA Regulated
30	#190(OST1)	CS/H	8,300	Wastewater	X
31	#191(OST2)	CS/H	8,300	Wastewater	X
32	#192(OST3)	CS/H	14,400	Wastewater	X
33	#193(OST4)	CS/H	10,185	Wastewater	X
34	#194(OST5)	CS/H	11,835	Wastewater	X
35	#195(OST17)	CS/H	20,000	Wastewater	X

*Tank Farm #3 is scheduled to be removed in mid-1989

SS - Stainless Steel Material
CS - Carbon Steel Material
CB - Cone Bottom Tank
DB - Dish Bottom Tank
FB - Flat Bottom Tank
PB - Piggy Back (Double Tank)
H - Horizontal Tank

Source: Part B Application
Date: November 4, 1988

TABLE IV-4

TANK SCHEDULE - TANK FARM #4

SWMU No.	Tank Number	Type of Tank	Capacity (Gallons)	Normal Assigned Storage Use	RCRA Regulated
36	#1(D1)	SS/DB	12,500	Waste, In Process Material, or Product	X
37	#2(D2)	SS/DB	12,500	Waste, In Process Material, or Product	X
38	#3(D3)	SS/DB	12,500	Waste, In Process Material, or Product	X
39	#4(D4)	SS/DB	12,500	Waste, In Process Material, or Product	X
40	#5(D5)	SS/CB	8,000	Waste, In Process Material, or Product	X
41	#6	SS/CB	8,000	Waste, In Process Material, or Product	X
42	#11(S1)	SS/CB	3,500	Waste, In Process Material, or Product	X
43	#12(S2)	SS/CB	3,500	Waste, In Process Material, or Product	X
44	#13(S3)	SS/CB	3,500	Waste, In Process Material, or Product	X
45	#14(S4)	SS/CB	3,500	Waste, In Process Material, or Product	X
46	#15(S5)	SS/CB	3,500	Waste, In Process Material, or Product	X
47	#16(S6)	SS/CB	3,500	Waste, In Process Material, or Product	X
48	#17(S7)	SS/CB	3,500	Waste, In Process Material, or Product	X
49	#18(S8)	SS/CB	3,500	Waste, In Process Material, or Product	X
50	#19(S9)	SS/CB	3,500	Waste, In Process Material, or Product	X
51	#20(S10)	SS/DB	1,000	Waste, In Process Material, or Product	X
52	#21(S11)	SS/DB	500	Waste, In Process Material, or Product	X
53	#22	SS/CB	3,500	Waste, In Process Material, or Product	X
54	#23	SS/CB	3,500	Waste, In Process Material, or Product	X
55	PCT#1	CB/FB	10,000	In Process Material	
56	PCT#2	CB/FB	10,000	In Process Material	

SS - Stainless Steel Material
CS - Carbon Steel Material
CB - Cone Bottom Tank
DB - Dish Bottom Tank
FB - Flat Bottom Tank
PB - Piggy Back (Double Tank)
H - Horizontal Tank

Source: Part B Application
Date: November 4, 1988

TABLE IV-5

TANK SCHEDULE - TANK FARM #5

SWMU No.	Tank Number	Type of Tank	Capacity (Gallons)	Normal Assigned Storage Use	RCRA Regulated
57	#30A	SS/PB	7,500	Waste, In Process Material, or Product	X
58	#30B	SS/PB	7,500	Waste, In Process Material, or Product	X
59	#31	SS/CB	15,000	Waste, In Process Material, or Product	X
60	#32	SS/CB	15,000	Waste, In Process Material, or Product	X
61	#33	SS/CB	15,000	Waste, In Process Material, or Product	X
62	#34A	SS/PB	7,500	Waste, In Process Material, or Product	X
63	#34B	SS/PB	7,500	Waste, In Process Material, or Product	X
64	#35A	SS/PB	7,500	Waste, In Process Material, or Product	X
65	#35B	SS/PB	7,500	Waste, In Process Material, or Product	X
66	#36	SS/CB	15,000	Waste, In Process Material, or Product	X
67	#37A	SS/PB	7,500	Waste, In Process Material, or Product	X
68	#37B	SS/PB	7,500	Waste, In Process Material, or Product	X
69	#38	SS/CB	15,000	Waste, In Process Material, or Product	X
70	#39	CS/CB	15,000	Waste, In Process Material, or Product	X
71	#40A	CS/PB	7,500	Waste, In Process Material, or Product	X
72	#40B	CS/PB	7,500	Waste, In Process Material, or Product	X
73	#41A	CS/PB	7,500	Waste, In Process Material, or Product	X
74	#41B	CS/PB	7,500	Waste, In Process Material, or Product	X
	#42	SS/CB	15,000	In Process Material	
	#43	SS/CB	15,000	In Process Material	
	#44	SS/CB	15,000	In Process Material	
	#45	SS/CB	15,000	In Process Material	
75	#46A	CS/PB	7,500	Waste, In Process Material, or Product	X
76	#46B	CS/PB	7,500	Waste, In Process Material, or Product	X
77	#47A	CS/PB	7,500	Waste, In Process Material, or Product	X
78	#47B	CS/PB	7,500	Waste, In Process Material, or Product	X

Source: Part B Application
Date: November 4, 1988

TABLE IV-5

TANK SCHEDULE - TANK FARM #5
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SWMU No.	Tank Number	Type of Tank	Capacity (Gallons)	Normal Assigned Storage Use	RCRA Regulated
	#48A	SS/PB	7,500	In Process Material	
	#48B	SS/PB	7,500	In Process Material	
	#49A	SS/PB	7,500	In Process Material	
	#49B	SS/PB	7,500	In Process Material	
	#50	SS/CB	15,000	In Process Material	
79	#51	CS/CB	15,000	Waste, In Process Material, or Product	X
80	#52A	CS/PB	7,500	Waste, In Process Material, or Product	X
81	#52B	CS/PB	7,500	Waste, In Process Material, or Product	X
82	#53A	CS/PB	7,500	Waste, In Process Material, or Product	X
83	#53B	CS/FB	7,500	Waste, In Process Material, or Product	X
	#54	SS/FB	20,000	Product	
	#55	SS/FB	20,000	Product	
	#56	SS/CB	15,000	In Process Material	
	#57A	SS/PB	7,500	In Process Material	
	#57B	SS/PB	7,500	In Process Material	
	#58	SS/CB	15,000	In Process Material	
	#59	SS/FB	20,000	Product	
	#60	SS/FB	20,000	Product	

SS - Stainless Steel Material
CS - Carbon Steel Material
CB - Cone Bottom Tank
DB - Dish Bottom Tank
FB - Flat Bottom Tank
PB - Piggy Back (Double Tank)
H - Horizontal Tank

TABLE IV-6

TANK SCHEDULE - TANKS PCT #3 AND PCT #4

SWMU No.	Tank Number	Type of Tank	Capacity (Gallons)	Normal Assigned Storage Use	RCRA Regulated
84	PCT#3	CB/FB	10,000	In Process Material	
85	PCT#4	CB/FB	10,000	In Process Material	

SS - Stainless Steel Material
CS - Carbon Steel Material
CB - Cone Bottom Tank
DB - Dish Bottom Tank
FB - Flat Bottom Tank
PB - Piggy Back (Double Tank)
H - Horizontal Tank

Unit No:	SWMU No. 86
Unit Name:	Distillation Unit L1 (Photo 29)
Unit Description:	The distillation unit is the LUWA thin film evaporator designated as L1. This unit was previously located in Process Building #1, but has been moved to Process Building #2. The L1 unit is used to reclaim most types of waste received at the facility and is generally the first step in the process. The L1 has a nominal process capacity of 1,000 gallons per hour. The distillation process generates a residual material called still bottoms. These still bottoms are shipped off-site for burning for energy recovery or re-refining, reclamation or re-use as oils.
Age of Unit:	This unit is approximately 12-15 years old. The column was replaced in 1986.
Date of Closure:	This unit is presently active and there is no anticipated date of closure.
Wastes Managed:	Hazardous and non-hazardous wastes are processed in this unit.
Release Controls:	This unit is situated on a concrete floor. The floor is fitted with a sump system which is designed to contain releases from the process units.
History of Releases:	There is no documented history or visual evidence of release from this unit.
Conclusions:	<u>Soil/Groundwater</u>: The release potential to the soil/groundwater is low due to the indoor location and the containment system in Process Building #2. <u>Surface Water</u>: The release potential to surface water is low due to the indoor location and the containment system in Process Building #2. <u>Air</u>: The release potential to the air is low due to the indoor location. Emissions from this unit are regulated by a permit issued by Illinois EPA, Division of Air Pollution Control. <u>Subsurface Gas</u>: The potential for the generation of subsurface gas is low due to the indoor location and the containment system in Process Building #2.

Unit No: SWMU Nos. 87-89

Unit Name: Liquid-Liquid Extraction Units E1-E3 (Photos 2, 26)

Unit Description: There are three liquid-liquid extraction units at the facility. They are designated E1, E2, and E3, and they have capacities of 600, 1,800, and 125 gallons per hour, respectively. E1 is located inside the east side of Process Building #1. This unit has a 10 contactor design. E2 is located inside Process Building #2 and has a 15 contactor design. E3 was located inside the southeast corner of Process Building #1 and has a 5 contactor design. The components of a neutralized mixture are generally separated by liquid-liquid extraction. Several other wastes received at the facility, including aqueous solutions of n-methyl pyrrolidone (NMP), a non-regulated material, are also separated by liquid-liquid extraction. A liquid-liquid extraction is used to separate one component of a mixture from the mixture by taking advantage of the different solubilities of the mixture components in an extraction solvent.

Age of Unit: E1 is approximately 8 years old, E2 is approximately 6 years old, and E3 is approximately 10 years old.

Date of Closure: E1 and E2 are presently active and there is no anticipated date of closure. E3 has been decommissioned and is presently located in the yard north of 42nd Street.

Wastes Managed: E1 (as was E3) is used to process non-hazardous waste. E2 is used to process hazardous and non-hazardous waste.

Release Controls: These units are situated on concrete floors which are fitted with a sump system which is designed to contain releases from process units.

History of Releases: There is no documented history or visual evidence of release from these units.

Conclusions: Soil/Groundwater: The release potential to the soil/groundwater is low due to the indoor locations of E1 and E2 and the containment systems in Process Buildings #1 and #2, respectively.

Surface Water: The release potential to surface water is low due to the indoor locations of E1 and E2 and the containment systems in Process Buildings #1 and #2, respectively.

Air: The release potential to the air is low due to the indoor locations. Emissions from these units are regulated by a permit issued by Illinois EPA, Division of Air Pollution Control.

Subsurface Gas: The potential for the generation of subsurface gas is low due to the indoor locations of E1 and E2 and the containment systems in Process Buildings #1 and #2, respectively.

Unit No: SWMU Nos. 90-95

Unit Name: Fractionation Units F1-F6 (Photos 1, 3, 9, 27, 28)

Unit Description: There are six fractionation units at the facility. The columns are multiple-stage fractionation columns and are designated F1 through F6. F1 is presently located inside the southeast corner of Process Building #1, but this unit will be re-located outside the east side of Process Building #1. The tower structure of F2 is located outside the east side of Process Building #1. F3 is located inside Process Building #2. F4 is located inside the east side of Process Building #2. F5 is located inside the east side of Process Building #1. F-6 was formerly located inside the east side of Process Building #1, but it has been decommissioned and is presently located outside in the yard south of 42nd Street. F1-F5 are fractional distillation columns and F6 is a simple distillation column. F1 is a tray column with 17 trays. F2 is a tray column with 50 trays. F3 is a tray column with 30 trays. F4 is a combined tray and packing column with an equivalent of 50 trays. F5 is a packed column equivalent to 2 trays. F6 is a packed column equivalent to 1 tray. Various types of materials can be separated from other organic materials contained in the same crude waste feedstock by fractionation. The fractionation columns are used to process most of the waste types received at the facility. A particular waste may be processed using the LUWA or one of the fractionation columns, or using the LUWA and one of the fractionation columns in sequence, depending on the waste composition and solids content.

Age of Unit: F1 is approximately 20 years old, F2 is approximately 9 years old, F3 and F4 are approximately 6 years old, F5 and F6 are approximately 8 years old.

Date of Closure: F1 through F5 are presently active and there is no anticipated date of closure. F6 is no longer active.

Wastes Managed: Hazardous and non-hazardous wastes are processed in units F1 through F5. F6 was used to process non-hazardous waste.

Release Controls: F1 and F3 through F5 are situated on concrete floors which are fitted with a sump system which is designed to contain releases from process units. F2 is situated outside on a concrete pad.

History of Releases: There is no documented history or visual evidence of release from these units.

Conclusions: Soil/Groundwater: The release potential to the soil/groundwater is low for F1 and F3 through F5 due to the indoor locations and the containment systems in Process Buildings #1 and #2. The release potential for F2 is low to moderate due to the outdoor location and the lack of a containment system.

Surface Water: The release potential to surface water is low for F1 and F3 through F5 due to the indoor locations and the containment systems in Process Buildings #1 and #2. The release potential for F2 is low as the nearest body of surface water is 1 1/2-2 miles away.

Air: The release potential to the air is low for F1 and F3 through F5 due to the indoor locations. The release potential for F2 is low to moderate due to the outdoor location. Emissions from all of these units are regulated by a permit issued by Illinois EPA, Division of Air Pollution Control.

Subsurface Gas: The potential for the generation of subsurface gas is low due to the indoor locations of F1 and F3 through F5, as well as the containment systems in Process Buildings #1 and #2, and the concrete pad associated with F2.

Unit No:	SWMU No. 96
Unit Name:	Neutralization Unit (Photo 4)
Unit Description:	The neutralization unit is located on the east side of Process Building #1. This unit is used for in-line neutralization and has a 1,500-gallons per hour throughput capacity. The facility uses approximately 400 gallons of caustic solution per day in the neutralization process.
Age of Unit:	This unit is approximately 7-8 years old.
Date of Closure:	This unit is presently active and there is no anticipated date of closure.
Wastes Managed:	Acidic wastes including bulk shipments of a mixture of dimethyl acetamide (DMAC), acetic acid, and water are neutralized on a batch basis or in-line as part of the process train. This unit is used to process non-hazardous waste only.
Release Controls:	This unit is situated on a concrete floor which is fitted with a sump system which is designed to contain releases from process units.
History of Releases:	There is no documented history or visual evidence of release from this unit.
Conclusions:	Soil/Groundwater: The release potential to the soil/groundwater is low due to the indoor location and the containment system in Process Building #1. Surface Water: The release potential to surface water is low due to the indoor location and the containment system in Process Building #1. Air: The release potential to the air is low due to the indoor location. Emissions from this unit are regulated by a permit issued by Illinois EPA, Division of Air Pollution Control. Subsurface Gas: The potential for the generation of subsurface gas is low due to the indoor location and the containment system in Process Building #1.

Unit No: SWMU Nos. 97-100

Unit Name: Container Accumulation Areas C1-C4 (Photos 7, 10, 19, 25)

Unit Description: There are four satellite accumulation areas for containers at this facility. C1 is located outside on the west side of Tank Farm #2. C2 is located outside on the west side of Truck Station #2. C3 is located inside Process Building #2. C4 is located inside on the south end of Truck Station #1. C3 is used to accumulate laboratory wastes as well as used samples of in-process or product material. C1, C2 and C4 are used to collect small amounts of waste as they are generated, such as waste from hose drippings. When a drum is filled, it is moved from the satellite accumulation area to Container Storage Area #1.

Age of Unit: These units have been in operation since 1988.

Date of Closure: These units are presently active and there is no anticipated date of closure.

Wastes Managed: Hazardous and non-hazardous wastes are accumulated in these areas.

Release Controls: C1 and C4 are located on a concrete pad. C2 is located on a concrete pad with a shallow dike. C3 is located on a concrete floor which is fitted with a sump system which is designed to contain releases.

History of Releases: There is no documented history or visual evidence of releases from these units.

Conclusions: Soil/Groundwater: The release potential to the soil/groundwater is low to moderate for C1, C2 and C4 as the units are located on concrete pads (C2 is fitted with a shallow dike). The release potential for C3 is low due to the indoor location and the containment system in Process Building #2.

Surface Water: The release potential to surface water is low for C1, C2 and C4 as the units are located on concrete pads (C2 is fitted with a shallow dike). The release potential for C3 is low due to the indoor location and the containment system in Process Building #2.

Air: The release potential to the air is low for C1 through C4 as the wastes in these units are containerized and C3 is located indoors.

Subsurface Gas: The potential for the generation of subsurface gas is low as C1, C2 and C4 are located on concrete pads (C2 is fitted with a shallow dike), and C3 is located indoors.

Unit No:	SWMU Nos. 101-102
Unit Name:	Laboratory Waste Container (Photo 24)
Unit Description:	Laboratory wastes are accumulated in 2-gallon containers in the quality control laboratory and in the main laboratory. These wastes are generated as the result of laboratory analyses which are performed on waste, in-process, and product materials. When the laboratory containers are filled, they are emptied into the drums located in satellite accumulation area C3.
Age of Unit:	These units have been in operation since 1988.
Date of Closure:	These units are presently active and there is no anticipated date of closure.
Wastes Managed:	Hazardous and non-hazardous wastes are accumulated in these units.
Release Controls:	The laboratory containers are used for temporary accumulation only. They are located adjacent to laboratory sinks.
History of Releases:	There is no documented history or visual evidence of releases from these units.
Conclusions:	Soil/Groundwater: The release potential to the soil/groundwater is low due to the indoor location of these units. Surface Water: The release potential to surface water is low due to the indoor location of these units. Air: The release potential to the air is low due to the indoor location of these units. Subsurface Gas: The potential for the generation of subsurface gas is low due to the indoor location of these units.

V. SUMMARY OF SUGGESTED FURTHER ACTIONS

UNIT NO.	UNIT NAME	OPERATIONAL DATES	SUGGESTED FURTHER ACTION	EVIDENCE OF RELEASE
1	Truck Station #1	1987-present	No further action is suggested at this time.	No
2	Truck Station #2	1987-present	No further action is suggested at this time.	No
3	Truck Station #3	1987-present	No further action is suggested at this time.	No
4	Container Storage Area #1	approx. 1983-present	Sample soil just north of unit for organics to determine if hazardous constituents have been released.	Yes
5	Tank #199	approx. 1975-present	No further action is suggested at this time.	No
6-18	Tank Farm #1	approx. 1978-present	No further action is suggested at this time.	No
19-29	Tank Farm #2	1975-present	No further action is suggested at this time.	No
30-35	Tank Farm #3	approx. 1970-present	No further action is suggested at this time.	No
36-56	Tank Farm #4	1983-present	No further action is suggested at this time.	No
57-83	Tank Farm #5	1987-present	No further action is suggested at this time.	No
84-85	Tanks PCT #3 & PCT #4	approx. 1984-present	No further action is suggested at this time. Consider installation of adequate secondary containment.	No

V. SUMMARY OF SUGGESTED FURTHER ACTIONS
(continued)

UNIT NO.	UNIT NAME	OPERATIONAL DATES	SUGGESTED FURTHER ACTION	EVIDENCE OF RELEASE
86	Distillation Unit	approx. 1975-present	No further action is suggested at this time. Monitor compliance with DAPC Permit.	No
87-89	Liquid-Liquid Extraction Units	approx. 1980-present	No further action is suggested at this time. Monitor compliance with DAPC Permit.	No
90-95	Fractionation Units	approx. 1970-present	No further action is suggested at this time. Monitor compliance with DAPC Permit. Consider installation of containment system for F2.	No
96	Neutralization	approx. 1982-present	No further action is suggested at this time. Monitor compliance with DAPC Permit.	No
97-100	Satellite Container Accumulation Areas	1988-present	No further action is suggested at this time. Consider installation of secondary containment at these areas.	No
101-102	Laboratory Waste Containers	1988-present	No further action is suggested at this time.	No
AOC A	Area south of Tank Farm #3 and Tank Farm ~~#4~~ 2		Sample soil for organics to determine if hazardous constituents have been released.	Yes
AOC B	Area west of Container Storage Area #1		Sample soil for organics to determine if hazardous constituents have been released.	Yes

VI. REFERENCES

Files

USEPA Region V
Illinois EPA Division of Land Pollution Control
Illinois EPA Division of Water Pollution Control
Illinois EPA Division of Air Pollution Control

Facility

Part B Permit Application dated November 4, 1988
Information submitted by facility during VSI

Miscellaneous

Correspondence from Illinois EPA Public Water Supplies
Correspondence from Illinois State Water Survey
Conversation with Illinois State Geological Survey (Bill Dixon)

ATTACHMENT A

SWMU LOCATION MAP

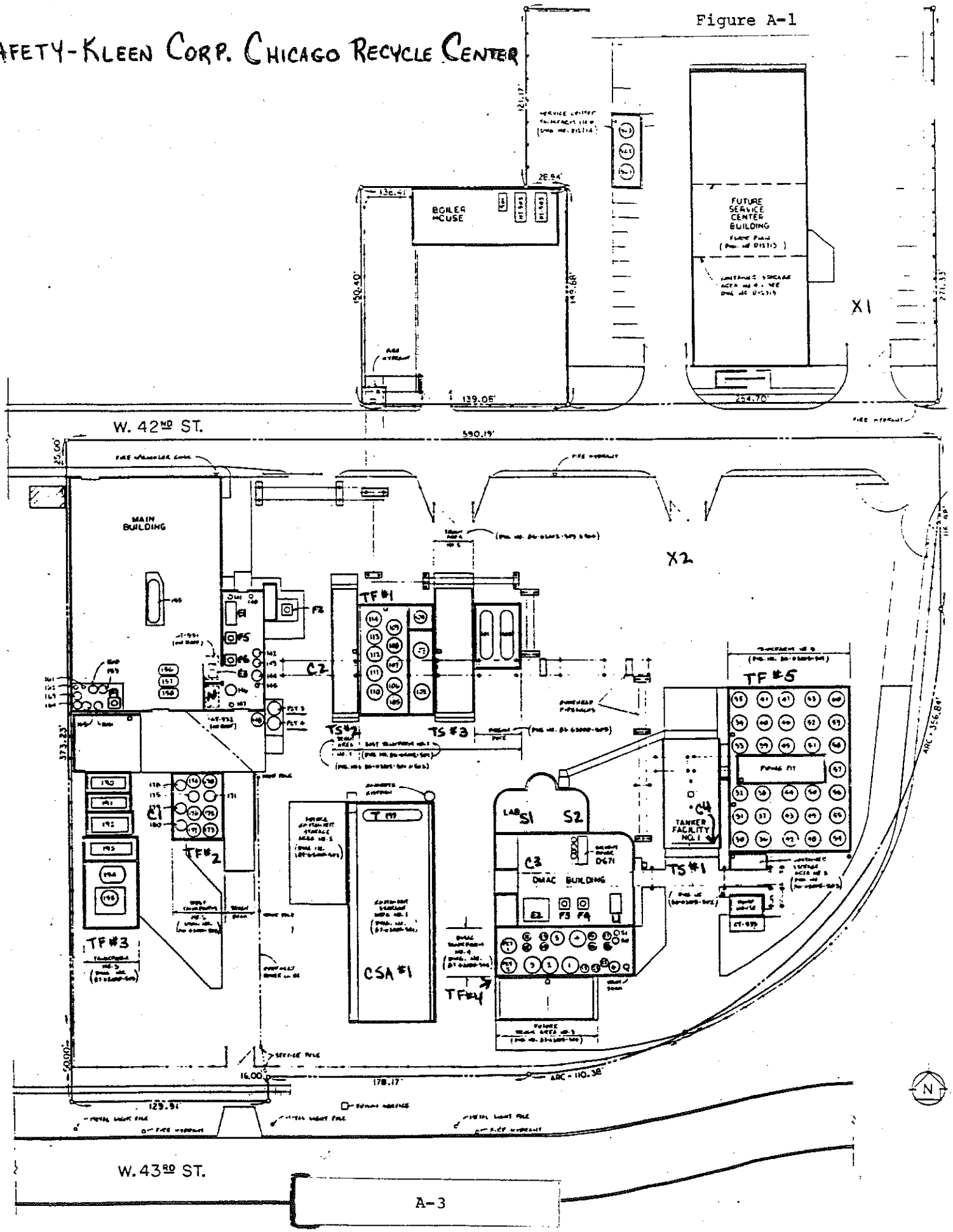
SWMU Location Map Key

Truck Station #1	TS #1
Truck Station #2	TS #2
Truck Station #3	TS #3
Container Storage Area #1	CSA #1
Tank #199	T199
Tank Farm #1	TF #1
Tank Farm #2	TF #2
Tank Farm #3	TF #3
Tank Farm #4	TF #4
Tank Farm #5	TF #5
Tanks PCT #3 and PCT #4	PCT 3 and PCT 4
Distillation Unit	L1
Liquid-Liquid Extraction Units	E1-E3
Fractionation Units	F1-F6
Neutralization Unit	N
Satellite Accumulation Areas	C1-C4
Laboratory Waste Containers	S1 and S2

Note: E3 and F6 were formerly located at the areas designated above. These units have been decommissioned and are now located at the areas designated as X1 and X2, respectively.

SAFETY-KLEEN CORP. CHICAGO RECYCLE CENTER

Figure A-1



ATTACHMENT B

AREAS OF CONCERN

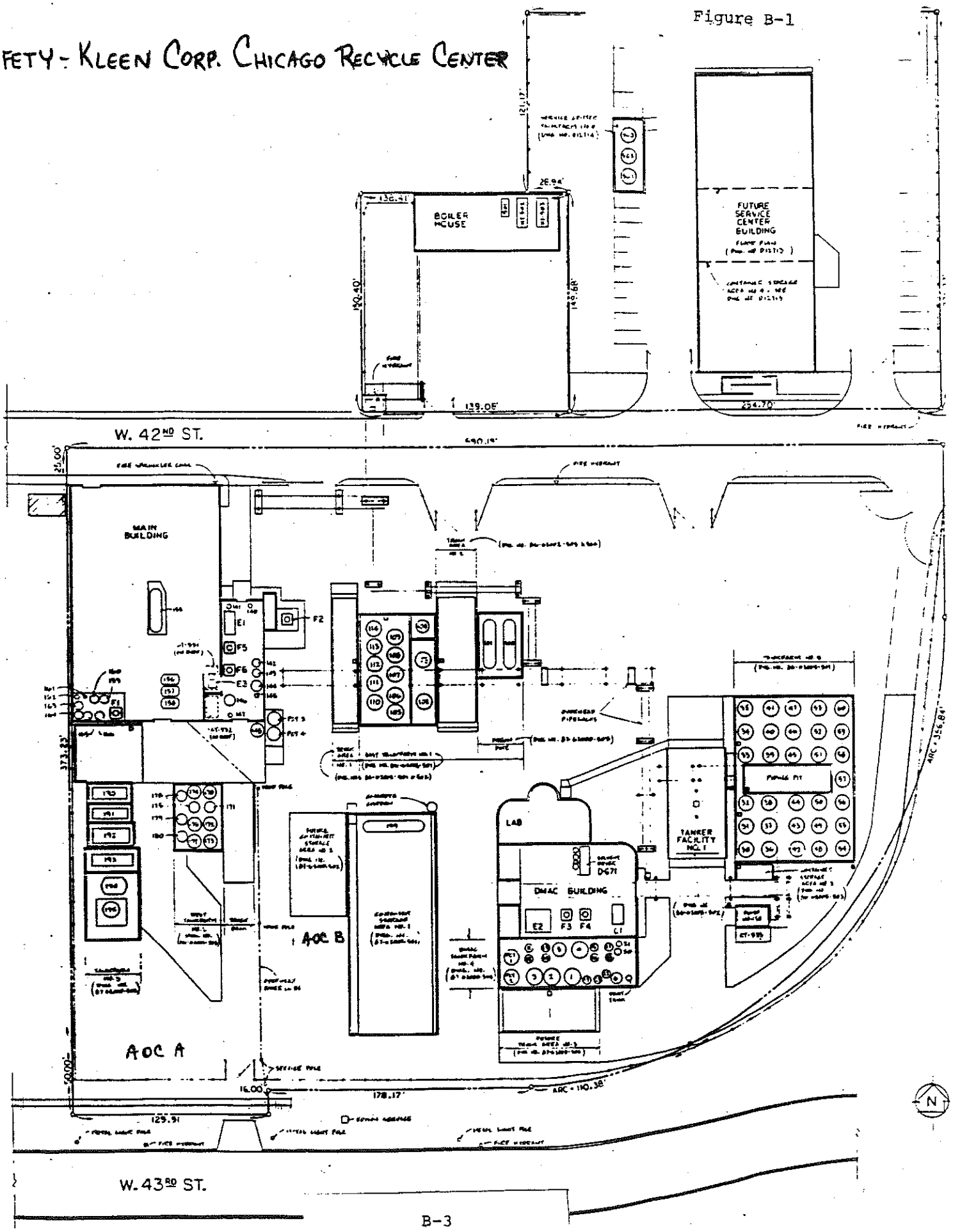
Areas of Concern

The areas of concern at Safety-Kleen Chicago Recycle Center are primarily reported spills which have occurred outside of contained areas. The first area of concern is an area south of Tank Farm #3 and Tank Farm #4. Past inspection reports from Illinois EPA Land Division files indicate that open drums containing waste material and rain water were observed in storage in this area on September 9, 1981. A spill of a semi-solid waste material was observed in this area on October 10, 1982. The location of this area is shown in Figure B-1 as AOC A.

The second area of concern is the area on the west side of Container Storage Area #1. Safety-Kleen documented a spill of 20 gallons of freon which occurred on July 22, 1987. Waste material was released onto an uncontained area and contaminated soil was excavated at that time. The location of this area is shown on Figure B-1 as AOC B.

