# INDUSTRIAL WATER SERVICES, INC.

## Hazardous Waste Management Facility Construction Permit Application

## Florida Department of Environmental Regulation

Submitted By:
INDUSTRIAL WATER SERVICES, INC.
Jacksonville, Florida
April 30, 1993

# INDUSTRIAL WATER SERVICES, INC.

The Complete Industrial Waste Water Company

*Facility Address:*
INDUSTRIAL WATER SERVICES, INC.
1640 Talleyrand Avenue
Jacksonville, Florida 32206

*Mailing Address:*
P.O. Box 43369
Jacksonville, Florida 32203

(904) 354-0372
1-800-447-3592
Fax (904) 354-7612

April 30, 1993

Mr. Ashwin B. Patel
Florida Department of Environmental Regulation
7825 Baymeadows Way, Suite B 200
Jacksonville, Florida 32256

This is a final permit application. District copy.

Re: Hazardous Waste TSDF Permit Application
FLD 981 928 484
HC 16-218826

Dear Mr. Patel:

Pursuant to our recent telephone conversations, we have completed the revision to note that IWS will comply with Local, State, and Federal Standards regarding the closure of the proposed facility. We have also revised the drawings to show that the drum storage area will be level with the top of the secondary containment wall.

We have enclosed four copies of the completely revised permit application for your review.

If you have any questions, please call.

Very truly yours,

INDUSTRIAL WATER SERVICES, Inc.

Charles Dudley

Charles Dudley
General Manager

NORTHEAST DISTRICT
RECEIVED
APR 30 1993
DER-JACKSONVILLE

*Serving The Industrial, Marine, and Petroleum Industries*

**INDUSTRIAL WATER SERVICES, INC.**

**HAZARDOUS WASTE FACILITY PERMIT APPLICATION**

## TABLE OF CONTENTS

APPLICATION FOR A HAZARDOUS WASTE FACILITY PERMIT
CERTIFICATION
TO BE COMPLETED BY ALL APPLICANTS

Facility name: Industrial Water Services EPA ID# FLD 981 928 484

1. **Operator**

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 gathered and evaluated 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, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Further, I agree to comply with the provisions of Chapter 403, Florida Statutes, and all rules and regulations of the Department of Environmental Regulation. It is understood that the permit is only transferable in accordance with Section 17-730, FAC, and, if granted a permit, the Department of Environmental Regulation will be notified prior to the sale or legal transfer of the permitted facility.

Industrial Water Services, Inc.

By: A Thomas Dudley
Signature of the Operator or Authorized Representative*

A. Thomas Dudley, President
Name and Title (Please type or print)

Date: 4/28/93 Telephone: (904) 354-0372

2. **Facility Owner**

This is to certify that I understand this application is submitted for the purpose of obtaining a permit to construct, operate, or close a hazardous waste management facility on the property as described. As owner of the facility, I understand fully that the facility operator and I are jointly responsible for compliance with the provisions of Chapter 403, Florida Statutes, and all rules and regulations of the Department of Environmental Regulation.

Industrial Water Services, Inc.

By: A Thomas Dudley
Signature of the Facility Owner or Authorized Representative*

A. Thomas Dudley, President
Name and Title (Please type or print)

Date: 4/28/93 Telephone: (904) 354-0372

*Attach a letter of authorization

DER Form # 17-730.900(2)(d)
Page 1 of 2 [9-10-91]

## 3. Land Owner

This is to certify that I, as land owner, understand that this application is submitted for the purpose of obtaining a permit to construct, operate, or close a hazardous waste management facility on the property as described. For hazardous waste disposal facilities, I further understand that I am responsible for providing the notice in the deed to the property required by 40 CFR §264.119 and §265.119, as adopted by reference in Chapter 17-730, FAC.

Industrial Water Services, Inc.

By: A Thomas Dudley
Signature of the Land Owner or Authorized Representative*

A. Thomas Dudley, President
Name and Title (Please type or print)

Date: 4/28/93 Telephone: (904) 354-0372

***Attach a letter of authorization**

## 4. Professional Engineer Registered in Florida

[Complete when required by Chapter 471, F.S. or not exempted by Rule 17-730.220(5), F.A.C.]

This is to certify that the engineering features of this hazardous waste management facility have been designed/examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgment, this facility, when properly constructed, maintained and operated, or closed, will comply with all applicable statutes of the State of Florida and rules of the Department of Environmental Regulation.

Signature

Joseph A. Mittauer, P.E.
Name (please type)

Florida Registration Number: 23111

Mailing Address: 767 Blanding Blvd., Suite 102
Street or P.O. Box

Orange Park, FL 32065
City State Zip

Date: 4-30-93 Telephone (904) 276-5236

[PLEASE AFFIX SEAL]

JOSEPH A. MITTAUER
CERTIFICATE
No. 23111
STATE OF
FLORIDA
REGISTERED ENGINEER

ATTACHMENT 1

PART 1 - GENERAL FACILITY INFORMATION

# APPLICATION FOR A HAZARDOUS WASTE FACILITY PERMIT
## PART I - GENERAL
## TO BE COMPLETED BY ALL APPLICANTS

Please Type or Print

## A. General Information

1. Type of facility:

| | | | |
|---|---|---|---|
| Disposal [ ] | | | |
| landfill | [ ] | land treatment | [ ] |
| surface impoundment | [ ] | miscellaneous units | [ ] |
| Storage [X] | | | |
| containers | [X] | tanks | [X] |
| piles | [ ] | surface impoundment | [ ] |
| miscellaneous units | [ ] | | |
| Treatment [X] | | | |
| tanks | [X] | piles | [ ] |
| incineration | [ ] | surface impoundment | [ ] |
| miscellaneous units | [ ] | | |

2. Type of application: [ ] TOP [X] construction [ ] operation [ ] closure [ ] RD&D

3. Application submittal: [X] new [ ] revised

4. Date current operation began (or is expected to begin): November 1986

5. Facility name: Industrial Water Services, Inc.

6. EPA/DER I.D. No.: FLD 981 928 484

7. Facility location or street address: 1640 Talleyrand Ave., Jacksonville, FL 32206

8. Facility mailing address: P.O. Box 43369 (Street or P.O. Box) Jacksonville (City) FL (State) 32203 (Zip)

9. Contact person: Charles Dudley Telephone: (904) 354-0372

   Title: General Manager

   Mailing Address: P.O. Box 43369 (Street or P.O. Box) Jacksonville (City) FL (State) 32203 (Zip)

10. Operator's name: Industrial Water Services, Inc. Telephone: (904) 354-0372

11. Operator's address: Same As Above (Street or P.O. Box / City / State / Zip)

12. Facility owner's name: Industrial Water Services, Inc. Telephone: (904) 354-0372

13. Facility owner's address: Same As Above
Street or P.O. Box City State Zip

14. Legal structure: [XX] Corporation [ ] Non-profit Corporation [ ] Partnership [ ] Individual
[ ] Local Government [ ] State Government [ ] Federal Government [ ] Other

15. If an individual, partnership, or business is operating under an assumed name, specify the county and state where the name is registered.

County: Not Applicable State: ____________

16. If the legal structure is a corporation, indicate the state of incorporation.

State of incorporation: Florida

17. If the legal structure is an individual or partnership, list the owners. Not Applicable

Name: ____________

Address: ____________
Street or P.O. Box City State Zip

Name: ____________

Address: ____________
Street or P.O. Box City State Zip

Name: ____________

Address: ____________
Street or P.O. Box City State Zip

Name: ____________

Address: ____________
Street or P.O. Box City State Zip

18. Site ownership status: [X] owned [ ] to be purchased [ ] to be leased ______ years
[ ] presently leased; the expiration date of the lease is: ____________

If leased, indicate:

Land owner's name: Industrial Water Services, Inc.

Land owner's address: Same As Above
Street or P.O. Box City State Zip

19. Name of engineer: Joseph A. Mittauer, P.E. Registration no.: 2311

Address: 767 Blanding Blvd., Suite 102, Orange Park, FL 32065

Street or P.O. Box / City / State / Zip

Associated with: Mittauer/Fitzpatrick, Inc.

20. Facility located on Indian land: [ ] yes [X] no

21. Existing or pending environmental permits: (attach a separate sheet if necessary)

| NAME OF PERMIT | AGENCY | PERMIT NUMBER | DATE ISSUED | EXPIRATION DATE |
|---|---|---|---|---|
| Part A RCRA TOP | US EPA | Interim Status No Number | Submitted 9/20/90 | Not Applicable |
| Used Oil Facility | FDER | S016-181367 | 6/15/90 | 6/15/95 |
| Industrial User Permit | City of Jacksonville | ISN-019 | 3/9/92 | 3/8/95 |
| | | | | |
| | | | | |

## B. Site Information

1. Facility location County: Duval Nearest Community: Jacksonville

Latitude: 30°20' 36"N Longitude: 81° 37'46"W

2. Area of facility site (acres): 1.68

3. Attach a scale drawing and photographs of the facility showing the location of all past, present, and future treatment, storage and disposal areas. Also show the hazardous wastes traffic pattern including estimated volume and control. See Attachment A

4. Attach topographic map which show all the features indicated in the instruction sheet for this part. See Attachment B

5. Is the site located in a 100-year flood plain? [ ] yes [X] no

## C. Land Use Information

1. Present zoning of the site Industrial - Heavy

2. If a zoning change is needed, what should the new zoning be? Not Applicable

3. Present land use of site Industrial

## D. Operating Information

1. Is waste generated on site? [X] yes [ ] no

   List the SIC codes (4-digit)

   4953 2999

2. Attach a brief description of the facility operation, nature of the business, and activities that generate, treat, store or dispose of hazardous waste. See Attachment C

3. Using the following table and codes provided, specify, (1) each process used for treating, storing, or disposing of hazardous waste (including design capacities) at the facility, and (2) the hazardous waste (or wastes) listed or designated in 40 CFR Part 261, including the annual quantities, to be treated, stored, or disposed by each process at the facility. (See the instructions for the list of process codes and units).

| PROCESS CODE | PROCESS DESIGN CAPACITY AND UNITS OF MEASURE | HAZARDOUS WASTE CODE | ANNUAL QUANTITY OF HAZARDOUS WASTE AND UNITS OF MEASURE |
|---|---|---|---|
| S02 | 78,000 Gallons | D018 | 5,000,000 Gallons (Est.) |
| T01 | 150 Gallons Per Minute | D018 | 5,000,000 Gallons (Est.) |
| S01 | 55-Gallon Drums | D018 | 24,000 Pounds (Est.) |
| | | | |
| | | | |