Figure B-1

SAFETY-KLEEN CORP. CHICAGO RECYCLE CENTER



ATTACHMENT C

ANALYTICAL DATA

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

SAMPLE NUMBER : D975147
SAMPLING POINT DESC. : CHICAGO/181A 4401 S ASHLAND

SUBMITTING SOURCE # : 031600002 SITE # :
DATE COLLECTED : 890814 TIME COLLECTED : 0920 SAMPLING PROGRAM : TH

COLLECTED BY : JAMES SHADLE DELIVERED BY : UPS
COMMENTS : THMS
FUNDING CODE : PW30 AGENCY ROUTING : -- UNIT CODE :
SAM TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

DATE RECEIVED : 890818 TIME RECEIVED : 1000 RECEIVED BY : D V
LAB OBSERVATIONS : 2 THM TRIP BL SAM# : D975148
SUPERVISORS INITIALS : JTH NOTE : K = LESS THAN VALUE

32106	CHLOROFORM	UG/L	: 15
32101	DICHLOROBROMOMETHANE	UG/L	: 7
32105	CHLORODIBROMOMETHANE	UG/L	: 4
32104	BROMOFORM	UG/L	: 1.0K
34423	METHYLENE CHLORIDE	UG/L	: 1.0K
3[illegible]501	1,1-DICHLOROETHYLENE	UG/L	: 1.0K
[illegible] 96	1,1-DICHLOROETHANE	UG/L	: 1.0K
34546	TRANS-1,2-DICHLOROETHYLENE	UG/L	: 1.0K
34531	1,2-DICHLOROETHANE	UG/L	: 1.0K
34506	1,1,1-TRICHLOROETHANE	UG/L	: 1.0K
32102	CARBON TETRACHLORIDE	UG/L	: 1.0K
39180	TRICHLOROETHYLENE	UG/L	: 1.0K
34475	TETRACHLOROETHYLENE	UG/L	: 1.0K
34301	CHLOROBENZENE	UG/L	: 1.0K
34716	DICHLOROBENZENE(TOTAL)	UG/L	: 1.0K

CITY OF CHICAGO — DEPARTMENT OF WATER — BUREAU OF WATER OPERATIONS

WATER PURIFICATION DIVISION — WATER PURIFICATION LABORATORY

SAMPLES COLLECTED Oct. 4, 1989

COMPREHENSIVE CHEMICAL ANALYSIS

ANALYSIS COMPLETED Nov. 2, 1989

	PARAMETER	IPCB MCL	DETERMINED AS	STORET NUMBER	SOUTH WATER DISTRICT			CENTRAL AND NORTH WATER DISTRICTS			
					RAW CRIB	COMPOSITE SAMPLES		RAW CRIB	COMPOSITE SAMPLES		
						OUTLET	DISTRIBUTION		OUTLET	CEN. DISTR.	NOR. DISTR.
	TEMPERATURE		°C	00010	15	16	16	15	16	15	15
	TURBIDITY	1	N.T.U.	00076	8.0	0.35	0.32	3.4	0.35	0.35	0.35
	THRESHOLD ODOR, STRAIGHT	3	T.O.N.	00086	1M	2Cc	1Cc	2D F	2Cc	2Cc	1Cc
	THRESHOLD ODOR, DECHLORINATED	3	T.O.N.		–	1M	1M	–	1M	1M	1M
	COLOR	15	Pt.-Co. UNITS	00080	1	0	0	1	0	0	0
	pH	6.5-8.5	STD. UNITS	00400	8.3	8.1	8.0	8.2	8.0	8.0	8.0
MILLIGRAMS/LITER	ALKALINITY, PHTH.		$CaCO_3$	00415	0	0	0	0	0	0	0
	ALKALINITY, TOTAL		$CaCO_3$	00410	105	102	100	100	100	100	101
	SULFATE	250	SO_4	00945	24.1	26.5	27.1	25.3	25.9	25.6	26.4
	CHLORIDE	250	Cl	00940	9.7	10.6	11.2	9.5	10.6	10.7	10.8
	FLUORIDE	1.8	F	00950	0.16	0.83	0.92	0.14	0.96	0.94	0.92
	PHOSPHATE, TOTAL		PO_4	00650	0.03	0.03	0.03	0.03	0.02	0.02	0.02
	PHOSPHATE, DISSOLVED		PO_4	00653	0.02	0.01	0.01	0.01	0.01	0.01	0.01
	SILICA		SiO_2	00956	0.40	0.74	0.72	0.29	0.80	0.80	0.80
	CALCIUM		Ca	00916	35	36	38	34	34	34	34
	MAGNESIUM		Mg	00927	10	10	10	10	10	10	10
	POTASSIUM		K	00937	1.4	1.3	1.3	1.4	1.2	1.3	1.3
	SODIUM		Na	00929	6.2	6.2	6.4	5.8	5.9	5.6	5.8
	RESIDUE, TOTAL		TOT. SOLIDS	00500	187	184	186	177	164	175	173
	RESIDUE, FILTRABLE	500	DISS. SOLIDS	00515	169	155	153	155	152	152	144
	OXYGEN, DISSOLVED		O_2	00300	----------	----------	----------	----------	----------	----------	----------
	OXYGEN DEMAND, CHEMICAL		O	00335	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	NITROGEN, AMMONIA		N	00610	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	NITROGEN, NITRITE/NITRATE	1/10	N	00630	0.24	0.23	0.24	0.25	0.23	0.30	0.23
	NITROGEN, KJELDAHL, TOTAL		N	00625	0.20	0.17	0.24	0.23	0.24	0.18	0.21
	CYANIDE	0.2	CN	00720	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
	FOAMING AGENTS	0.5	MBAS	38260	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	HARDNESS		$CaCO_3$	00900	125	131	136	126	126	126	126
MICROGRAMS/LITER	ALUMINUM		Al	01150	57	332	288	50	243	197	258
	ARSENIC	50	As	01002	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	BARIUM	1000	Ba	01007	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	BORON	1000	B	01022	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	CADMIUM	10	Cd	01027	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	CHROMIUM	50	Cr	01034	< 3	< 3	< 3	< 3	< 3	< 3	< 3
	COBALT		Co	01037	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	COPPER	5000	Cu	01042	4	< 3	< 3	8	< 3	5	< 3
	IRON, TOTAL	1000	Fe	01045	330	10	10	109	14	14	14
	LEAD	50	Pb	01051	< 3	< 3	< 3	< 3	< 3	< 3	< 3
	LITHIUM		Li	01132	2	2	2	1	1	2	1
	MANGANESE	150	Mn	01055	9	< 1	1	2	1	1	1
	MERCURY	2	Hg	71900	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	NICKEL		Ni	01067	< 3	< 3	< 3	< 3	< 3	< 3	< 3
	STRONTIUM		Sr	01082	122	109	110	128	135	121	131
	ZINC	5000	Zn	01092	< 1	< 1	3	< 1	< 1	< 1	< 1
	PHENOL-LIKE SUBSTANCES		PHENOL	32730	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	SILVER	50	Ag	01077	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	SELENIUM	10	Se	01145	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	RADIOACTIVITY	50	BETA pCi/L	03501	2.6	2.3	1.9	2.3	2.8	2.5	2.1
	RADIOACTIVITY	15	ALPHA pCi/L		< 1	< 1	< 1	< 1	< 1	< 1	< 1
	SATURATION INDEX		(L)		+0.22	+0.05	-0.03	+0.09	-0.08	-0.	-0.11

REV. 2-83 CHIEF WATER CHEMIST

CITY OF CHICAGO — DEPARTMENT OF WATER — BUREAU OF WATER OPERATIONS

WATER PURIFICATION DIVISION — WATER PURIFICATION LABORATORY

COMPREHENSIVE CHEMICAL ANALYSIS

SAMPLES COLLECTED Aug. 9, 19 89 — ANALYSIS COMPLETED Aug. 24, 19 89

	PARAMETER	IPCB MCL 1979	DETERMINED AS	STORET NUMBER	SOUTH WATER DISTRICT RAW CRIB	SOUTH WATER DISTRICT COMPOSITE SAMPLES OUTLET	SOUTH WATER DISTRICT COMPOSITE SAMPLES DISTRIBUTION	CENTRAL AND NORTH WATER DISTRICTS RAW CRIB	CENTRAL AND NORTH WATER DISTRICTS COMPOSITE SAMPLES OUTLET	CENTRAL AND NORTH WATER DISTRICTS COMPOSITE SAMPLES CEN. DISTR.	CENTRAL AND NORTH WATER DISTRICTS COMPOSITE SAMPLES NOR. DISTR.
	TEMPERATURE		°C	00010	22	23	23	23	23	22	23
	TURBIDITY	1	N.T.U.	00076	1.5	0.30	0.20	2.0	0.30	0.20	0.20
	THRESHOLD ODOR, STRAIGHT	3	T.O.N.	00086	1M	2Cc	1Cc	1DM	2Cc	1Cc	1Cc
	THRESHOLD ODOR, DECHLORINATED	3	T.O.N.		-	1M	1M	-	1M	1M	1M
	COLOR	15	Pt.-Co. UNITS	00080	1	0	0	1	0	0	0
	pH	6.5-8.5	STD. UNITS	00400	8.4	8.1	8.1	8.3	7.9	8.1	8.1
MILLIGRAMS/LITER	ALKALINITY, PHTH.		$CaCO_3$	00415	0	0	0	0	0	0	0
	ALKALINITY, TOTAL		$CaCO_3$	00410	101	101	100	102	97	97	95
	SULFATE	250	SO_4	00945	23.7	25.8	25.6	24.1	25.5	25.4	25.9
	CHLORIDE	250	Cl	00940	8.3	9.9	10.1	8.4	9.9	10.0	10.1
	FLUORIDE	1.8	F	00950	0.11	0.86	0.87	0.12	0.90	0.84	0.91
	PHOSPHATE, TOTAL		PO_4	00650	0.02	0.02	0.01	0.02	0.01	0.02	0.05
	PHOSPHATE, DISSOLVED		PO_4	00653	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01
	SILICA		SiO_2	00956	0.20	0.43	0.35	0.18	0.29	0.35	0.25
	CALCIUM		Ca	00916	36	36	37	36	36	36	35
	MAGNESIUM		Mg	00927	10	10	10	10	10	10	10
	POTASSIUM		K	00937	1.3	1.3	1.3	1.3	1.2	1.3	1.3
	SODIUM		Na	00929	5.3	5.3	4.7	4.6	5.0	4.5	4.6
	RESIDUE, TOTAL		TOT. SOLIDS	00500	165	176	174	165	179	187	187
	RESIDUE, FILTRABLE	500	DISS. SOLIDS	00515	157	167	165	156	157	163	163
	OXYGEN, DISSOLVED		O_2	00300	10.2	8.3	8.2	8.7	8.4	8.4	8.2
	OXYGEN DEMAND, CHEMICAL		O	00335	< 5	<5	< 5	<5	< 5	< 5	< 5
	NITROGEN, AMMONIA		N	00610	< 0.01	< 0.01	0.01	0.01	< 0.01	< 0.01	< 0.01
	NITROGEN, NITRITE/NITRATE	1/10	N	00630	0.24	0.23	0.26	0.27	0.22	0.23	0.23
	NITROGEN, ORGANIC TKN		N	00605	0.21	0.25	0.20	0.26	0.26	0.23	0.26
	CYANIDE	0.2	CN	00720	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
	FOAMING AGENTS	0.5	MBAS	38260	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	HARDNESS		$CaCO_3$	00900	131	131	134	131	131	131	129
MICROGRAMS/LITER	ALUMINUM		Al	01150	< 50	454	389	50	389	356	406
	ARSENIC	50	As	01002	< 5	<5	<5	<5	<5	< 5	<5
	BARIUM	1000	Ba	01007	< 50	<50	< 50	< 50	<50	< 50	<50
	BORON	1000	B	01022	< 2	<2	<2	<2	<2	< 2	< 2
	CADMIUM	10	Cd	01027	< 1	<1	<1	<1	<1	<1	<1
	CHROMIUM	50	Cr	01034	< 3	<3	<3	<3	<3	<3	<3
	COBALT		Co	01037	< 1	<1	<1	<1	<1	<1	<1
	COPPER	5000	Cu	01042	5	<3	<3	6	<3	<3	<3
	IRON, TOTAL	1000	Fe	01045	11	<10	<10	23	<10	<10	<10
	LEAD	50	Pb	01051	< 3	<3	5	<3	<3	< 3	18*
	LITHIUM		Li	01132	2	1	1	2	2	1	1
	MANGANESE	150	Mn	01055	1	1	1	3	1	1.1	1
	MERCURY	2	Hg	71900	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5
	NICKEL		Ni	01067	< 3	<3	<3	<3	<3	<3	<3
	STRONTIUM		Sr	01082	108	102	117	115	115	124	126
	ZINC	5000	Zn	01092	6	1	15	11	[illegible]	12	2
	PHENOL-LIKE SUBSTANCES	1	PHENOL	32730	2	<1	1	<1	2	<1	<1
	SILVER	50	Ag	01077	<1	<1	<1	<1	<1	<1	<1
	SELENIUM	10	Se	01145	<1	<1	<1	<1	<1	<1	<1
	RADIOACTIVITY	50	BETA pCi/L	03501	2.06	1.86	1.83	2.02	1.85	1.83	1.88
	RADIOACTIVITY	15	ALPHA pCi/L		0.595	0.168	0.139	0.271	0.094	0.286	0.212
	SATURATION INDEX		(L)		+0.45	+0.17	+0.16	+0.36	+0.05	+0.14	+0.15

*Checked

Ann L. Wojcinski — CHIEF WATER CHEMIST

Lilia McMillan / EP7 — DIR., WATER PURIFICATION LABORATORIES

C. Duke / PPA — ENGINEER OF WATER PURIFICATION

REV. 2-83

TOWN Chicago TOWNSHIP Map No. 16
COMPANY Chgo.Pub.Wks.Dept. No. R. 14E
FARM No. T. Sec.
AUTHORITY Blueprint 39 N 31
ELEVATION 594
COLLECTOR DATE DRILLED 1913
CONFIDENTIAL
Robey St. just N. of 35th St.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Filling	6		6	
	Clay, yellow	3		9	
	Sand and gravel	4		13	
	Clay, hard gravelly	15		28	
	Sand and gravel	2		30	
	Boulders	1		31	
	Sand and gravel	5		36	
	Hardpan, gravelly	9		45	
	Boulders and Clay	2		47	
	Sand and gravel	1		48	
	Limestone	2		50	
	Fissure		6	50	6
	Limestone	10	6	61	

Blueprint: Plan and Section Showing Borings
35th Street Tunnel.

County Cook Index No. 1631
T.—DRILL RECORD
47327—10M—4-35 Illinois Geological Survey, Urbana. 31-39N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

ENGINEERING BORING	Thickness	Top	Bottom
AP-2			
Misc. FILL			6.5
Stiff brn-yel clayey SILT			8.5
Tough brn-yel clayey SILT			11.0
Tough brn-yel silty CLAY, occ small pebb			14.0
Soft blue silty CLAY, occ sm pebb			17.0
Tough blue silty CLAY, occ sm pebb			20.0
Soft blue silty CLAY, occ sm pebb			24.0
Tough blue silty CLAY, occ small pebb			31.5
Med gry sand seams			34.0
Hard blue silty CLAY, some sm pebb			44.1
Dolomitic Limestone			50.7
Typed by Warrenville			
Logs of 3 borings filed at NE Ill Office			
City of Chgo. Dept. of Pub. Wks. Bur of Eng.			
NO ENVELOPE			

COMPANY City of Chgo. Dept. of Pub. Wks.
FARM 39th & Ashland Overpass NO. AP-2
DATE DRILLED 6/61 COUNTY NO. 26665
AUTHORITY Company
ELEVATION 592.6' G.L.
LOCATION SE, SE, SE
COUNTY COOK

31-39N-14[illegible]

TOWN Chicago TOWNSHIP Map No. 16
COMPANY Chgo.Pub.Wks.Dept. No. R. 14E
FARM No. T. 39 N Sec. 31
AUTHORITY Blueprint
ELEVATION 592
COLLECTOR DATE DRILLED 1913
CONFIDENTIAL
Claremont Av., north side 35th St.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Filling	4		4	
	Clay, yellow	3		7	
	Hardpan, gravelly	4		11	
	Clay, blue	3		14	
	Gravel and Boulders	3		17	
	Clay and boulders	2		19	
	Clay, hard, sand and gravel	8		27	
	Hardpan	2		29	
	Loose limestone	1		30	
	Limestone	3		33	
	Fissure		6	33	6
	Limestone	8	6	42	
	Blueprint: Plan and Section Showing Borings 35th Street Tunnel.				

County Cook Index No. 1631.
T.—DRILL RECORD
47327—10M—4-35 Illinois Geological Survey, Urbana. 31-39N-14E

TOWN Chicago TOWNSHIP Map No. 16

COMPANY Chgo.Pub.Wks.Dept. No. R. 14E

FARM No. T. Sec.

AUTHORITY Blueprint 39 N 31

ELEVATION 592

COLLECTOR DATE DRILLED 1913

CONFIDENTIAL

Leavitt St. just south of 35th St.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Filling	6		6	
	Clay, yellow	6		12	
	Clay, gravelly blue	12		24	
	Gravel and boulders	1		25	
	Clay, hard blue	3		28	
	Hardpan, gravelly	8		36	
	Gravel, clay, and limestone	4		40	
	Limestone	11		51	
	Blueprint: Plan and Section Showing Borings 35th St. Tunnel.				

County Cook Index No. 1631

T.—DRILL RECORD

47327—10M—4-35 4 Illinois Geological Survey, Urbana.

31-39N-14E

TOWN Chicago TOWNSHIP Map No. 10.

COMPANY Chgo.Pub.Wks.Dept. No. R. 14E

FARM No. T. Sec.

AUTHORITY Blueprint 39 N 31

ELEVATION 594

COLLECTOR DATE DRILLED 1913

CONFIDENTIAL

Honore St., S. side 35th St.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Filling	4		4	
	Clay, yellow	6		10	
	Clay, soft, blue	13		23	
	Gravel and boulders	1		24	
	Clay, hard	10		34	
	Hardpan, gravelly	4		38	
	Clay, hard	5		43	
	Sand and gravel	3		46	
	Limestone	1		47	
	Fissure		6	47	6
	Limestone	14	6	62	

Blueprint: Plan and Section Showing Borings 35th Street Tunnel.

County Cook Index No. 1631

T.—DRILL RECORD

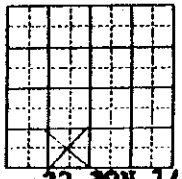
47327—10M—4-35 4 Illinois Geological Survey, Urbana.

31-39N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

	Thickness	Top	Bottom
Total depth			905
Nuclear log filed			
Caliper log filed			
Temperature log filed			
Density log filed			
3-Dimensional Velocity log filed			
Elastic Properties log filed			
*North Side Rock Tunnel Project			
**3600 South Racine			

COMPANY Metropolitan Sanitary Dist.
FARM *DH-71-13 (72) NO.
DATE DRILLED June-August 1971 COUNTY NO. 1676
AUTHORITY
ELEVATION
LOCATION **SE SW
COUNTY COOK



32-39N-14E

TOWN Chicago TOWNSHIP

COMPANY Chgo. Pub. Wks. Dept. No.

FARM No.

AUTHORITY Blueprint

ELEVATION 592

COLLECTOR DATE DRILLED 1913

CONFIDENTIAL

Map No. 16

R. 14E

T. 39 N

Sec. 32

Iron St., just south of 35th St.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Pavement	2		2	
	Filling	7		9	
	Clay, red	10		19	
	Clay, blue	10		29	
	Clay and boulders	7		36	
	Lime shale	1		37	
	Dolomite	3		40	
	Limestone	10		50	

Blueprint: Plan and Section Showing Borings 35th Street Tunnel.

County Cook Index No. 1632

T.—DRILL RECORD

47327—10M—4-35 Illinois Geological Survey, Urbana. 32-39N-14E

(3)

TOWN Chicago TOWNSHIP Map No. 16

COMPANY Chgo.Pub.Wks.Dept. No. R. 14E

FARM No. T. 39 N Sec. 32

AUTHORITY Blueprint

ELEVATION 593

COLLECTOR DATE DRILLED 1913

CONFIDENTIAL

Meadrat St., just north of 35th St.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Filling	4		4	
	Clay and gravel	10		14	
	Boulders, gravel, and limestone	6		20	
	Limestone	2		22	

Blueprint: Plan and Section Showing Borings, 35th Street Tunnel.

County Cook Index No. 1632

T.—DRILL RECORD

67327—10M—4-35 4 Illinois Geological Survey, Urbana.

32-39N-14E

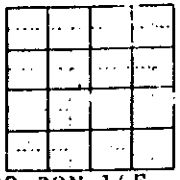
ILLINOIS GEOLOGICAL SURVEY, URBANA

ENGINEERING BORINGS	Thickness	Top	Bottom
35-1			
WATER			10.5
Loose blk org SILT, (sludge), occ sand, trace wood			24.0
Gry broken LIMESTONE			26.0
Gry dolomitic LIMESTONE, some clay partings			29.0
Gry dolomitic LIMESTONE, occ clay partings vertical fracture noted			34.0

Typed by Warrenville

Logs of 5 borings filed at NE Ill. Office
City of Chgo. Dept. of Pub. Wks. Bur. of Eng.
NO ENVELOPE

COMPANY City of Chgo. Dept. of Pub. Wks.
FARM W. 35th St. Bridge NO. 35-1
DATE DRILLED 10/66 COUNTY NO. 26666
AUTHORITY Company
ELEVATION
LOCATION SE, SE, NW
COUNTY COOK



32-39N-14E

TOWN Chicago TOWNSHIP Map No. 16
COMPANY Chgo.Pub.Wks.Dept. No. R. 14E
FARM No. T. Sec.
AUTHORITY Blueprint 39 N 32
ELEVATION 593
COLLECTOR DATE DRILLED 1913
CONFIDENTIAL
Auburn St., South side 35th St.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Filling	4		4	
	Clay, yellow	7		11	
	Clay, soft blue	21		32	
	Clay, hard blue	4		36	
	Gravel and boulders	1		37	
	Limestone, loose	2		39	
	Limestone	11		50	
	Blueprint: Plan and Section Showing Borings 35th Street Tunnel.				

County Cook Index No. 1632
T.—DRILL RECORD
67327—10M—4-35 Illinois Geological Survey, Urbana.

32-39N-14E

TOWN Chicago TOWNSHIP

COMPANY Chgo.Pub.Wks.Dept. No.

FARM Chgo.Pub.Wks.Dept. No.

AUTHORITY Blueprint: 3-18-13

ELEVATION 592

COLLECTOR DATE DRILLED 1927

CONFIDENTIAL

35th St. and Iron St.

Map No. 16

R. 14E

T 39 N

Sec. 32

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Fill	9		9	
	Clay, red	10		19	
	Clay, blue	3		22	
	Clay, boulders and shale	18		40	

County Cook

Index No. 1632

T.—DRILL RECORD

(30619—5M—7-34) 2 Illinois Geological Survey, Urbana.

32-39N-14E

TOWN Chicago TOWNSHIP 39N R. 14E

COMPANY J. P. Miller Art. Well Co. T. SEC. 32

FARM Armour Glue Works - Stock Yards

DATE DRILLED 1891, Deepened Jan. 1901

AUTHORITY J. P. Miller Art. Well Co.

COLLECTOR CBA ELEVATION 570 ETM NW

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Surface, sand, gravel, etc.	45		45	
	Limestone	242		287	
M	Shale	284		571	
GP	Limestone	347		918	
D.P.	Sandstone	272		1190	
I	Limestone	133		1323	
F	Shale, sandy	15		1338	
	Shale, red or marl	70		1408	
	Streaks of lime and shale	60			
	Sandstone				
	Drilled Deeper Total Depth (1901)			2051	
	Maybe at Glue Works but this is 1½ miles N. of Stock Yards				
	8" hole				
	45' casing (1914)				
	Static level: 150'				
	Not used since 1927.				

NO ENVELOPE

ORIGINAL FILED

~~NO ENVELOPE~~

COUNTY Cook 32-39N-14E

SAMPLE SET NO.

(64187—20M—6-45)

ILLINOIS GEOLOGICAL SURVEY, URBANA

(3)

32-39N-14E

COMPANY Chicago Dept Subways & Tract.
FARM Subway Boring NO. R-4
DATE DRILLED 4-3-39
AUTHORITY Driller's log
COLLECTOR ELEVATION 592.65 SW SW SW SW
100' E. of NE cor. Pershing Rd. & Ashland Av.

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Miscellaneous fill: loam, clay and sand (dry)	0 to		6.00	
	Fine yellow sand			9.00	
	Medium soft sandy blue and yellow clay with some very fine gravel			14.25	
	Medium soft, medium lean sandy blue clay with occasional small gravel			19.25	
	Soft medium lean sandy blue clay with occasional small gravel			23.55	
	Medium soft, medium lean sandy blue clay with occasional small gravel			27.50	
	Medium stiff sandy blue clay with some small gravel			31.20	
	Hard blue clay with sand and gravel			40.00	

COUNTY Cook 32-39N-14E
SAMPLE SET NO.
(24159—20M—9-46)

ILLINOIS GEOLOGICAL SURVEY, URBANA

TOWN Chicago TOWNSHIP Map No. 16

COMPANY Chgo.Pub.Wks.Dept. No. R. 14E

FARM No. T. Sec.

AUTHORITY Blueprint 39 N 32

ELEVATION 593

COLLECTOR DATE DRILLED 1913

CONFIDENTIAL

Charlton St., north side 35th St.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Filling	3		3	
	Clay, yellow	8		11	
	Clay, hard blue	15		26	
	Boulders	1		27	
	Clay, hard, blue	9		36	
	Clay, hard, boulders and limestone	5		41	
	Limestone	12		53	

Blueprint: Plan and Section Showing Borings, 35th St. Tunnel.

County Cook Index No. 1632

T.—DRILL RECORD

47327—10M—4-35 4 Illinois Geological Survey, Urbana.

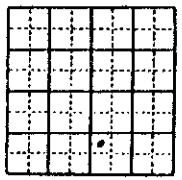
32-39N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

(3)

	Thickness	Top	Bottom
Surface material, sand, etc.			57
Limestone			300
Shale			552
Limestone			564
Shale			584
Limestone			820
Sandy shale, including streaks of shale, and sandstone			885
Limestone			1020
Shale			1027
Limestone			1029
Red marl			1100
Limestone			1101
Limestone, containing many crevices			1170
Sandy shale			1300
White sandstone			1405
Soft sandstone			1517
Hard sandstone			1588
Limestone			1598
Limestone and streaks of shale			1620
Red marl			1708
Shale (dark) probably dark gray			1748
Still in shale			1816'3"
6" diameter			
* 3755 S. Racine			

COMPANY J. P. Miller Artesian Well Co.
FARM White Eagle Brewery NO.
DATE DRILLED May 1913 COUNTY NO. 1634
AUTHORITY Company
ELEVATION 593' G. L.
LOCATION Ap. NW SW SE¼
COUNTY COOK



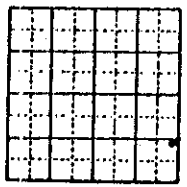
32-39N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

	Thickness	Top	Bottom
Surface, sand, gravel, etc.	40'10"	0	40'10"
Limestone	264' 2"	40'10"	305'
Shale	145'	305	450
Limestone	30	450	480
Shale	92	480	572
Limestone	393	572	965
Sandstone	58	965	1023
Shale	3	1023	1026
Limestone	424	1026	1450
Sandstone	181'8"	1450	1631'8"

Formerly Jung Brewery

COMPANY J. P. Miller Co.
FARM South Side Brewery NO.
DATE DRILLED 1896 COUNTY NO. 1658
AUTHORITY Company
ELEVATION 593'
LOCATION 120' W Halsted & 100' S of 37th St.
COUNTY COOK

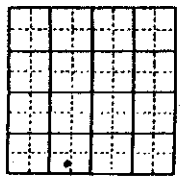


32-39N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

	Thickness	Top	Bottom
Total depth			1600
Casing: 8" Inside Diameter 0-530'			
5" diameter inserted casing 1010'			
1½" air pipe - 510' down			

COMPANY S. B.Geiger Co.
FARM Darling & Co.-46th St.Plant NO.
DATE DRILLED COUNTY NO. 1655
AUTHORITY
ELEVATION
LOCATION 580' S line, 1925' W line SW
COUNTY COOK



5-38N-14E

TOWN Chicago TOWNSHIP

COMPANY Armour (Stock Yards)

FARM Armour & Co (North side of wool house)

AUTHORITY

ELEVATION

COLLECTOR CBA DATE DRILLED 1910

CONFIDENTIAL

1850' S line, 2040' W line of SW

Map No. R. 14 E T. 38 Sec. 5

No.	COUNTY No. 1596 STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Clay or drift	60		60	
	Limestone	250		310	
	Shale	250		560	
	Limestone	340		900	
	St. Peter sandstone	50		950	
	Mixed with bluish shale	50		1000	
	3 streaks, fautly formation	185		1185	
	Great water vein	65		1250	
	Limestone	120		1370	
	Potsdam sandstone, water vein	205		1575 TD	

Diameter: 16" at top
12" at bottom

Static water level 215'
Pumping level 230' when pumping at 1400 gallons per minute

County COOK Index No. 1709

T.—DRILL RECORD

Illinois Geological Survey, Urbana. 5-38N-14E

TOWN Chicago TOWNSHIP Whitney Map No. 17

COMPANY Packers Ave. Wells R. 14

FARM Armour & Co. (Stock Yards) T. 38 Sec. 5

AUTHORITY

ELEVATION 592

COLLECTOR OBA DATE DRILLED

CONFIDENTIAL

2180'S line, 1650' W line of SW

No.	COUNTY No. 1538 STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Clay or drift	70		70	
	Limestone	215		285	
	Shale, blue	300		585	
	Limestone	305		890	
	St. Peter's sandstone	160		1050	
	Limestone	340		1390	
	Potsdam sands	200		1590	
	Limestone	10		1600	
				TD	
	Diameter: 25" at top				
	15¼" at bottom				
	Casing: 831' of 10" pipe				
	Static water level: 215'				
	Pumping level 230' when pumping at				
	420 gallons per minute.				

County COOK Index No. 1705

T.—DRILL RECORD 5-38N-14E

Illinois Geological Survey, Urbana.

TOWN Chi[illegible] TOWNSHIP

COMPANY NW cor. of Power house

FARM Armour & Co. (Stock yards) No.

AUTHORITY

ELEVATION

COLLECTOR CBA DATE DRILLED

CONFIDENTIAL

Map No.

R. 14 E

T. 38 Sec. 5

2465' S line, 1460' W line of SW

COUNTY No. 1557 STATE

No.		Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Clay or drift	73		73	
	Limestone	227		300	
	Shale	270		570	
	Limestone	290		860	
	St. Peter's sandstone	140		1000	
	Limestone	360		1360	
	Potsdam sandstone	221		1581 TD	

Diameter at top: 17¼"
at bottom: 13¼"

Static water level: 225'
Pumping level 360' when pumping at 979 gallons per minute.

County COOK

Index No. 1705

T.—DRILL RECORD

5-38N-14E

Illinois Geological Survey, Urbana.

(1)

(3)

TOWN Chicago TOWNSHIP

MAP No. 17

FARM NW cor. of Power house

COMPANY Armour & Co. (Stock Yards)

AUTHORITY

ELEVATION HOLE No.

COLLECTOR CRA DATE DRILLED

R. 14E

T. 38 N

Sec. 5

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Clay or drift	73		73	
	Limestone	227		300	
	Shale	270		570	
	Limestone	290		860	
	St. Peter's sandstone	140		1000	
	Limestone	360		1360	
	Potsdam sandstone	221		1581	

County Cook

T. DRILL RECORD.

Index No. 1715.0

E 1 (3)

TOWN Chicago TOWNSHIP

COMPANY Adler & Chendorf No.

FARM 46th & Packets Ave. No.

AUTHORITY J.P. Miller Co.

ELEVATION

COLLECTOR CBA DATE DRILLED 1902

CONFIDENTIAL

Map No. 17

R. 14 E

T. 38 N Sec. 5

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Sand, gravel, clay	?		?	
	Limestone	?		370	
	Lime shale	145		515	
	Shale	54		569	
	Limestone	346		915	
	Sand	?		?	
	Limestone	?		1430	
	Sandstone	164	10	1594	10

County COOK Index No. 1300

T.—DRILL RECORD

5--38N-14E

Illinois Geological Survey, Urbana.

TOWN Chicago TOWNSHIP

COMPANY Adler & Obendorf No.

FARM 46th St. & Sacramento Ave.

AUTHORITY J.F.Miller Co.

ELEVATION

COLLECTOR GBA DATE DRILLED Nov.-Dec. 1897

CONFIDENTIAL

Map No. 17

R. 14 E

T. 38 N

Sec. 5

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Surface material	28		28	
	Limestone	364		392	
	Shale	25		417	
	Limestone	20		437	
	Shale	115		552	
	Limestone	328		880	
	Sandstone	27		1007	
	Limestone, "cave" at about 1030	198		1305	
	Depth			1305	

County COOK

T.—DRILL RECORD

Index No. 1700

Illinois Geological Survey, Urbana.

(3)

TOWN Chicago TOWNSHIP E 3 Map No. 17

COMPANY Armour & Co. No. R. 14

FARM Engine house No. 8 T. Sec.

AUTHORITY J.P.Miller Art. Well 28

ELEVATION

COLLECTOR GRA DATE DRILLED

CONFIDENTIAL 1889, deepened 1907

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Surface, sand, gravel, etc.	65		65	
	Limestone			1267	
	No record until limestone reached at			1277	
				1277 ?	
	Marl, red	4		1281	
	Limestone	49		1330	
	Sandstone	5		1335	
	Sand, shale	25		1360	
	Limestone	10		1370	
	Sand shale	122		1492	
	Sandstone (hard)	211	5	1603	5
	Measured depth 1603'5"				

SEC. 16

County Cook Index No. 1740

T.—DRILL RECORD

TOWN Chicago TOWNSHIP Map No. 17 (3)

COMPANY Continental Packing Co. R. 14 E

FARM Stock Yards No. T. Sec. 5

AUTHORITY J.P.Miller Well Co. 38 E

ELEVATION

COLLECTOR DRA DATE DRILLED 1892 deepened 1901

CONFIDENTIAL

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Surface, sand, gravel, etc.	58		58	
	Limestone				
	Shale, no record			552	
	Limestone	883		1435	
	Sandstone, hard	165		1600	
	Limestone	60		1660	
	Limestone and shale	120		1790	
	Shale	95		1885	
	Sandstone	27	6	2012	6
	Measured depth			2012	6
	Plotted				

County COOK Index No. 17015

T.—DRILL RECORD

Illinois Geological Survey, Urbana.

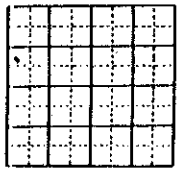
ILLINOIS GEOLOGICAL SURVEY, URBANA

	Thickness	Top	Bottom
Surface sand, gravel	61		61
Limestone	229		290
Shale	254½		544½
Limestone	330½		875
Sand shale and sandstone (caves)	145		1020
Caving rock, probably shale and limestone	330		1350
Sand shale	80		1430
Sandstone	160		1590
Lime and shale	93		1683
			TD

6" hole
Casing: 61' from drift to limestone
Static level 300'

Casing: 12" 0-61'
10" 0-300'
8" 0-544'
6¼" 0-1030'
5-5/8" casing down in hole, Setting uncertain
467' of 2" air line from surface to 267'

COMPANY S. B. Geiger Artesian Well Co.
FARM Darling & Co.-42nd St. Plant NO.
DATE DRILLED March 1913 COUNTY NO. 1654
AUTHORITY Company
ELEVATION
LOCATION 2030' N line, 310' W line of NW
COUNTY COOK



5-38N-14E

TOWN Chicago TOWNSHIP Map 17 (2)

COMPANY Union Stock Yards No. 14E R.

FARM No. 38N T. Spc. 5

AUTHORITY Ill. Repts V. 3, p. 244

ELEVATION

COLLECTOR DATE DRILLED

CONFIDENTIAL

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Niagara group				
	Limestone, bluish gray	16		16	
	Limestone, light gray, slightly varying in shade of color at different depths	138		154	
	Limestone, nearly white	20		174	
	Limestone, buff or drab	80		254	
	Cincinnati group				
	Shale, soft and fine	104		358	
	Limestone, light gray	20		378	
	Shale, coarser and arenaceous	126		504	
	Trenton group				
	Limestone, brownish, ferruginous	25		529	
	Limestone, grayish, more or less dark	305		834	
	St. Peter				
	Sandstone, whitish brown	155		989	
	Lower Magnesian limestone				
	Limestone, light colored, very hard	60		1049	
	Limestone, gray	10		1059	
	NO ENVELOPE				

County COOK Index No. 1700

T.—DRILL RECORD

5-38N-11E

Illinois Geological Survey, Urbana.

(3)

TOWN Chicago TOWNSHIP

Map No. 17

COMPANY

FARM Wilson & Co. Union St. Yards No.

AUTHORITY

ELEVATION

COLLECTOR From State Rec. DATE DRILLED 1920

CONFIDENTIAL

T. 38 N R. 14 E Sec. 5

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Surface	61		61	
	Lime	279		340	
	Shale	50		390	
	Lime, rotten	40		430	
	Shale	70		500	
	Lime	20		520	
	Shale	15		535	
	Lime	325		860	
	Sand	85		945	
	Lime	25		970	
	Lime, sandy	15		985	
	Lime	90		1075	
	Red rock	3		1078	
	Lime	202		1280	
	Sand rock	45		1325	
	Lime	70		1395	
	Sand	115		1510	
	Sand, soft	80		1590	
	Shale, very hard	10		1600	

ORIGINAL FILED

County Cook

T.—DRILL RECORD

Index No. 170b

5-38N-14E

(67720—5M—6-27)

TOWN Chicago TOWNSHIP

COMPANY Hammond Packing Co.

FARM Stock Yards No. 2

AUTHORITY J. P. Miller Co.

ELEVATION

COLLECTOR CBA DATE DRILLED Nov. 1902-Jan. 1903

CONFIDENTIAL

Map No. (3)

R. 17 E.

T. 38 N. 14 Sec. 5

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Surface, sand, gravel, etc.	63		63	
	Limestone	257		320	
	Shale	248		568	
	Limestone	334		902	
	Sandstone	136		1038	
	Limestone	332		1370	
	Sand shale	62		1432	
	Sandstone	163	2	1595	2
	Measured depth			1595	2

Plotted

13' of 10 in pipe to rock

abandoned

County COOK Index No. 1706

T.—DRILL RECORD

Illinois Geological Survey, Urbana.

(3)

TOWN Chicago TOWNSHIP

Map No. 17

COMPANY G.H.Hammond Co. No.

R. 14 E

FARM Stock Yards No. 3

T 38 N Sec. 5

AUTHORITY J.P.Miller Co.

ELEVATION

COLLECTOR CBA DATE DRILLED June-Dec.1904

CONFIDENTIAL

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Surface, sand, gravel, etc.	61		61	
	Limestone	146		207	
	Limestone, hard	111		318	
	Shale	253		571	
	Limestone	344		915	
	Sandstone	30		945	
	Limestone, sandy	75		1020	
	Limestone, crevices and caving	50		1322	
	Shale, sandy	78		1400	
	Shale	21		1421	
	Sand shale	12		1433	
	Sandstone	58		1491	
	Sandstone, hard	35		1526	
	Sandstone, soft	93	6	1592	6
	Plotted				
	66' of 10" bottled pipe to rock				
	5" hole at bottom				
	Abandoned				

County COOK Index No. 1706

T.—DRILL RECORD

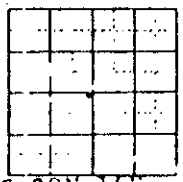
Illinois Geological Survey, Urbana.