Attachment A

For

Part 1 - B. Site Information

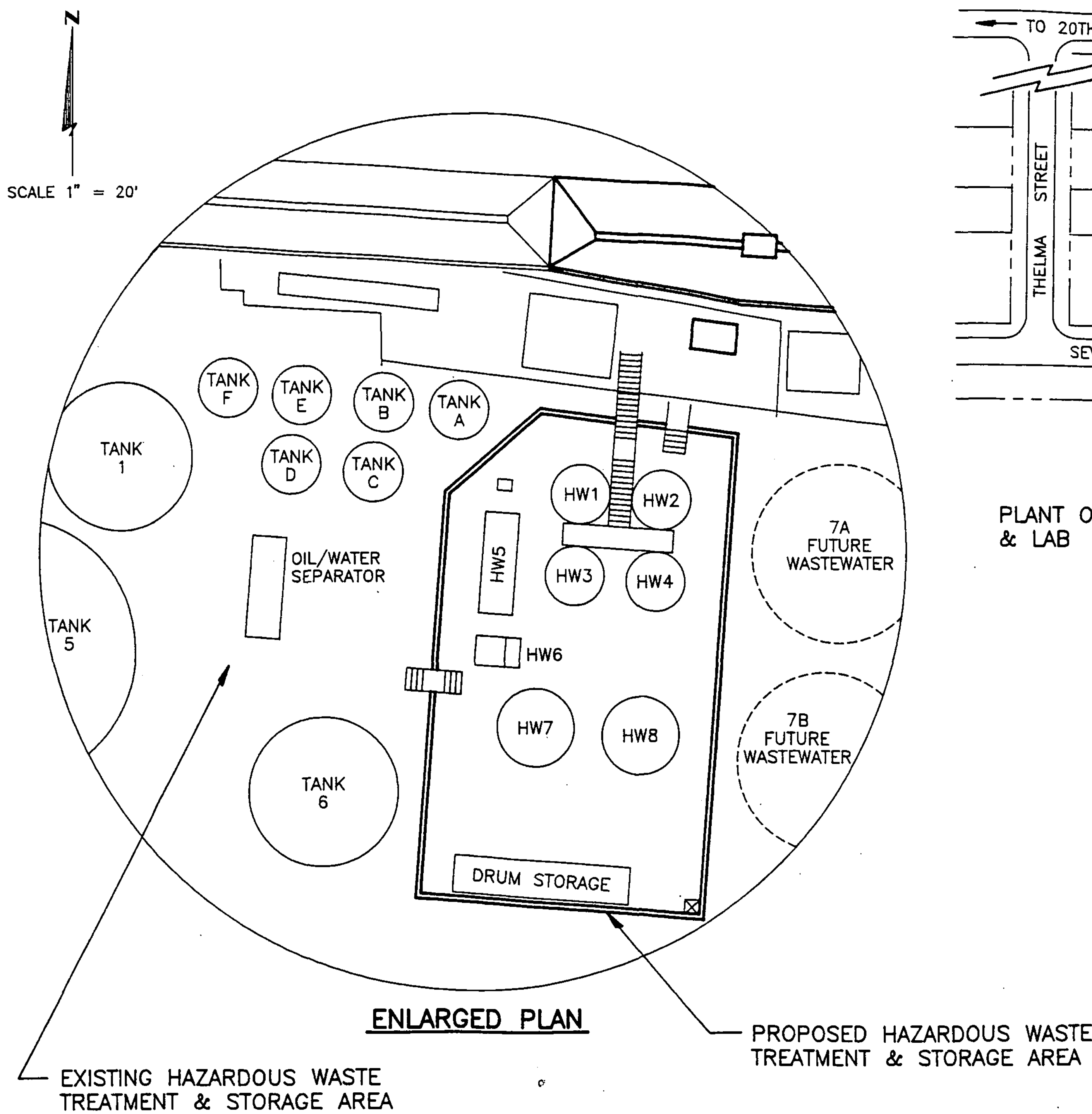
Item 3 - Scale Drawing and Photographs

INDUSTRIAL WATER SERVICES, INC.

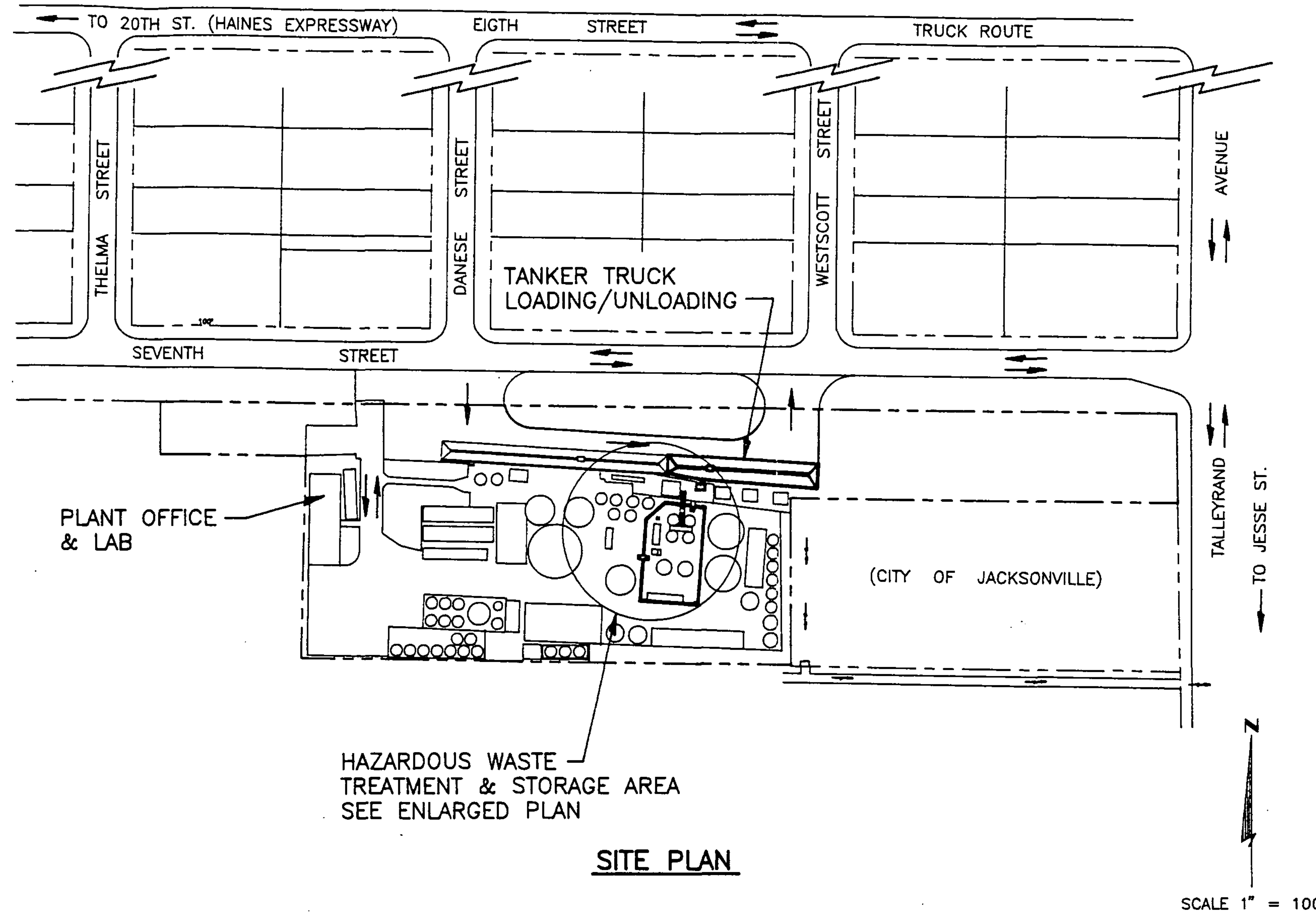
Figure B-1 is a scale drawing (scale 1" = 100') showing the location of all past, present and future hazardous waste treatment and storage areas. The existing facility is operating under Part A - RCRA Interim Status. D018 Hazardous Waste is unloaded from tanker trucks to Tank B and treated in the oil/water separator. Hydrocarbons collected in the oil/water separator are transferred to Tank 4 for temporary storage prior to shipment off site for further processing at a facility not owned by IWS. Treated water is stored in Tank 6 where it is tested in accordance with IWS's Industrial User Permit (City of Jacksonville) prior to discharge to the POTW.

The proposed hazardous waste treatment and storage facilities will consist of four, 7,000 gallon receiving storage tanks (Tanks HW 1 - 4), the 150 gpm Oil/Water Separator (HW 5), a combination tank with an effluent sump and oil sump (HW 6), and two, 25,000 gallon effluent storage tanks (HW 7 & 8). One of the 7,000 gallon receiving storage tanks will serve a dual purpose of hydrocarbon storage. The existing Oil/Water Separator will be relocated and incorporated into the proposed facilties.

Also attached are photographs of the existing treatment and storage facilities.




ENLARGED PLAN




SITE PLAN

1992 AVERAGE DAILY TRAFFIC VOLUME

TALLYRAND AT JESSE STREET – 5992 VPD
TALLYRAND AT 8TH STREET – 6344 VPD
8TH STREET AT 20TH STREET – 7254 VPD

SOURCE: CITY OF JACKSONVILLE TRAFFIC PLANNING DEPARTMENT
VPD = VEHICLES PER DAY

TANKER TRUCK VOLUME

FACILITY RECEIVES APPROXIMATELY 20 LOADS PER DAY OF INDUSTRIAL WASTEWATER

SOURCE: INDUSTRIAL WATER SERVICES, INC.

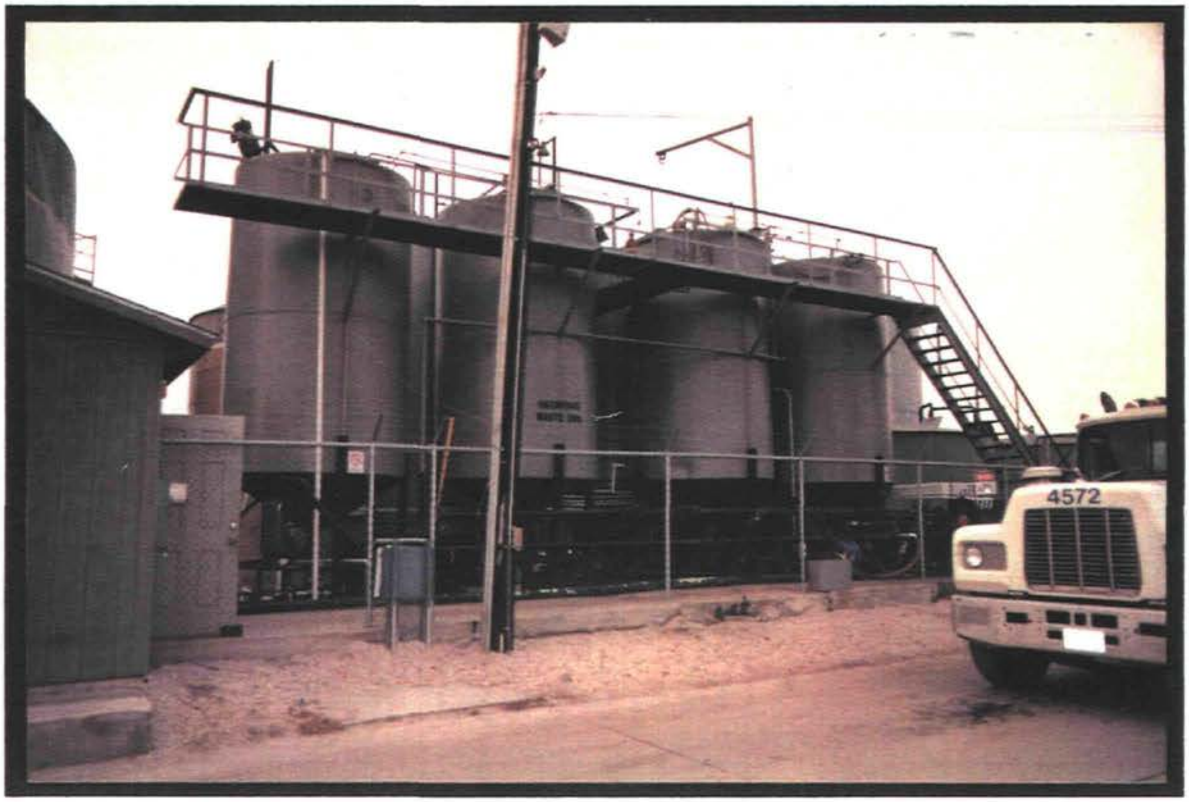
*MITTAUER/FITZPATRICK, INC.*
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 276-5236