ILLINOIS GEOLOGICAL SURVEY, URBANA

ENGINEERING BORING	Thickness	Top	Bottom
SY-6			
FILL, cinders, brick, silt, sand, gravel & wood			5.0
Loose gry brn SILT, tr clay & sand, organic matter noted			8.5
Tough gry br silty CLAY, tr c-f sand & f gravel			13.0
Very tough gr silty CLAY, tr c-f sand & f gravel			18.0
Hard gr silty CLAY, tr c-f sand & f gravel			23.5
Hard gr clayey SILT, occ c-f sand & m-f gravel			51.0
Very dense gr SILT, some limestone fragments & tr clay			56.0
Fractured LIMESTONE			57.0
Typed by Warrenville			
Logs of 36 borings filed at NE Ill Office City of Chicago Dept. of Pub. Wks., Bur. of Eng. NO ENVELOPE			

COMPANY City of Chicago DPW
FARM Stockyard Redevelopment
DATE DRILLED 1/68
AUTHORITY Company
ELEVATION 594' G.L.
LOCATION NE, NE, SW
COUNTY COOK

NO. SY-6
COUNTY NO. 26565



5-38N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

ENGINEERING BORING	Thickness	Top	Bottom
SY-12			
Organic SILT FILL, some cinders & sand, wood noted			6.5
Loose br gr SILT, occ c-f sand, tr f gravel			8.5
Very tough br gr silty CLAY, occ c-f sand, tr f gravel			10.5
Tough gr silty CLAY, occ c-f sand, tr f gravel			18.0
Very tough gr silty CLAY, occ c-f sand, tr f gravel			25.5
Hard gr silty CLAY, occ c-f sand, tr m-f gravel			29.0
Hard gr clayey SILT, occ c-f sand, tr m-f gravel			53.0
Broken LIMESTONE FRAGMENTS & c-f sand, tr silt			55.0

Typed by Warrenville

Logs of 36 borings filed at NE Ill Office
City of Chicago Dept. of Pub. Wks., Bur. of Eng.
NO ENVELOPE

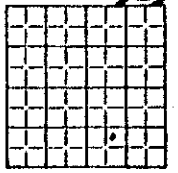
COMPANY	City of Chicago DPW
FARM	Stockyard Redevelopment NO. SY-12
DATE DRILLED	1/68 COUNTY NO. 26566
AUTHORITY	Company
ELEVATION	591' G.L.
LOCATION	NE, NE, NW
COUNTY	COOK

5-38N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

Strata	Thickness	Top	Bottom
Studied by P. M. Busch, 1/52			
PLEISTOCENE SYSTEM			
Gravel & little sand, dolomitic, clayey, grayish brown	55		55
SILURIAN SYSTEM			
Niagaran Series			
Dolomite, light gray, fine to medium	20		75
Dolomite, light gray to white, fine to coarse	170		245
Brandonbridge formation			
Dolomite, silty, argillaceous, gray, fine, paleoturritella, ammodiscum, lituotuba	20		265
Alexandrian Series			
Kankakee-Edgewood formations			
Dolomite, light yellowish gray to yellowish gray, fine to medium	15		280
Dolomite, light yellowish gray to light yellowish brown, fine to medium	10		290
Dolomite, glauconitic at top, sandy, fine to medium	20		310
Dolomite, partly argillaceous, light yellowish gray to grayish brown, fine to medium, little siltstone, dolomitic, grayish green, firm	3		313

COMPANY Milsager Well Drlg Co. NO.
FARM Produce 45th St., Stock Yards NO.
DATE DRILLED 1951 COUNTY NO.
AUTHORITY Summary Sample Study
ELEVATION 594' est. T. M.
LOCATION 1200' S. line, 1800' E. line SEc 5-38N-14E
COUNTY COOK S. S. 21641



Strata	Thickness	Top	Bottom
ORDOVICIAN SYSTEM			
Maquoketa formation			
Shale, dolomitic, light green, weak	7		320
Siltstone, dolomitic, grayish green, yellowish green, compact; shale as above	10		330
Shale, dolomitic, green, weak	20		350
Dolomite, argillaceous, green, gray, dark speckled fine	10		360
Shale, dolomitic, green, weak	20		380
Dolomite, argillaceous, green, fine	10		390
Shale, dolomitic, green, weak	15		405
Dolomite, partly argillaceous, grayish brown, gray, dark speckled, fine; few shale partings, dolomitic, green, brown, weak to firm	5		410
Dolomite, yellowish gray, fine to medium, dark speckled	5		415
Dolomite, cherty, partly argillaceous, yellowish gray to yellowish green, fine	20		435
Dolomite, argillaceous to partly argillaceous, gray to yellowish brown, fine to coarse, dark speckled; shale at top, grayish brown, firm, dark speckled	15		450

~~Milsager Well Drlg. Co. Prod. 45th St., 8th Yds~~

COUNTY COOK S. S. #21641 5-39N-11E

Strata	Thickness	Top	Bottom
Dolomite, partly argillaceous, yellowish gray, fine to medium	5		455
Shale, dolomitic, yellowish green to green; dolomite, argillaceous, yellowish brown to green to gray, fine to medium	10		465
Dolomite, partly argillaceous, green to yellowish brown, fine to medium	5		470
Shale, dolomitic, green, weak	10		480
Dolomite, partly argillaceous, green, yellowish gray, yellowish brown, fine; shale, dolomitic, green, weak	5		485
Shale, dolomitic, green, weak to firm	70		555
Galena formation			
Dolomite, light yellowish brown, fine to coarse	65		620
Dolomite, yellowish gray, fine to coarse	5		625
Dolomite, light yellowish brn, fine to coarse	105		730
Decorah formation			
Dolomite, sandy, yellowish gray to pale yellowish brown, fine to coarse	20		750
Guttenberg formation			
Dolomite, partly sandy, pale yellowish brown, fine to medium, some orange specks	10		760

Milaeger Well Drlg. Co. Prod. 45th St., Stk Yds

COUNTY COOK S. S. #21641 5-38N-14E

Strata	Thickness	Top	Bottom
Platteville formation			
Dolomite, pale yellowish brown, fine to medium	10		770
Dolomite, pale yellowish brown, fine to coarse	20		790
Dolomite, gray to pale yellowish brown, fine to medium	15		805
Dolomite, gray, fine, few dark shaley surfaces	20		825
Dolomite, light yellowish brown, fine to medium	35		860
Dolomite, pale yellowish brown, fine	5		865
Dolomite, pale grayish brown to gray, fine	10		875
Dolomite, sandy, pale grayish brown, some gray, fine to medium	10		885
Glenwood-St. Peter formations			
Sandstone, yellowish gray, fine to medium, incoherent	25		910
Sandstone, yellow, fine to medium, incoherent	5		915
Sandstone, yellowish gray, very fine to medium, incoherent	25		940
Sandstone, light gray, fine to medium, incoherent	20		960
Shale, dolomitic, silty, sandy, light gray, weak-	5		965
Oneota formation			
Dolomite, sandy, slightly cherty to cherty, light gray, fine to coarse; few shale ptgs, sandy, green, wk	45		1010

Milsagar Well Drlg. Co. Prod. 45th St., Stk Yds

COUNTY COOK S. S. #21641 5-38N-14E

Strata	Thickness	Top	Bottom
Dolomite, yellowish gray to pale yellowish brown, fine to medium, few brown shaley surfaces, (sample floats)	10		1020
Dolomite, cherty, light gray to pale yellowish brown, fine to coarse; few green shale partings	15		1035
Dolomite, cherty, light gray, pink, fine to coarse; shale partings, sandy, green, weak	45		1080
CAMBRIAN SYSTEM			
Trempealeau formation			
Dolomite, sandy, light gray to light yellowish gray, fine to medium; few green shale partings; little sandstone at base, light yellowish gray, coarse, compact	40		1120
Sandstone, light gray, fine to coarse, angular, incoherent; dolomite, sandy, light yellowish gray, some pink, fine to coarse	5		1125
Dolomite, sandy, light yellowish gray, some pink, fine to medium; few shale partings, green, weak (No sample 1150'-1160')	35		1160
Dolomite, partly sandy, light gray to light yellowish gray, fine to medium	35		1195
Dolomite, white to light yellowish gray, fine to crse	10		1205

Milaeger Well Drlg. Co. Prod. 45th St., Stk Yds

COUNTY COOK S. S. #21641 5-38N-14E

Strata	Thickness	Top	Bottom
Dolomite, light yellowish gray, fine to medium	35		1240
Dolomite, yellowish gray, fine to coarse; quartz	50		1290
Franconia formation			
Dolomite, sandy, glauconitic, yellowish gray to pink to light yellowish brown, fine to coarse; sandstone at base, partly dolomitic, light gray, fine to coarse, incoherent	40		1330
Sandstone, glauconitic, gray, medium to coarse, incoherent	15		1345
Sandstone, glauconitic, silty, partly dolomitic, greenish gray, fine to coarse, incoherent	5		1350
Sandstone, glauconitic, dolomitic, grayish green, fine to coarse, compact	10		1360
Sandstone, glauconitic, dolomitic, silty, grayish green, fine to coarse, compact to incoherent	5		1365
Dolomite, glauconitic, sandy, grayish green to gray, fine to coarse; sandstone as above	30		1395
Dolomite, glauconitic, sandy, partly argillaceous, grayish green, fine to medium; sandstone at base, glauconitic, dolomitic, grayish green, fine to coarse, compact	25		1420

Milaeger Well Drlg. Co. Prod. 45th St., Stk Yds

COUNTY COOK S. S. #21641 5-38N-14E

Strata	Thickness	Top	Bottom
Ironton-Galesville formation			
Sandstone, light yellowish gray, fine to very coarse, incoherent, some compact; dolomite at base, sandy, light yellowish gray, fine to medium	10		1430
Sandstone, light gray, medium to very coarse, incoherent; dolomite, sandy, light yellowish brown to pink, fine to coarse	20		1450
Sandstone, light yellowish gray, fine to very coarse, incoherent; little dolomite, sandy, light yellowish brown, fine to coarse	5		1455
Sandstone, light yellowish gray, medium to very coarse, incoherent; little dolomite as above	20		1475
Sandstone, silty, yellowish gray, fine to very coarse, incoherent; dolomite, sandy, light pinkish brown, fine to coarse	15		1490
Sandstone, light gray, medium to very coarse, incoherent silty	20		1510
Sandstone, slightly sandy to silty, light gray, fine to very coarse	30		1540
Sandstone, light gray, fine to medium	10		1550
Sandstone, light yellowish gray, fine to very coarse, incoherent; dolomite at top,			

~~Mileager Well Drlg. Co. Prod. 45th St., Stk Yds~~

COUNTY COOK S. S. #21641 5-38N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

Strata	Thickness	Top	Bottom
sandy, yellowish gray, fine to coarse	10		1560
Sandstone, partly dolomitic, yellowish gray, fine to very coarse, incoherent; little dolomite, sandy, light yellowish brown, fine to coarse	10		1570
Sandstone, dolomitic, silty, yellowish gray, fine to coarse, incoherent	10		1580
Sandstone, partly dolomitic, yellowish gray, fine to coarse, incoherent	10		1590
Sandstone, yellowish gray, medium to coarse, incoherent	10		1600
Eau Claire formation			
Dolomitic, sandy, argillaceous, dark grayish brown, fine to medium; siltstone, dolomitic, yellowish gray to grayish brown, compact	5		1605 TD

Milaeger Well Drlg. Co. Prod. 45th St. Stk Yds

COUNTY COOK S. S. #21641 5-39N-14E

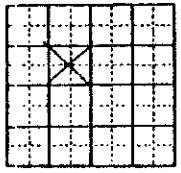
ILLINOIS GEOLOGICAL SURVEY, URBANA

	Thickness	Top	Bottom
Sand, gravel, clay	67'9"	0	67'9"
Limestone	232'3"	67'9"	300
Shale	277	300	577
Limestone	319	577	896
Sand	85	896	981
Cave	59	981	1040
Limestone	315	1040	1355
Shale, sandy	60	1355	1415
Sand	207	1415	1622
			TD

Casing: to 67'
Diameter: 10"

" 42nd and Packers

COMPANY J. P. Miller
FARM Nelson Morris Co. (Glue house)
DATE DRILLED 1903 COUNTY NO. 1607
AUTHORITY Company
ELEVATION 592' G. L.
LOCATION SE NW"
COUNTY COOK



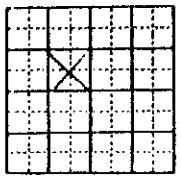
5-38N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

	Thickness	Top	Bottom
Sand, gravel, clay	67	0	67
Limestone	218	67	285
Shale	259	285	544
Limestone	386	544	930
Sand	170	930	1100
Red marl	100	1100	1200
Limestone	200	1200	1400
Sand	226	1400	1626
			TD

Diameter of well: 10"

COMPANY J. P. Miller
FARM Nelson Morris Co. NO.
DATE DRILLED 1901 COUNTY NO. 1606
AUTHORITY Company
ELEVATION
LOCATION SE NW
COUNTY COOK



5-38N-14E

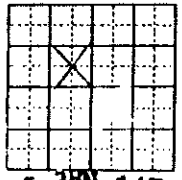
ILLINOIS GEOLOGICAL SURVEY, URBANA

	Thickness	Top	Bottom
Surface material	75	0	75
Limestone	217	75	292
Shale	293	292	585
Limestone	385	585	970
"Cave", probably shale	70	970	1040
Limestone	360	1040	1400
Sandstone	160	1400	1560
Limestone	47'4"	1560	1607'4" TD

There is no mention here of the St. Peter sandstone but I believe it is present though not noted in the records.

Diameter: 12" top
8" bottom

COMPANY J. P. Miller
FARM Nelson Morris Co. NO.
DATE DRILLED May-July 1898 COUNTY NO. 1605
AUTHORITY Company
ELEVATION
LOCATION SE NW
COUNTY COOK



5-39N-14E

TOWN Chicago TOWNSHIP Map No. 7 (2)
COMPANY Armour & Co. No. 14 E
FARM Stock Yards No. T Sec.
AUTHORITY J.P.Miller Co. 38 N
ELEVATION
COLLECTOR CBA DATE DRILLED 1900
CONFIDENTIAL

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Well drilled deeper, originally			1286	
	Limestone	1340 ?		1340	
	Sand	272		1612	
	Limestone	133		1745	
	Shale, sandy	15		1760	
	Shale, red	70		1830	
	Lime and shale	60		1890	
	Sand	161		2051	

County COOK Index No. 1700
T.—DRILL RECORD

Illinois Geological Survey, Urbana.

(5)

TOWN Chicago TOWNSHIP Map No. 17

COMPANY Hammond Packing Co.

FARM Stock Yards No.

AUTHORITY J.P.Miller Well Co

ELEVATION

COLLECTOR CBA DATE DRILLED July-Oct. 1902

CONFIDENTIAL

46th St. Racine

14 R. E

T 38 N Sec. 5

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Surface, sand, gravel, etc.	66		66	
	Limestone	246		312	
	Shale	248		560	
	Limestone	340		900	
	Sandstone	82		982	
	Caving material, probably sand shale and rotten limestone	20		1002	
	Limestone	326		1328	
	Sandstone	76		1404	
	Sand shale	61		1465	
	Sandstone	128		1593	
	Measured depth			1593	

Plotted

5" hole
66' of 10" pipe to rock
abandoned

County COOK

Index No. 1706

T.—DRILL RECORD

Illinois Geological Survey, Urbana.

TOWN Chicago TOWNSHIP

COMPANY Swift & Co. No.

FARM Union Stock Yards No. 1

AUTHORITY J.P. Miller (Hog house)

ELEVATION

COLLECTOR CBA & DATE DRILLED

CONFIDENTIAL Bull. 35 1900

475' W of Racine & 35' N of 42nd Place

Map 17

R. 14 E

T. 38 N

Sec. 5

No.	Co. # 1635 STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Sand, clay, gravel	55		55	
	Limestone	240		295	
	Shale	258		553	
	Limestone	402		955	
	Cave	50		1005	
	Limestone	345		1350	
	Sand, shale	90		1440	
	Sand	200		1640	
	Shale, sandy	238		1878	
	Sand	122		2000	
	56' 4" of 10" casing abandoned				
	Depth			2008	

County Cook Index No. 1703

T.—DRILL RECORD

Illinois Geological Survey, Urbana. 5-38N-14E

TOWN Chicago TOWNSHIP

COMPANY Swift & Co. No.

FARM Union Stock Yards No. 2

AUTHORITY J.P.Miller

ELEVATION

COLLECTOR CBA DATE DRILLED

CONFIDENTIAL 1900 .

Map 1700

R. 14E

T 38 N

Sec. 5

175' S of 42nd Place & 425' E. of Ashland

No.	C#1636 STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Sand, gravel, clay				
	Limestone			285	
	Shale	269		554	
	Limestone	326		880	
	Sand	115		995	
	Limestone	305		1300	
	Sand	300		1600	
	Limestone	65		1665	
	Shale	115		1780	
	Limestone	60		1840	
	Shale	35		1875	
	Sand	125		2000	
	Caving rock (965-1100)				
	47'10" casing to rock				
	Abandonded				
	Depth from CBA & Bull.35 (Bone house)			1979	

County Cook Index No. 1705

T.—DRILL RECORD

5-38N-14E

Illinois Geological Survey, Urbana.

TOWN Chicago TOWNSHIP

COMPANY Swift & Co. No.

FARM Union Stock Yards No. 3

AUTHORITY J.P. Miller

ELEVATION

COLLECTOR CBA DATE DRILLED

CONFIDENTIAL Nov.-Feb. 1896

350' W of Loomis St. & 100' S. of 41st St.

Map 17

R. 14 E

T. 38 N

Sec. 5

No.	Co. #1637 STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Surface material	69		69	
	Limestone	229		298	
	Shale	259		557	
	Limestone	319		876	
	Sandstone	89		965	
	Limestone	468		1433	
	Sandstone, very hard	134		1567	
	Limestone	168		1735	
	Shale, "sticky"	115		1850	
	Sandstone	168	9	2018	9
	72' of 10" casing				
	Abandoned				

County Cook

Index No. 1700

T.—DRILL RECORD

5- 38N-14E

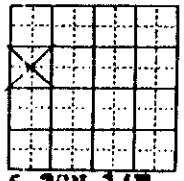
Illinois Geological Survey, Urbana.

ILLINOIS GEOLOGICAL SURVEY, URBANA

	Thickness	Top	Bottom
Surface material	66		66
Limestone	224		290
Shale	250		540
Limestone	330		870
Sandstone	88		958
Shale, sandy	7		965
"Caving" material, for most part shale	27		992
Limestone	209*		1301
			TD
*As shown on driller's log.			
This well deepened by Swift & Company, 1907			
Sandy lime			1435
Sand (hard)			1460
Sand (soft)			1520
Sand (hard)			1614
			TD
They were in the shale a short distance at 1614 but it gives only that fact, not the depth.			
*220' N 42nd Place and 450' E of Ashland			

COMPANY J. P. Miller & Co.
FARM Darling & Co.
DATE DRILLED November 1897
AUTHORITY Company
ELEVATION
LOCATION SW NW*
COUNTY COOK

NO.
COUNTY NO. 1653

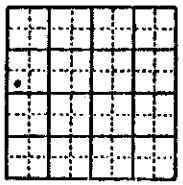


5-38N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

Fertilizer Well	Thickness	Top	Bottom
Clay, sand, gravel	72	0	72
Limestone	233	72	305
Shale	285	305	590
Limestone, includes St. Peter sandstone	730	590	1320
Sandstone	200	1320	1520
Limestone	80	1520	1600
Shale	180	1600	1780
Sandstone	33'6"	1780	2013'6"
Total Depth			2019
Depth of casing 72'			

COMPANY J.P. Miller
FARM Swift and Company NO. 3
DATE DRILLED 1896-1900 COUNTY NO. 1609
AUTHORITY Swift & Co.
ELEVATION 593'
LOCATION 2510' N line, 325' W line of NW
COUNTY COOK



5-38N-14E

North Boiler House Union Stock Yards

TOWN Chicago TOWNSHIP Map No. 17

COMPANY W.H.Gray and Brother R. 14E

FARM Swift and Co. No. T. Sec.

AUTHORITY No.

ELEVATION 38

COLLECTOR DATE DRILLED N 5

CONFIDENTIAL From State H.O. Survey 1917-1918

1280' N line, 1130' W line of NW

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Clay	30		30	
	Limestone	260		290	
	Soapstone	268		558	
	Limestone	322		880	
	Sand	80		960	
	Limestone	550		1510	
	Sandstone	70		1580	
	Limestone and slate	39		1619	

County Cook Index No. 1705

T.--DRILL RECORD 5-38N-14E

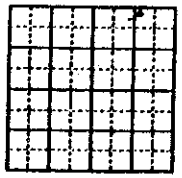
(67729—3M—5-27)

ILLINOIS GEOLOGICAL SURVEY, URBANA

5

Strata	Thickness	Top	Bottom
Total Depth (Electric log)			1625
Electric log filed.			
Section gauge filed.			
Fluid level: 437'			

COMPANY Produce Terminal Corp.
FARM Power House 39th St. NO.
DATE DRILLED January 1956 COUNTY NO. 18
AUTHORITY Electric log from Co.
ELEVATION
LOCATION 1135'E line, 220'N line, of NE
COUNTY COOK



5-38N-14E

(3)

TOWN TOWNSHIP R. 14E

COMPANY J.P. Miller Art. Well Co. T. SEC.

FARM Swift & Co., Poultry Division 5

DATE DRILLED July 1946 38N

AUTHORITY Driller's Log

COLLECTOR ELEVATION

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Clay and fill			0-15	
	Broken shale and gravel			29	
	Lime gray hard			180	
	Blue shale			185	
	Lime hard			195	
	Shale			205	
	Lime hard			275	
	Shale			502	
	Lime hard			650	
	Crevice			657	
	Lime hard			855	
	Sand, white, soft & hard			1022	
	Lime, hard			1027	
	13" well, surface to 29'				
	Water at 140, 4 bailer				
	Main supply at 905 to 945'				
	~~No envelope~~ ORIGINAL				

COUNTY Cook: 5 -38N-14E

SAMPLE SET NO.

(84107—20M—6-45)

ILLINOIS GEOLOGICAL SURVEY, URBANA

(54389—2M)

TOWN Chicago TOWNSHIP MAP No. 17

COMPANY Schlumberger and Sons

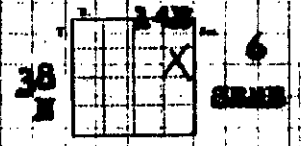
FARM

AUTHORITY

ELEVATION HOLE No. 3

COLLECTOR DATE DRILLED

Oakland & 42nd.



No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
1	Glacial till containing pebbles of various kinds of igneous rocks and fine quartz sand (quartz-peridotite, etc.); some of the pebbles calcareous	40		45	
2	Glacial till, like the preceding, containing more quartz sand	14		55	
3	Dolomite, light gray; very little action in cold dilute HCl but vigorous action in hot dilute HCl, fine grained to subcrystalline; a few pieces of chert and small igneous pebbles were noted which probably came down from above	5		65	
4	Dolomite, like the preceding, some fragments of a darker colored dolomite and a noticeable amount of iron rust	5		70	
5	Dolomite, light gray, fairly pure subcrystalline to crystalline; slight action with cold dilute HCl but strong action with warm dilute HCl	5		75	
6	Dolomite, like the preceding	5		80	

County Cook Index No. 1706

T—DRILL RECORD

(74698—1M)

SHEET 2 , 38N , 14E , 6

COMPANY Sulberger and Sons HOLE No. 1

No.	STRATA	THICKNESS FEET	THICKNESS IN.	DEPTH FEET	DEPTH IN.
7	Dolomite, light gray to almost white, crystalline, strong action with warm dilute HCl	10		90	
8	Dolomite, like the preceding	10		100	
9	Dolomite, like the preceding	55		155	
10	Dolomite, like the preceding	15		170	
11	Dolomite, like the preceding, with fragments of gray dolomite	10		180	
12	Dolomite, like the preceding	10		190	
13	Dolomite, same	10		200	
14	Dolomite, like the preceding; very little of the gray dolomite	5		205	
15	Dolomite, white, fine grained; some action with cold dilute HCl; ~~[illegible]~~ vigorous when heated	10		215	
16	Dolomite, like the preceding, only fragments have a grayish tinge	10		225	
17	Dolomite, like the preceding; a few fragments of calcite were present	15		240	
18	Dolomite, light gray, fine grained to subcrystalline, strong action with warm dilute HCl	11		251	
19	Dolomite, like the preceding	14		265	

County Cook Index No. 1706

T.—DRILL RECORD

(7-499—1M)

SHEET 3 T. 38N R. 14E S. 6

COMPANY Schlumberger and Sons HOLE No. 1

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
20	Dolomite, like the last; a few pieces of pyrite present; also a noticeable amount of iron rust probably from fragments of iron broken from the drill	10		275	
21	Dolomite like the preceding with light gray shale which has been powdered in drilling so that original texture is lost. Shale very plastic	5		280	
22	Dolomite, dark-gray, fine grained, good action with warm dilute HCl	20		300	
23	Dolomite, gray to almost black, fine grained to crystalline; a few pieces of calcite and pyrite and a few grains of quartz sand	30		330	
24	Dolomite, gray to dark gray, good reaction with warm HCl. Some of the fragments rounded as by erosion	50		380	
25	Dolomite, light gray to gray, fine grain to crystalline. Some fine sand calcite present	5		400	
26	Dolomite, like the last	5		415	
	Maquoketa Shale				
27	Shale, very dolomitic, yellowish brown, very finely powdered by the drill, occasionally a small				

County Cook

T. DRILL RECORD

Index No. 1706

(74898—1M)

SHEET 4 T 38N R 14E S 6

COMPANY Schlumberger and Sons HOLE No. 1

No.	STRATA	THICKNESS FEET	THICKNESS IN.	DEPTH FEET	DEPTH IN.
	piece is found which retains the original texture. A fairly brisk action was obtained with cold dilute HCl. This sample might possible be called a shaly dolomite, but the shale seems to be rather the predominant character	35		450	
28	Shale, like the preceding	35		485	
29	Shale, like the preceding, less dolomitic	15		500	
30	Shale, like the preceding, only the action of cold dilute acid was not very brisk and residue was more flakey	20		520	
31	Dolomite crystaline, cream color to yellowish brown, rich cream when finely powdered. Slight action with cold dilute acid, became brisk when heated; a few pieces of shale which must have dropped from above	4		534	
32	Dolomite, like the preceding	16		550	
33	Dolomite, like the preceding	20		570	
34	Shale, gray, mostly powdered and recemented, but some fragments retain original texture, very plastic; no action with cold or warm dilute acid;				

County Cook Index No. 1706

T.—DRILL RECORD

(75489—1M)

SHEET 5 T. 38N. R. 14E. 6

COMPANY Schlumberger and Sons HOLE No. 1

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	noticeable amount of pyrite	10		580	
35	Dolomite, crystalline, cream color, brisk action with warm dilute HCl; an occasional piece of white chert was found	5		585	
36	Dolomite like preceding	10		595	
37	Dolomite like the preceding with a few pieces of shale that may have fallen from above	15		6057	
38	Dolomite, like the last, but without the shale	10		615	
39	Dolomite, like preceding	20		635	
40	Dolomite, like preceding	10		645	
41	Dolomite, like preceding	15		660	
42	Dolomite, like preceding, a few pieces of gray shale again present	20		680	
43	Dolomite, like preceding	15		695	
44	Dolomite, like preceding	15		710	
45	Dolomite, like preceding with a number of small pieces of gray shale	15		725	
46	Dolomite like preceding, but less shale; small flinkes of chert	10		735	
47	Dolomite, like the last, finely powdered	5		740	
48	Dolomite, like preceding	10		750	
49	Dolomite, like preceding	10		760	
50	Dolomite, like preceding, with a few fragments of gray shale	10		770	

Cook

County

T. DRILL RECORD

Index No. 1706

(74698—1M)

SHEET 5 T 38N R 14E S 6

COMPANY Sulzberger and Sons HOLE No. 1

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
51	Dolomite, like preceding	5		775	
52	Dolomite, like preceding	5		780	
53	Dolomite, like preceding, with some gray dolomite	5		785	
54	Dolomite, cream colored, very finely powdered, fairly brisk action with cold dilute HCl	5		790	
55	Dolomite, like the last, with an occasional fragment of gray shale and of gray dolomite	5		795	
56	Dolomite, like preceding	5		800	
57	Dolomite, like preceding, only in coarser particles	10		810	
58	Dolomite, like preceding	5		815	
59	Dolomite, very fine powder, rich cream color; fair action with cold HCl which becomes vigorous when heated	5		820	
60	Dolomite, like preceding	5		825	
61	Dolomite, cream-color to brownish-gray crystalline, good reaction with warm HCl; some fragments of blue-gray shale present	10		835	
62	Dolomite, like the preceding, more shale	10		845	
63	Like the preceding	10		855	
64	Like the preceding (nearly all of the sample lost; sack torn	5		860	

County Cook

Index No. 1706

T. DRILL RECORD

(74498—1M)

SHEET 7 T. 38 R. 14E S. 4

COMPANY Sulzberger and Sons HOLE No. 1

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	St. Peter Sandstone				
65	Sandstone very fine, white to colorless, rounded grains with a few pieces of gray shale; noticeable amount of iron rust present	10		870	
66	Sandstone, like preceding	10		880	
67	Sandstone, like preceding, no shale	15		895	
68	Sandstone, like preceding enough rust present to tinge the entire sample pink error, individual grains of sand are uncolored	30		925	
69	Sandstone, like the last; only a pinch of sample left, the rest lost	25		950	
70	Sandstone, like preceding, only less rust	10		960	
71	Sandstone like preceding	10		970	
72	Sample lost Lost Sequence	15		985	
73	Dolomite crystalline, light gray to cream color, very little action with cold dilute HCl, but became vigorous when heated; a few fragments of blue gray shale and an occasional calcite crystal; some small pieces of pyrite; a few small particles of white chert	29	9	1014	9
74	Dolomite, chert, and iron rust, with a few grains of				

Cook

County

Index No. 1706

T.—DRILL RECORD

(74599—1M)

SHEET 8 , 38N R 14E , 6

COMPANY Schlumberger and Sons HOLE No. 1

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	clear quartz sand. The dolomitic character seems to be the most pronounced. The whole sample is colored by the iron rust	9	3	1025	
75	Dolomite, light gray, subcrystalline to crystalline, with an abundance of white chert chips. This sample also contains a noticeable amount of the iron rust mentioned above	5		1030	
76	Dolomite, white to gray, fine-grained to subcrystalline; slight reaction with cold dilute HCl which became brisk when heated	15		1045	
77	Dolomite, crystalline, light gray to gray; a few chert chips and a few pieces of gray-green shale were noted; some iron rust	15		1060	
78	Dolomite, like preceding	10		1070	
79	Dolomite, like preceding with clear quartz sand, noticeable amount of the iron rust	5		1075	
80	Dolomite and shale, white crystalline dolomite with reddish brown and green shale; red shale not dolomitic; green shale slightly so; a few pieces of chert and a few grains of clear or colorless quartz sand were noted	5		1085	

County Index No.

T.—DRILL RECORD

274893—1M

SHEET 9 T 38 R 14E S 6

COMPANY Schlumberger and Sons WELL No. 1

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
81	Dolomite, white to gray, crystalline; good reaction with warm dilute acid; some of the larger fragments contain silicious oolite, some of them have a true oolitic structure	5		1085	
82	Dolomite, white to gray crystalline with blue gray shale and a few grains of very fine, clear, quartz sand. Only a small amount of this sample was still in the sack, the rest being lost.	35		1120	
83	Dolomite, light gray to almost white, crystalline; a few fragments of gray shale and some pyrite crystals were noted	28		1148	
84	Dolomite, cream colored, finely powdered; some very fine, clear, quartz sand grains were present. One piece of pyrite was noted	72		1220	
85	Dolomite, like preceding	25		1245	
86	Dolomite, gray, crystalline; some rounded sand grains and some very fine crystals of glauconite Cambrian Potsdam	30		1275	
87	Sandstone, dolomitic, very fine, colorless, well rounded grains, quartz. A				

Cook

County

Index No. 1704

T.—DRILL RECORD

(7455—1M)

SHEET 10 T 38N R 14E S 6

COMPANY Salzberger and Sons WELL No. 1

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	notable amount of glauconite present	5		1280	
88	Sandstone, dolomitic, like the preceding, except that grains are some what larger and there is less glauconite	35		1315	
89	Sandstone, dolomitic, like the preceding	20		1335	
90	Sandstone, dolomitic, like the preceding. Some gray dolomite and gray shale, which probably came from above also present	25		1360	
91	Sandstone, clear, colorless, well rounded grains, grains much larger than the preceding	30		1390	
92	Sandstone like the preceding	10		1400	
93	Sandstone, dolomitic, clear colorless, well rounded grains, some larger than others2	25		1425	
94	Sandstone, like the last, only grains are more uniform in size, much iron rust present	25		1450	
95	Sandstone, dolomitic cement, white, well rounded grains	85		1535	
96	Sandstone, like the preceding with a few fragments of gray sandstone and blue to brown shale	55		1590	
	Cook				

County Index No. 1706

T.—DRILL RECORD

(7468—1M)

SHEET 11 T 38N R 14E S 6

COMPANY Sulzberger and Sons HOLE No. 1

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
97	Sandstone and shale, like the preceding	15		1605	
98	Sandstone and shale, like the preceding	5		1610	
99	Shale, light gray sandy shale and a very fine grained blue-gray shale; one or two fragments of very fine, cream colored sandstone were found	40		1650	
100	Sandstone and shale, very fine, rounded, cream colored sand grains with almost equal amount of blue-gray shale (Sample at 1675 lost)	10		1660	
101	Sandstone, very fine grained, shaly, dolomitic; sample also contained a few fragments of blue-gray shale	30		1690	

County Cook Index No. 1706

T. DRILL RECORD

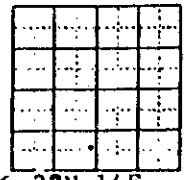
ILLINOIS GEOLOGICAL SURVEY, URBANA

ENGINEERING BORING	Thickness	Top	Bottom
B-3			
Dense blk CINER & Crushed stone FILL			5.0
Loose blk DINER & silty SAND FILL			8.0
Loose blk SANITARY LANDFILL, hair paper, roots, leaves & wood			14.0
Loose blk CINER & BRICK FILL			16.0
Loose blk SANITARY LANDFILL, hair paper, roots, leaves & wood			24.0
Tough blk to grn gr & br silty clay, tr sand, gravel & org matter			28.5
Hard gr very silty CLAY, tr silt seams, sand & pebbles			48.0
Very tough gr silty CLAY, tr sand			48.0
Hard gr sandy clayey SILT, some limestone fragments			52.0
Gr LIMESTONE			54.0
Typed by Warrenville			
Logs of 3 borings filed at NE Ill Office City of Chicago Dept. of Pub. Wks., Bur. of Eng. NO ENVELOPE			

COMPANY	City of Chicago DPW
FARM	Storage Garage
DATE DRILLED	11/71
AUTHORITY	Company
ELEVATION	594.5' G.L.
LOCATION	NE, SE, SW
COUNTY	COOK

NO. B-3

COUNTY NO. 26567

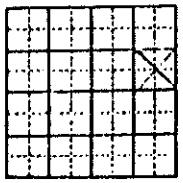


6-38N-14E

ILLINOIS GEOLOGICAL SURVEY, URBANA

	Thickness	Top	Bottom
Drift	60'6"	0	60'6
Limestone	219'6"	60'6'	280
Shale	250	280	530
Limestone	327	530	857
Sand	103	857	960
Cave, probably limestone and shale	54	960	1014
Limestone	256	1014	1270
Crevices, Limestone	20	1270	1290
Sandy lime	30	1290	1320
Shale	15	1320	1335
Limestone	55	1335	1390
Sand	195	1390	1585
Shale	2	1585	1587
Lime	63	1587	1650
Shale	40	1650	1690
Casing to 65'			

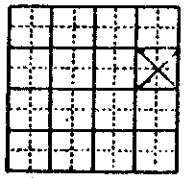
COMPANY J.P. Miller & Co.
FARM Sulzberger (Now Wilson Co.) NO. C
DATE DRILLED 1913 COUNTY NO. 1620'
AUTHORITY Company
ELEVATION
LOCATION SE NE (42nd and Ashland)
COUNTY COOK



6-38N-14E

	Thickness	Top	Bottom
GEOLOGICAL TOPS from Samples Studied by H. M. DuBois			
PLEISTOCENE			
Drift	55	0	55
SILURIAN SYSTEM			
Niagaran, dolomite, light gray to white, fine grained to sub-crystalline	360	55	415
ORDOVICIAN SYSTEM			
Maquoketa, shale, yellowish brown, dolomitic	105	415	520
Galena-Platteville, dolomite, cream color, subcrystalline to crystalline	340	520	860
St. Peter, Sandstone, white, rounded colorless quartz grains	125	860	985
Lower Magnesian, dolomite, white to gray, crystalline	290	985	1275
CAMBRIAN SYSTEM			
Potsdam, sandstone, white, fine to coarse, well rounded, quartz grains	415	1275	1690

COMPANY J. P. Miller & Co.
FARM Sulzberger (Now Wilson Co.) NO. C
DATE DRILLED 1913 COUNTY NO. 1620
AUTHORITY Company
ELEVATION
LOCATION SE NE (42nd and Ashland)
COUNTY COOK

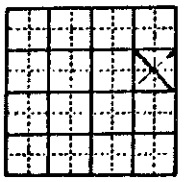


6-38N-14E

ILLINOIS GEOLOGIC SURVEY, URBANA

	Thickness	Top	Bottom
Pleistocene Series			
Light to dark sandstone with considerable dolomite		0	65
SILURIAN SYSTEM			
Light colored dolomite with some sandstone		65	78
Grayish white dolomite		78	95
Grayish white chert with some light yellow sandstone		95	105
Light gray dolomite		105	285
ORDOVICIAN SYSTEM			
Maquoketa Shale			
Dark gray dolomitic shale		285	305
Dark gray dolomitic shale with a small amount of light and dark sandstone		305	325
Dark gray dolomitic shale		325	380
Dark gray dolomite with some shaly material		380	415
Dark gray dolomite with considerable dark shaly material		415	465
Dark gray dolomitic shale		465	505
Dark gray dolomite with considerable shaly material		505	520
Galena-Platteville Limestone			
Gray dolomite with a little shale		520	540
Light gray dolomite		540	695
Gray dolomite		695	795
Dark gray dolomite with a little shaly material		795	810
Gray dolomite		810	855
St. Peter Sandstone			
A mixture of white sand and gray			

COMPANY J.P. Miller
FARM Sulzberger (Now Wilson Co.) NO. D
DATE DRILLED 1913-14 COUNTY NO. 1631
AUTHORITY
ELEVATION
LOCATION SE NE
COUNTY COOK SS# 59



6-38N-14E

	Thickness	Top	Bottom
dolomite		855	865
Fine white sand with many particles cemented together and stained by iron giving a light reddish tinge to the whole mass		865	885
Light grayish sandstone with less iron than in above samples		885	895
Light reddish gray sandstone with some iron stained particles		895	910
Fine white sandstone		910	940
Light reddish gray sandstone with some iron stained particles		940	965
Prairie du Chien Group			
White chert with dolomite and white sandstone		965	1025
Gray dolomite with chert and sandstone		1025	1070
Dark gray shale with dolomite and alittle sand		1070	1075
Gray dolomite with a little sand		1075	1090
Slightly calcareous dolomite with a little sand and shale		1090	1110
Same as above but no shale		1110	1130
Gray dolomite		1130	1145
CAMBRIAN SYSTEM			
Gray sandstone with some dolomite		1145	1275
Gray sandstone with some dolomite		1275	1290
Gray sandstone, slightly dolomitic		1290	1350
Brownish sandstone, slightly dolomitic		1350	1380
White sandstone, slightly dolomitic		1380	1395
Fine white sandstone		1395	1415
Fine white sandstone, very slightly dolomitic		1415	1460
Fine white sandstone		1460	1480
White sandstone, very slightly dolomitic		1480	1490
White sandstone		1490	1580
Reddish gray sandstone, very slightly			

	Thickness	Top	Bottom
dolomitic and stained considerably by iron		1580	1595
White sandstone, slightly stained by iron		1595	1600
Grayish sandstone, slightly dolomitic with a very little shaly material		1600	1620 TD
Drift	60		60
Limestone	220		280
Shale	251		531
Limestone	329		860
Sand	100		960
Cave	25		985
Limestone	90		1075
Red marl	2		1077
Limestone	75		1152
Crevices (all ... in lime)	118		1270
Limestone	30		1300
Sandy limestone	40		1340
Limestone	50		1390
Sand	195		1585
? Limestone or shale	35		1620

J.P. Miller Sulzberger #D

COUNTY COOK SS# 59 6-38N-14E

(3)

TOWN Chicago TOWNSHIP

COMPANY S. B. Geiger and Co. No.

FARM Swift and Co. No.

AUTHORITY S. B. Geiger files

ELEVATION

COLLECTOR Workman DATE DRILLED

~~CONFIDENTIAL~~

Ashland and 42nd Sts.

Map No. 17

R. 14 E

T 38 N

Sec. 6

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Surface	61		61	
	Limestone	219		280	
	Shale	5		285	
	Limestone	25		310	
	Shale	10		320	
	Limestone	45		365	
	Shale	25		390	
	Rotten limestone	40		430	
	Shale	70		500	
	Limestone	20		520	
	Shale	15		535	
	Limestone	325		860	
	Sand	85		945	
	Limestone	25		970	
	Limestone, sandy	15		985	
	Limestone	90		1075	
	Red rock	3		1078	
	Limestone (crevices between 1155-1280)	202		1280	
	Sand	45		1325	
	Limestone	70		1395	
	Sand	115		1510	
	Soft sand	80		1590	
	Very hard sand and shale	10		1600	
	64' 8" 18" OD pipe surface				
	53' 16" 337'-390'				
	144' 4" 12" 390' 8"-535				
	bottom of 12" hole 1421				
	10" hole 1600				

County Cook

T.—DRILL RECORD

(51052-3m-1-26)

Index No. 1906

6-38N-14E

(6)

TOWN Chicago TOWNSHIP Map No. 17

COMPANY W. H. Gray, Jr. R. 14 E

FARM Wilson Packing Co. No. T. 38 N Sec. 6

AUTHORITY No. 1000'W Ashland

ELEVATION 593 E.T.M. Groundwater COLLECTOR DATE DRILLED 200'N 43rd St.

CONFIDENTIAL

Samples Studied by L. E. Workman

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	No samples	15		15	
1	Mixture: shale, very silty, slightly dolomitic, dark brown to gray, tough, containing Sporangites .22 mm. and .44 mm. diameter, thick, micaceous, carbonaceous flakes; dolomite, cherty, light buff and light gray, very finely crystalline; some sand, very fine to medium; considerable sandstone, dolomitic, gray, very fine, quartzitic; some granite and dolomite rocks, pyrite, cinders, and coal	8		23	
	No sample	10		33	
2	Same as 1	12		45	
3	Clay, dolomitic, silty, light brown, containing Sporangites of two sizes 0.22 and 0.44 mm. diameter, the smaller being thin-walled and the larger thick; no appreciable amount of mica; a few small chips of material as above	20		65	
4	Dolomite, white with gray spots, finely crystalline,				

County Cook Index No. 1706

T.—DRILL RECORD

17898 4M 5 29 Sample Set #223

SHEET 4 R. 14 E S. 6

COMPANY F. L. Gray, Jr.

FARM Wilson Packing Co.

HOLE NO.

HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	vesicular	5		70	
	No sample	5		75	
	8-6 Same	20		95	
7	Dolomite, light gray, finely crystalline, vesicular	10		105	
	8-13 Same	60		165	
14	Similar, but darker and fairly compact	10		175	
15	Dolomite, white, very finely crystalline, compact	10		185	
	16-17 Same	20		205	
18	Same, but slightly grayish	10		215	
19	Same as 18	10		225	
	20-22 Same	30		255	
23	Dolomite, light buff with greenish tint in spots, very finely crystalline, compact	10		265	
	24-26 Same	15		280	
26	Mixture: dolomite, as above; shale, dolomitic, silty, green, weak, grading to siltstone, dolomitic, green, to gray, tough	10		290	
27	Mixture: dolomite, as above; and siltstone, as above	10		300	
	Siltstone, dolomitic, light greenish gray, soft, sample pulverized	10		310	
29	Shale, silty, dolomitic, green, weak to tough; a few chips dolomite, light and dark gray, spotted, fine grained	10		320	
	30-32 Same	30		350	

County Cook

T.—DRILL RECORD

(27091—4M—11-28) 3

Sample Set #223

Index No. 1706

SHEET 3 R. 14 E S. 4

COMPANY F. M. Green, Jr.

FARM William Publishing Co. HOLE NO.

HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
33	Same, containing considerable dolomite	10		360	
34	Shale, silty, dolomitic, greenish gray, weak; a few chips dolomite, as above	10		370	
35-37	Same	30		400	
38	Mixture: Dolomite, cherty with buff chert, buff, finely crystalline, compact, and siltstone, dolomitic, grayish green, tough	10		410	
39	Dolomite, cherty, brownish and greenish gray with scattered dark brown shards, very fine, compact	10		420	
40	Shale, dolomitic, green, weak	10		430	
41	Same, but little lighter green	10		440	
42	Same as 40	10		450	
43	Mixture: dolomite, cherty, yellowish gray, finely crystalline; shale, dark brown, fossiliferous; sand, fine to coarse; igneous fragments; sample is either taken from near surface in glacial drift or is composed mostly of material thrown into hole	10		460	
44	Shale, dolomitic, green, weak	10		470	
45-47	Same	45		515	
48	Dolomite, cherty, brownish gray				

Index No. 0

T.—DRILL RECORD

(27091—4M—11-29) Sample Set #823

1906

SHEET 4 R. 14 E. S.
COMPANY F. M. Gray, Jr. HOLE NO.
FARM Wilson Packing Co. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	and greenish gray with scattered dark brown streaks, very fine, compact, probably part of sample 38, marked "Bluestone"	20		525?	
48	Dolomite, light brownish gray [illegible] speckled by [illegible]	10		535	
50-51	Same	20		555	
52	Dolomite, light brownish gray with dark spots, finely crystalline, compact	10		565	
53-65	Same	125		690	
66	Dolomite, buff, medium crystalline	10		700	
67	Dolomite, light brownish gray, finely crystalline	10		710	
68	Dolomite, light brownish gray with brown uneven bituminous (?) surfaces as in fractures, finely crystalline	10		720	
69	Dolomite, light brownish gray, some chips, reddish brown, a few chips gray, finely crystalline	10		730	
70	Dolomite, light brown with gray spots, finely crystalline	10		740	
71-2	Same	20		760	
73	Same, uneven brown, bituminous (?) stains	10		770	
74	Same at 70	10		780	
75	Dolomite, mottled dark gray and				

County Cook
T.—DRILL RECORD
(37091—4M—11-39)

Sample Set #[illegible] Index No. 1966

O

SHEET 6 R. 14 E. 6
COMPANY F. M. Gray, Jr.
FARM William Fairfax Co. HOLE NO. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	brownish gray, very finely crystalline, compact	10		790	
76	Same	10		800	
77	Same, but more largely brownish gray	10		810	
78-79	Same as 77	20		830	
80	Dolomite, mottled light brown and dark gray, very fine, compact	10		840	
81-82	Same	20		860	
83	Mixture: dolomite, sandy, with fine to medium rounded, sand, mottled light brown and dark gray, very finely crystalline, compact; some ships pyrite, shale, dark brown, Sporangites, caved or thrown in from surface	10		870	
84	Mixture: sandstone, light gray, fine, rounded, grains incoherent; clay, dolomitic, buff, probably thrown in	10		880	
85	Sandstone, light gray, fine, rounded, incoherent; some caved dolomite, chert, and brown shale	10		890	
86	Sandstone, white, very fine to fine, rounded, incoherent	10		900	
87	Sandstone, white, very fine to medium, rounded, incoherent	10		910	
88	Same, with some clay, probably thrown in	10		920	

County Cook
T.—DRILL RECORD
(27091—4M—11-29) 2

Sample Set #825 Index No. 1706

SHEET 4 R. 14 E S. 6

COMPANY F. M. Gray, Jr. HOLE NO.

FARM Wilson Packing Co. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
89	Sandstone, white, medium, rounded, incoherent	10		930	
90-91	Same	20		950	
92	Sandstone, white, very fine to fine, rounded, incoherent	10		960	
93	Sandstone, white, fine, rounded, incoherent	10		970	
94	Sandstone, white, medium, rounded, incoherent	10		980	
95	Mixture: Sandstone, white, coarse, rounded, incoherent; chert, oolitic, white; shale, sandy, blue, weak; much massive pyrite	10		990	
96	Chert, slightly calcareous, oolitic, white to light gray, dense; a few chips shale, sandy, blue, and dark gray, the dark gray being very fine	10		1000	
97	Mixture: dolomite, cherty; white, very finely crystalline, compact; shale, sandy, blue, weak, fissile, pyritic, may be caved; a few chips of red brick (?)	10		1010	
	No sample	10		1020	
98	Dolomite, cherty, white, very finely to medium crystalline, a few chips of coarsely crystalline; some sand, very fine, caved (?)	10		1030	
99	Dolomite, cherty with oolitic chert, light gray,				

County Cook

T.—DRILL RECORD Sample Study #823 Index No. 1906

(37091—4M—11-39) 2

SHEET 1 R. 34 E. 6

COMPANY W. M. Gray, Jr. HOLE NO.

FARM Wilson Packing Co. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	very finely crystalline	10		1040	
100	Same	10		1050	
101	Same, slightly cherty	10		1060	
102	Dolomite, slightly cherty, white, with a few green grains, very finely crystalline, compact	10		1070	
103	Dolomite, very fine, sandy, light gray, finely crystalline, compact, a few argillaceous surfaces; some shale, dolomitic, green, tough	10		1080	
104	Dolomite, cherty, sandy with medium sand, light gray, extremely fine to finely crystalline; shale, sandy green, firm	10		1090	
105	Dolomite, sandy, light gray, compact	10		1100	
	No sample	10		1110	
106	Dolomite, sandy, white, compact	10		1120	
107	Dolomite, light gray, very finely crystalline, compact, a few green spots	10		1130	
108	Dolomite, light gray, finely crystalline, compact	10		1140	
109-110	Same	20		1160	
111	Dolomite, light gray with dark spots, finely crystalline, disseminated pyrite in the dark gray	10		1170	
112	Same, some buff color	10		1180	

County Cook

T.—DRILL RECORD

(27091—4M—11-39)

Sample Set #883

Index No. 1704

SHEET 8 R. 14 E. S. 6

COMPANY W. M. Gray, Jr. HOLE NO.

FARM Wilson Packing Co. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
113	Same	10		1190	
114	Dolomite, buff, finely crystalline	10		1200	
115	Dolomite, light brownish gray, very finely crystalline	10		1210	
116	Same, with a little chert and some quartz geodes	10		1220	
117	Dolomite, slightly cherty, light brownish gray, finely crystalline, full of quartz geodes	10		1230	
118	Dolomite, light brownish gray, very finely crystalline, a few geodes	10		1240	
119-20	Same	20		1260	
121	Same, a few scattered very fine grains glauconite	10		1270	
122	Dolomite, sandy, glauconitic, light gray and pinkish, fine grained, compact; a little shale, green, weak	10		1280	
123	Dolomite, very sandy, glauconitic, pinkish gray, fine, compact	10		1290	
124	Sandstone, dolomitic, glauconitic, light pinkish gray, fine, fair cementation, much secondary quartz crystallization	10		1300	
125	Same, with less secondary crystallization	10		1310	
126	Sandy but gray	10		1320	

County Clark

T.—DRILL RECORD

(27001—4M—11-28) 3

Sample Set #883

Index No. 1906

SHEET 3 R. 14 E S. 4

COMPANY F. H. Gray & Co. HOLE NO.

FARM Wilson Packing Co. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
127	Same, little secondary crystallization	10		1330	
128	Same; and sandstone, dolomitic, argillaceous, glauconitic, green, grading to shaly, green, weak	10		1340	
129	Sandstone, dolomitic, glauconitic, greenish gray and buff, fine, grading through argillaceous dolomite to shale, sandy, greenish gray, fine	10		1350	
130	Same	10		1360	
131	Same, pyritic	10		1370	
132	Sandstone, dolomitic, glauconitic, gray, very fine, well cemented, scattered fragments coarse grained dolomite possibly fossil fragments; carved shale, sandy, green	10		1380	
133	Dolomite, sandy, glauconitic, light gray, very fine grained, compact, a little pyrite	10		1390	
134	Sandstone, dolomitic, glauconitic, light pink, medium with some coarse grains, poorly sorted, fairly well cemented	10		1400	
135	Sandstone, dolomitic, light buff, fine, with some medium and coarse grains, poorly sorted,				

County Index No. O

T.—DRILL RECORD

(27091—4M—11-29) 2 Sample Set #883 1706

SHEET 10 R. 14 X R. 4

COMPANY F. M. Gray, Jr. HOLE NO.

FARM William Rushing Co. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	fairly well cemented	10		1420	
132	Sandstone, dolomitic, buff, coarse, fair cementation	10		1430	
133	Same, but pinkish buff	10		1440	
134	Sandstone, slightly dolomitic, white, medium, incoherent	10		1440	
135	Sandstone, buff, very fine to medium, incoherent, sandy appearance	10		1450	
136	Same, but very fine to coarse	10		1460	
141	Sandstone, white, very fine to coarse, incoherent, sandy appearance	10		1470	
142-3	Same	20		1490	
144	Sandstone, dolomitic, light gray, very fine to medium, sandy appearance	10		1500	
145	Dolomite, sandy, brown, compact; some sand to medium size, may be cored	10		1510	
146	Sandstone, white, coarse, incoherent	10		1520	
147	Sandstone, white, medium to coarse, incoherent	10		1530	
148	Same	10		1540	
149	Same, but fine to medium	10		1550	
150	Same, but medium to coarse	10		1560	
151	Sandstone, white, fine, well sorted, incoherent	10		1570	
152	Same	10		1580	
	No sample	10		1590	
153	Mixture: dolomite, sandy, gray and brown, compact				

County Cook

T.—DRILL RECORD

(27091—4M—11-29) 3

Sample Set #225

Index No. 1704

SHEET 11 R. 14 S. 6

COMPANY F. M. Gray, Jr. HOLE NO.

FARM Wilson Packing Co. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	shale, gray, weak; sandstone, white, medium, rounded and frosted grains; a little shale, sandy, blue fairly weak; sandstone, dolomitic, white, fine	10		1600	
154	Sandstone, dolomitic, glauconitic, greenish gray and buff, fine to medium, well cemented	10		1610	
155	Mixture: sandstone, as above, shale, sandy, greenish gray, firm; shale, sandy, glauconitic, bright green, weak	10		1620	
156	Mixture: sandstone, dolomitic, glauconitic, brownish and pinkish gray, very fine, compact, micaceous; shale, micaceous, greenish gray, firm	10		1630	
157	Same, but mostly sandstone, fine	10		1640	
158	Same, with considerable shale, sandy, micaceous, greenish gray, firm	10		1650	
159	Shale, gray, plastic; and sandstone as above	10		1660	
160	Mixture: sandstone, dolomitic, glauconitic, greenish gray, fine, compact, micaceous; shale, micaceous, greenish gray, firm	10		1670	
161	Mixture: sandstone, as				

County Cook

T.—DRILL RECORD (27091—4M—11-29) 3

Sample Set #823

Index No. 1708 O

SHEET 12 T. 1 R. 14 E. 6

COMPANY F. H. Gray, Jr. HOLE NO.

FARM Wilson Packing Co. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	above, but brownish gray shale, as above	10		1690	
162	Same	10		1690	
163	Mixture: sandstone, as above, but reddish brown, shale, sandy, micaceous, reddish brown and greenish gray, firm	10		1700	

See Sample Study and description of insoluble residues by C.E. Needham in file.

County Cook

T.—DRILL RECORD

(27991—4M—11-29) 3

Sample Set #883

Index No. 1704

10 200

ORDOVICIAN

MARQUOKETA

Shale

(6)

TOWN Chicago TOWNSHIP

COMPANY F. E. Gray, Jr. No.

FARM Wilson Packing Co. No.

AUTHORITY

ELEVATION 593 T.M. Groundwater

COLLECTOR DATE DRILLED 1929

CONFIDENTIAL

Samples exam. by Thwaites & Workman

Map No. 17

R. 14 E

T. 38 N. Sec. 6

100' W. of Ashland

200' N. of 42nd St.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	DRIFT				
	Fill and gravel	45		45	
	Devonian shale, light brown, dolomitic	20		65	
	DEVONIAN				
	Dolomite, white, gray spots	30		95	
	NIAGARA				
	Dolomite, light gray	80		175	
	Dolomite, white, very fine grained	80		255	
	Dolomite, light yellowish gray and greenish gray, fine grained	15		260	
	RICHMOND				
	Shale, greenish gray, dolomitic	120		400	
	Dolomite, yellowish gray, brown, green, dense	20		420	
	Shale, greenish gray, dolomitic	105		525	
	GALENA-BLACK RIVER				
	Dolomite, light brownish gray, dense	30		555	
	Dolomite, light brownish gray, dark spots	135		690	
	Dolomite, yellowish gray	10		700	
	Dolomite, light brownish gray, bituminous?	30		730	
	Dolomite, light brown, gray spots	50		780	

County COOK Index No. 1706

T.—DRILL RECORD

Illinois Geological Survey, Urbana.

SHEET 2 HOLE NO. 6

COMPANY W. H. Shay, Jr.

FARM Illinois Packing Co. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Dolomite, mottled dark and brownish gray	50		850	
	Dolomite, mottled light brown and dark gray	30		860	
	Dolomite, sandy, mottled light brown, dark gray	10		870	
	ST. PETER				
	Sandstone, fine, light gray, dolomitic	10		880	
	Sandstone, very fine to medium, white, dolomitic?	20		900	
	Sandstone, very fine to medium, white	60		960	
	Sandstone, coarse, white; chert, white, shale, blue	20		1000	
	LOWER MAGNESIAN				
	Dolomite, white to light gray; chert, white	60		1060	
	Dolomite, white, green specks	10		1070	
	Dolomite, sandy, light gray; shale, green, dolomitic	20		1090	
	Dolomite, sandy, light gray	10		1100	
	No sample	10		1110	
	Dolomite, sandy, white	10		1120	
	Dolomite, light gray	40		1160	
	Dolomite, light gray, dark spots	30		1190	
	Dolomite, yellowish gray	10		1200	
	Dolomite, light brownish gray, quartz geodes, glauconitic at base	70		1270	
	MAQUOKETA				
	Dolomite, sandy, gray, pink, glauconitic	20		1290	

County ROCK

T.—DRILL RECORD

(27691—4M—11-29) 2

Index No. 1706

SHEET 2 E R. 8.
COMPANY Wilson Drilling Co. 38 N HOLE 24 N 6
FARM F.M. Gray, Jr. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Sandstone, fine, pink, gray, dolomitic, glauconitic	40		1330	
	Sandstone, fine, gray, green, yellow, dolomitic, glauconitic; shale, green	40		1370	
	Sandstone, very fine, gray, dolomitic, glauconitic	10		1380	
	Dolomite, sandy, gray, glauconitic	10		1390	
	Sandstone, medium to coarse, pink, dolomitic, glauconitic	10		1400	
	Sandstone, medium to coarse, yellow, dolomitic	30		1430	
	DEVONIAN				
	Sandstone, medium, white, slightly dolomitic	10		1440	
	Sandstone, very fine to coarse, yellow, gray	20		1460	
	Sandstone, very fine to coarse, white	30		1490	
	Sandstone, very fine to medium, light gray, dolomitic	10		1500	
	Dolomite, sandy, brown	10		1510	
	Sandstone, coarse to medium, white	30		1540	
	Sandstone, fine to medium, white	10		1550	
	Sandstone, coarse to medium, white	10		1560	
	Sandstone, fine, white	20		1580	
	EAU CLAIRE				
	No sample	10		1590	
	Dolomite, sandy, gray, brown; shale, gray, blue	10		1600	

County OCOK Index No. 1706

T.—DRILL RECORD
(27091—4M—11-28) 1

SHEET 4 T. 3 S. R. 14 E. HOLE NO. 6

COMPANY F. M. Gray, Jr.

FARM Wilson Banking Co. HOLE NO.

No.	STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Sandstone, fine, greenish gray, dolomitic, glauconitic	10		1610	
	Sandstone, like above; shale, sandy, green, glauconitic	10		1620	
	Sandstone, fine, micaceous, brownish gray, dolomitic; shale, greenish gray	40		1660	
	Sandstone, fine, greenish and brownish gray, dolomitic, glauconitic; shale, micaceous, green	30		1690	
	Sandstone, fine, reddish brown, dolomitic, shale, sandy	10		1700	

Casing record:

22" pipe 65'
18" pipe 273'9" - 533' 11"
16" " 940'3" - 1022'
21" hole 533'11"
17" " 1022'
15" " 1625'
12" " 1700'

See Sample Study and description of insoluble residues by C.E. Needham in file.

County OCOK

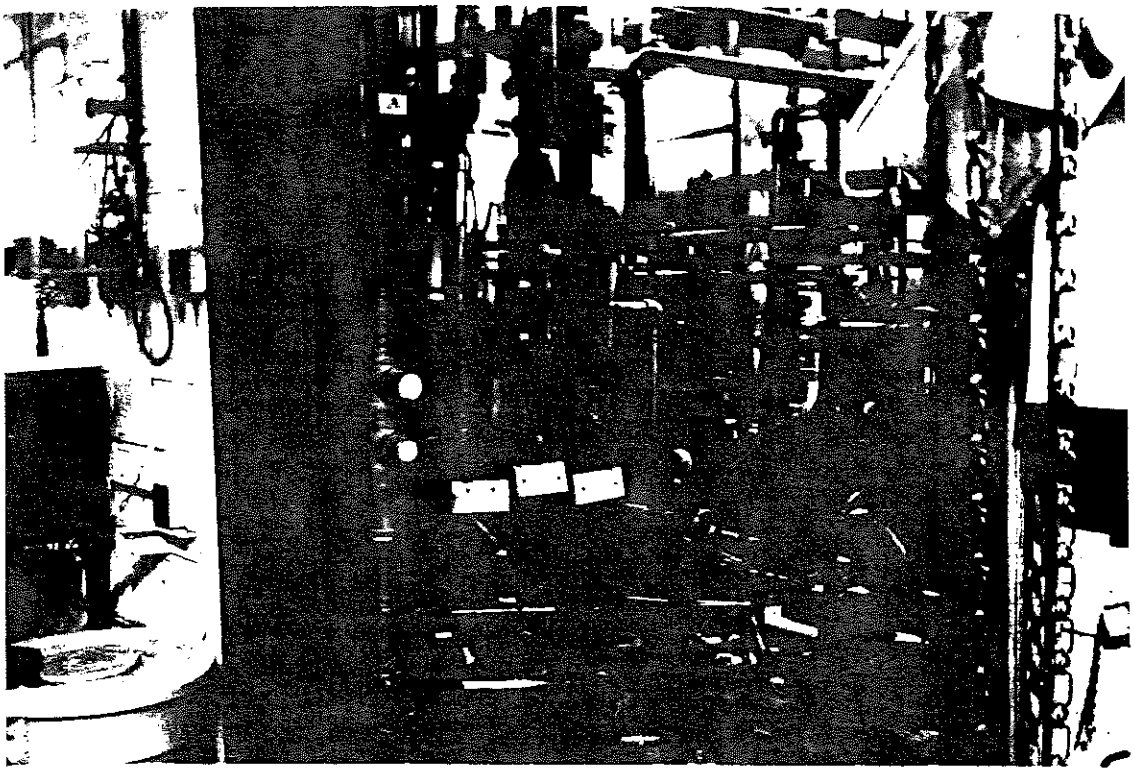
Index No. 0

—DRILL RECORD
(6-11-29) 3

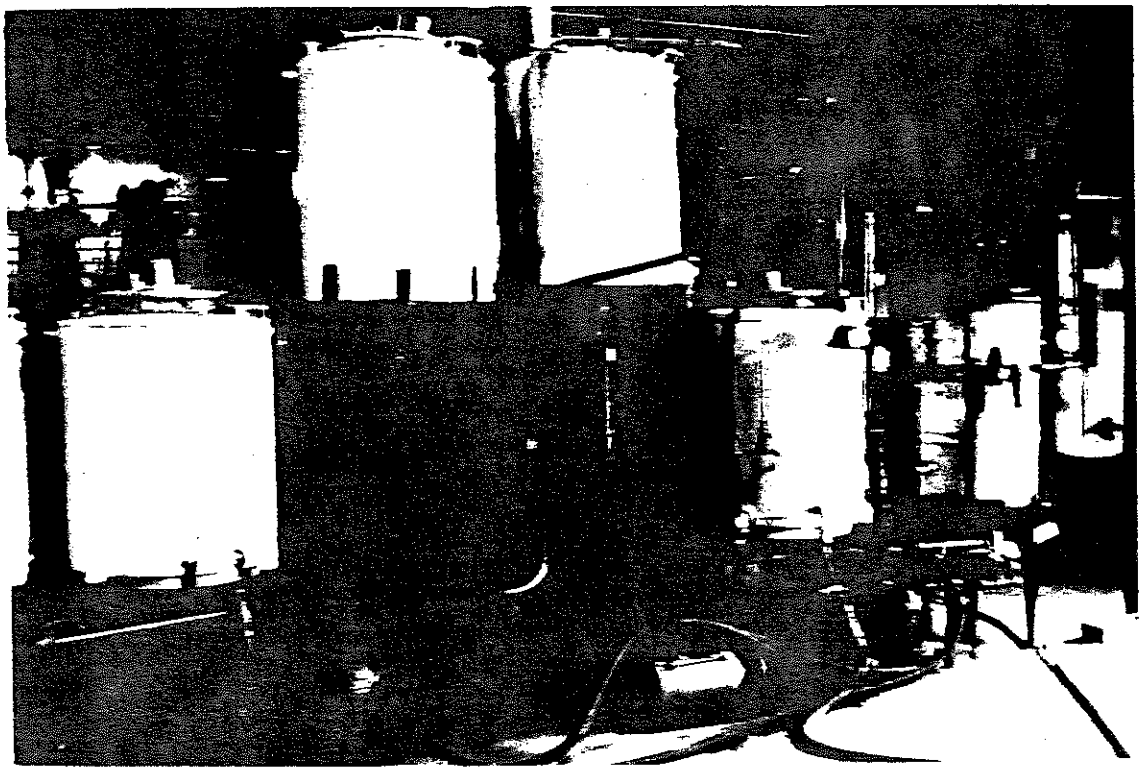
1706

ATTACHMENT D

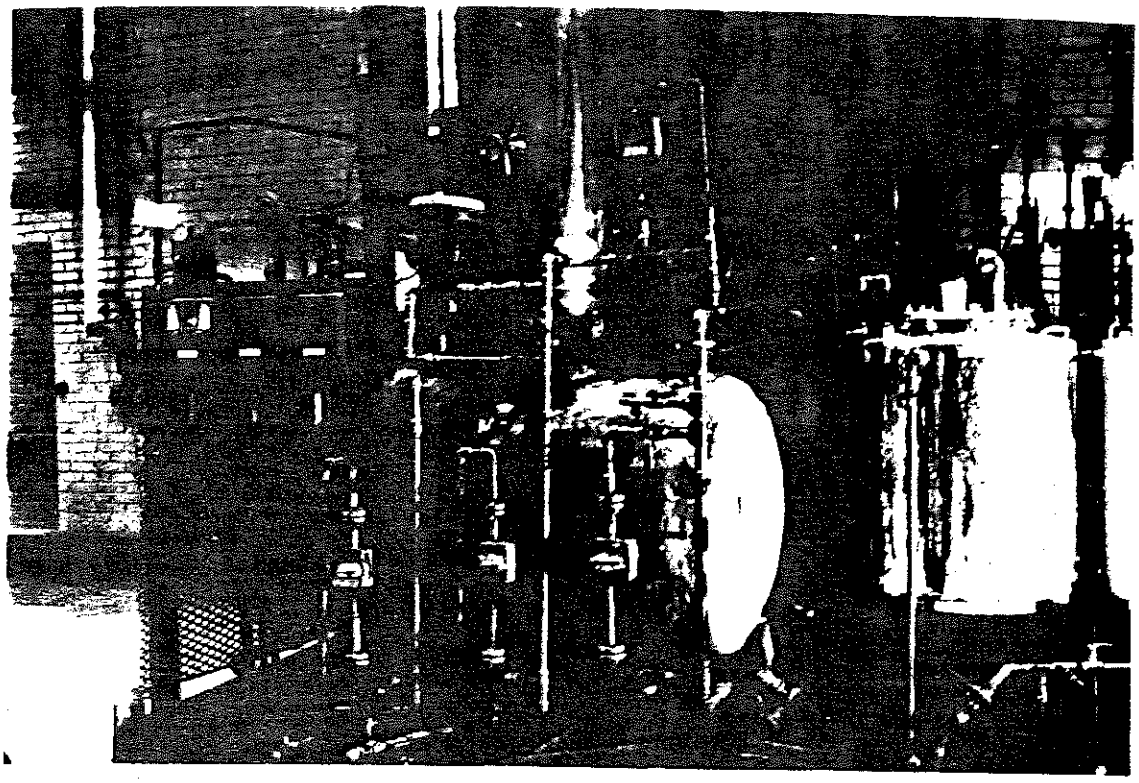
VSI PHOTOGRAPH LOG



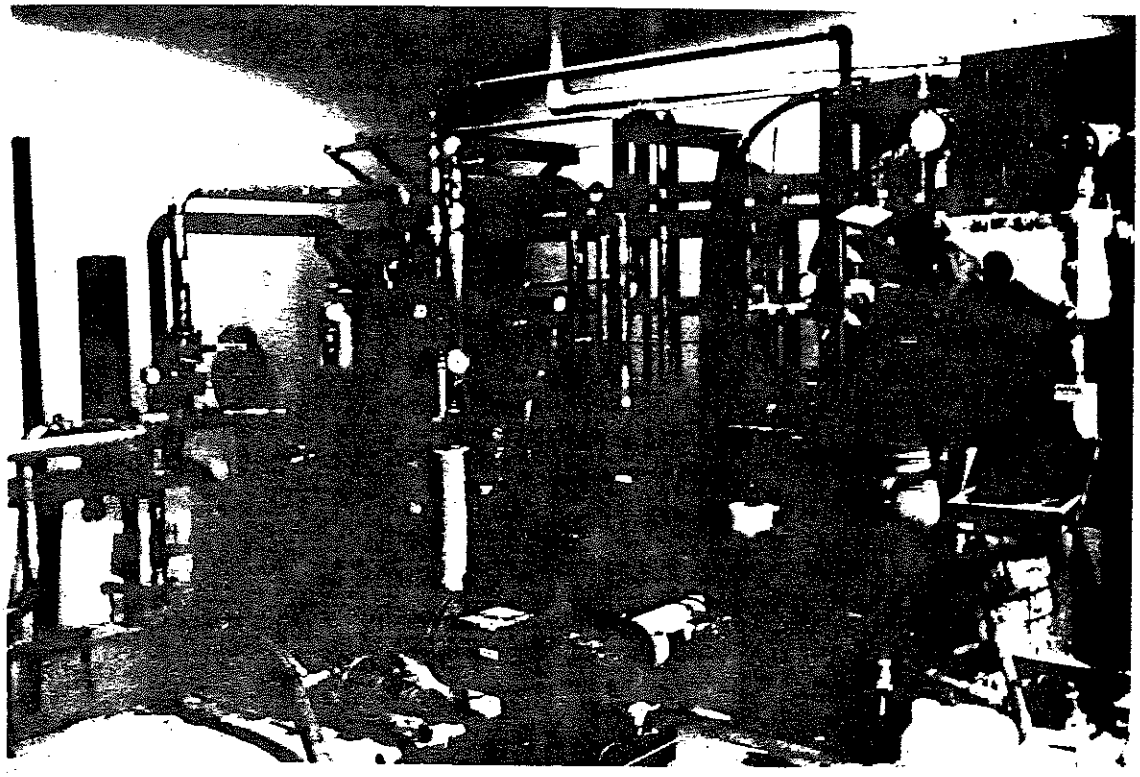
ɔgraph 1: Looking east at Fractionation Unit F1 (SWMU No. 90) located in Process Building #1.