**INDUSTRIAL WATER SERVICES, INC.**
Hazardous Waste Management Facility
Scale Drawings
Jacksonville, Florida

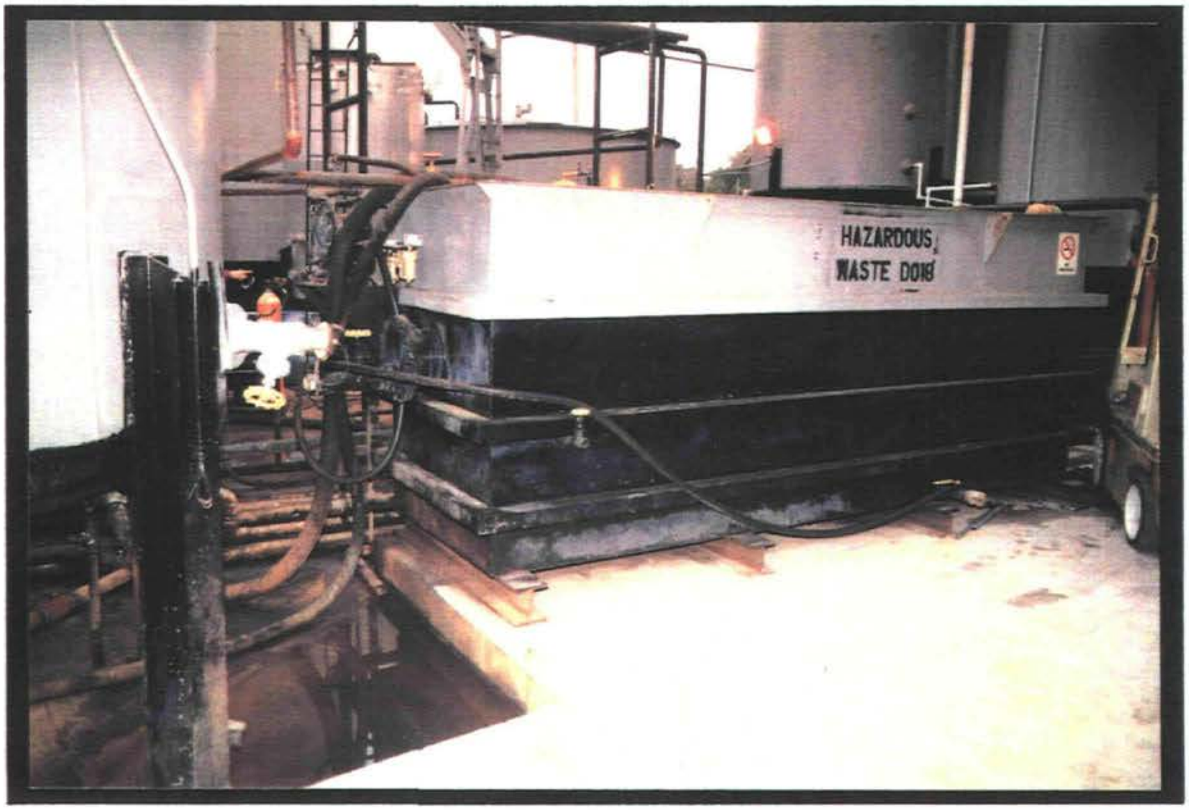
JOSEPH A. MITTAUER
CERTIFICATE
STATE OF FLORIDA
REGISTERED ENGINEER

FIGURE
B–1
DECEMBER 1992

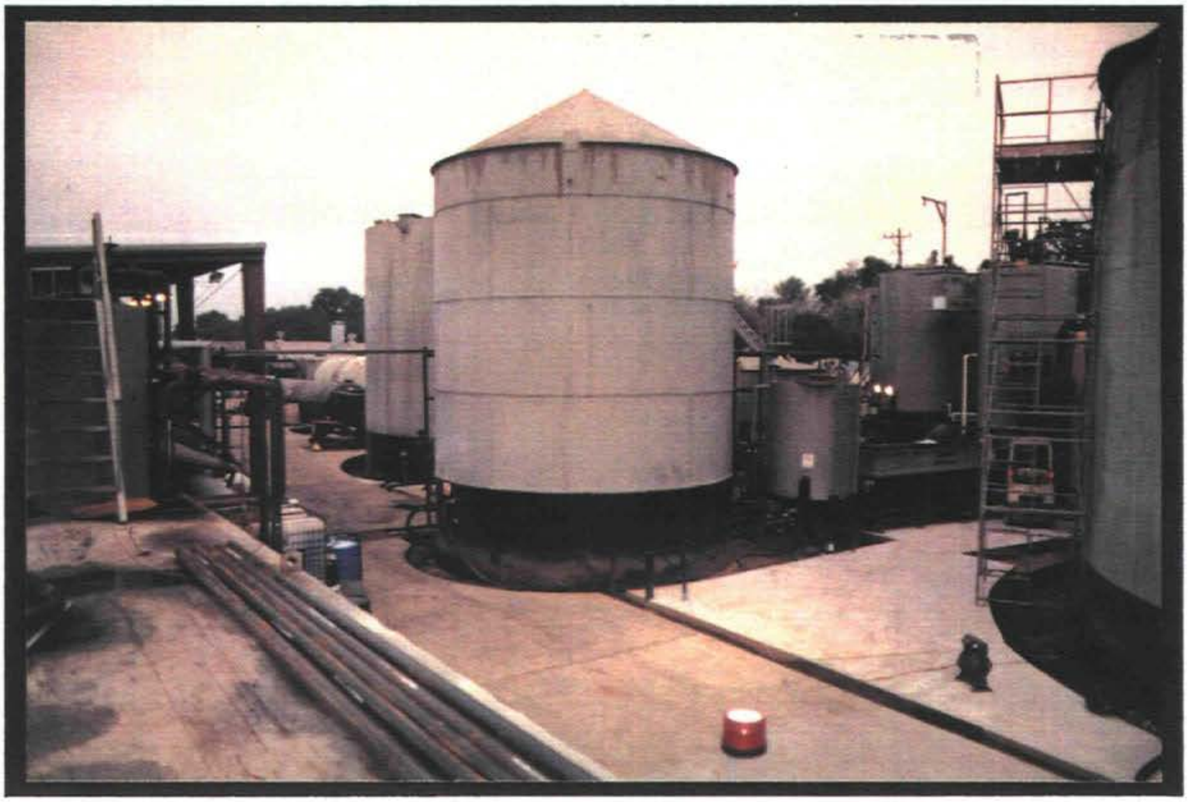
APR 30 1993




D018 WASTE RECEIVING TANK




OIL/WATER SEPARATOR



TANK 6

Attachment B

For

Part I - B. Site Information

Item 4 - Topographic Map

INDUSTRIAL WATER SERVICES

The attached topographic map, Figure B-2, shows the following information:

a. Map scale and date

b. 100-year flood plain area

c. Orientation of map

d. Surface water bodies

e. Surrounding land uses

f. Legal boundaries of the facility

i. Intake and discharge structures within one mile

B-4 (g) and B-4 (h) are not applicable to the IWS Facility. There are no injection wells within one mile of the IWS Facility and no drinking water wells within one-quarter mile.

Map Scale and Date

The source of Figure B-2 is the U.S. Geological Survey, (USGS) which prepares 7.5 Minute Series (topographic) Quadrangle Maps at a scale of 1" = 2,000 ft. The Jacksonville Quadrangle (1982) and the Arlington Quadrangle (1988) were combined to form Figure B-2.

Flood Plain

IWS is not within the 100-year, flood plain area. Figure B-2 indicates the areas of the flood zone boundaries in respect to IWS.

Flood zone information was obtained from the Federal Emergency Management Agency (FEMA), National Flood Insurance Program, Community Panel No. 12007 0161 E. IWS is located in an area determined to be outside the 500-year, flood plain. The area closest to IWS that is inundated by the 100-year, flood plain is depicted on Figure B-2. The 100-year, flood plain is approximately 600 feet south of the IWS property in the area of Deer Creek.

## Orientation

Figure B-2 has a north arrow shown for proper map orientation.

## Surface Water Bodies

There is one surface water body within a one-quarter-mile radius of the IWS property. Deer Creek is situated directly south of the property at a distance of approximately 700 feet. Figure B-2 shows the location of Deer Creek. The St. Johns River is located approximately 2,000 feet due east of the IWS property.

## Surrounding Land Use

Surrounding land use is industrial, commercial and residential. Directly west of the IWS property is Arlington Salvage which is currently in operation. The area north of IWS is residential and commercial. The City of Jacksonville owns the property directly east and a domestic waste lift station is on the property. The property south was occupied by Ring Power; however, the property and the building are currently vacant. North of the property at the corner of 7th and Talleyrand is Joyserve, owned and operated by Southeast Toyota. Across Talleyrand is the abandoned Kerr McGee property. Kerr McGee was involved in pesticide manufacturing. Figure B-2 shows the surrounding land use in respect to IWS.

## Legal Boundaries

The legal boundaries of the facility are shown on the attached Figure B-2.

## Intake and Discharge Structures

Two permitted NPDES discharges occur within approximately one mile of the IWS Facility. These discharges are indicated on Figure B-2. One discharge is from the Buckman Street Wastewater Treatment Plant located at 2221 Buckman Street, and the other is an industrial stormwater discharge from the Witco Corporation located at 3101 Talleyrand Ave. There are no identified cooling water intakes within one mile from the IWS Facility.

LEGEND

HEAVY INDUSTRIAL

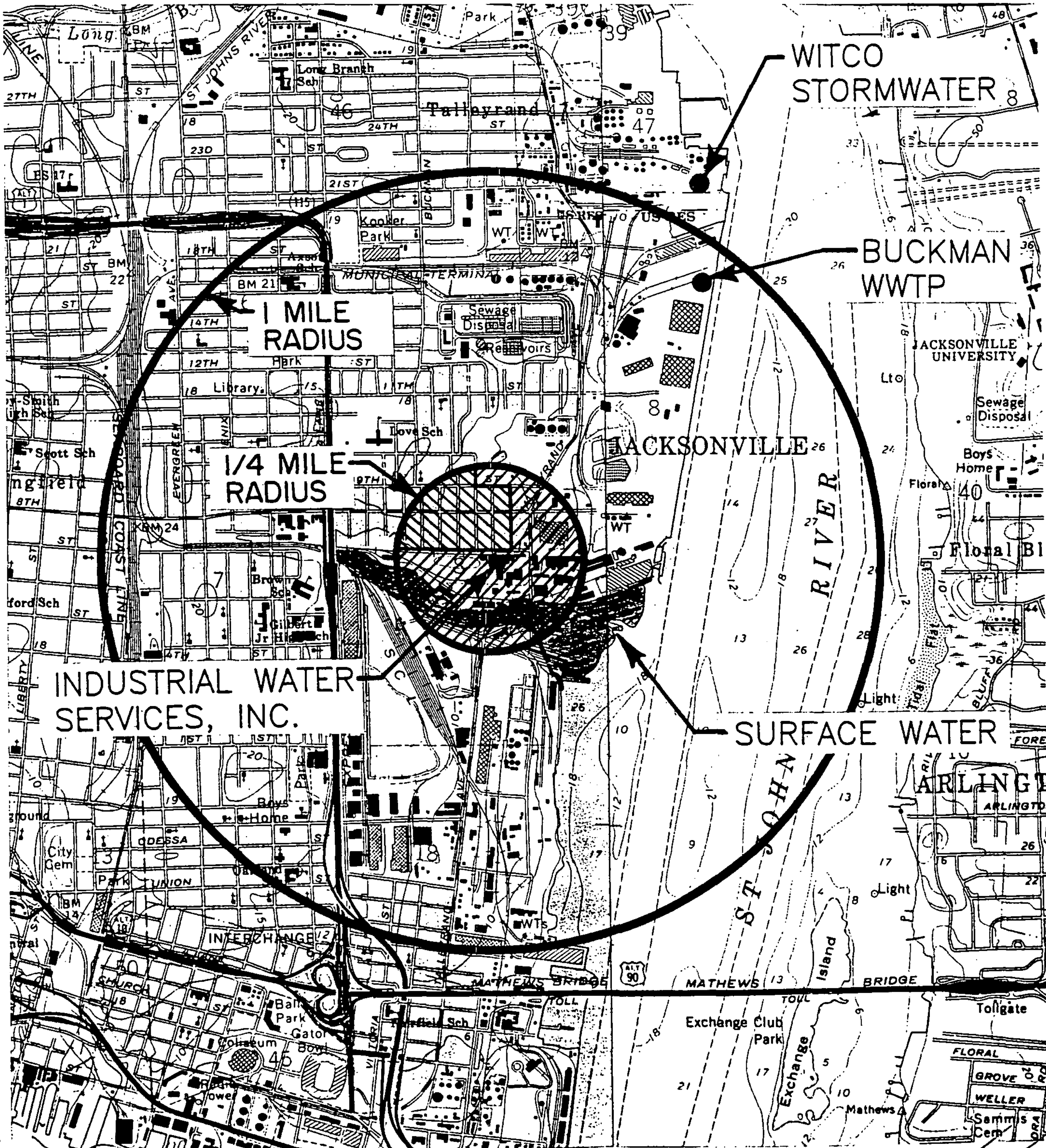
RESIDENTIAL

100 YR. FLOOD ZONE

SOURCE: U. S. GEOLOGICAL SURVEY
PHOTO DATED 1988, 1982

N

SCALE 1" = 2000'




*MITTAUER/FITZPATRICK, INC.*
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 276-5236

**INDUSTRIAL WATER SERVICES, INC.**
Hazardous Waste Management Facility
Topographic Map
Jacksonville, Florida

FIGURE
B-2

DECEMBER 1992

APR 30 1993

Attachment C

Part I - D. Operating Information

Item 2 - Facility Description

IWS is an industrial wastewater pretreatment facility. IWS accepts wastewater from maritime, petroleum, transportation, environmental and industrial sources. Approximately 75% of accepted wastewater is non-hazardous.

Incoming wastewater is examined for acceptability, bench tested for appropriate treatment and treated as follows: free hydrocarbons are separated through gravity separation. Oil is segregated, dewatered by thermal and chemical treatment and sold for energy recovery. Wastewater is treated chemically, if required, to adjust pH and to induce coagulation and flocculation. Treatment is either on a segregated batch basis or a continuous basis using dissolved air flotation. Treated water is tested and discharged to the local POTW. Sludges are dewatered and routed to an appropriately permitted landfill or incinerator.

IWS accepts one category of hazardous waste: gasoline contaminated wastewater from petroleum storage tanks. This waste typically contains benzene at constituent levels in excess of 0.5 mg/l based upon TCLP. This benzene TC wastewater is D018 hazardous waste. The D018 wastewater is typically very lightly contaminated (less than one percent) with gasoline or diesel fuel. IWS unloads the D018 waste to a designated holding tank or directly through a parallel plate separator. Free hydrocarbons are separated and transferred to a holding tank. Accumulated hydrocarbons are sent off-site to be recycled for energy recovery purposes. Treated wastewater is tested and discharged to the POTW.

IWS generates small quantities of D018 hazardous waste solids which come from strainer baskets used in the unloading process and from a vibrating screen used in processing used oil. These D018 solids are drummed and sent off-site for disposal at an appropriate landfill or incinerator. IWS also generates very small quantities of spent F listed solvents from laboratory activities. These lab wastes are sent off-site for disposal at an appropriate landfill or incinerator.

The hazardous waste portion of the IWS Facility will consist of six tanks with a combined capacity of 78,000 gallons and a parallel plate separator rated at 150 gpm. The facility will process an average of 20,000 gallons of D018 wastewater per day. The tanks, separator, and related pumps, piping and controls will have an estimated useful life of fifteen years.

# A. GENERAL

1

# Notes

ATTACHMENT 2

PART II - A. 1. MAPS AND EXHIBITS

REVISION 1, 1-11-93

## A. GENERAL

### 1. Maps and Exhibits

#### a. Topographic Map

Figure A-1 shows a Topographic Map of the Industrial Water Services, Inc. facility located at 1640 Talleyrand Avenue in Jacksonville, Florida. The topographic map includes the following items and features:

(1) Map Scale and Date
(2) Orientation of the Map
(3) Access Control
(4) Buildings and Other Structures
(5) Contours
(6) Loading and Unloading Areas
(7) Drainage Structures
(8) Hazardous Waste Units
(9) Stormwater Management Basins

There are no injection wells within one mile of the IWS facility and no drinking wells within one-quarter mile.

An aerial photograph of the Industrial Water Services site and surrounding area is shown on Figure A-2. The boundary of the 100-yr flood plain is also shown along with general surface water drainage patterns. The aerial photograph was taken in 1988.

#### b. Wind Rose

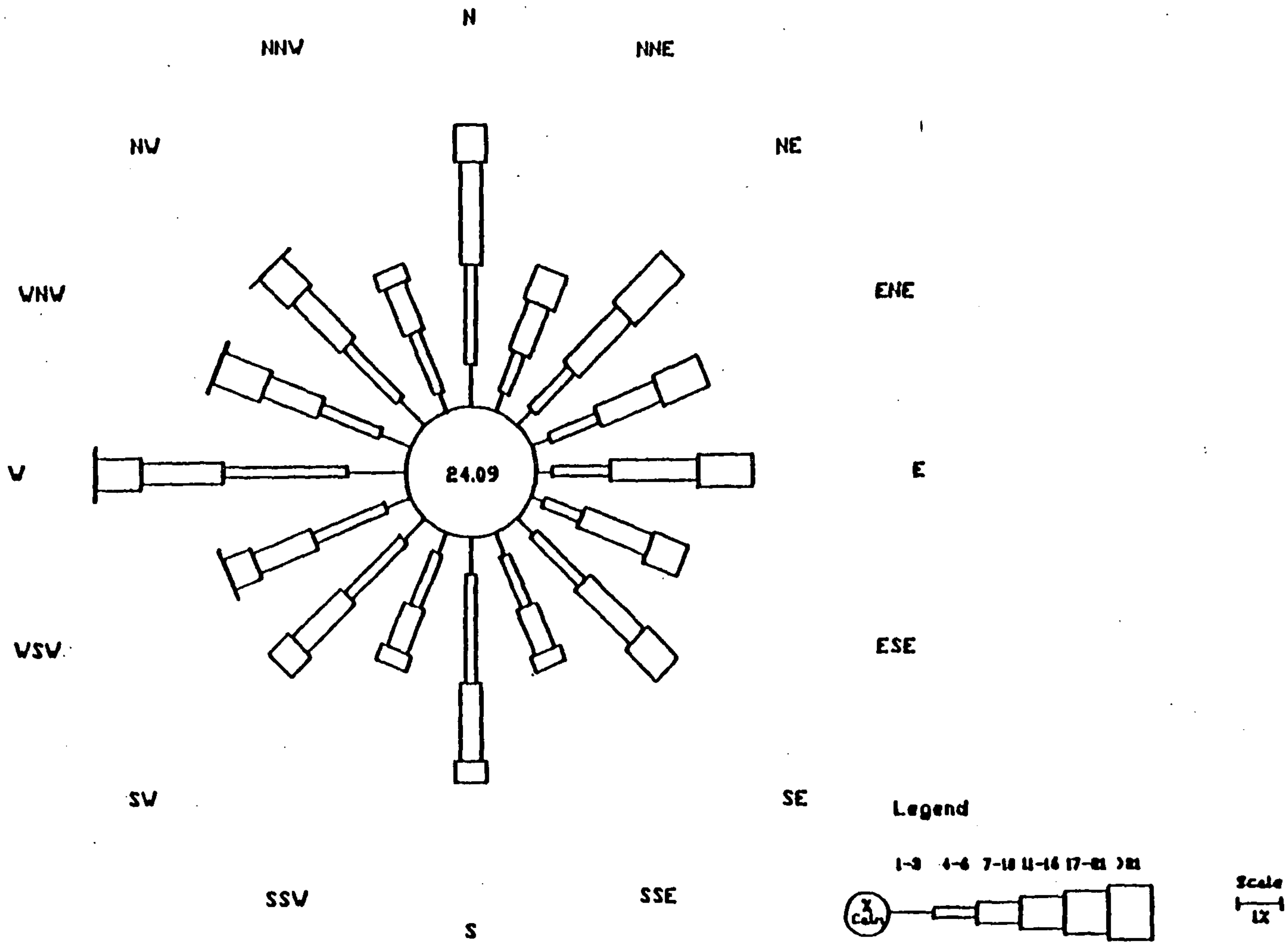
Figure A-3 shows a Wind Rose prepared by the Federal Aviation Administration for the period 1984 through 1988 for the greater Jacksonville area. The wind rose shows wind speeds and directions. A table prepared by the FAA which indicates number of occurrences is also provided.

#### c. Traffic Patterns

Industrial Water Service will receive shipments of D018 Benzene TC contaminated wastewater in bulk tanker trucks from a variety of sources principally in Northeast Florida. Truck shipments generally enter the facility from the east from Talleyrand Avenue. On site traffic patterns are illustrated in Figure A-4.

All roadway designs conform to either the City of Jacksonville or the Florida Department of Transportation Standards for roadway widths and bearing capacities. The City of Jacksonville standards for roadway construction are as follows:

*Jacksonville, FL Wind Rose*
*Five-Year Composite*
*1984 – 1988*




Note: Winds are from indicated directions.

SOURCE: FEDERAL AVIATION ADMINSTRATION

FIGURE
A-3

WINDROSE JACKSONVILLE, FL -1984-1988
ANNUAL (5-YR COMPOSITE)

SPEED (KTS)

| | NUMBER OF OCCURRENCES | | | | | | PERCENT | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIR | 0-3 | 4-6 | 7-10 | 11-16 | 17-21 | >21 | 0-3 | 4-6 | 7-10 | 11-16 | 17-21 | >21 |
| N | 407 | 985 | 1008 | 367 | 8 | 2 | 0.93 | 2.25 | 2.30 | 0.84 | 0.02 | 0.00 |
| NNE | 190 | 419 | 513 | 359 | 37 | 0 | 0.43 | 0.96 | 1.17 | 0.82 | 0.08 | 0.00 |
| NE | 203 | 565 | 758 | 708 | 83 | 2 | 0.46 | 1.29 | 1.73 | 1.62 | 0.19 | 0.00 |
| ENE | 183 | 532 | 671 | 508 | 39 | 0 | 0.42 | 1.21 | 1.53 | 1.16 | 0.09 | 0.00 |
| E | 154 | 587 | 906 | 561 | 18 | 0 | 0.35 | 1.34 | 2.07 | 1.28 | 0.04 | 0.00 |
| ESE | 123 | 418 | 746 | 376 | 6 | 0 | 0.28 | 0.95 | 1.70 | 0.86 | 0.01 | 0.00 |
| SE | 242 | 697 | 781 | 448 | 16 | 0 | 0.55 | 1.59 | 1.78 | 1.02 | 0.04 | 0.00 |
| SSE | 240 | 564 | 487 | 157 | 5 | 1 | 0.55 | 1.29 | 1.11 | 0.36 | 0.01 | 0.00 |
| S | 354 | 1090 | 761 | 211 | 14 | 0 | 0.81 | 2.49 | 1.74 | 0.48 | 0.03 | 0.00 |
| SSW | 208 | 591 | 473 | 160 | 8 | 0 | 0.47 | 1.35 | 1.08 | 0.37 | 0.02 | 0.00 |
| SW | 293 | 801 | 695 | 282 | 19 | 0 | 0.67 | 1.83 | 1.59 | 0.64 | 0.04 | 0.00 |
| WSW | 268 | 801 | 630 | 291 | 30 | 7 | 0.61 | 1.83 | 1.44 | 0.66 | 0.07 | 0.02 |
| W | 591 | 1243 | 814 | 459 | 64 | 9 | 1.35 | 2.84 | 1.86 | 1.05 | 0.15 | 0.02 |
| WNW | 328 | 664 | 590 | 507 | 90 | 19 | 0.75 | 1.52 | 1.35 | 1.16 | 0.21 | 0.04 |
| NW | 349 | 761 | 682 | 410 | 55 | 6 | 0.80 | 1.74 | 1.56 | 0.94 | 0.13 | 0.01 |
| NNW | 200 | 648 | 502 | 177 | 10 | 0 | 0.46 | 1.48 | 1.15 | 0.40 | 0.02 | 0.00 |