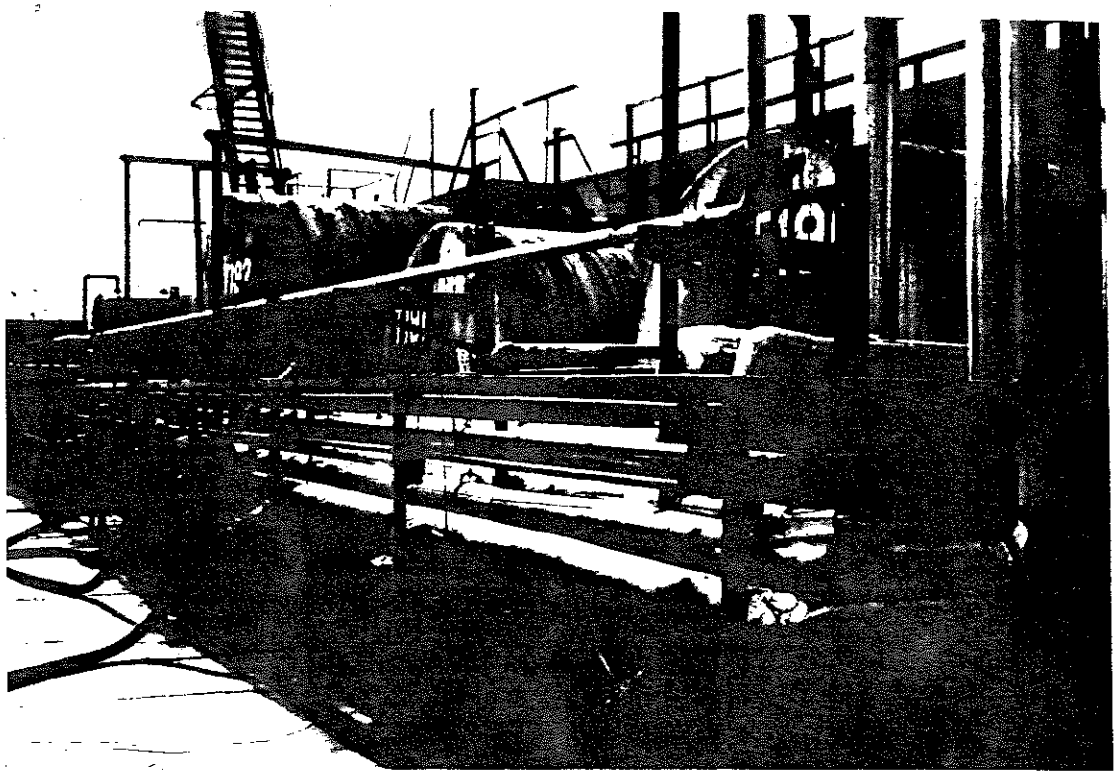
ɔgraph 2: Looking west at Liquid-Liquid Extraction Unit E1 (SWMU No. 87) located in Process Building #1.



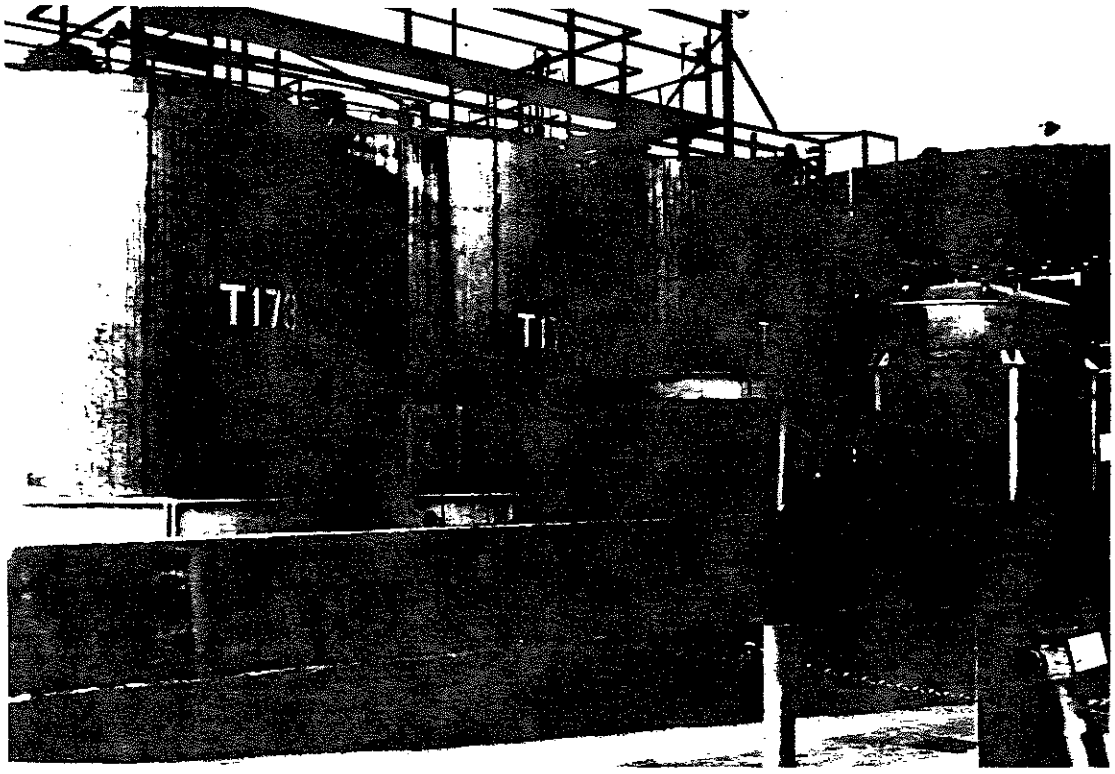
Photograph 3: Looking west at Fractionation Unit F5 (SWMU No. 94) located in Process Building #1.



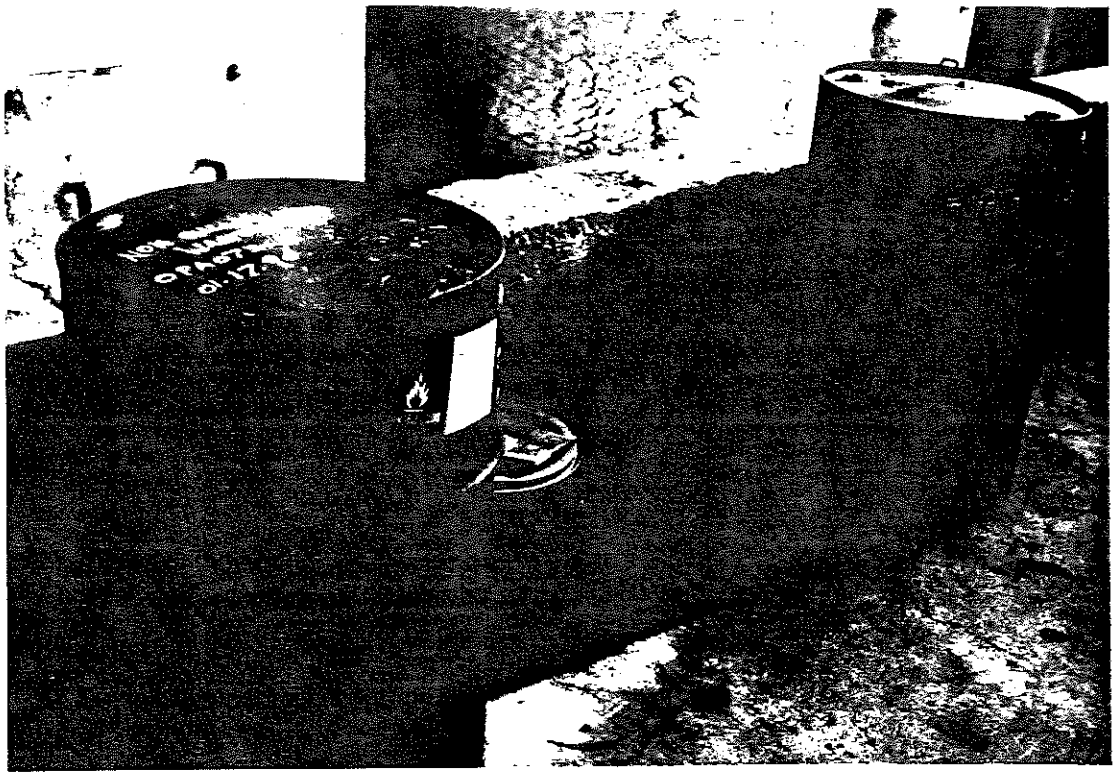
Photograph 4: Looking northwest at Neutralization Unit (SWMU No. 96) located in Process Building #1.



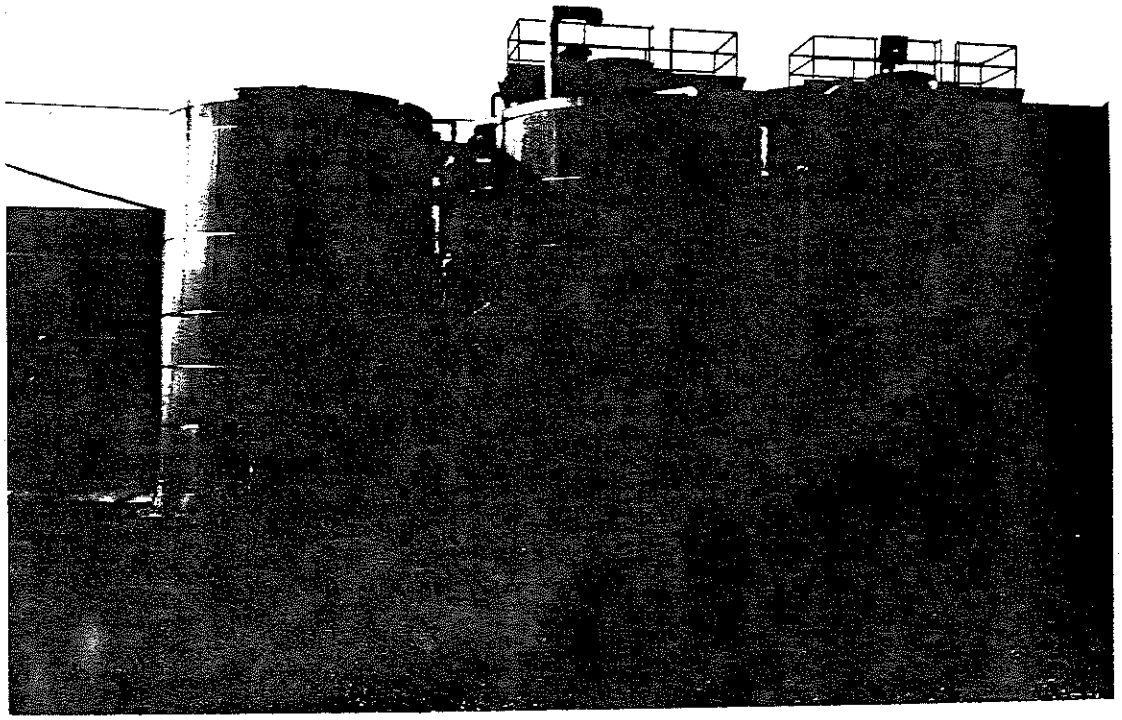
aph 5: Looking southwest at Tank Farm #3 (SWMU Nos. 30-35), showing concrete perimeter dike.



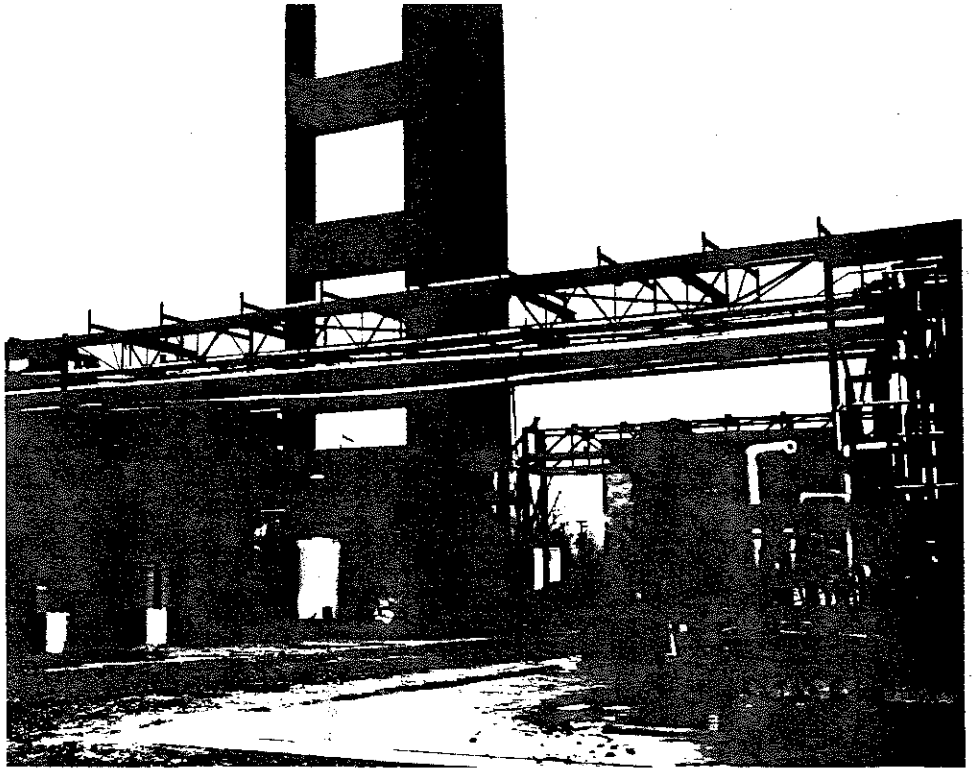
aph 6: Looking west at Tank Farm #2 (SWMU Nos. 19-29), showing concrete perimeter dike.



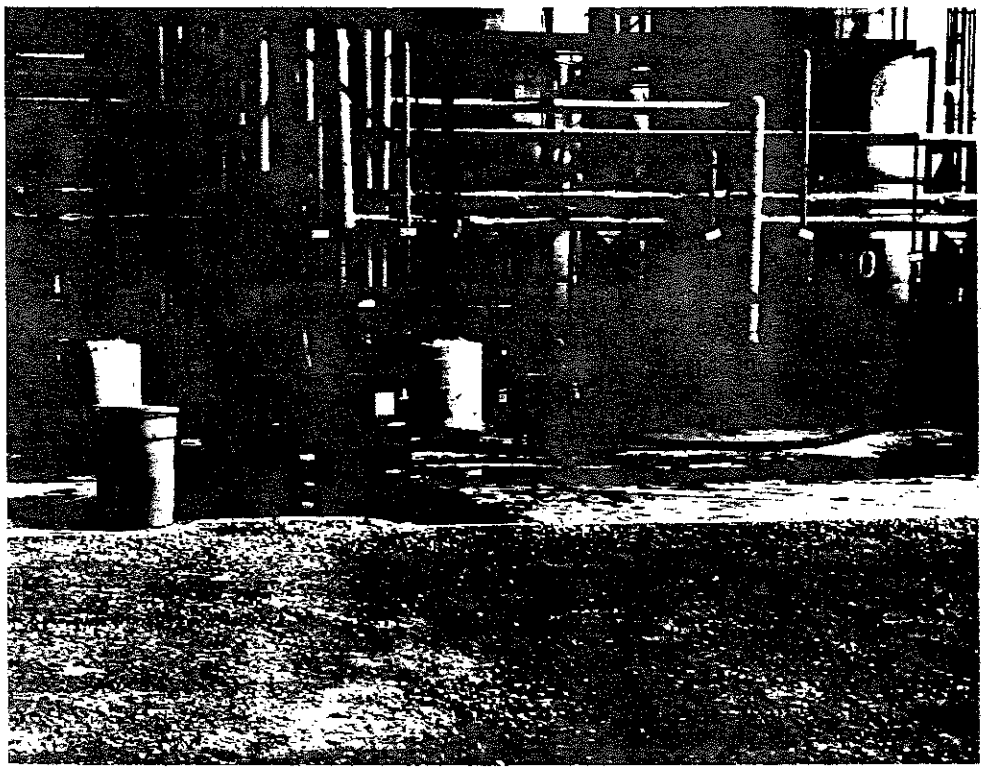
ph 7: Looking east at Satellite Accumulation Area C1 (SWMU No. 97), located on the west side of Tank Farm #2. Note drums placed on concrete pad.



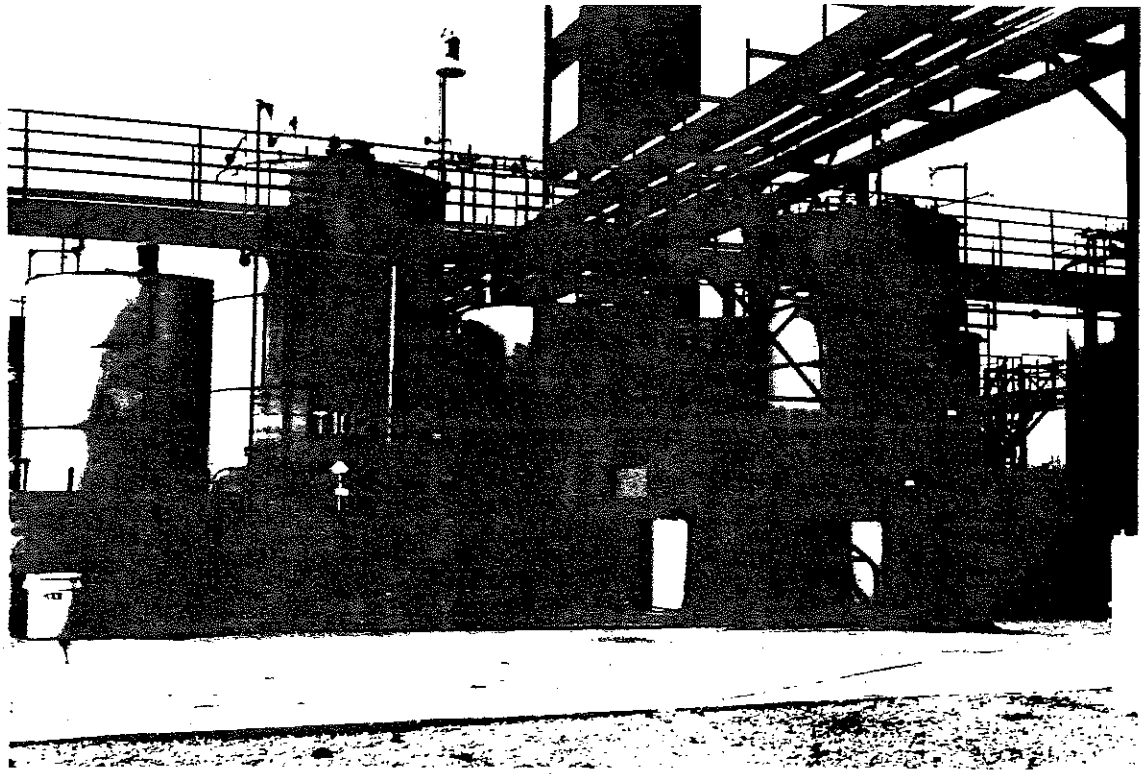
ıph 8: Looking west at Tanks PCT #3 and PCT #4 (SWMU Nos. 84-85), located just southeast of Process Building #1. Note tanks situated on concrete pad.



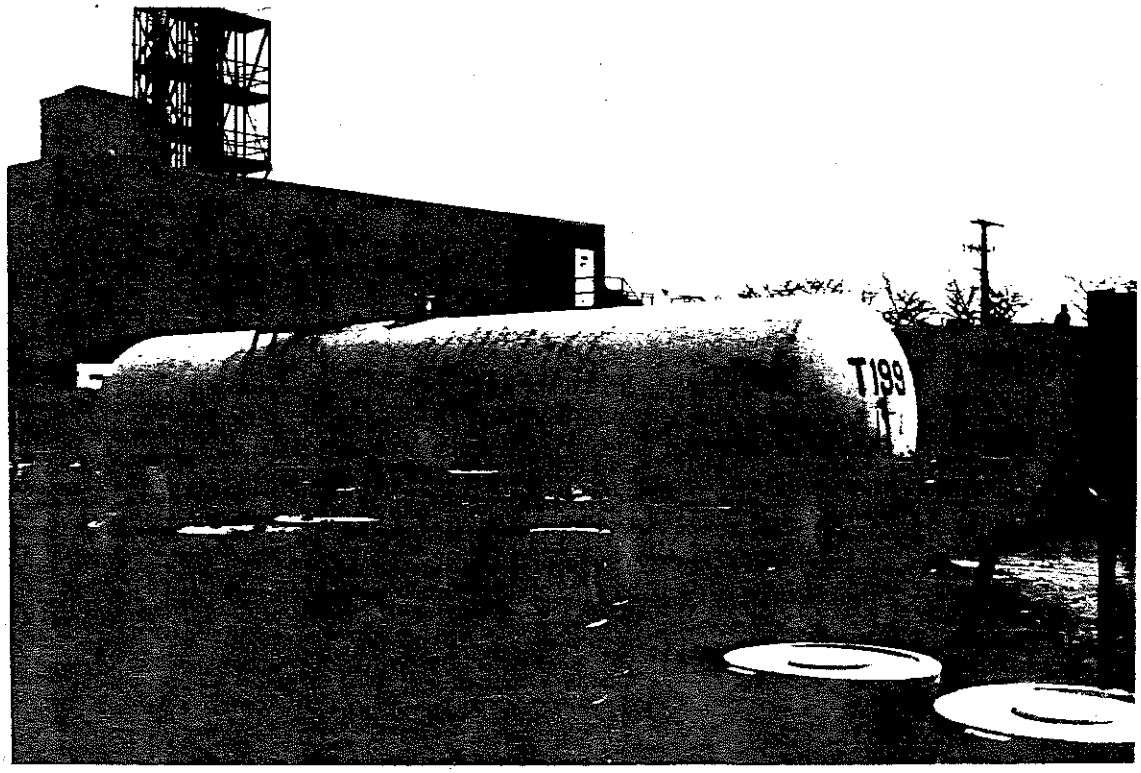
Looking northwest at Fractionation Unit F2 (SWMU No. 91) located on the east side of Process Building #1.



Looking east at Satellite Accumulation Area C2 (SWMU No. 98) located on the west side of Tank Farm #1. Note drums are placed on concrete pad with shallow dike.

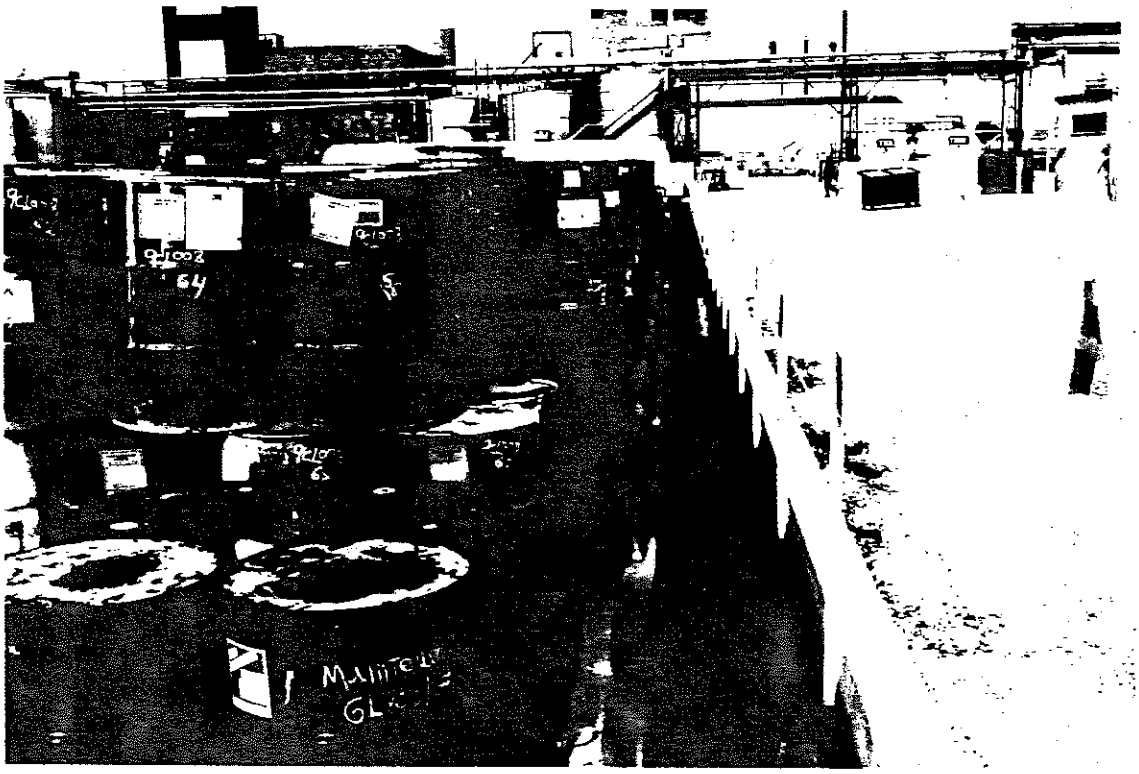


Photograph 11: Looking west at Tank Farm #1 (SWMU Nos. 6-18), showing concrete perimeter dike.

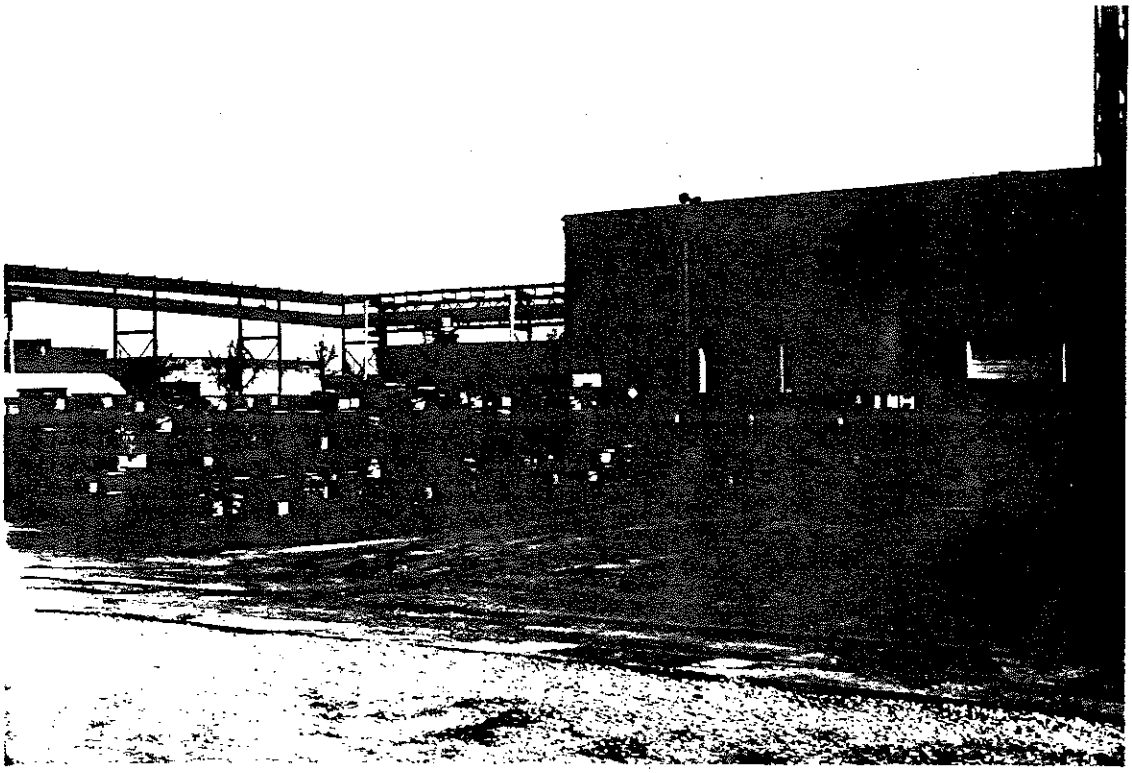


Photograph 12: Looking southeast at Tank #199 (SWMU No. 5) which is located in Container Storage Area #1.

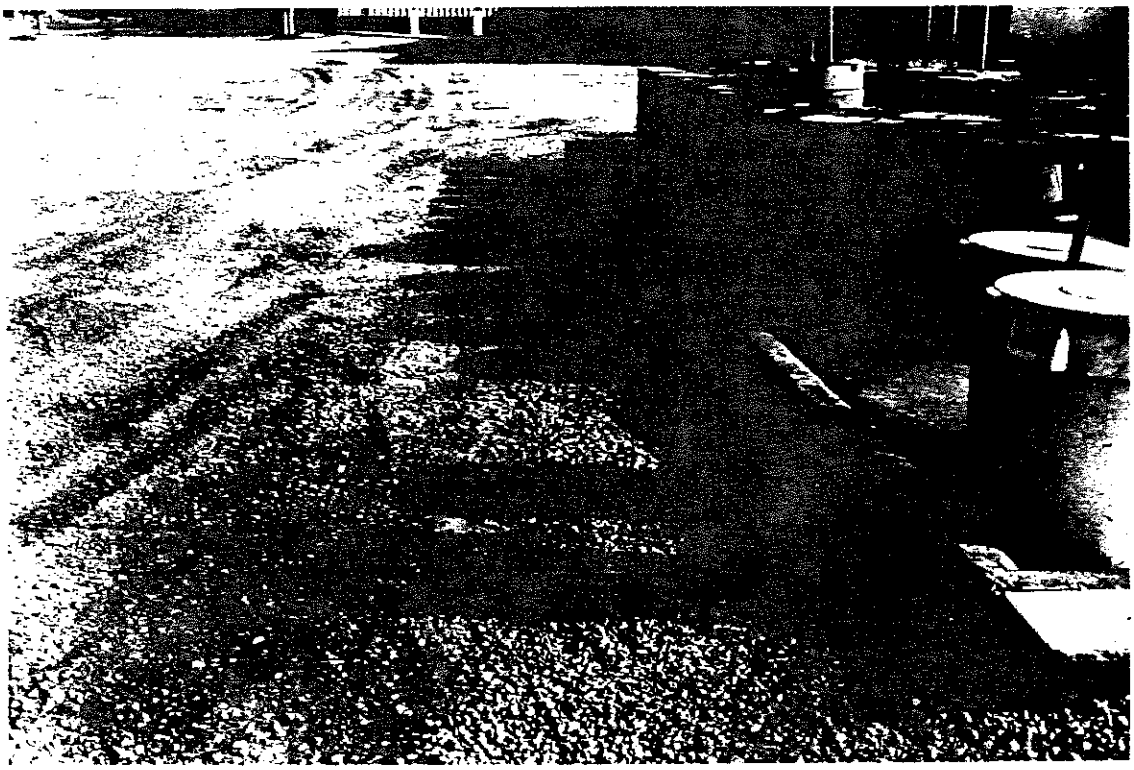
Photograph 13: Looking west at Container Storage Area #1 (SWMU No. 4), showing concrete pad and curb.