NO. OF OBS.= 43797 CALMS = 10552 CALM PERCENT = 24.09

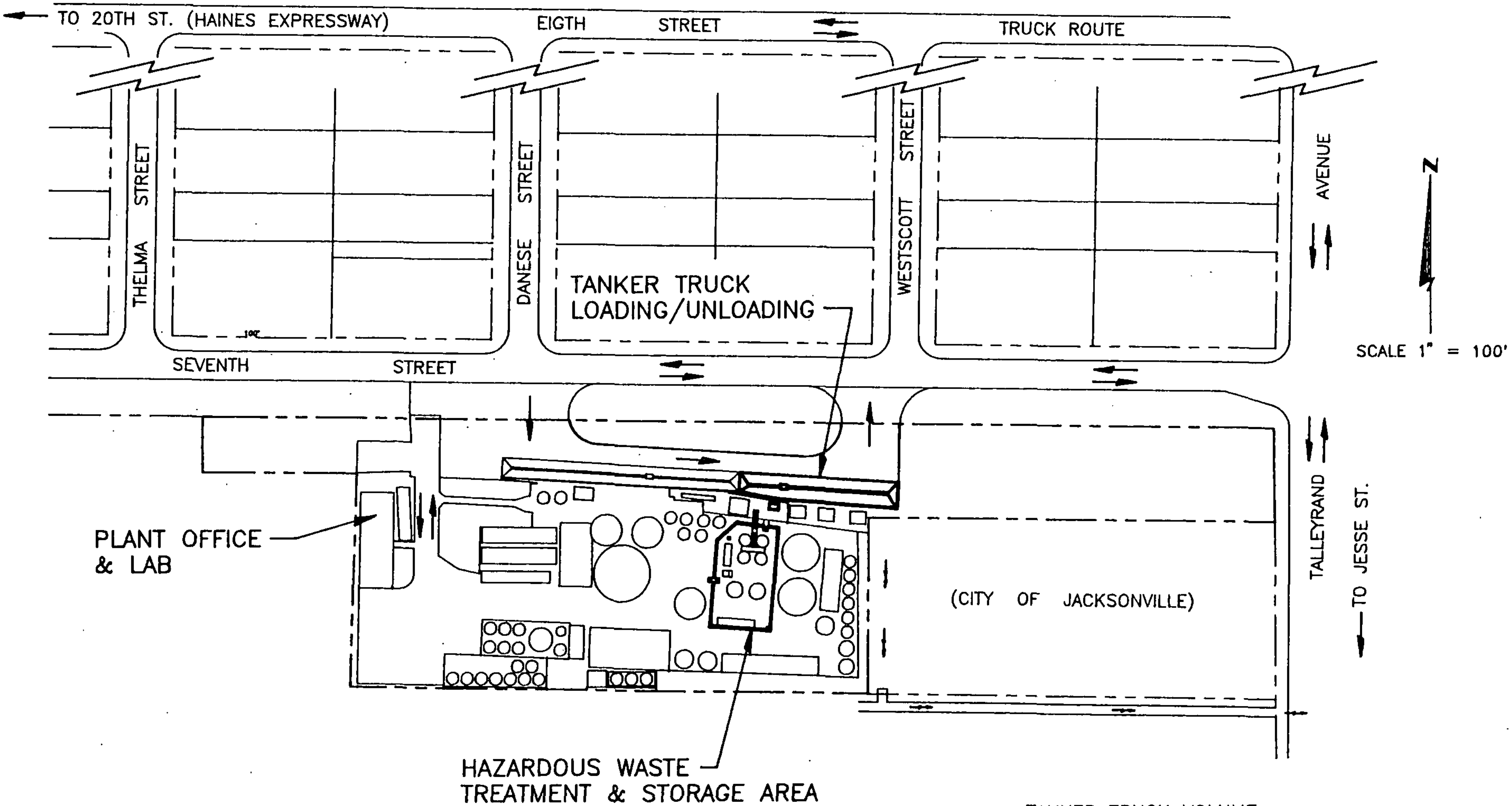
(1) Subgrade shall have a minimum depth of 12-inches and a minimum limerock bearing ratio (LBR) of 40.

(2) Base course for industrial areas shall have a minimum thickness of 8-inches and achieve a minimum density of 75 percent of the minimum limerock bearing ratio of 40.

(3) Surface course for flexible pavements in industrial areas shall be a minimum thickness of 1-1/2 inches for Type I and 2 inches for Type II asphaltic concrete pavements.

(4) Surface course for portland cement concrete pavements in industrial areas shall be a minimum of 5 inches thick.

The roadways in the vicinity of the I.W.S. facility should conform to these standards of construction.




1992 AVERAGE DAILY TRAFFIC VOLUME

TALLYRAND AT JESSE STREET – 5992 VPD
TALLYRAND AT 8TH STREET – 6344 VPD
8TH STREET AT 20TH STREET – 7254 VPD

SOURCE: CITY OF JACKSONVILLE TRAFFIC PLANNING DEPARTMENT
VPD = VEHICLES PER DAY

TANKER TRUCK VOLUME

FACILITY RECEIVES APPROXIMATELY 20 LOADS PER DAY OF INDUSTRIAL WASTEWATER

SOURCE: INDUSTRIAL WATER SERVICES, INC.

*MITTAUER/FITZPATRICK, INC.*
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 276-5236

**INDUSTRIAL WATER SERVICES, INC.**
Hazardous Waste Management Facility
Traffic Patterns
Jacksonville, Florida

JOSEPH A. MITTAUER CERTIFICATE No. 27111 STATE OF FLORIDA ENGINEER

APR 30 1993

FIGURE
A-4

UPDATED JANUARY 1993

2

# Notes

2. Financial Responsibility

Closure Cost Estimate
Industrial Water Systems. Inc.

M/F Project No. 9122-02-1
April 1993

| No. | Description | Quantity | Unit | Unit Cost | Amount |
|---|---|---|---|---|---|
| | Closure of Existing Units | | | | |
| 1 | Treatment and disposal of waste in tanks plus rinsate. | 80,000 | gal | $0.30 | $24,000.00 |
| 2 | Cleaning of all tanks, slab, and equipment. | | | | |
| | Labor | 160 | hrs | $25.00 | $4,000.00 |
| | Supervisor | 2 | wk | $1,000.00 | $2,000.00 |
| | Equipment & Supplies | 1 | LS | $2,000.00 | $2,000.00 |
| | Contractor's O&P | 25 | % | $8,000.00 | $2,000.00 |
| 3 | Analytical Work - TCLP analyses | 9 | ea | $1,400.00 | $12,600.00 |
| 4 | Solids disposal | 8 | drums | $250.00 | $2,000.00 |
| 5 | Administrative Costs | 40 | hrs | $40.00 | $1,600.00 |
| 6 | Engineer's certification | 16 | hrs | $75.00 | $1,200.00 |
| | SUBTOTAL | | | | $51,400.00 |
| 7 | Contingency @ 10% | | | | $5,140.00 |
| | TOTAL EXISTING TANKS | | | | $56,540.00 |
| | Closure of Proposed TSD Facility | | | | |
| 8 | Treatment and disposal of waste in tanks. | 91,475 | gal | $0.30 | $27,442.50 |
| 9 | Cleaning of all tanks, slab, and equipment. | | | | |
| | Labor | 160 | hrs | $25.00 | $4,000.00 |
| | Supervisor | 2 | wk | $1,000.00 | $2,000.00 |
| | Equipment & Supplies | 1 | LS | $2,000.00 | $2,000.00 |
| | Contractor's O&P | 25 | % | $8,000.00 | $2,000.00 |
| 10 | Analytical Work - TCLP analyses | 24 | ea | $1,400.00 | $33,600.00 |
| 11 | Solids disposal | 12 | drums | $250.00 | $3,000.00 |
| 12 | Administrative Costs | 40 | hrs | $40.00 | $1,600.00 |
| 13 | Engineer's certification | 16 | hrs | $75.00 | $1,200.00 |
| | SUBTOTAL | | | | $76,842.50 |
| 14 | Contingency @ 10% | | | | $7,684.25 |
| | TOTAL PROPOSED TANKS | | | | $84,526.75 |

9/08/92

PRODUCER

Coastal Plains Insurance
Division of Brown & Brown Inc
P O Box 52897
ksonville, FL 32201

CODE SUB-CODE

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

Industrial Water Services, Inc
P. O. Box 43369
Jacksonville FL 32203

COMPANIES AFFORDING COVERAGE

| | |
|---|---|
| COMPANY LETTER A | |
| COMPANY LETTER B | |
| COMPANY LETTER C | |
| COMPANY LETTER D | |
| COMPANY LETTER E | SPHERE DRAKE INSURANCE LTD. |

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| CO LTR | TYPE OF INSURANCE | POLICY NUMBER | POLICY EFFECTIVE DATE (MM/DD/YY) | POLICY EXPIRATION DATE (MM/DD/YY) | ALL LIMITS IN THOUSANDS |
|---|---|---|---|---|---|
| | GENERAL LIABILITY<br>COMMERCIAL GENERAL LIABILITY<br>CLAIMS MADE / OCCUR.<br>OWNER'S & CONTRACTOR'S PROT | | | | GENERAL AGGREGATE<br>PRODUCTS-COMP/OPS AGGREGATE<br>PERSONAL & ADVERTISING INJURY<br>EACH OCCURRENCE<br>FIRE DAMAGE (ANY ONE FIRE)<br>MEDICAL EXPENSE (ANY ONE PERSON) |
| | AUTOMOBILE LIABILITY<br>ANY AUTO<br>ALL OWNED AUTOS<br>SCHEDULED AUTOS<br>HIRED AUTOS<br>NON-OWNED AUTOS<br>GARAGE LIABILITY | | | | COMBINED SINGLE LIMIT<br>BODILY INJURY (PR. PER.)<br>BODILY INJURY (PR. ACC.)<br>PROPERTY DAMAGE |
| | EXCESS LIABILITY<br>OTHER THAN UMBR. FORM | | | | EACH OCCURRENCE / AGGREGATE |
| | WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY | | | | STATUTORY<br>(EACH ACCIDENT)<br>(DISEASE-POL. LIM.)<br>(DISEASE-EA. EMPL.) |
| E | OTHER<br>CLOSURE / POST CLOSURE | 9921012 | 9/1/92 | 9/1/93 | $100,000 LIMIT<br>1640 TALLEYRAND AVE<br>JACKSONVILLE, FL |

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

See additional insormation attached

CERTIFICATE HOLDER

Dept of Enviromental Reg
N. E. Dist. Ste B 200
7825 Baymeadows Way
.acksonville, FL 32256-7577

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 60 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

CERTIFICATE OF INSURANCE FOR CLOSURE AND POST-CLOSURE CARE

| | |
|---|---|
| Name and Address of Insurer: | Sphere Drake Insurance Ltd.<br>c/o National Assurance Corporation<br>4250 Perimeter Park South<br>Suite 116 Atlanta, GA 30341 |
| Name and Address of Insured: | Industrial Water Services, Inc.<br>P. O. Box 43369<br>Jacksonville, FL 32203 |
| Facilities Covered: | 1640 Tallyrand Avenue<br>Jacksonville, FL 32203 |
| Face Amount: | $100,000 |
| Policy Number: | 9921012 |
| Effective Date: | September 1, 1992 |

The Insurer hereby certifies that it has issued to the Insured the policy of insurance identified above to provide financial assurance for closure and post-closure for the facilities identified above. The Insurer further warrants that such policy conforms in all respects with the requirements of 40 CFR 264.143(e), 264.145(e), 265.143(d) and 265.145(d), as applicable and as such regulations were constituted on the date shown immediately below. It is agreed that any provision of the policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.

Whenever requested by the EPA Regional Administrator(s) of the U.S. Enviromental Protection Agency, the Insurer agrees to furnish to the EPA Regional Administrator(s) a duplicate original of the policy listed above, including all endorsements thereon.

I hereby certify that the wording of the certificate is identical to the wording specified in 40 CFR 264.151(e) as such regulations were constituted on the date shown immediately below.

Authorized Signature for the Insurer

Tom Locasale
Vice President
COASTAL PLAINS INSURANCE

Signature of witness or notary:

Date: 9/1/92

NOTARY PUBLIC, STATE OF FLORIDA
My commission expires Sept. 26, 1992

CERTIFICATE OF INSURANCE

9/08/92

| PRODUCER | THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. |
|---|---|
| Coastal Plains Insurance<br>Division of Brown & Brown Inc<br>P O Box 52897<br>ksonville, FL 32201 | COMPANIES AFFORDING COVERAGE |
| | COMPANY LETTER A |
| CODE SUB-CODE | COMPANY LETTER B |
| INSURED | COMPANY LETTER C |
| Industrial Water Services, Inc<br>P. O. Box 43369<br>Jacksonville FL 32203 | COMPANY LETTER D |
| | COMPANY LETTER E CERTAIN UNDERWRITERS AT LLOYDS |

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| CO LTR | TYPE OF INSURANCE | POLICY NUMBER | POLICY EFFECTIVE DATE (MM/DD/YY) | POLICY EXPIRATION DATE (MM/DD/YY) | ALL LIMITS IN THOUSANDS |
|---|---|---|---|---|---|
| | GENERAL LIABILITY<br>COMMERCIAL GENERAL LIABILITY<br>CLAIMS MADE / OCCUR.<br>OWNER'S & CONTRACTOR'S PROT | | | | GENERAL AGGREGATE<br>PRODUCTS-COMP/OPS AGGREGATE<br>PERSONAL & ADVERTISING INJURY<br>EACH OCCURRENCE<br>FIRE DAMAGE (ANY ONE FIRE)<br>MEDICAL EXPENSE (ANY ONE PERSON) |
| | AUTOMOBILE LIABILITY<br>ANY AUTO<br>ALL OWNED AUTOS<br>SCHEDULED AUTOS<br>HIRED AUTOS<br>NON-OWNED AUTOS<br>GARAGE LIABILITY | | | | COMBINED SINGLE LIMIT<br>BODILY INJURY (PR. PER.)<br>BODILY INJURY (PR. ACC.)<br>PROPERTY DAMAGE |
| | EXCESS LIABILITY<br>OTHER THAN UMBR. FORM | | | | EACH OCCURRENCE / AGGREGATE |
| | WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY | | | | STATUTORY<br>(EACH ACCIDENT)<br>(DISEASE-POL. LIM.)<br>(DISEASE-EA. EMPL.) |
| E | OTHER<br>FIRST PARTY POLLUTION LIABILITY | NVA220 | 9/1/92 | 9/1/93 | $1,000,000 OCC./<br>$2,000,000 AGG.<br>LIMITS OF LIABILITY |

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

See additional insormation attached

| CERTIFICATE HOLDER | CANCELLATION |
|---|---|
| Dept of Enviromental Reg<br>N. E. Dist. Ste B 200<br>7925 Baymeadows Way<br>cksonville, FL 32256-7577 | SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 60 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.<br>AUTHORIZED REPRESENTATIVE |

HAZARDOUS WASTE FACILITY LIABILITY ENDORSEMENT

| | |
|---|---|
| Name and Address of Insurer: c/o | Certain Underwriters at Lloyds<br>National Assurance Corportaion<br>4250 Perimeter Park South<br>Suite 116 Atlanta, GA 30341 |
| Name and Address of Insured: | Industrial Water Services, Inc.<br>P. O. Box 43369<br>Jacksonville, FL 32203 |
| Facilities Covered: | 1640 Tallyrand Avenue<br>Jacksonville, FL 32203 |
| Policy Number: | NVA220 |
| Effective Date: | September 1, 1992 |

This endorsement certifies that the policy to which the endorsement is attached provides liability insurance covering bodily injury and property damage in connection with the insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147. The coverage applies at 1640 Tallyrand Ave., Jacksonville, Florida 32203, for sudden and nonsudden accidental occurences. The limits of liability are $1,000,000 each occurence and 2,000,000 annual aggregate, exclusive of legal defense costs.

The insurance afforded with respect to such occurences is subject to all of the terms and conditions of the policy; provided, however, that any provisions of the policy inconsistent with subsections (a) through (e) of this Paragraph are hereby amended to conform with subsections (a) through (e):

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy to which this endorsement is attached.

(b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147(f) or 265.147(f).

(c) Whenever requested by a Regional Administrator of the U.S. Environmental Protection Agency (EPA), the Insurer agrees to furnish to the Regional Administrator a signed duplicate original of the policy and all endorsements.

(d) Cancellation of this endorsement, whether by the insurer, the insured, a parent corporation providing insurance coverage for its subsidiary, or by a firm having an insurable interest in and obtaining liability insurnace on behlaf of the owner or operator of the hazardous waste management facility, will be effective only upon written notice and only after the expiration of 60 days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

(e) Any other termination of this endorsement will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is located.

Attached to and forming part of policy No. NVA220 issued by Certain Underwriters at Lloyds, herin called the Insurer, of 4250 Perimeter Park South; Suite 116, Atlanta, Georgia 30341 to Industrial Water Services, Inc. of P. O. Box 43369; Jacksonville, Florida 32203 this 1st day of September, 1992. The effective date of said policy is 1st day of September, 1992.

I hereby certify that the wording of this endorsement is identical to the wording specified in 40 CFR 264.151(i) as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or nore states.

Authorized Signature for the Insurer

Tom Locasale
Vice President
COASTAL PLAINS INSURANCE

Signature of Witness or Notary

Diane M. Barton

Date: 9/1/92

NOTARY PUBLIC, STATE OF FLORIDA
My commission expires Sept. 26, 1992

3

Notes

ATTACHMENT 3

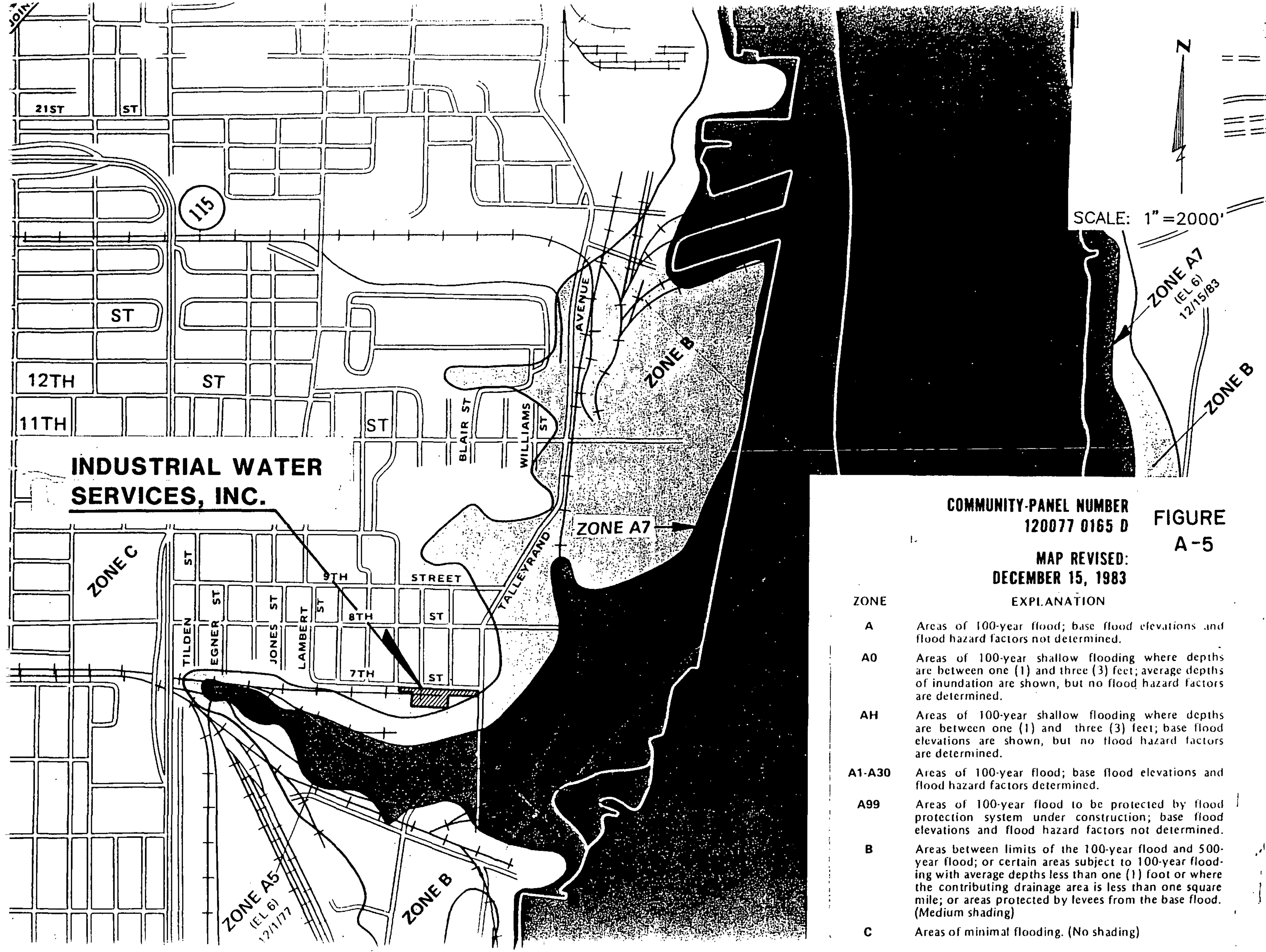
PART II A. 3. FLOOD MAP

REVISION 1, 1-11-93

3. <u>Flood Map</u>

Industrial Water Services is not within the 100-yr flood plain area. Figure A-5 shows the boundaries of the flood zone with respect to Industrial Water Services.

Flood zone information was obtained from the Federal Emergency Management Agency (FEMA), Nation Flood Plain Insurance Program, Community Panel No. 12007 0161 E. Industrial Water Service is located in an area determined to be outside the 500-yr flood plain. The area closest to IWS that is inundated by the 100-yr flood plain is approximately 1,200 feet south of the IWS property in the area along Deer Creek.