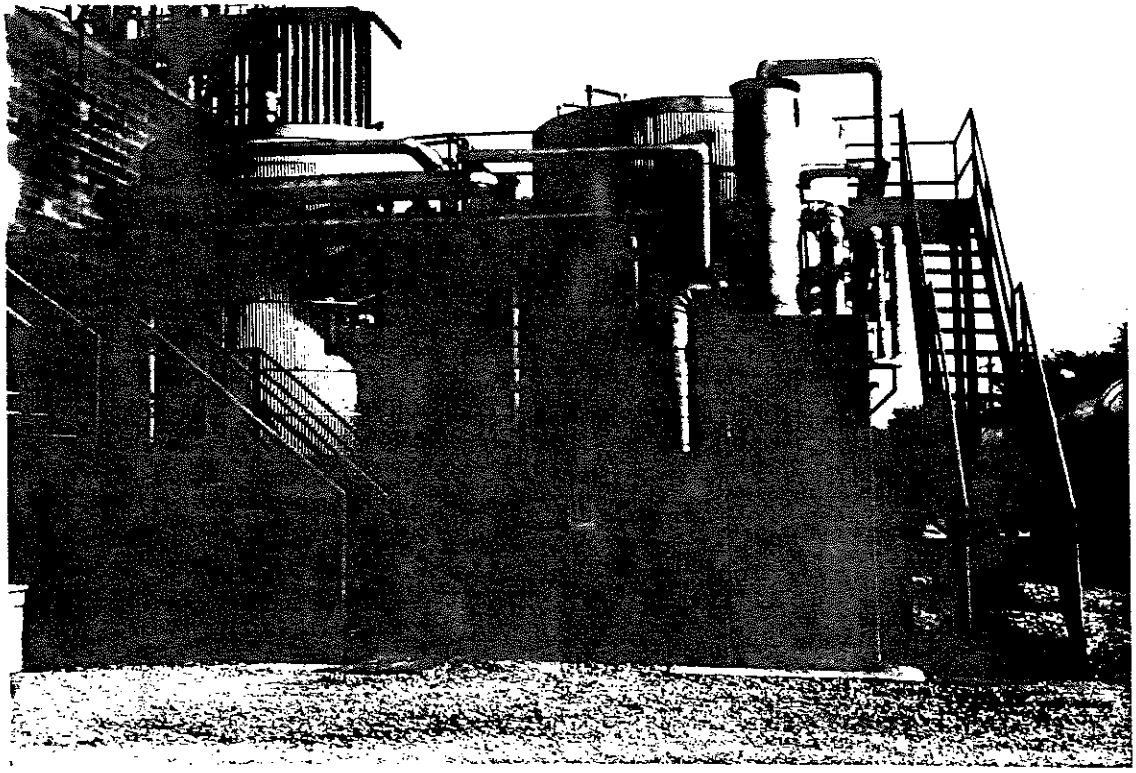
Photograph 14: Looking north at Container Storage Area #1 (SWMU No. 4), showing concrete trench which runs along the east side of the unit.



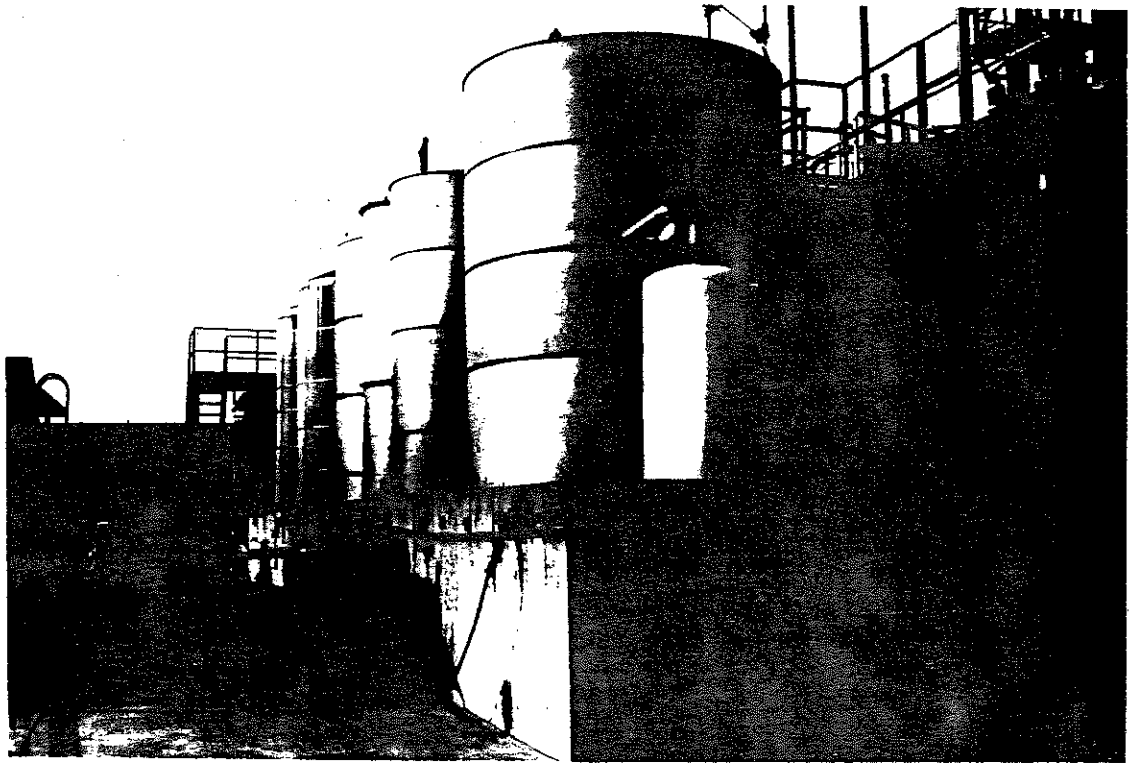
Photograph 15: Looking northeast at Container Storage Area #1 (SWMU No. 4), showing concrete pad.



Photograph 16: Looking east at area just north of Container Storage Area #1 (SWMU No. 4), where a spill of mineral spirits bottoms oil was documented by the facility.

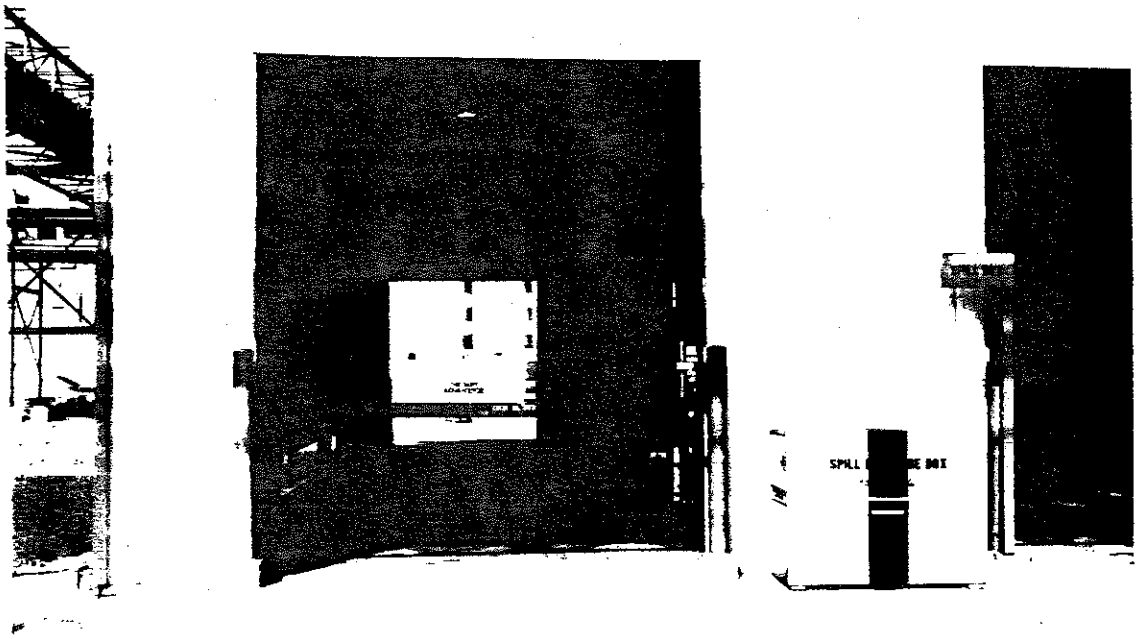


Photograph 17: Looking east at Tanks PCT #1 and PCT #2, (SWMU Nos. 55-56), located in Tank Farm #4. Note concrete perimeter dike.

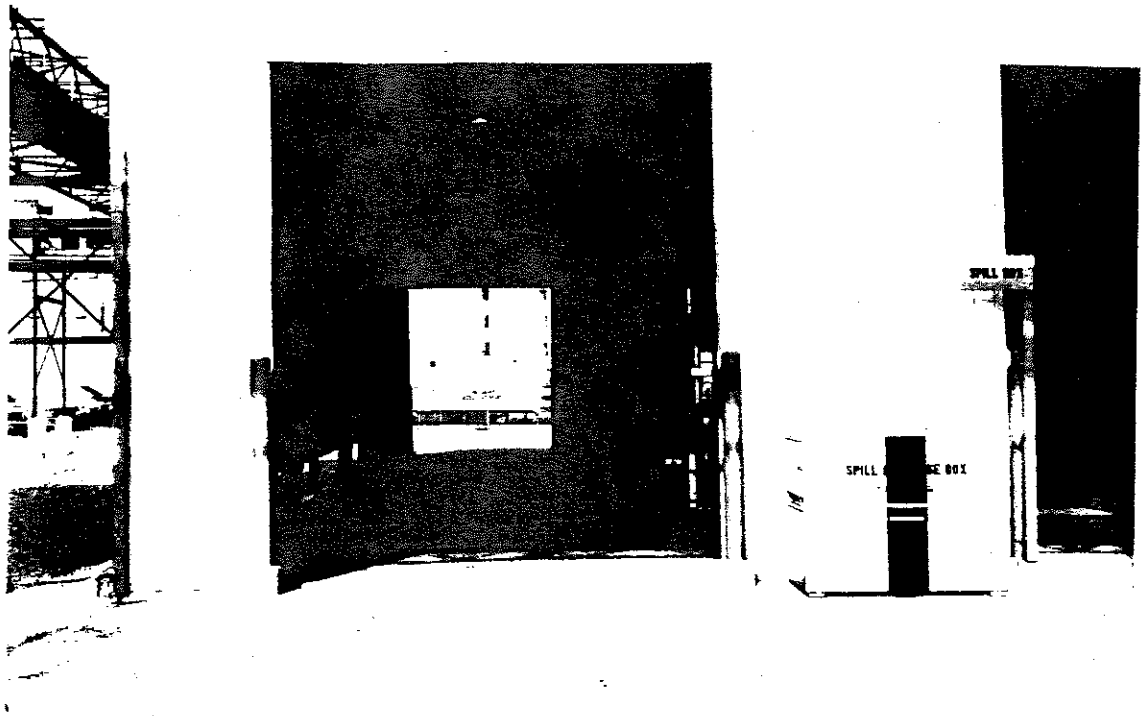


Photograph 18: Looking west at Tank Farm #4 (SWMU Nos. 36-56), showing concrete perimeter dike.

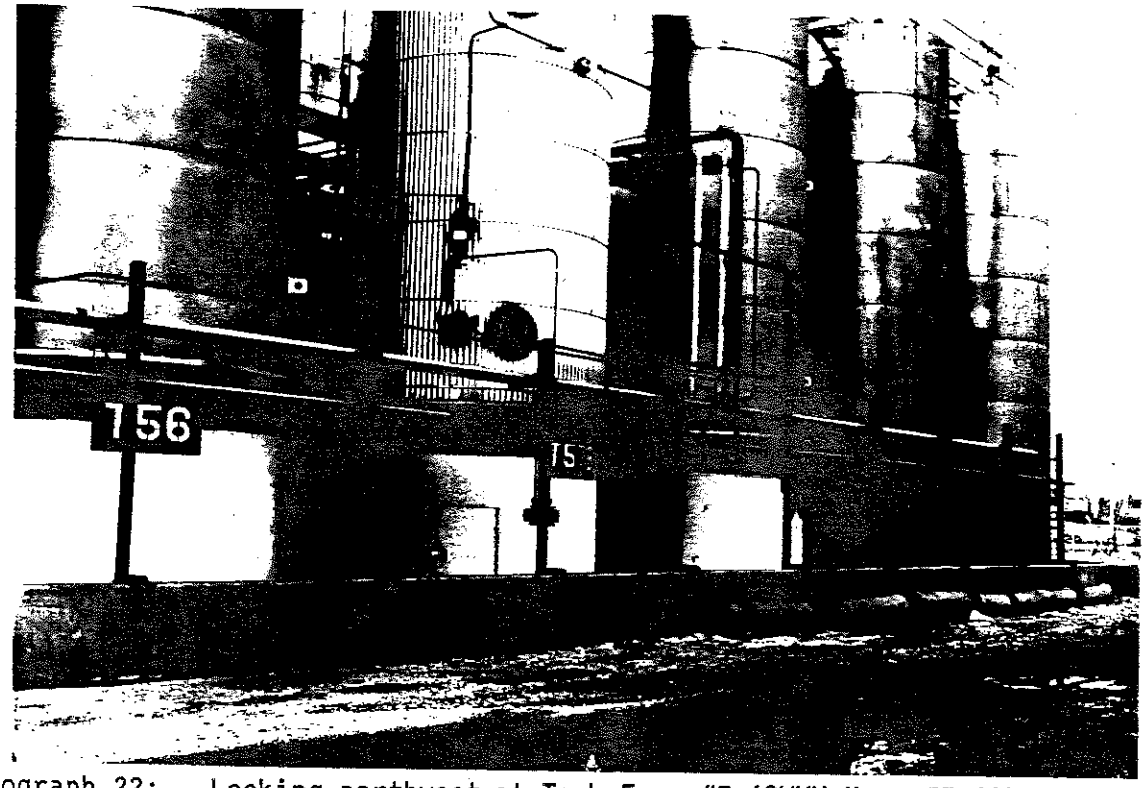
Photograph 19: Looking east at Satellite Accumulation Area C4 (SWMU No. 100) located on the south end of Truck Station #1. Note drums are placed on concrete pad.



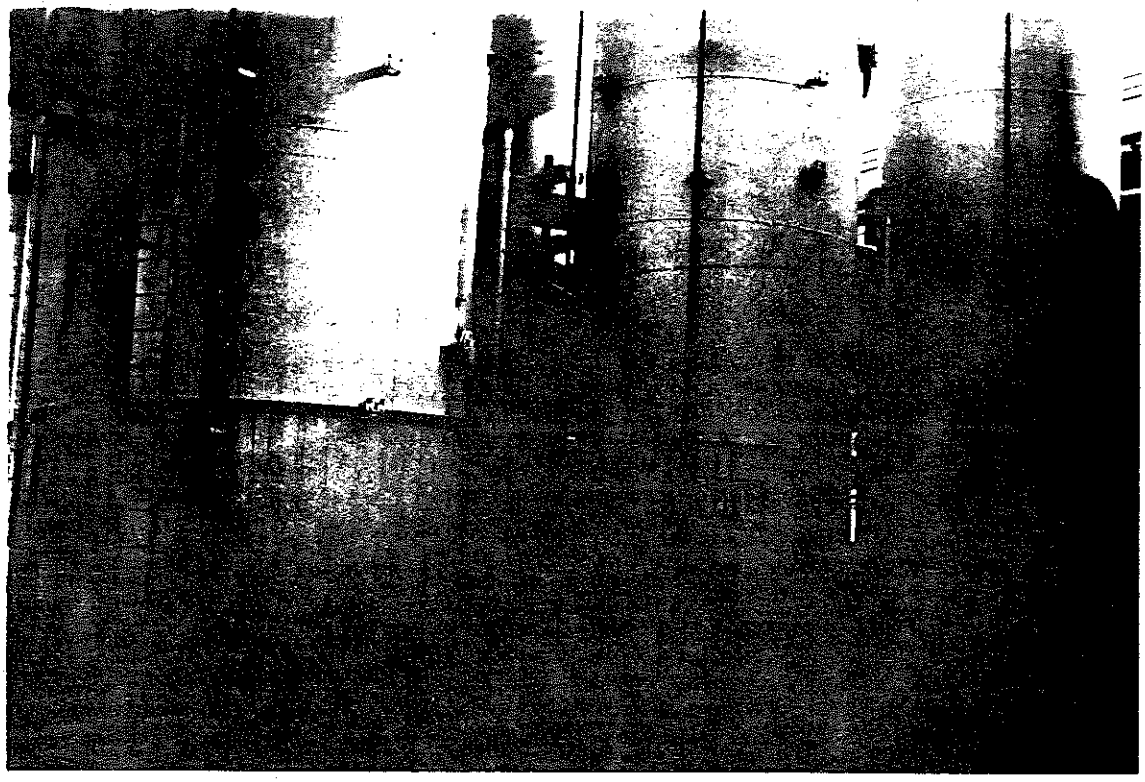
Photograph 20: Looking north at Truck Station #1 (SWMU No. 1), showing concrete pad with concrete curbs.



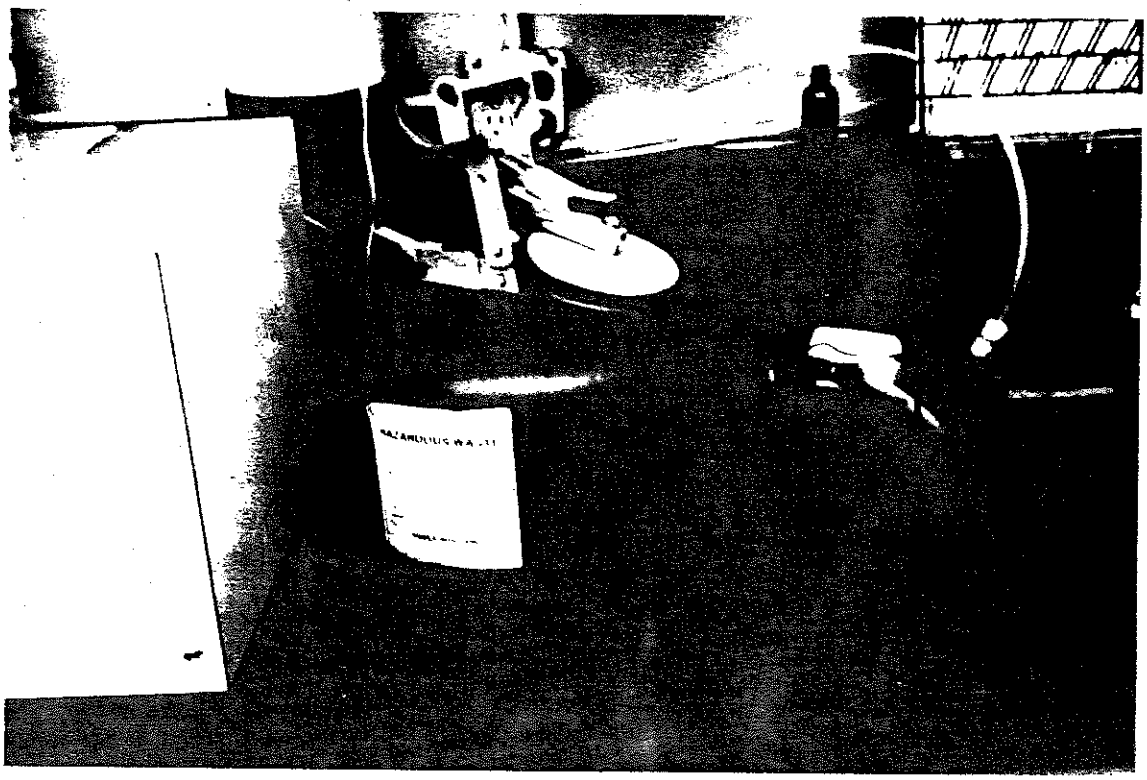
Photograph 21: Duplicate of Photograph 20.



Photograph 22: Looking northwest at Tank Farm #5 (SWMU Nos. 57-83), showing concrete perimeter dike.

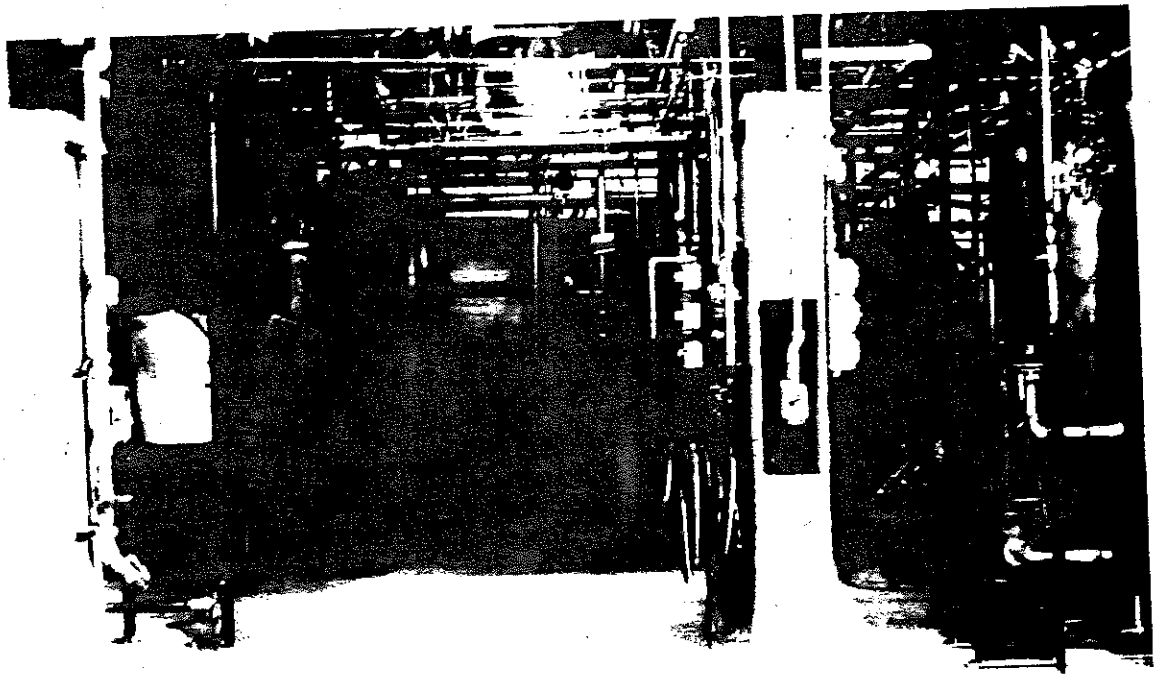


Photograph 23: Looking southeast at Tank Farm #5 (SWMU Nos. 57-83), showing concrete perimeter dike.

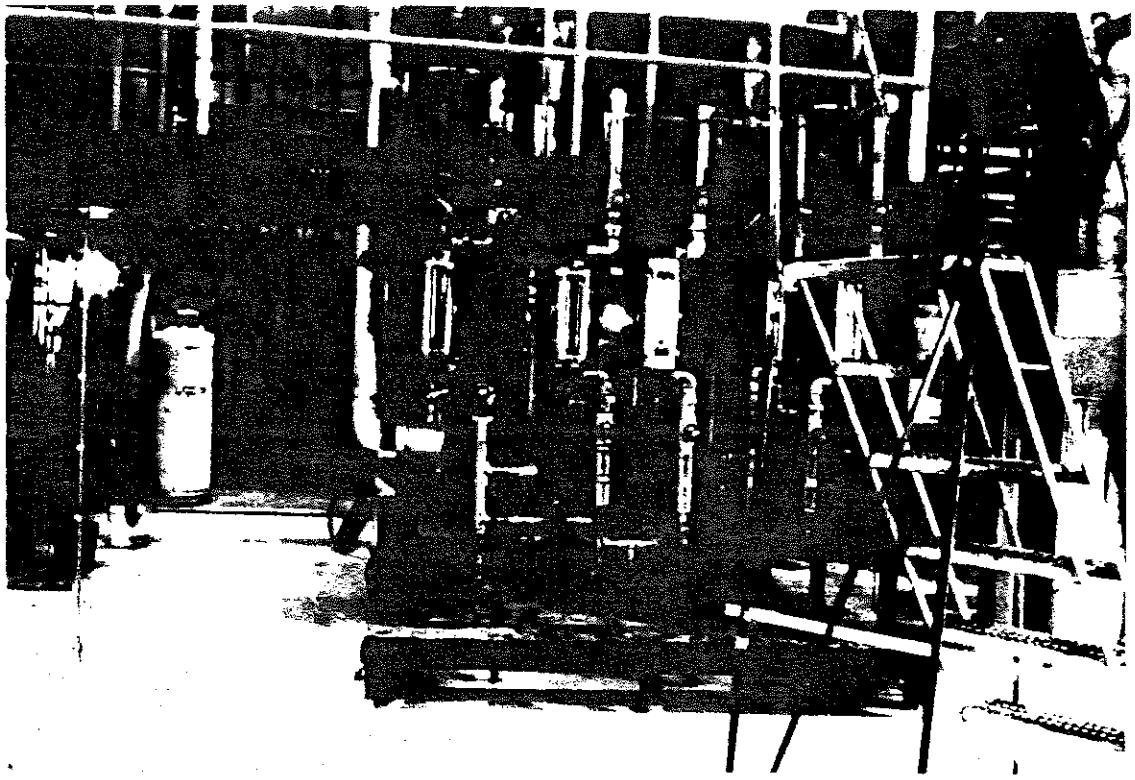


Photograph 24: Laboratory Waste Container (SWMU No. 101) located in Main Laboratory.

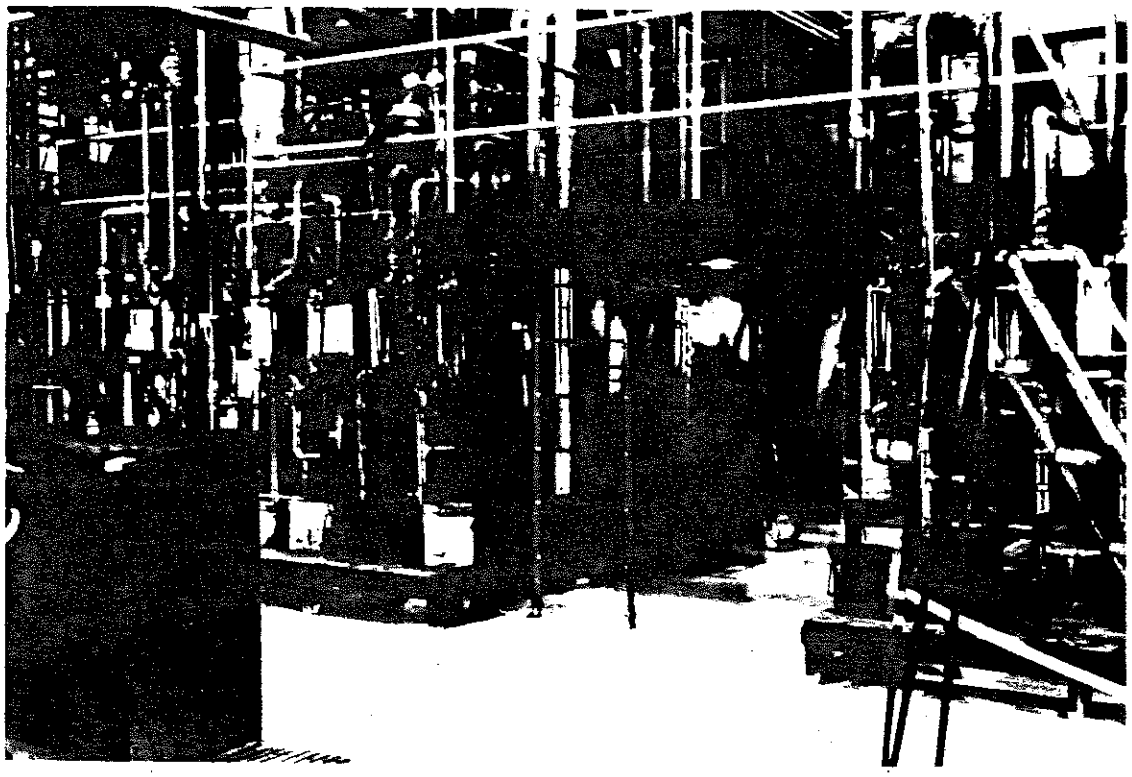
Photograph 25: Looking north at Satellite Accumulation Area C3 (SWMU No. 99) located in Process Building #2.



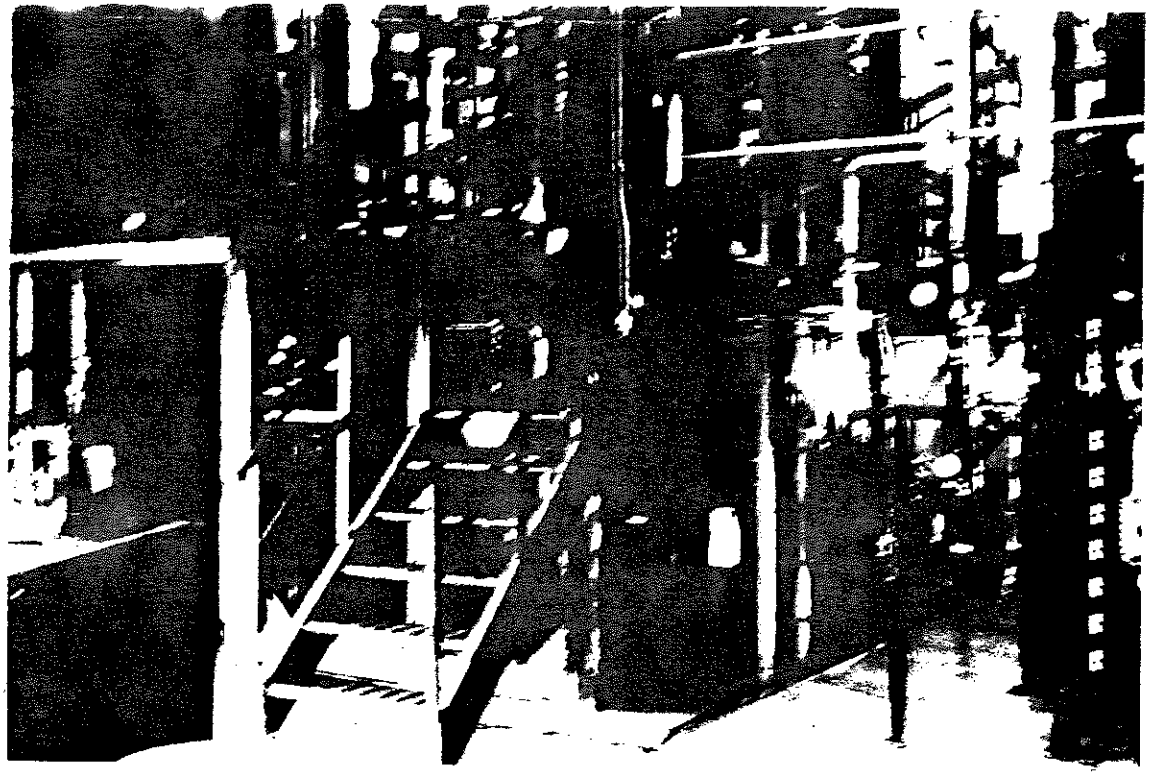
Photograph 26: Looking south at Liquid-Liquid Extraction Unit E2 (SWMU No. 88) located in Process Building #2.



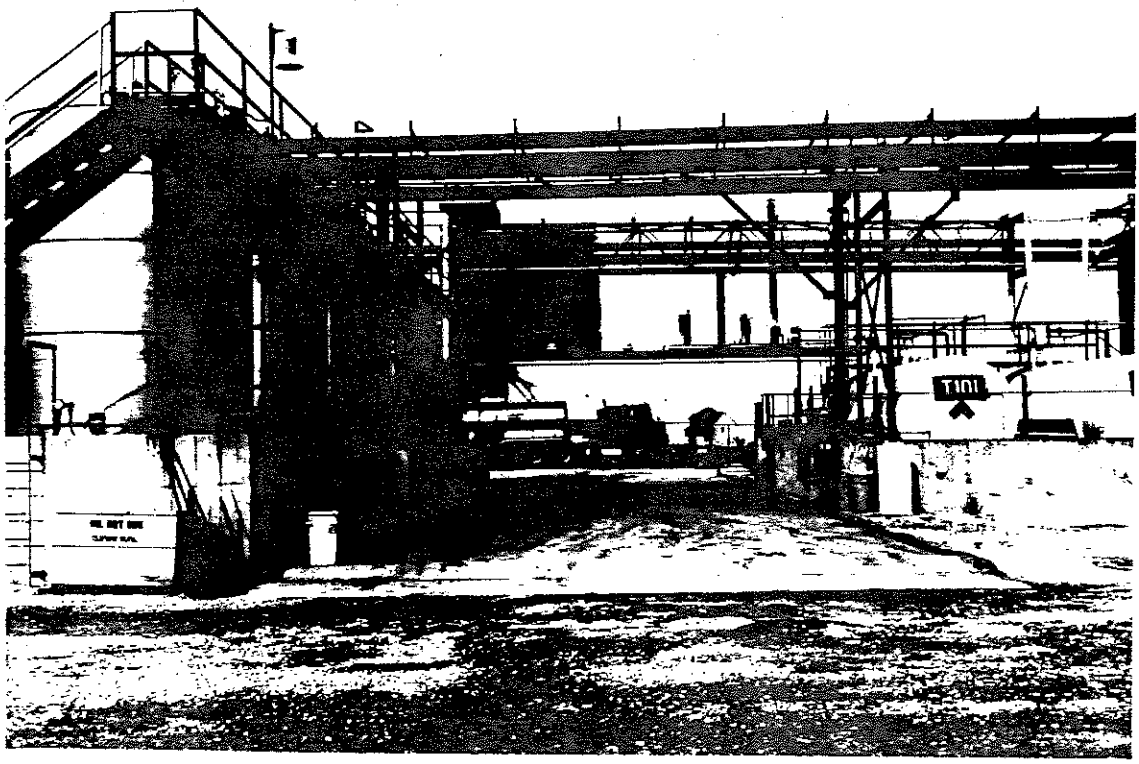
Photograph 27: Looking south at Fractionation Unit F3 (SWMU No. 92) located in Process Building #2.



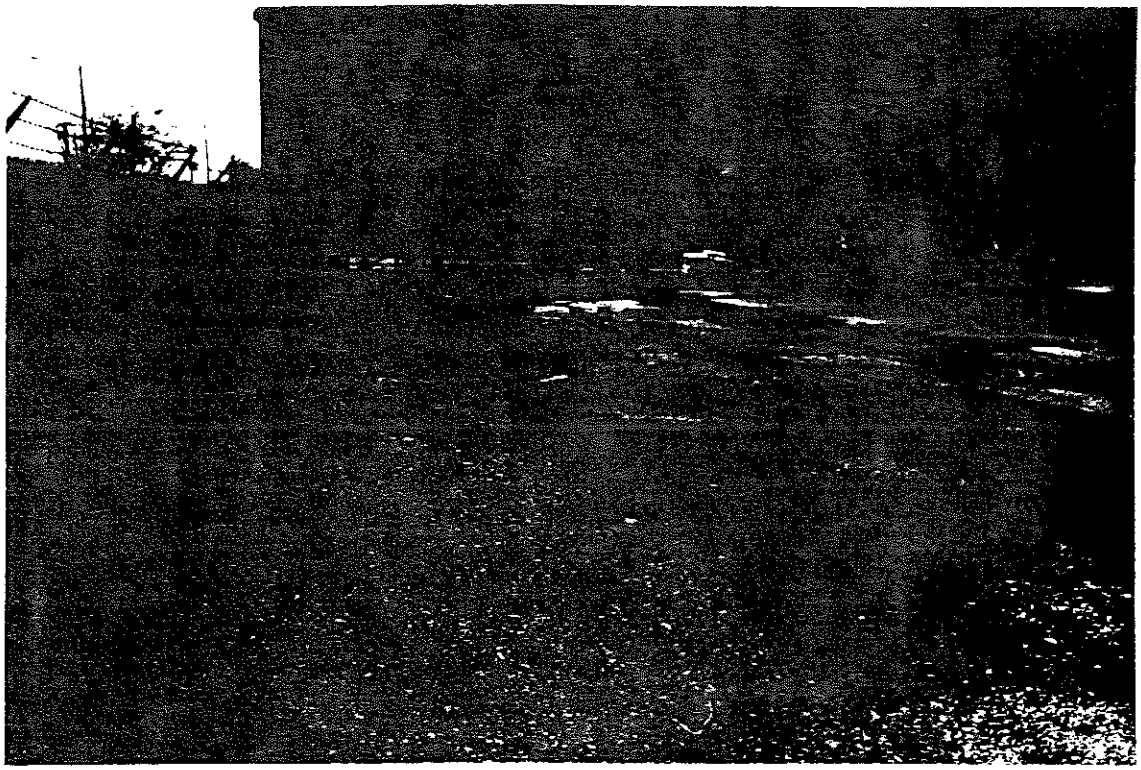
Photograph 28: Looking south at Fractionation Unit F4 (SWMU No. 93) located in Process Building #2.



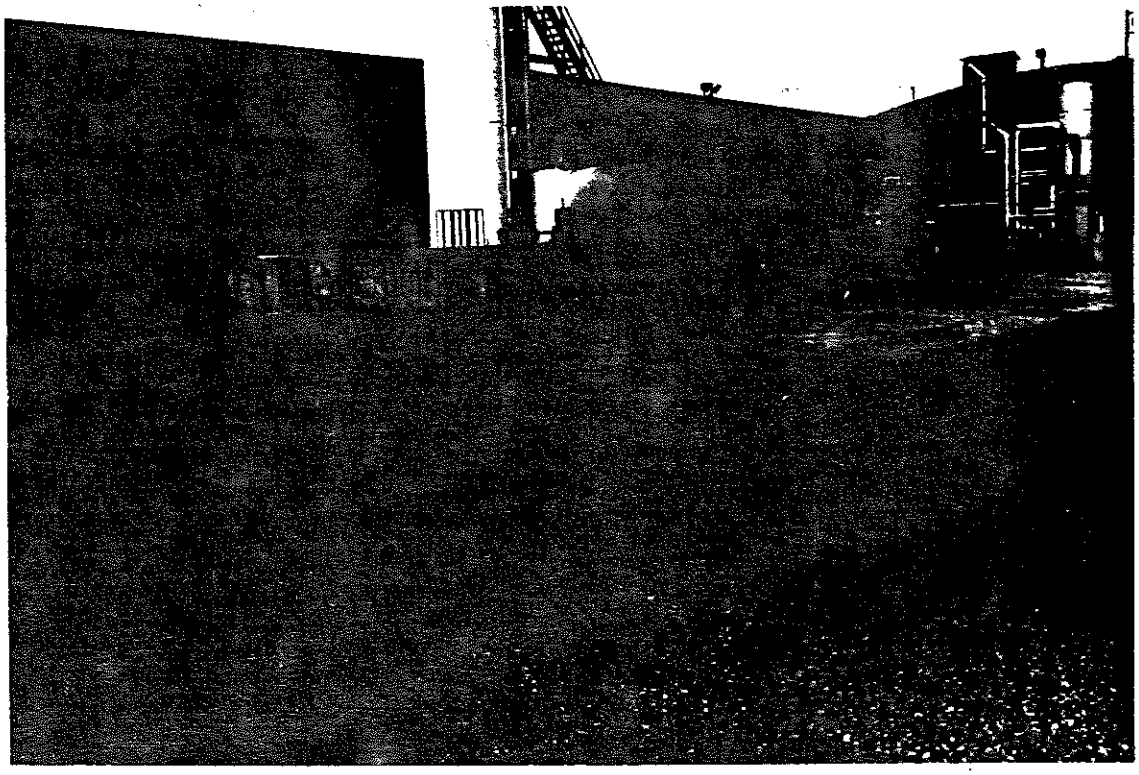
Photograph 29: Looking south at Distillation Unit L1 (SWMU No. 86) located in Process Building #2.



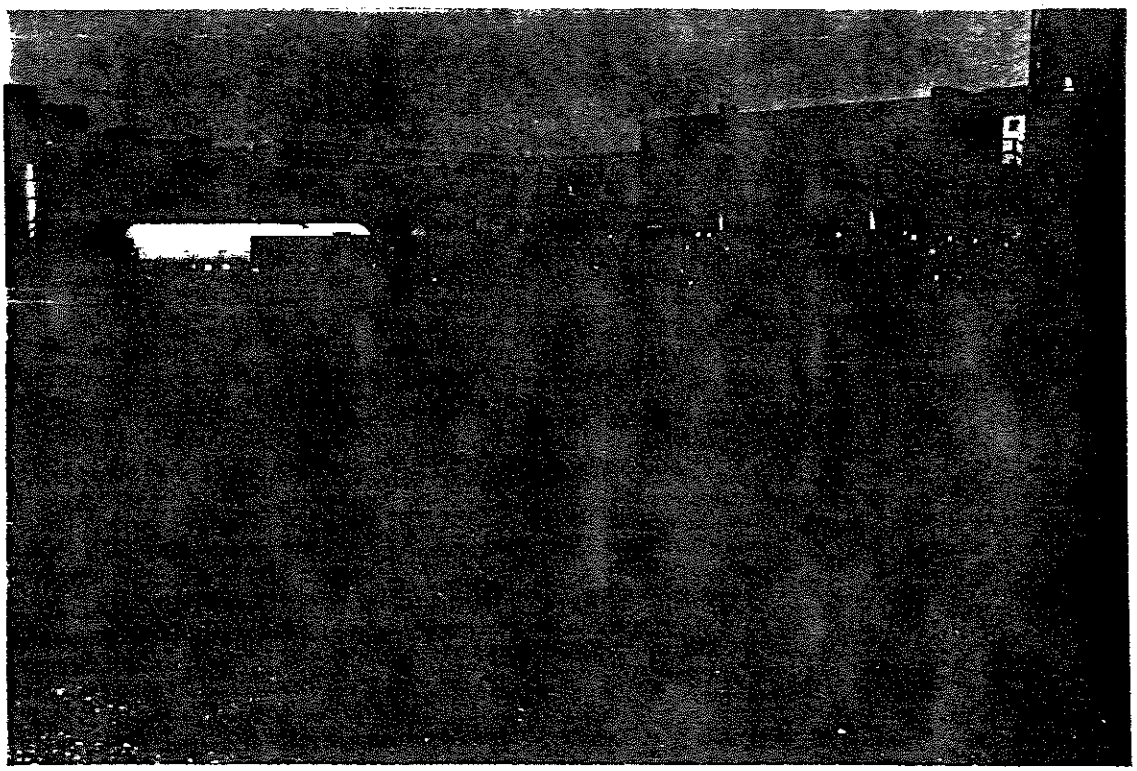
Photograph 30: Looking north at Truck Station #3 (SWMU No. 3) showing concrete pad and concrete curbs.



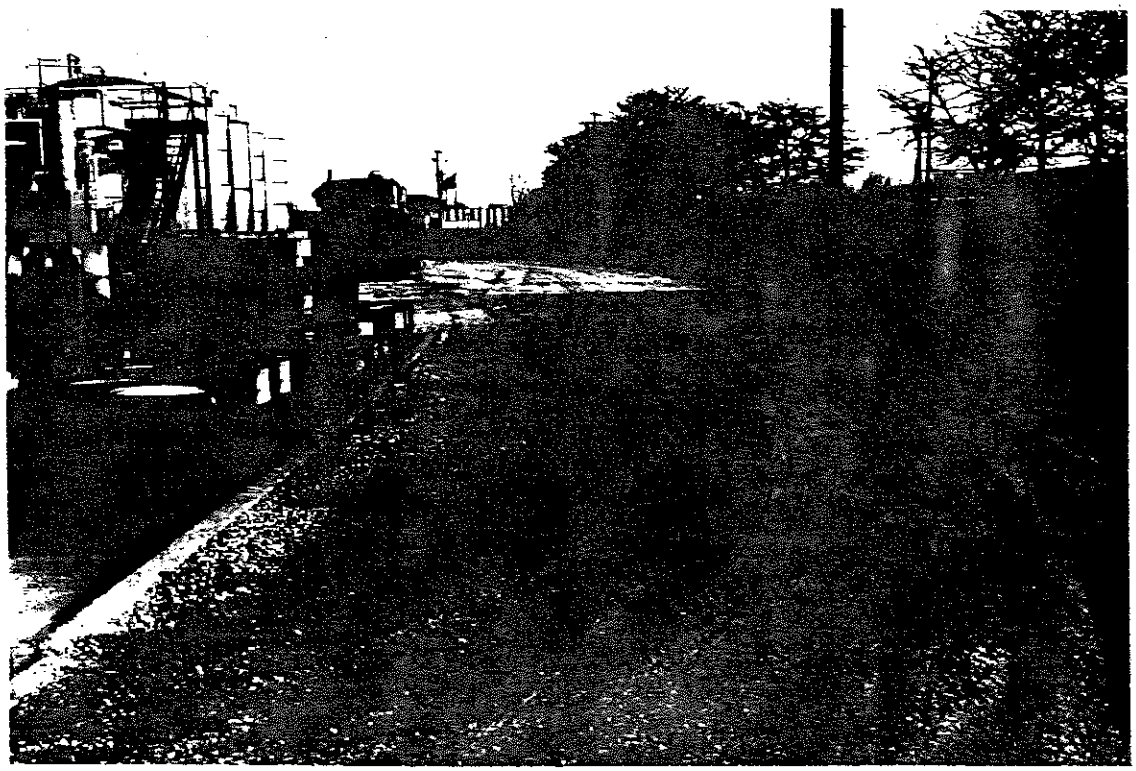
Photograph 31: Looking west at area south of Tank Farms #3 and #2 (AOC A) where containers were formerly stored open.



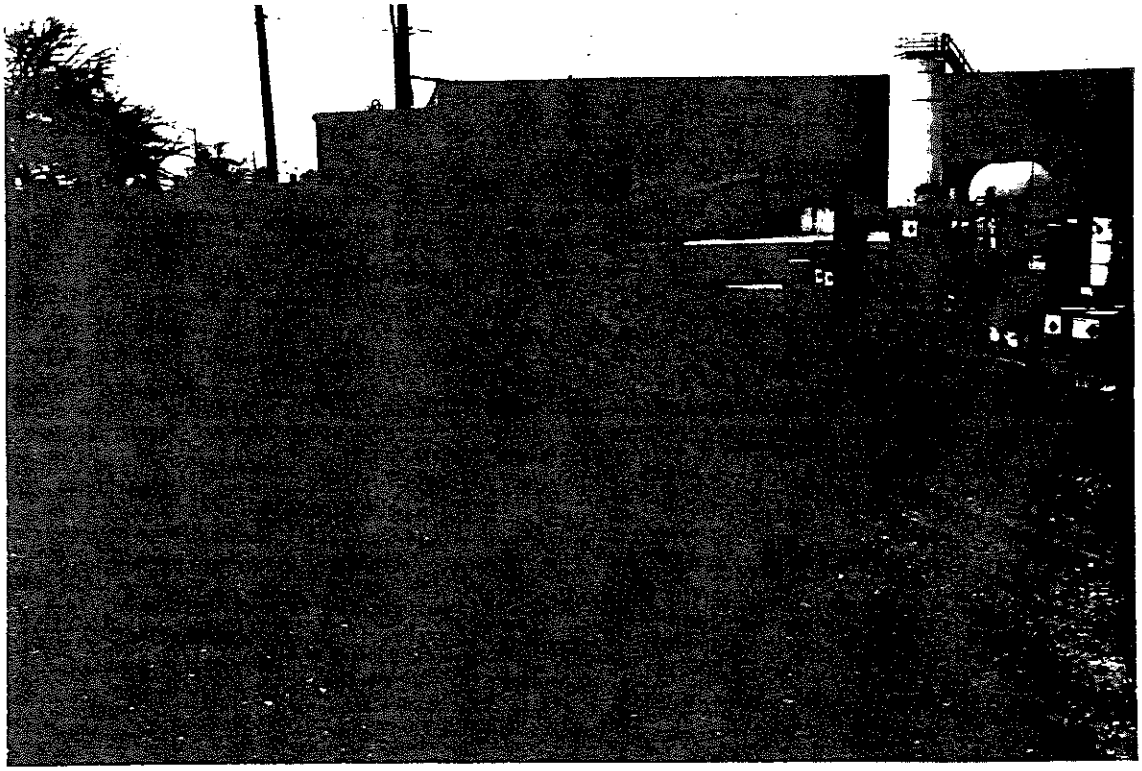
Photograph 32: Looking northwest at area south of Tank Farms #3 and #2 (AOC A) where containers were formerly stored open.



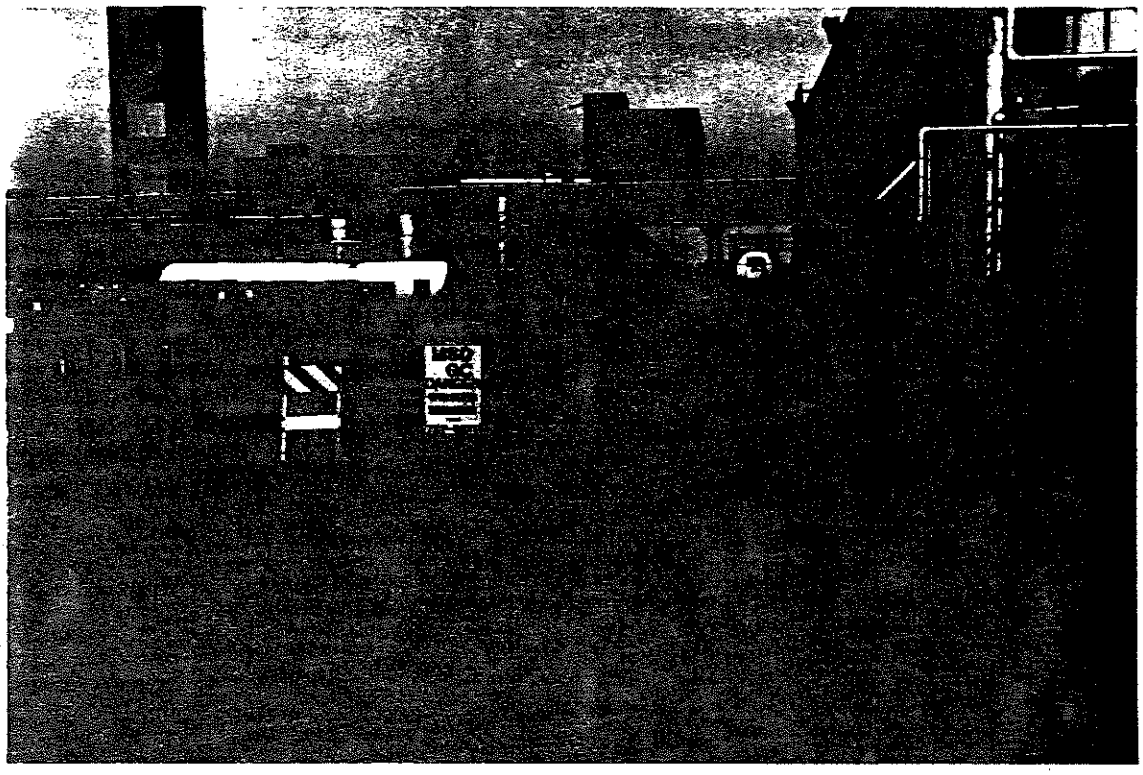
Photograph 33: Looking northeast at the area west of Container Storage Area #1 where the facility documented a spill of freon (AOC B).



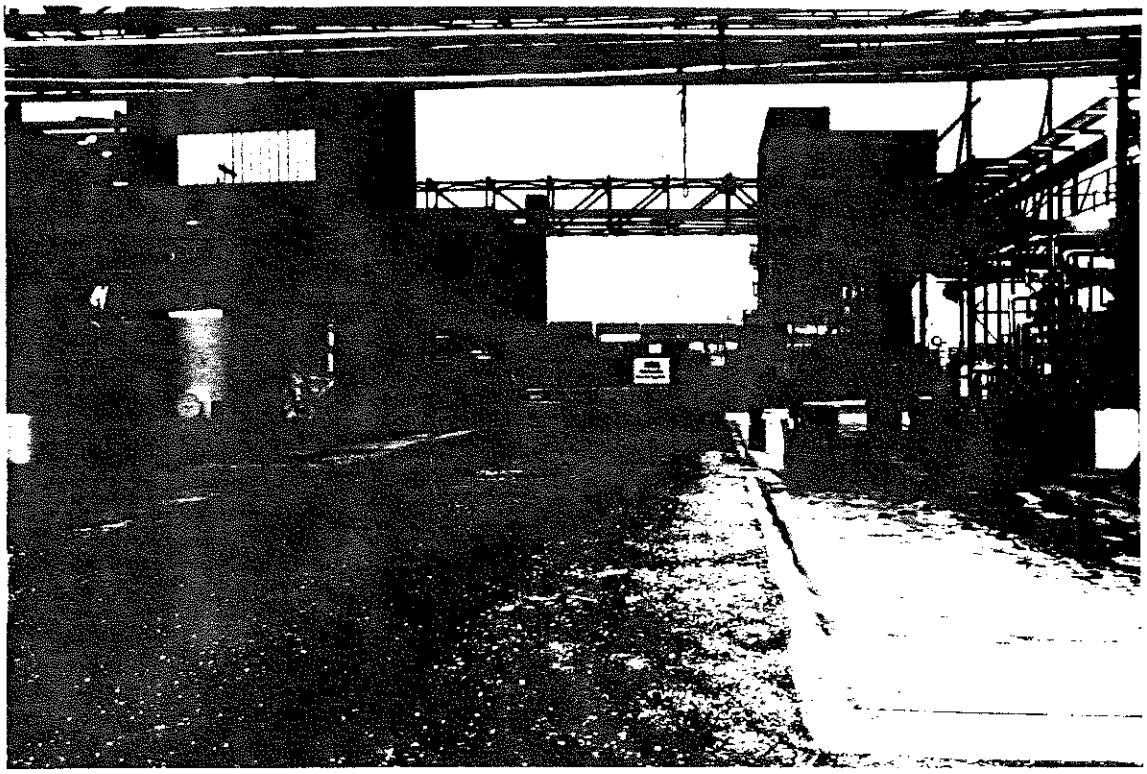
Photograph 34: Looking east at area south of Container Storage Area #1 (SWMU No. 4).



Photograph 35: Looking west at area south of Container Storage Area #1 (SWMU No. 4).



Photograph 36: Looking north at area east of Container Storage Area #1 (SWMU No. 4).



Photograph 37: Looking north at Truck Station #2 (SWMU No. 2), showing concrete pad and concrete curb.

ATTACHMENT E

FIELD LOG BOOK

VISUAL SITE INVESTIGATION 1-19-90

TIME: 12:15pm - 2:00pm

SAFETY-KLEEN CHGO. RC

WEATHER: ↓ 30°

PARTICIPANTS: DONNA CZECH IEPA

ALFRED AGHAIEPOUR SAFETY-KLEEN

PHOTOGRAPHS:

(DIRECTION) ~~DIRECTION~~

① F-1 in P.B#1 on concrete floor

(E) DAPC permits

② E-1 (DAPC) in P.B#1 - concrete fl (W)

③ F-5 -DAPC permit in P.B#1 concrete fl. (W)

④ neutralizing unit (NW) - concrete floor in P.B#1 - caustic line

⑤ TF #3 (SW) 2nd cont. conc. dike

⑥ TF #2 (W) conc. dike 2nd cont.

⑦ TF #- (W. side) SAT. [illegible] concrete pad [illegible]

(8) TF = 3 x #. (W) outside P.B.# in concrete [illegible]

(9) F-2 NW outside P.K.#1 in concrete [illegible]

(10) Sed. area outside TF #1 (west side) - facing (E) - concrete pad shallow ditch

C2

(11) TF #1 (W) [illegible]

(12) T-199 (SE) in conc. pad in C.S.A. #1

(13) C.S.A. #1 (W) ~~[illegible]~~

(14) P.S.A. #1 (N) [illegible]

(15) (NE) C.S.A. # [illegible] pad. ditch NE

(16) [illegible] (E) [illegible]

(17) [illegible] (TF#4) [illegible] (no new [illegible])

(18) TF#4 (W) [illegible]

(19) TS#1 [illegible] (E) [illegible]

(20) underground

(21) TS#1 (N) [illegible]

(22) TF#5 (NW)

(23) TF#5 (SE)

(24) MA/1 AB 2 gal. Container for ab waste

25) P [illegible] C-3 [illegible]

26) E-2 (S) [illegible]

27) I-3 (S)

28) F-1 (S)

29) [illegible] (S) ✓

30) T.C.=3 (1) [illegible]

31 (W)
32 (NW)
33 (NE)
34 (E)
35 (W)
36 (N)
37 (N) — TS #2

Area on South Side of prop
A.O.C.

ATTACHMENT F

VSI SUMMARY

B-121

USEPA

safety-kleen®

January 6, 1997

Mr. Lawrence W. Eastep, P.E.
Manager, Permit Section
IEPA-Division of Land Pollution Control
2200 Churchill Road
Springfield, IL 62706

Re: Safety-Kleen Corporation Chicago Recycle Center
ILD0005450697; Site #0316000053

Dear Mr. Eastep:

Safety-Kleen Corporation Is hereby submitting the tank inspection report pursuant to the requirement of the Part-B Permit. Specifically, Section II, condition H.G.C. requires that Safety-Kleen Corporation should conduct an internal inspection of the second half of the hazardous waste storage tanks in TF #5 by the end of 1996 and submit the inspection report to the agency.

As per this permit condition, the inspection performed by an independent, professional Engineer is provided in the attachment. We believe this submittal satisfies the requirement of the permit. If you have any questions please call me at (773) 247-2828.

Sincerely,

Alfred Aghapour
Facility Manager

AA:bb
Attachment

cc: Bob Burke
Mark Schollenberger
File - Chicago Part-B Correspondence 1997
AA97-1

RECEIVED
JAN - 9 1997
IEPA-BOL
PERMIT SECTION

1445 WEST 42ND STREET CHICAGO, ILLINOIS 60609 PHONE 312/ 247-2828

SEECO Consultants Inc.

Consulting Engineers

Report

DECEMBER 20, 1996
JOB NUMBER -5232QC

STRUCTURAL INTEGRITY TANK INSPECTION REPORT FOR SAFETY-KLEEN CORPORATION CHICAGO RECYCLE CENTER AT 1445 WEST 42ND STREET, CHICAGO, IL 60609

PREPARED FOR

EVEREADY WELDING SERVICE, INC.
18111 S. HARLEM AVE.
TINLEY PARK, ILLINOIS 60477
ATTN: MR. ROBERT HAAVIG, JR.

PREPARED BY

SEECO CONSULTANTS, INC.
7350 DUVAN DRIVE
TINLEY PARK, ILLINOIS 60477
(708) 429-1666

TABLE OF CONTENTS

INTRODUCTION

This report presents inspection records and comments pertaining to both visual inspection and ultrasonic testing which was performed at the Safety-Kleen Corporation Recycle Center site located in Chicago, Illinois. The inspection and testing was performed on eighteen (18) permitted Product and Hazardous Waste storage tanks located in tank farm #5.

Scope of Work

A complete visual inspection, both internal and external, was performed on each tank. In addition, using ultrasonic testing the thickness of each tank wall was measured with readings obtained at the top and bottom of all tank welds. This work was performed with the intent of certifying each tank for hazardous waste service.

General Information

Tank Farm #5 consists of tanks T-30 to T-60 and is located near the southeast corner of the property. This tank farm is contained by a perimeter concrete wall approximately three (3) feet in height and includes a piping pit located in the center of the farm. This inspection was performed on only two (2) rows of the tanks present in this tank farm (Refer to the attached Location Plan references). The tanks inspected are as follows: T-42, T-43, T-44, T-45, T-46A, T-46B, T-47A, T-47B, T-48A, T-48B, T-49A, T-49B, T-50, T-51, T-52A, T-52B, T-53A and T-53B.

Two (2) types of tank layouts exist for the eighteen (18) tanks inspected. These types are referenced to as "Piggyback" and "Non-Piggyback". The "Piggyback" tanks are referenced as T-46A, T-46B, T-47A, T-47B, T-48A, T-48B, T-49A, T-49B, T-52A,

T-52B, T-53A and T-53B. The piggyback tanks consist of one (1) 7,500 gallon tank constructed directly on top of another 7,500 gallon tank which share a common outer shell. The "Non-Piggyback" tanks are referenced as T-42, T-43, T-44, T-45, T-50 and T-51. These tanks are constructed as a single tank structure having a volume of 15,000 gallons,

The tanks are constructed of either carbon steel or stainless steel. A total of Nine (9) tanks are constructed of carbon steel and nine (9) of stainless steel. Tanks T-42, T-43, T-44, T-45, T-48A, T-48B, T-49A, T-49B and T-50 are constructed of stainless steel.

All tanks are fireproofed around the exterior of the tank from the base to the top of the cone basin or approximately 8' high for "Non-Piggyback" tanks and 16' high for all "Piggyback" tanks. This material is approximately 1.5 inches thick. It was also noted that tanks T-47A and T-49A are insulated at the top with a corrugated metal wrapped around the exterior. The insulation includes a cooling system consisting of Glycol Tracing.

Observation of the tanks from the exterior indicate that the connecting painted steel catwalks located above each tank are rusting. The rust from these catwalks travel down the tanks after each rain giving an appearance of rust on all carbon steel tanks.

However, no visual corrosion or rust remitting from the tank itself was observed on the exterior. The stainless steel tanks showed no collection of the rust runoff; with the exception of the fireproofing material located at the bottom of the tank.

Copies of the Storage Tank Inspection Records performed and recorded by Mr. Robert Haavig, Jr. of Eveready Welding Services, Inc. for the eighteen (18) tanks are attached for reference.

FIELD WORK AND INSPECTION TESTING

Each tank was emptied, vented and cleaned with all connections closed. The cleaning was performed by pressure power washing with all sludge and scale removed if present. Visual inspection of both the interior and exterior was conducted. This included: check for cracks, leaks, corrosion and erosion, check of the foundation and tank support, inspection of all welds, check of any insulation and/or fireproofing and operation of the safety vent system. A thickness profile of each tank was made using Ultrasonic Testing (UT). Using this method, the thickness of the tank wall was measured in thousandths of inches at the top and bottom of all tanks welds and at four (4) locations 2 feet from the center of the tank cone. UT is a non-destructive inspection method which utilizes high frequency sound waves to measure geometric and physical properties in material. All UT testing was performed using an explosion proof device manufactured by Milltronic. These UT thickness readings in inches are summarized on the bottom of each Storage Tank Inspection Record. Finally, a complete internal inspection was performed. This included a check of the sidewall, roof and bottom surfaces with particular attention to the condition of all welds. Welds were visually inspected for any surface flaws and imperfections including discontinuities, cracks, adequate penetration and overall weld surface condition. All welds were found to be strictly in accordance with American Welding Society (AWS) requirements. A check of any internal items such as baffles, level gauge floats and dip tubes was also made.

Tank Farm #5 was visually inspected for RCRA compliance with Code of Federal Regulations, 40 CFR Part 264 - Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities, Subpart J, "Tank Systems" (264.191). The inspected tanks are approximately 8-10 years old. The inspected tanks are permitted for both Product storage and Hazardous Waste. A table summarizing the tanks inspected by SEECO Consultants, and the Storage Tank Inspection Records generated by Eveready Welding Service, Inc. as well as a list of chemicals managed in Tank Farm #5 are attached in the Appendix of this report. None of the chemicals listed are mineral acids known to be incompatible with steel. Additionally, the tanks in Tank Farm #5 were noted to be in compliance with Illinois Office of the State Fire Marshal (OSFM), Title 41, Part 160 regulations for above ground storage tank spacing requirements from buildings, property lines or adjacent tanks.

QUALIFICATIONS

SEECO Consultants, Inc. is a full service consulting engineering firm providing Structural Evaluation Services, Environmental Engineering, Construction and Geotechnical Services, Foundation Engineering Analysis, and Geotechnical and Materials Laboratory Testing.

SEECO Environmental Services, Inc. is a full Environmental Engineering Firm. The following is some information regarding our environmental capabilities. Our studies have included site assessments which vary in type and complexity. Our staff and services include work in the areas of groundwater, landfill and hazardous waste investigation and remediation, surveys and sampling of asbestos and other hazardous materials. Also, we have been very successful in servicing

our clients needs in other environmental areas such as industrial hygiene surveys Real Estate assessments and RCRA site evaluations.

SUMMARY OF TANKS INSPECTED

The following tanks were inspected by SEECO Consultants, Inc.

TANK NUMBER	TANK CAPACITY (Gallons)	TYPE OF TANK	YEAR BUILT
42	15,000	Non-Piggyback (Stainless Steel)	1987
43	15,000	Non-Piggyback (Stainless Steel)	1987
44	15,000	Non-Piggyback (Stainless Steel)	1987
45	15,000	Non-Piggyback (Stainless Steel)	1987
46A	7,500	Piggyback (Carbon Steel)	1987
46B	7,500	Piggyback (Carbon Steel)	1987
47A	7,500	Piggyback (Carbon Steel)	1987
47B	7,500	Piggyback(Carbon Steel)	1987
48A	7,500	Piggyback (Stainless Steel)	1988
48B	7,500	Piggyback (Stainless Steel)	1988
49A	7,500	Piggyback (Stainless Steel)	1987
49B	7,500	Piggyback (Stainless Steel)	1987
50	15,000	Non-Piggyback (Stainless Steel)	1988
51	15,000	Non-Piggyback (Carbon Steel)	1988
52A	7,500	Piggyback (Carbon Steel)	1988
52B	7,500	Piggyback (Carbon Steel)	1988
53A	7,500	Piggyback (Carbon Steel)	1988
53B	7,500	Piggyback (Carbon Steel)	1988

CERTIFICATION

The eighteen (18) tanks referenced in this report have been inspected for integrity both internally and externally. All eighteen (18) tanks were found to be in suitable condition for use as hazardous waste storage tanks both structurally and in accordance with the requirements of the Code of Federal Regulations 40 CFR Part 264 - Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities, Subpart J, "Tank Systems" (264.191).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate anc complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Collin W. Gray, S.E., P.E.

COLLIN W. GRAY
62-28849
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Date: 12-20-96

STATE OF ILLINOIS
COLLIN W. GRAY
81-3528
REGISTERED STRUCTURAL ENGINEER

Closing Remarks

We trust this report and the information contained herein is sufficient for your present requirements. We have welcomed the opportunity to be of service to you on this project. If there are any questions regarding this report, please contact us at your convenience.

Respectfully submitted,

SEECO CONSULTANTS, INC.

Harold R. Swanson
Field Engineer

Collin W. Gray, S.E., P.E.
President

HS:arm

APPENDIX

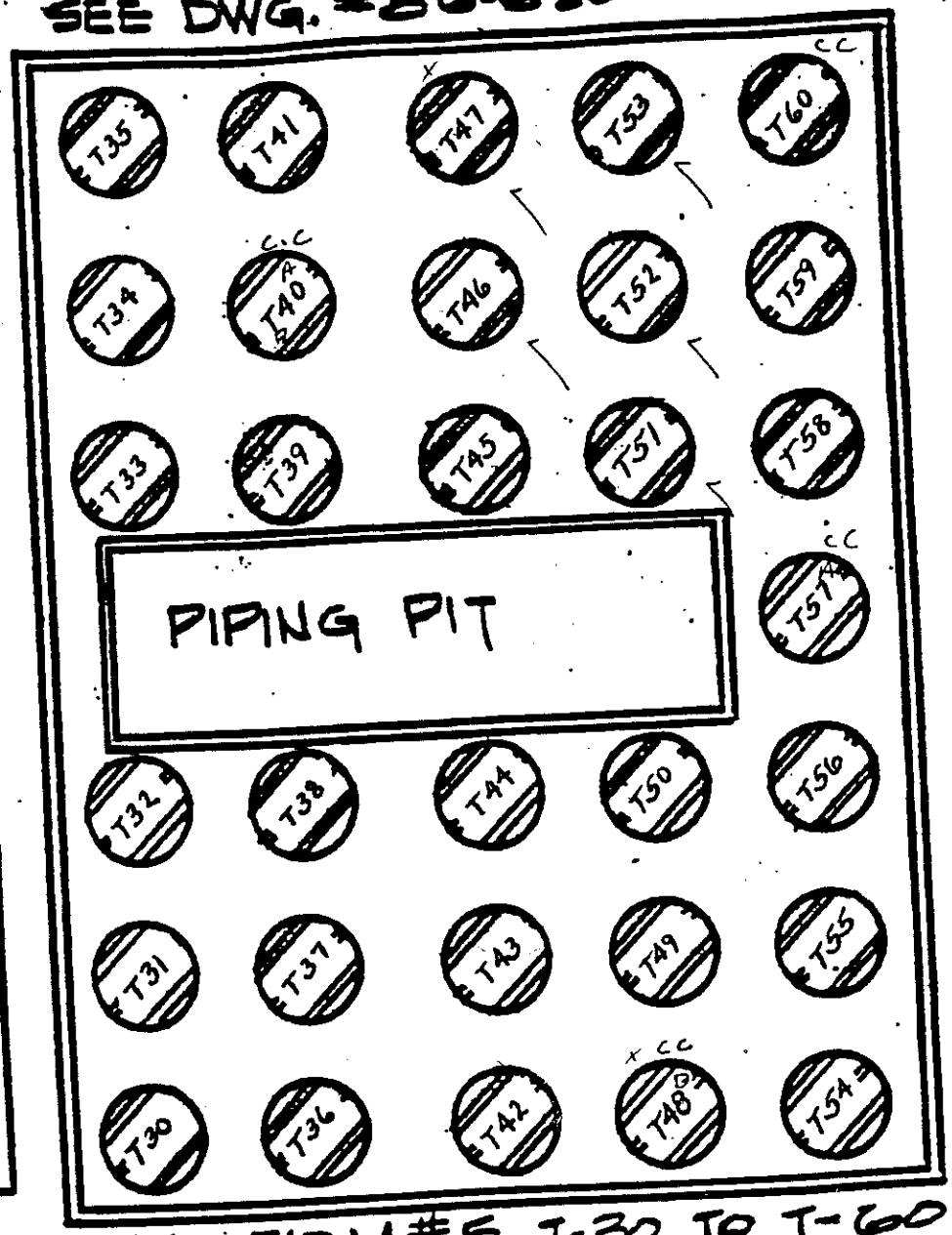
1. TANK LOCATION PLAN

2. TANK INSPECTION RECORDS

3. LIST OF CHEMICALS MANAGED AT TANK FARM #5

Tanks with Carbon Canister
Permit

CHLORINATED TANK DIKE
SEE DWG. #86-620



CARBON STEEL

TANKER TUNNEL

TANK FARM #5 T-30 TO T-60
(PROPOSED) (COMPLETION 12/86)

GREEN ROWS OF TANKS INSPECTED

YELLOW - PIGGY BACK TANKS
HIGHLIGHTER

BE MOVED FROM
MAIN BLDG. 12/86)

SAFETY-KLEEN
1445 W. 42 ND ST.
CHICAGO, IL.