**COMMUNITY-PANEL NUMBER**
**120077 0165 D**

**MAP REVISED:**
**DECEMBER 15, 1983**

FIGURE
A-5

| ZONE | EXPLANATION |
|---|---|
| A | Areas of 100-year flood; base flood elevations and flood hazard factors not determined. |
| A0 | Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined. |
| AH | Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined. |
| A1-A30 | Areas of 100-year flood; base flood elevations and flood hazard factors determined. |
| A99 | Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined. |
| B | Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading) |
| C | Areas of minimal flooding. (No shading) |

4

# Notes

ATTACHMENT 4

PART II A. 4. FACILITY SECURITY

## 4. Facility Security

### a. Description of Security Procedures

The RCRA portion of the IWS facility is operated to prevent the unknowing entry and minimize the possibility of unauthorized entry of persons into the active portion of the facility.

Security of the existing hazardous waste management area consists of a 6-foot high chain link fence with 3 strands of barbed wire around the entire facility. The new facility will be entirely fenced within the existing fence with a 4-foot high chain link fence above a concrete wall. IWS guards are on duty during closed hours.

A warning sign is posted on the fence at the facility entrance which states that only authorized personnel are allowed to enter the active portion of the facility and that entry could be dangerous.

Facility security provisions will be inspected on a weekly basis and consist of a visual inspection of the fenced portion for damage. Warning signs will also be visually inspected for legibility and missing signs. Rack attendants and security guards are trained to report any unusual activity or unauthorized site entry.

b. <u>Contingency Plan</u>

Industrial Water Service's (I.W.S.) "Contingency Plan and Emergency Procedures" complies with the requirements of 40 CFR Subpart D of the Resource Conservation and Recovery Act (RCRA). The document was prepared in November 1991 and submitted to the Environmental Protection Agency in February 1992.

The hazardous waste management units addressed in the plan includes the treatment process of TC benzene hazardous waste, container storage and tank storage of TC benzene hazardous waste and storage of other hazardous materials.

(1) <u>General Information</u>

(a) Purpose and Implementation

The Contingency Plan and Emergency Procedures are designed to minimize hazards to human health or the environment from fires, explosions or any unplanned sudden release of hazardous waste or hazardous waste constituents to air, soil or surface waters. The provisions of this plan must be carried out immediately whenever there is a fire, explosion or release of hazardous materials which could threaten human health or the environment.

(b) Description of Facility Operations

Industrial Water Services (I.W.S.) is an industrial wastewater treatment facility located at 1640 Talleyrand Avenue near the intersection of Talleyrand and 7th Street, Jacksonville, Florida. The facility is approximately 1.6 acres in size and operates from 7 a.m. to 11 p.m. Monday through Saturday. A facility location map is shown in Figure A-1.

I.W.S. treats and discharges wastewater collected from marine, petroleum, transportation, environmental and industrial sources. Approximately 75% of the incoming wastewater is nonhazardous. Influent wastewater is treated either by gravity separation or by dissolved air floatation, and treated chemically to adjust pH to induce coagulation and flocculation. Processed wastewater is tested and discharged to the local POTW. Sludges are dewatered and routed to an appropriate landfill. The oil is segregated, stored on-site and marketed to used oil processors for energy recovery.

I.W.S. accepts and manages benzene contaminated wastewater (D018). This waste is generated from petroleum bulk storage facilities and from underground fuel storage tanks. Approximately five 55-gallon drums of strainer basket solids generated from the off-loading of tankers and solids resulting from operation of the shaker are generated per month. Waste xylene (F003) is generated from the on-site laboratory. Approximately five gallons of waste xylene is generated per month from laboratory operations.

(2) Emergency Coordinators

The plant superintendent, Bill Hatfield, or his designee is the primary emergency coordinator. Table A.4-1 includes the name, home address, and both office and home telephone numbers of the primary emergency coordinator and his alternates.

At all times there is at least one employee either on the facility premises or on call (i.e. available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures.

The primary emergency coordinator and the alternate emergency coordinators are thoroughly familiar with all aspects of the contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout.

In addition to the primary and secondary emergency coordinators, I.W.S. has developed a spill response team to assist with emergencies and offer their expertise regarding regulatory, chemical and safety issues. The spill team members are listed in Table A.4-1.

The emergency coordinator has designated the I.W.S. Operations Office located across the street from the physical plant, for the area to convene for assessing any emergency response actions to take place.

(a) Emergency Coordinator Authority

The emergency coordinators have the authority to commit the resources needed to carry out the contingency plan. The emergency coordinator also has the authority to shut down and restart facility processing and order evacuation of plant personnel.

(b) Implementation

The emergency coordinators use the following criteria for

## TABLE A. 4-1

## EMERGENCY COORDINATORS

### Primary Emergency Coordinator

| | | |
|---|---|---|
| Name: | Bill Hatfield | Work Phone # - 354-0372 |
| Position: | Plant Superintendent | Home Phone # - 260-1496 |
| Address: | 4124 Huntington Forest | |
| | Blvd., Jacksonville, FL | Pager # - 645-4016 |

### Alternate Emergency Coordinators

### First Alternate

| | | |
|---|---|---|
| Name: | Mark Byrne | Work Phone # - 354-0372 |
| Position: | Process Supervisor | Home Phone # - 781-3104 |
| Address: | 2135 Rothbury Drive | |
| | Jacksonville, FL 32202 | Pager # - 645-2794 |

### Second Alternate

| | | |
|---|---|---|
| Name: | Daniel Maye | Work Phone # - 354-0372 |
| Position: | Director of Operations | Home Phone # - 249-7121 |
| | 647 Selva Marina Circle | |
| | Atlantic Beach, FL | Pager # 1-800-999-6710 then 999 8341 |

## SPILL RESPONSE TEAM

The following individuals comprise the IWS Spill Response Team that have been trained to respond to a spill or unexpected occurrence:

| NAME | TITLE | PAGER/HOME PHONE |
|---|---|---|
| Daniel Maye | Dir. of Operations | 646-6019/249-7121 |
| Bill Hatfield | Plant Superintendent | 645-4016/260-1496 |
| Mark Byrne | Process Supervisor | 645-2794/358-3463 |
| Larry O'Connor | Trans. Supervisor | 766-0909/645-2793 |
| John Stribling | Lab Director | 790-1517/730-9148 |
| Lawrence Halstead | Operations Coordinator | 790-0858/730-9549 |

implementation of the Contingency Plan for any potential emergency:

(i) Activate internal facility alarms and communication systems, where applicable, to notify all plant personnel.

(ii) Notify the appropriate State and Local agencies with designated response roles, if their help is needed.

(iii) Whenever there is a release, fire, or explosion the emergency coordinator must immediately identify the character, exact source, amount, and a real extent of any released material(s). The emergency coordinator may do this by observation or review of facility records or manifests, and if necessary, by chemical analysis.

(iv) Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion (e.g. the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water runoff from water or chemical agents used to control fire and heat-induced explosions).

(v) If the emergency coordinator determines that the facility has had a release, fire or explosion which could threaten human health or the environment, outside the facility, he must immediately alert the General Manager.

(vi) During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

(vii) If the facility stops operations in response to a fire, explosion or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(viii) Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility. If the recovered solid waste cannot be processed on-site, disposal in an off-site approved hazardous waste landfill or alternate treatment process is to be arranged.

(ix) The emergency coordinator must ensure that no waste is incompatible with the released material, and all emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

(c) Notification of Emergency

If the emergency coordinator determines that the facility has had a release, fire or explosion which could threaten human health or the environment, outside the facility, the emergency coordinator must report findings as follows:

(i) If the assessment indicates that evacuation of local areas may be advisable, the coordinator must immediately notify appropriate local authorities. Table A.4-2 includes the emergency notification information and telephone numbers. The coordinator must be available to help appropriate officials decide whether local areas should be evacuated; and,

(ii) Must immediately notify the Florida Department of Environmental Regulation, Northeast District, during regular business hours and after business hours notify the State Warning Point 24 hour number. The report must include:

(1) Name and telephone number of reporter;
(2) Name and address of facility;
(3) Time and type of incident(e.g. release, fire);
(4) Name and quantity of material(s) involved to the extent known;
(5) The extent of injuries, if any; and
(6) The possible hazards to human health or environment outside the facility.

(4) <u>Hazardous Materials Identification and Assessment</u>

(a) Records

Records relating to hazardous waste and hazardous waste

Table A. 4-2

**EMERGENCY NOTIFICATION INFORMATION**

In the event of an emergency which could threaten human health or the environment outside of the facility, the emergency coordinator must immediately notify:

**FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION**
Northeast District
Telephone (904) 448-4320

**STATE WARNING POINT**
Telephone: (904) 488-1320 (24 hours)

**NATIONAL RESPONSE CENTER**
Telephone: (904)800-424-8802 (24 hours)

**U.S. ENVIRONMENTAL PROTECTION AGENCY - REGION IV**
Telephone: (404) 881-4062 (24 hours)

**U.S. COAST GUARD**
Telephone: Day (904) 791-2648
Night (904) 246-7341

**CHEMTREC (Chemical Information)**
Telephone: 800 -424-9300 (24 hours)

Within 15 days after the incident, send written report to:

**FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION**
Northeast District
7825 Baymeadows Way Suite 200-B
Jacksonville, Florida 32256

emergencies will be maintained at the facility office and are readily accessible to the emergency coordinator. Potential spill sources at the I.W.S. facility include releases due to accidents, equipment failure, or overflows from aboveground storage and treatment tanks for oily wastewater, D018 benzene contaminated wastewater and waste oil. All ancillary equipment in conjunction with these tanks such as pipes, pumps and valves are also potential spill sources. Spills can potentially occur from the loading and off-loading of tankers at the loading dock areas, and the transfer and off-loading of chemical products, and the off-loading and storage of D018 hazardous waste drums. Another potential source is from the storage of chemical products, D018 solid hazardous waste, and the storage of F003, waste xylene.