DATE: 12/13/96
JOB NO.: 5230 QC

N LINE
NEUTRALIZER
(TO BE MOVED FROM
MAIN BLDG 1/87)

PUMP
HSE.

EVEREADY WELDING SERVICE, INC.
18111 S. HARLEM AVENUE
TINLEY PARK, IL 60477
(708) 532-2432

DECEMBER 13, 1996

THE FOLLOWING PAGES CONTAIN THE 18 TANK INSPECTION RECORDS FOR THE FOLLOWING TANKS:

1. 42
2. 43
3. 44
4. 45
5. 46A
6. 46B
7. 47A
8. 47B
9. 48A
10. 48B
11. 49A
12. 49B
13. 50
14. 51
15. 52A
16. 52B
17. 53A
18. 53B

AS ALWAYS, IT WAS A PLEASURE DOING BUSINESS WITH SAFETY-KLEEN - HICAGO RECYCLE CENTER.

SINCERELY,

Robert R Haavig Jr

ROBERT HAAVIG, JR.
EVEREADY WELDING SERVICE, INC.

Storage Tank Inspection Record

Facility: SAFETY-KLEEN - CHGO. RECYCLE CENTER	Sheet: 1 Of 1
Location: 1445 W. 42ND STREET	Date: 11/25/96

Type Inspection: Interior X Exterior X By: R.R. HAAVIG

Service: PRODUCT STORAGE - PERMITTED FOR HAZARDOUS WASTE

Capacity: 15,000 Tank Type: S.S. VERTICAL STORAGE TANK

	Roof/Top Head	Wall Shell	Floor Bottom	Jacket
Matls:	304 S.S.	304 S.S.	CONE 304 S.S.	N/A

Wall/Shell Condition: EXCELLENT

Roof Condition: EXCELLENT

Bottom Condition: EXCELLENT

Jacket Condition: N/A

Support Type: STEEL SKIRT WITH FIREPROOF INSULATION

Foundation Condition: CONCRETE - EXCELLENT

Internal Structure Condition: EXCELLENT

Welded/Flanged Joint Condition: EXCELLENT

Nozzle Condition: EXCELLENT

Lining/Coating Condition: FIREPROOF COATING ON SKIRT HAS HAIRLINE CRACKS

Insulation Condition: N/A

Safety Valve Condition: N/A

Signs of Cracks: NONE

Signs of Leakage: NONE

Signs of Corrosion: NONE

Test? NO Type: Results:

Operating Conditions: Max. Temp. 100 C Max. Press. ¾" Vac. ¾"

Comments: TANK IS IN EXCELLENT CONDITION

Thickness Readings: TAKEN NEXT TO VAREC GAUGE-2" PIPE ON RIGHT SIDE - BOTTOM TO TOP - (.263 .260) WELD (.190 .194 .190) WELD (.194 .195 .193) WELD (.196 .191 .194) WELD (.191 .190 .190) WELD (.191 .193 .194) WELD (.196 .198)

CONE MEASUREMENTS TAKEN 2 FT. FROM CENTER DRAIN

N .261 S .260 W .262 E .258

Storage Tank Inspection Record

Facility: SAFETY-KLEEN - CHGO. RECYCLE CENTER	Sheet: 1 Of 1
Location: 1445 W. 42ND STREET	Date: 11/25/96

Type Inspection: Interior X Exterior X By: R.R. HAAVIG

Service: PRODUCT STORAGE - PERMITTED FOR HAZARDOUS WASTE

Capacity: 15,000 Tank Type: VERTICAL STORAGE TANK

	Roof/Top Head	Wall Shell	Floor Bottom	Jacket
Matls:	304 S.S.	304 S.S.	CONE 304 S.S.	N/A

Wall/Shell Condition: EXCELLENT

Roof Condition: EXCELLENT

Bottom Condition: EXCELLENT

Jacket Condition: N/A

Support Type: STEEL SKIRT WITH FIREPROOF INSULATION

Foundation Condition: CONCRETE - EXCELLENT

Internal Structure Condition: EXCELLENT

Welded/Flanged Joint Condition: EXCELLENT

Nozzle Condition: EXCELLENT

Lining/Coating Condition: SLIGHT HAIRLINE CRACKS

Insulation Condition: N/A

Safety Valve Condition: N/A

Signs of Cracks: NONE

Signs of Leakage: NONE

Signs of Corrosion: NONE

Test? NO Type: Results:

Operating Conditions: Max. Temp. 100 C Max. Press. ¾" Vac. ¾"

Comments: TANK IS IN EXCELLENT CONDITION

Thickness Readings: TAKEN FROM SOUTH MAN WAY - BOTTOM TO TOP (.258 .256) WELD (.185 .185 .184) WELD (.184 .186 .184) WELD (.193 .196 .193) WELD (.194 .197 .194) WELD (.182 .184 .182) WELD (.192 .195)

CONE MEASUREMENTS TAKEN 2 FT. FROM DRAIN N .261 S .262

W .259 E .260

Storage Tank Inspection Record

Facility: SAFETY-KLEEN - CHGO. RECYCLE CENTER	Sheet: 1 Of 1
Location: TANK FARM # 5	Date: 12/13/96

Type Inspection: Interior X Exterior X By: R.R. HAAVIG

Service: PRODUCT STORAGE - PERMITTED FOR HAZARDOUS WASTE

Capacity: 7500 Tank Type: S.S. VERTICAL STORAGE TANK

	Roof/Top Head	Wall Shell	Floor Bottom	Jacket
Matls:	304 S.S.	304 S.S.	CONE 304 S.S.	NONE

Wall/Shell Condition: EXCELLENT

Roof Condition: EXCELLENT

Bottom Condition: EXCELLENT

Jacket Condition: N/A

Support Type: STEEL SKIRT WITH FIREPROOF COATING

Foundation Condition: CONCRETE - EXCELLENT

Internal Structure Condition: EXCELLENT

Welded/Flanged Joint Condition: EXCELLENT

Nozzle Condition: EXCELLENT

Lining/Coating Condition: SLIGHT HAIRLINE CRACKS IN FIRE PROOF COATING

Insulation Condition: N/A

Safety Valve Condition: N/A

Signs of Cracks: NONE

Signs of Leakage: NONE

Signs of Corrosion: NONE

Test? NO Type: Results:

Operating Conditions: Max. Temp. 100 C Max. Press. ¾" Vac. ¾"

Comments: TANK IS IN EXCELLENT CONDITION

Thickness Readings: TAKEN FROM SOUTH MAN WAY SIDE - BOTTOM TO TOP (.267 .264) WELD (.205 .194 .191) WELD (.188 .191 .188) WELD (.192 .192 .191) WELD (.189 .191 .189) (.190 .192 .192) WELD (.191 .191)

CONE MEASUREMENTS TAKEN 2 FT. FROM 3" N .266 S .265

CENTER DRAIN W .267 E .264

T- T45

Storage Tank Inspection Record

Sheet: 1 Of 1

Facility: SAFETY KLEEN - CHICAGO RECYCLE

Job No.

Location: 1445 W. 42ND STREET

Date: 11/11/96

Type Inspection: Interior X Exterior

By: R.R.HAAVIG

Item No. Code:

Year Built:

Service: PRODUCT STORAGE, PERMIT FOR HAZARDOUS WASTE

Capacity: 15000 Tank Type: VERTICAL STAINLESS STORAGE TANK

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	304 SS	304 SS	CONE 304 SS	NONE

Wall/Shell Condition: EXCELLENT

Roof Condition: EXCELLENT

Bottom Condition: EXCELLENT

Jacket Condition: N/A

Support Type: STEEL SKIRT WITH FIRE PROOF COATING

Foundation Condition: CONCRETE PAD-EXCELLENT CONDITION

Internal Structure Condition: EXCELLENT

Welded/Flanged Joint Condition: EXCELLENT

Nozzle Condition: EXCELLENT

Lining/Coating Condition: SLIGHT HAIRLINE CRACKS ON SKIRT-FIRE PROOF

Insulation Condition: N/A

Safety Valve Condition: N/A

Signs of Cracks: NONE

Signs of Leakage: NONE

Signs of Corrosion: NONE

Signs of Erosion: NONE

Test? NO Type: Results:

Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"

Reference Inspection Records:

Comments: TANK IS IN EXCELLENT CONDITION.

Thickness Readings: READINGS TAKEN FROM SOUTH MANWAY :

(BOTTOM TO TOP)

(.274 .272) WELD (.196 .197 .194) WELD (.196 .189 .197) WELD (.196 .198 .196)WELD

(.194 .194 .195) WELD (.196 .197 .196) WELD (.197 .199)

CONE N .266 S .262

E .266 W .261

T- 46A
Storage Tank Inspection Record

Sheet: 1 Of 1
Job No.
Date: 10/22/96
By: R.R.HAAVIG
Year Built: 1987

Facility: SAFETY KLEEN CHICAGO RECYCLE
Location: 1445 W. 42nd STREET
Type Inspection: Interior X Exterior
Item No. Code:
Service: PRODUCT STORAGE PERMIT FOR HAZARDOUS WASTE
Capacity: 7500 Tank Type: PIGGY BACK STACK TANK

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	CARBON STEEL	CARBON STEEL	CONE CARBON STEEL	N/A

Wall/Shell Condition: GOOD
Roof Condition: GOOD
Bottom Condition: GOOD
Jacket Condition: N/A
Support Type: TANK SITS ON TANK 46B
Foundation Condition: CONCRETE PAD - EXCELLENT
Internal Structure Condition: GOOD
Welded/Flanged Joint Condition: SLIGHT PITTING ON WELDS
Nozzle Condition: GOOD
Lining/Coating Condition: N/A
Insulation Condition: N/A
Safety Valve Condition: N/A
Signs of Cracks: NONE
Signs of Leakage: NONE
Signs of Corrosion: NONE
Signs of Erosion: NONE
Test? NO Type: Results:
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records:

Comments: TANK IS IN GOOD CONDITION

Thickness Readings: READING TAKEN FROM SOUTH MANWAY :

(TOP RING)	WELD SEAM	(BOTTOM RING)
(.283 .269)		(.282 .285 .277)

CONE READINGS TAKEN	N .295	S .293
APPROX. 2 FT. FROM DRAIN:	E .314	W .307

T- 46B

Storage Tank Inspection Record

Sheet: 1 Of 1
Job No.
Date: 10/22/96
By: R.R.HAAVIG
Year Built: 1987

Facility: SAFETY KLEEN CHICAGO RECYCLE
Location: 1445 W. 42nd STREET
Type Inspection: Interior X Exterior
Item No. Code:
Service: PRODUCT STORAGE PERMIT FOR HAZARDOUS WASTE
Capacity: 7500 Tank Type: PIGGY BACK STACK TANK

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	CARBON STEEL	CARBON STEEL	CONE CARBON STEEL	FIRE PROOF INSULATION

Wall/Shell Condition: GOOD
Roof Condition: GOOD
Bottom Condition: GOOD
Jacket Condition: N/A
Support Type: STEEL SKIRT - FIRE PROOF INSULATION
Foundation Condition: CONCRETE PAD - EXCELLENT
Internal Structure Condition: GOOD
Welded/Flanged Joint Condition: SLIGHT PITTING ON WELDS
Nozzle Condition: GOOD
Lining/Coating Condition: HAIRLINE CRACKS ON FIRE PROOF INSULATION
Insulation Condition: FIRE PROOF INSULATION ON TANK
Safety Valve Condition: N/A
Signs of Cracks: NONE
Signs of Leakage: NONE
Signs of Corrosion: NONE
Signs of Erosion: NONE
Test? NO Type: Results:
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records:

Comments: TANK IS IN GOOD CONDITION

Thickness Readings: READING TAKEN FROM SOUTH MANWAY

(TOP RING)	WELD SEAM	(BOTTOM RING)
(.269 .263)		(.266 .301 .306 .284)

CONE READINGS TAKEN	N .307	S .297
APPROX. 2 FT. FROM DRAIN:	E .296	W .314

T- 47A
Storage Tank Inspection Record

Sheet: 1 Of 1
Job No.
Date: 10/22/96
By: R.R.HAAVIG
Year Built: 1987

Facility: SAFETY KLEEN CHICAGO RECYCLE
Location: 1445 W. 42nd STREET
Type Inspection: Interior X Exterior
Item No. Code:
Service: PRODUCT STORAGE PERMIT FOR HAZARDOUS WASTE
Capacity: 7500 Tank Type: PIGGY BACK VERTICAL STACK TANK

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	CARBON STEEL	CARBON STEEL	CONE CARBON STEEL	CORRUGATED ALUMINUM ON WALLS & ROOF

Wall/Shell Condition: SLIGHT PITTING ON WALLS
Roof Condition: SLIGHT PITTING ON ROOF
Bottom Condition: SLIGHT PITTING ON CONE
Jacket Condition: GOOD
Support Type: TANK SITS ON TANK 47B
Foundation Condition: CONCRETE - EXCELLENT
Internal Structure Condition: GOOD
Welded/Flanged Joint Condition: MILD PITTING ON WELDS
Nozzle Condition: GOOD
Lining/Coating Condition: N/A
Insulation Condition: GOOD
Safety Valve Condition: N/A
Signs of Cracks: NONE
Signs of Leakage: NONE
Signs of Corrosion: NONE
Signs of Erosion: NONE
Test? NO Type: Results:
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records:

Comments: TANK IS IN GOOD CONDITION

Thickness Readings: READING TAKEN FROM SOUTH MANWAY :

(TOP RING)	WELD SEAM	(BOTTOM RING)
(.264 .268)		(.301 .309 .302 .293)

CONE READINGS TAKEN	N .269	S .274
APPROX. 2 FT. FROM CENTER	E .270	W .277
DRAIN:		

T- 47B

Storage Tank Inspection Record

Sheet: 1 Of 1
Job No.
Date: 10/22/96
By: R.R.HAAVIG
Year Built: 1987

Facility: SAFETY KLEEN CHICAGO RECYCLE
Location: 1445 W. 42nd STREET
Type Inspection: Interior X Exterior
Item No. Code:
Service: PRODUCT STORAGE PERMIT FOR HAZARDOUS WASTE
Capacity: 7500 Tank Type: PIGGY BACK STACK TANK

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	CARBON STEEL	CARBON STEEL	CONE CARBON STEEL	FIRE PROOF INSULATION

Wall/Shell Condition: GOOD
Roof Condition: GOOD
Bottom Condition: GOOD
Jacket Condition: N/A
Support Type: STEEL SKIRT WITH FIRE PROOF INSULATION
Foundation Condition: CONCRETE - EXCELLENT
Internal Structure Condition: GOOD
Welded/Flanged Joint Condition: SLIGHT PITTING ON WELDS
Nozzle Condition: GOOD
Lining/Coating Condition: FIRE PROOF INSULATION
Insulation Condition: GOOD - HAIRLINE CRACKS
Safety Valve Condition: N/A
Signs of Cracks: NONE
Signs of Leakage: NONE
Signs of Corrosion: NONE
Signs of Erosion: NONE
Test? NO Type: Results:
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records:

Comments: TANK IS IN GOOD CONDITION

Thickness Readings: READING TAKEN FROM SOUTH MANWAY :

(TOP RING) WELD SEAM (BOTTOM RING)
(.264 .274) (.279 .301 .304 .313)

CONE READINGS TAKEN APPROX. 2 FT. FROM DRAIN:

N .309 S .301
E .304 W .307

T- 48A
Storage Tank Inspection Record

Sheet: 1 Of 1
Job No.
Date: 11/18/96
By: R. R. Haavig
Year Built: 1988

Facility: SAFETY KLEEN (CHICAGO RECYCLE)
Location: 1445 w. 42nd Street
Type Inspection: Interior X Exterior X
Item No. Code:
Service: Product Storage Tank (Permitted for hazardous waste)
Capacity: 7500 Tank Type: Stainless steel stack tank

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	304 SS	304 SS	304 SS	N/A

Wall/Shell Condition: Excellent
Roof Condition: Excellent
Bottom Condition: Excellent
Jacket Condition: N/A
Support Type: Tank sits on 48B
Foundation Condition: Excellent (Concrete)
Internal Structure Condition: Excellent
Welded/Flanged Joint Condition: Excellent
Nozzle Condition: Excellent
Lining/Coating Condition: None
Insulation Condition: N/A
Safety Valve Condition: N/A
Signs of Cracks: None
Signs of Leakage: None
Signs of Corrosion: None
Signs of Erosion: None
Test? No Type: Results:
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records:

Comments: Tank is in excellent condition.

Thickness Readings: *Readings taken from manway on south side.*
(.266) Weld (.190 .180 .181) Weld (.181 .180 .181) Weld (.186 .184)

Cone reading taken 2 feet from 3" drain

N .261
S .260
E .257
W .258

Storage Tank Inspection Record

Facility: SAFETY KLEEN - CHGO. RECYCLE CENTER	Sheet: 1 Of 1
Location: TANK FARM # 5	Date: 12/13/96

Type Inspection: Interior X Exterior X By: R.R. HAAVIG

Service: PRODUCT STORAGE - PERMITTED FOR HAZARDOUS WASTE

Capacity: 7500 Tank Type: S.S. PIGGY BACK STORAGE TANK

	Roof/Top Head	Wall Shell	Floor Bottom	Jacket
Matls:	304 S.S.	304 S.S.	CONE 304 S.S.	FIRE PROOF COATING

Wall/Shell Condition: EXCELLENT

Roof Condition: EXCELLENT

Bottom Condition: EXCELLENT

Jacket Condition: SLIGHT HAIR LINE CRACKS IN FIRE PROOF INSULATION

Support Type: STEEL SKIRT WITH FIREPROOF COATING

Foundation Condition: CONCRETE - EXCELLENT

Internal Structure Condition: EXCELLENT

Welded/Flanged Joint Condition: EXCELLENT

Nozzle Condition: EXCELLENT

Lining/Coating Condition: SLIGHT HAIRLINE CRACKS

Insulation Condition: N/A

Safety Valve Condition: N/A

Signs of Cracks: NONE

Signs of Leakage: NONE

Signs of Corrosion: NONE

Test? NO Type: Results:

Operating Conditions: Max. Temp. 100 C Max. Press. ¾" Vac. ¾"

Comments: TANK IS IN EXCELLENT CONDITION

Thickness Readings: TAKEN FROM SOUTH MAN WAY - TOP TO BOTTOM
(.189 .189) WELD (.187 .189 .188) WELD (.188 .187 .191 .194) WELD (.269 .270)

CONE MEASUREMENTS TAKEN 2 FT. FROM 3"	N .262	S .263
CENTER DRAIN	W .259	E .261

Storage Tank Inspection Record

Facility: SAFETY-KLEEN - CHGO RECYCLE CENTER	Sheet: 1 Of 1
Location: 1445 W 42ND STREET - TANK FARM #5	Date: 12/03/96

Type Inspection: Interior X Exterior ___ By: R.R. HAAVIG

Service: PRODUCT STORAGE - PERMITTED FOR HAZARDOUS WASTE

Capacity: 7500 Tank Type: VERTICAL PIGGY BACK STACK TANK

	Roof/Top Head	Wall Shell	Floor Bottom	Jacket
Matls:	304 S.S.	304 S.S.	CONE 304 S.S.	Aluminum skin w/ fiberglass

Wall/Shell Condition: EXCELLENT

Roof Condition: EXCELLENT

Bottom Condition: EXCELLENT

Jacket Condition: EXCELLENT

Support Type: TANK SITS ON 49 B

Foundation Condition: CONCRETE PAD - EXCELLENT

Internal Structure Condition: EXCELLENT

Welded/Flanged Joint Condition: EXCELLENT

Nozzle Condition: EXCELLENT

Lining/Coating Condition: N/A

Insulation Condition: EXCELLENT

Safety Valve Condition: N/A

Signs of Cracks: NONE

Signs of Leakage: NONE

Signs of Corrosion: NONE

Test? NO Type: ___ Results: ___

Operating Conditions: Max. Temp. 100 C Max. Press. ¾" Vac. ¾"

Comments: TANK IS IN EXCELLENT CONDITION

Thickness Readings: TAKEN FROM NORTH MAN WAY - BOTTOM TO TOP
(.200 .199) WELD (.197 .199 .196) WELD (.190 .191 .192) WELD (.191 .189)

CONE MEASUREMENTS TAKEN 2 FT. FROM CENTER	N .265	S .269
DRAIN	W .267	E .269

Storage Tank Inspection Report

Facility: SAFETY KLEEN - CHGO. RECYCLE CENTER	Sheet: 1 Of 1
Location: 1445 W. 42ND STREET - TANK FARM #5	Date: 12/03/96

Type Inspection: Interior X Exterior ____ By: R.R. HAAVIG

Service: PRODUCT STORAGE - PERMITTED FOR HAZARDOUS WASTE

Capacity: 7500 Tank Type: VERTICAL PIGGY BACK STACK TANK

	Roof/Top Head	Wall Shell	Floor Bottom	Jacket
Matls:	304 S.S.	304 S.S.	CONE 304 S.S.	N/A

Wall/Shell Condition: EXCELLENT

Roof Condition: EXCELLENT

Bottom Condition: EXCELLENT

Jacket Condition: N/A

Support Type: STEEL SKIRT - FIRE PROOF INSULATION

Foundation Condition: CONCRETE PAD - EXCELLENT

Internal Structure Condition: EXCELLENT

Welded/Flanged Joint Condition: EXCELLENT

Nozzle Condition: EXCELLENT

Lining/Coating Condition: FIRE PROOF COATING W/ SLIGHT HAIRLINE CRACKS

Insulation Condition: N/A

Safety Valve Condition: N/A

Signs of Cracks: NONE

Signs of Leakage: NONE

Signs of Corrosion: NONE

Test? NO Type: ____ Results: ____

Operating Conditions: Max. Temp. 100 C Max. Press. ¾" Vac. ¾"

Comments: TANK IS IN EXCELLENT CONDITION

Thickness Readings: TAKEN FROM NORTH MAN WAY - BOTTOM TO TOP
(.268 .266) WELD (.194 .193 .191) WELD (.192 .194 .195) WELD (.191 .190)

CONE MEASUREMENTS TAKEN 2 FT. FROM CENTER	N .272	S .270
DRAIN	W .268	E .268

T- 50 (in tank farm #5)
Storage Tank Inspection Record

Facility: SAFETY KLEEN (CHICAGO RECYCLE)
Location: 1445 w. 42nd Street
Type Inspection: Interior X Exterior X
Item No. _____ Code: _____
Service: TANK PERMITTED FOR STORAGE OF HAZARDOUS WASTE
Capacity: 15000 Tank Type: STAINLESS STEEL VERTICAL STORAGE TANK

Sheet: 1 Of 1
Job No. _____
Date: 11/18/96
By: R. R. Haavig
Year Built: 1988

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	304 SS	304 SS	CONE 304 SS	N/A
Wall/Shell Condition:	Excellent			
Roof Condition:	Excellent			
Bottom Condition:	Excellent			
Jacket Condition:	N/A			
Support Type:	STEEL SKIRT WITH FIREPROOF COATING			
Foundation Condition:	Excellent (Concrete)			
Internal Structure Condition:	Excellent			
Welded/Flanged Joint Condition:	Excellent			
Nozzle Condition:	Excellent			
Lining/Coating Condition:	GOOD (HAIRLINE CRACKS)			
Insulation Condition:	N/A			
Safety Valve Condition:	N/A			
Signs of Cracks:	None			
Signs of Leakage:	None			
Signs of Corrosion:	None			
Signs of Erosion:	None			

Test? No Type: _____ Results: _____
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records: _____

Comments: TANK IS IN EXCELLENT CONDITION.

Thickness Readings: *Readings taken from manway on south side of tank opposite manway.* *(BOTTOM TO TOP)*
(.261 .258) WELD (.194 .191 .194) WELD (.186 .184 .181) WELD (.188 .189 .188) WELD (.186 .187 .184) WELD (.185 1.87 1.85) WELD (.185 .187)
CONE

N .259
S .260
E .261
W .264

Storage Tank Inspection Record

Sheet: 1 Of 1
Job No.
Date: 10/4/96
By: R.R. HAAVIG
Year Built: 1988

Facility: SAFETY KLEEN CHICAGO RECYCLE
Location: 1445 W. 42ND STREET
Type Inspection: Interior X Exterior
Item No. Code:
Service: PRODUCT STORAGE (PERMIT FOR HAZARDOUS WASTE)
Capacity: 15,000 Tank Type: CARBON STEEL VERTICAL STORAGE TANK

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls: Type:	CARBON STEEL	CARBON STEEL	CONE CARBON STEEL	N/A

Wall/Shell Condition: GOOD
Roof Condition: GOOD
Bottom Condition: GOOD
Jacket Condition: N/A
Support Type: STEEL SKIRT (FIRE PROOF INSULATION)
Foundation Condition: EXCELLENT
Internal Structure Condition: EXCELLENT
Welded/Flanged Joint Condition: GOOD (SLIGHT PITTING ON WELDS)
Nozzle Condition: GOOD (SLIGHT PITTING ON WELDS)
Lining/Coating Condition: GOOD
Insulation Condition: GOOD (SLIGHT HAIRLINE CRACKS)
Safety Valve Condition: N/A
Signs of Cracks: NONE
Signs of Leakage: NONE
Signs of Corrosion: NONE
Signs of Erosion: NONE
Test? NO Type: Results:
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records:

Comments: TANK IS IN GOOD CONDITION

Thickness Readings:
TOP (.294 .289 .283) WELD (.278 .281 .296 .301) WELD (.286 .291 .293) MANWAY(.288)
READING TAKEN 2 FEET FROM CENTER OF CONE:

N	.280	E	.301
S	.286	W	.288

T- 52A

Storage Tank Inspection Record

Sheet: 1 Of 1
Job No.
Date: 10/4/96
By: R.R. HAAVIG
Year Built: 1988

Facility: SAFETY KLEEN CHICAGO RECYCLE
Location: 1445 W. 42nd Street
Type Inspection: Interior X Exterior
Item No. Code:
Service: PRODUCT STORAGE (PERMIT FOR HAZARDOUS WASTE)
Capacity: 7500 Tank Type: PIGGY BACK CARBON STEEL TANK

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	CARBON STEEL	CARBON STEEL	CARBON STEEL	N/A

Wall/Shell Condition: GOOD
Roof Condition: GOOD
Bottom Condition: GOOD
Jacket Condition: N/A
Support Type: TANK SUPPORTED BY TANK 52B
Foundation Condition: EXCELLENT
Internal Structure Condition: EXCELLENT
Welded/Flanged Joint Condition: SLIGHT PITTING ON WELDS
Nozzle Condition: SLIGHT PITTING ON WELDS
Lining/Coating Condition: N/A
Insulation Condition: N/A
Safety Valve Condition: N/A
Signs of Cracks: NONE
Signs of Leakage: NONE
Signs of Corrosion: NONE
Signs of Erosion: NONE
Test? NO Type: Results:
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records:

Comments: TANK IS IN GOOD CONDITION

Thickness Readings: TAKEN BY NORTH MAN WAY
(TOP RING- .303 .311) *WELD SEAM* (BOTTOM RING - .318 .299 .301 .295 .299)

CONE READINGS 2 FEET FROM CENTER	N .278	E .262
DRAIN	S .263	W .258

T- 52B
Storage Tank Inspection Record

Sheet: 1 Of 1
Job No.
Date: 10/4/96
By: R.R. HAAVIG
Year Built: 1988

Facility: SAFETY KLEEN CHICAGO RECYCLE
Location: 1445 W. 42nd Street
Type Inspection: Interior X Exterior
Item No. Code:
Service: PRODUCT STORAGE (PERMIT FOR HAZARDOUS WASTE)
Capacity: 7500 Tank Type: PIGGY BACK CARBON STEEL TANK

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	CARBON STEEL	CARBON STEEL	CARBON STEEL	N/A

Wall/Shell Condition: GOOD
Roof Condition: GOOD
Bottom Condition: GOOD
Jacket Condition: N/A
Support Type: STEEL SKIRT WITH FIRE PROOF INSULATION
Foundation Condition: EXCELLENT
Internal Structure Condition: EXCELLENT
Welded/Flanged Joint Condition: SLIGHT PITTING ON WELDS
Nozzle Condition: SLIGHT PITTING ON WELDS
Lining/Coating Condition: GOOD
Insulation Condition: GOOD
Safety Valve Condition: N/A
Signs of Cracks: NONE
Signs of Leakage: NONE
Signs of Corrosion: NONE
Signs of Erosion: NONE
Test? NO Type: Results:
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records:

Comments: TANK IS IN GOOD CONDITION
REPAIRED PROP FOR MIXER (RESET AND TIGHTEN TO SHAFT)

Thickness Readings: TAKEN BY NORTH MAN WAY
(TOP RING- .309 .304 .284) *WELD SEAM* (BOTTOM RING - .284 .301 .303 .306)

CONE READINGS 2 FEET FROM CENTER	N .285	E .285
DRAIN	S .287	W .286

T- 53A

Storage Tank Inspection Record

Sheet: 1 Of 1
Job No.
Date: 10/4/96
By: R.R. HAAVIG
Year Built: 1988

Facility: SAFETY KLEEN CHICAGO RECYCLE
Location: 1445 W. 42nd Street
Type Inspection: Interior X Exterior
Item No. Code:
Service: PRODUCT STORAGE (PERMIT FOR HAZARDOUS WASTE)
Capacity: 7500 Tank Type: PIGGY BACK CARBON STEEL TANK

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	CARBON STEEL	CARBON STEEL	CARBON STEEL	N/A
Wall/Shell Condition:	GOOD	SLIGHT PITTING		
Roof Condition:	GOOD	SLIGHT PITTING		
Bottom Condition:	GOOD	SLIGHT PITTING		
Jacket Condition:	N/A			

Support Type: TANK SUPPORTED BY TANK 53B
Foundation Condition: EXCELLENT
Internal Structure Condition: EXCELLENT
Welded/Flanged Joint Condition: SLIGHT PITTING ON WELDS
Nozzle Condition: SLIGHT PITTING ON WELDS
Lining/Coating Condition: N/A
Insulation Condition: N/A
Safety Valve Condition: N/A
Signs of Cracks: NONE
Signs of Leakage: NONE
Signs of Corrosion: NONE
Signs of Erosion: NONE
Test? NO Type: Results:
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records:

Comments: TANK IS IN GOOD CONDITION

Thickness Readings: TAKEN BY NORTH MAN WAY
(TOP RING- .293 .303 .291 .289) *WELD SEAM* (BOTTOM RING - .291 .290)

CONE READINGS 2 FEET FROM CENTER N .304 E .306
DRAIN ON CONE S .307 W .301

T- 53B

Storage Tank Inspection Record

Sheet: 1 Of 1
Job No.
Date: 10/4/96
By: R.R. HAAVIG
Year Built: 1988

Facility: SAFETY KLEEN CHICAGO RECYCLE
Location: 1445 W. 42nd Street
Type Inspection: Interior X Exterior
Item No. Code:
Service: PRODUCT STORAGE (PERMIT FOR HAZARDOUS WASTE)
Capacity: 7500 Tank Type: PIGGY BACK CARBON STEEL STACK TANK

	Roof/Top Head	Wall/Shell	Floor/Bottom	Jacket
Matls:	CARBON STEEL	CARBON STEEL	CARBON STEEL	N/A

Wall/Shell Condition: GOOD
Roof Condition: GOOD
Bottom Condition: GOOD
Jacket Condition: N/A
Support Type: STEEL SKIRT WITH FIREPROOF INSULATION
Foundation Condition: EXCELLENT
Internal Structure Condition: GOOD
Welded/Flanged Joint Condition: GOOD SLIGHT PITTING ON WELDS
Nozzle Condition: GOOD SLIGHT PITTING ON WELDS
Lining/Coating Condition: TANK COATED WITH FIREPROOF INSULATION
Insulation Condition: GOOD (HAIRLINE CRACKS)
Safety Valve Condition: N/A
Signs of Cracks: NONE
Signs of Leakage: NONE
Signs of Corrosion: NONE
Signs of Erosion: NONE
Test? NO Type: Results:
Operating Conditions: Max. Temp. 100 C Max. Press. 3/4" Vac. 3/4"
Reference Inspection Records:

Comments: TANK IS IN GOOD CONDITION

Thickness Readings: TAKEN BY NORTH MAN WAY
(TOP RING- .314 .308 .309) *WELD SEAM* (BOTTOM RING - .302 .303 .304 .306)
CONE READINGS 2 FEET FROM CENTER N .304 E .306
DRAIN S .307 W .301

Chemicals Managed in Tank Farm No. 4100 Extension and Tank Farm No. 4500

L> TANK FARM #5

Butyl Acetate
Cyclopentane
Dimethyl Acetamide
Dimethyl Sulfoxide
Ethyl Lactate
Gamma Butyrolactone
Immersion Cleaner
Iso-Butyl Acetate
Iso-Butyl Alcohol
Isopropanol
Isopropyl Acetate
Low Vapor Pressure Lacquer Thinner
Methylene Chloride
Monochlorobenzene
N-ethyl Pyrrolidone
N-Methyl Pyrrolidone
Ortho-Chlorotoluene
Ortho-Dichlorobenzene
Safety-Kleen 105 Solvent
Tetrahydrofuran
Toluene
Trichlorotrifluroethane
Vinyl Acetate

Material Safety Data Sheets (MSDS) for the above chemicals are available at the plant.