(b) Potential Releases and Hazards

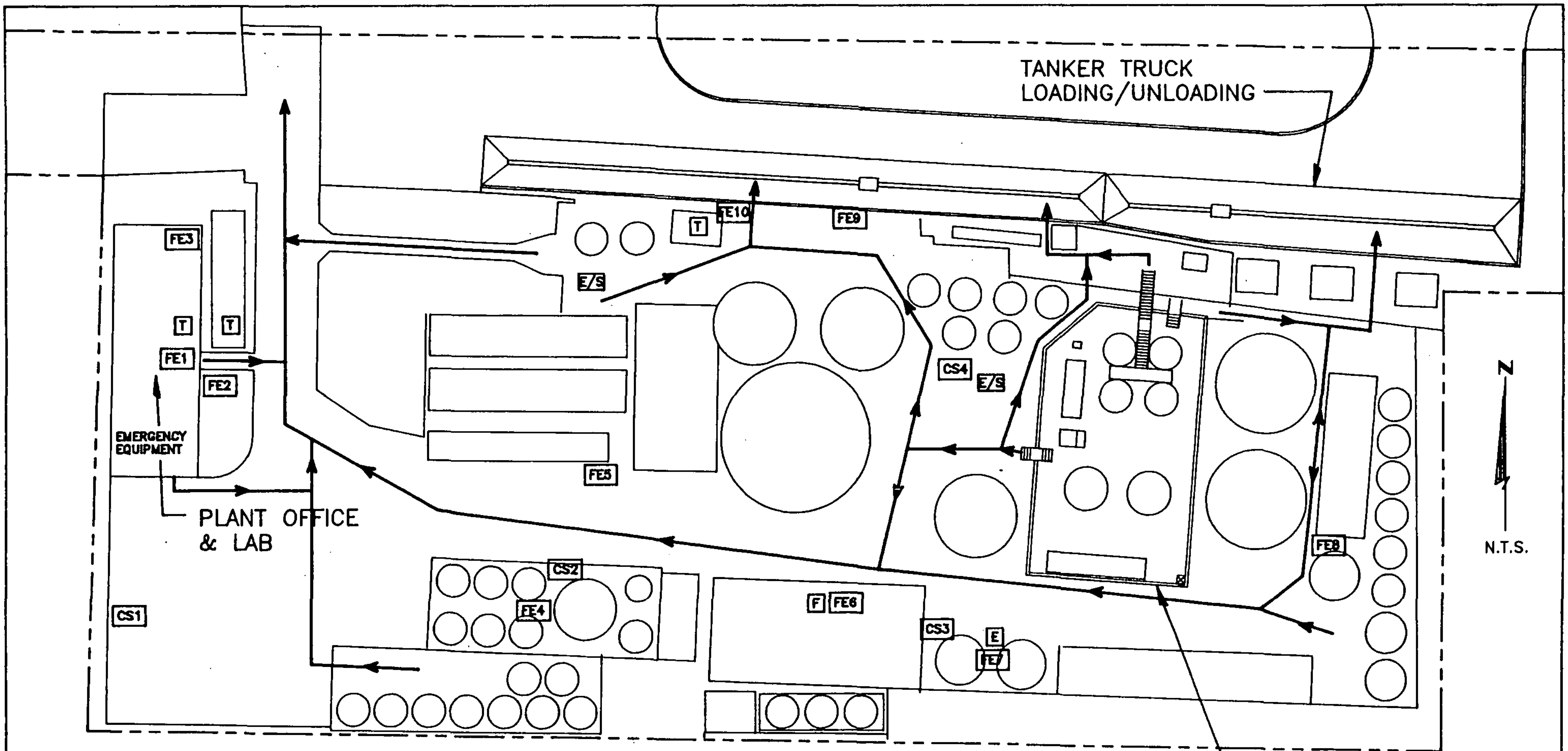
The potential for soil contamination exists at the facility due to possible releases from the storage of a variety of hazardous materials and hazardous waste. This potential has been minimized due to impervious concrete secondary containment in the RCRA permitted area (to be constructed) and concrete floor containment and secondary containment throughout the facility.

The potential for surface water contamination exists due to the quantity of materials stored and the proximity to surface water bodies.

The potential for a fire hazard exists at the I.W.S. facility due to the treatment and storage of certain flammable and ignitable wastes containing petroleum, petroleum solvents, denatured anhydrous ethyl alcohol, xylene and gasoline. An explosion hazard is also a potential hazard when any organic vapors come in contact with heat or an ignition source.

Potential hazards from chemical spills exist from the storage, transfer and usage of a variety of chemicals in the plant and laboratory area. Four chemical storage areas exist within the physical plant area at I.W.S. The storage areas are indicated in the Facility Layout shown on Figure A-6. Chemical types, physical characteristics, hazards and emergency procedures are detailed in Table A.4-4. Table A.4-3 describes the types and amounts of chemicals which are stored or may be stored in the chemical storage areas.

A variety of smaller amounts of chemicals (one gallon or less) are kept in the laboratory for conducting routine analysis and bench testing. The potential hazards of a




## LEGEND

| | | | |
|---|---|---|---|
| CS1 | CHEMICAL STORAGE | F | FIRE ALARM |
| FE1 | FIRE EXTINGUISHER | T | TELEPHONE |
| E | EYEWASH | ← | EVACUATION ROUTE |
| E/S | EYEWASH/SHOWER | | |

*MITTAUER/FITZPATRICK, INC.*
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 278-5236

**INDUSTRIAL WATER SERVICES, INC.**
Hazardous Waste Management Facility
Facility Site Plan
Jacksonville, Florida

JOSEPH A. MITTAUER
CERTIFICATE
NO. 2...
STATE OF
FLORIDA
REGISTERED ENGINEER
APR 30 1993

FIGURE
A-6
UPDATED JANUARY 1993

## TABLE A.4-3

## CHEMICAL STORAGE INFORMATION

| CHEMICAL | STORAGE LOCATION | MAXIMUM AMOUNT STORED |
|---|---|---|
| SULFURIC ACID | CS1,CS2,CS3,CS4 | 900 GALLONS |
| SODIUM HYDROXIDE | CS1,CS3,CS4 | 800 GALLONS |
| IPC 3525 | CS2 | 110 GALLONS |
| FERRIC CHLORIDE SOLUTION | CS1,CS3,CS4 | 800 GALLONS |
| ET - 11 | CS1,CS4 | 165 GALLONS |
| ET - 4 | CS1,CS4 | 165 GALLONS |
| ECA 1350 | CS1,CS4 | 165 GALLONS |
| DWT 6230 | CS3 | 300 GALLONS |
| CHARGE PAC COAGULANT | CS1,CS4 | 165 GALLONS |
| LIQUID ALUMINUM SULFATE | CS1,CS4 | 165 GALLONS |
| 8917 | CS1,CS4 | 165 GALLONS |
| 8117 | CS1,CS4 | 165 GALLONS |
| 8091 | CS1,CS4 | 165 GALLONS |
| 8102 | CS1,CS4 | 100 LBS, 165 GALLONS |
| BLP XYLENE | LABORATORY | 5 GALLONS |
| DOBER 5100 | CS1,CS4 | 165 GALLONS |
| 5225 FLUID FLOCCULENT | CS1,CS4 | 15 GALLONS |
| DWT 6230 | CS1,CS3,CS4 | 465 GALLONS |
| HYDROCHLORIC ACID | CS1,CS4 | 165 GALLONS |
| 8061 | CS1,CS4 | 165 GALLONS |
| HYDRATED LIME | CS4 | 1000 LBS |
| 8023 | CS1,CS4, | 50 GALLONS |

Table A. 4-4

| CHEMICAL TRADE NAME | PHYSICAL/CHEMICAL PROPERTIES | HAZARDS | EMERGENCY RESPONSE ACTIONS |
|---|---|---|---|
| SULFURIC ACID | pH<1; LIQUID 100% SOLUABLE IN WATER; OILY, ODORLESS, COLORLESS TO LIGHT GRAY; STABLE | REACTS VIOLENTLY WITH WATER, ORGANICS, ALKALINES, AND METALS, HAZARDOUS GASES ARE EVOLVED ON CONTACT WITH ORGANIDES, SULFIDES AND CARBIDES. RELEASES SULFUR DIOXIDE AT EXTREMELY HIGH TEMPERATURES. CAUSES SEVERE BURNS TO ALL BODY TISSUES. INHALED - MAY CAUSE LUNG DAMAGE. | CONTAIN SPILL DURING CLEAN UP; NEUTRALIZE WITH LIME OR SODA ASH. EVACUATE PERSONNEL. WEAR FULL PROTECTIVE CLOTHING AND SCBA IF FUMES, MIST PRESENT. AVOID GETTING WATER INSIDE CONTAINERS. |
| SODIUM HYDROXIDE LIQUID | LIQUID CAUSTIC SODA; COLORLESS, VISCOUS LIQUID. NO ODOR; SOLUABLE IN WATER; pH - 14; 50% DO NOT ALLOW CONTACT WITH ACIDS, ALUMINUM, ZINC, AND TIN. REACTS VIOLENTLY WITH HYDROGEN PEROXIDE AND ACIDS. | AVOID SKIN CONTACT AND INHALATION. CAUSES SERIOUS CHEMICAL AND THERMAL BURNS. | PERSONAL PROTECTION EQUIPMENT MUST BE WORN DURING CLEAN UP. CONTAIN SPILLAGE. DO NOT ALLOW DRAINAGE TO SEWERS, STREAMS OR STORM DRAINS. NEUTRALIZE WITH A WEAK ACID SOLUTION. REPORTABLE QUANTITY =1000 LBS |
| IPC 3525 | PETROLEUM SOLVENT, ISOPROPYL ALCOHOL, XYLENE; FLASH POINT - $95^0$ F; DARK AMBER LIQUID, AROMATIC ODOR; STABLE; INSOLUBLE IN WATER | FLAMMABLE LIQUID; SUSPECT INHALATION, EYE CONTACT, SKIN IRRITATION, INGESTION AND SKIN ABSORPTION HAZARD. | EXTINGUISH ALL IGNITION SOURCES; BLANKET WITH FIRE FIGHTING FOAM; RECOVER AND CONTAIN SPILL; USE APPROVED ORGANIC VAPOR RESPIRATOR OR SCBA. WEAR EYE AND DERMAL PROTECTION. |
| FERRIC CHLORIDE SOLUTION | FERRIC CHLORIDE 20%; PH<1; ORANGE BROWN LIQUID WITH SLIGHTLY ACRID ODOR; 100 % WATER SOLUABLE; STABLE. | MAY GENERATE FLAMMABLE, POTENTIALLY EXPLOSIVE HYDROGEN GAS ON CONTACT WITH METALS. EYE AND SKIN IRRITANT. MAY CAUSE EYE AND SKIN BURNS | CONTAIN; NEUTRALIZE SPILL WITH LIME OR SODA ASH. FLUSH WITH WATER TO WASTE TREATMENT SYSTEM. REPORTABLE QUANTITY = 1000 LBS. WEAR CHEMICAL SPLASH GOGGLES. WEAR APR/SKIN PROTECTION. |

Table A. 4-4 CONTINUED

| CHEMICAL TRADE NAME | PHYSICAL/CHEMICAL PROPERTIES | HAZARDS | EMERGENCY RESPONSE ACTIONS |
|---|---|---|---|
| 8061 | CALCIUM CHLORIDE 30% ; pH - 6.60 AMBER LIQUID, NO ODOR; STABLE. | INCOMPATIBLE WITH MOST METALS; CAN PRODUCE TOXIC OR THERMAL GASES; IRRITANT; NO FIRE OR EXPLOSION HAZARD. AVOID CONTACT WITH SKIN OR EYES. AVOID BREATHING. | COVER WITH INERT ABSORBENT MATERIAL. SWEEP UP, FLUSH AREA WITH WATER. BURNING MAY PRODUCE HIGHLY TOXIC COMBUSTION PRODUCTS. WEAR SELF CONTAINED BREATHING APPARATUS. |
| ECA 1350 | METHANOL AND SURFACE ACTIVE ORGANIC COMPOUNDS; WATER SOLUABLE DEMULSIFIER; SOLUABLE IN WATER; NONCOMBUSTIBLE; YELLOW COLORED LIQUID WITH A SLIGHTLY PUNGENT ODOR; STABLE | HEATING MAY GENERATE IRRITATING TOXIC AND FLAMMABLE METHANOL VAPORS. WILL REACT WITH SOME METALS AND ALKALINE MATERIALS. DECOMPOSES INTO CARBON AND NITROGEN. MATERIAL IS AN EYE, SKIN AND MUCOUS MEMBRANE IRRITANT. | DIKE AND CONTAIN SPILL. USE INERT ABSORBENT. USE ORGANIC VAPOR CARTRIDGE RESPIRATOR, EYE AND SKIN PROTECTION. FIREFIGHTERS SHOULD USE FULL PROTECTIVE CLOTHING AND SCBA. |
| DWT 6230 | ALUMINUM SULFIDE <40%; pH - 2.0; SOLUABLE IN WATER; VISCOUS BROWN LIQUID, MILD ODOR; STABLE. | INCOMPATIBLE WITH STRONG BASES AND STRONG OXIDIZERS AND EXTREME HEAT. CAUSES SKIN IRRITATION; CORROSIVE TO EYES. CONTACT WITH STRONG BASES OR THERMAL DECOMPOSITION MAY PRODUCE TOXIC AIR FUMES. | EVACUATE UNPROTECTED PERSONNEL. SCOOP UP MATERIAL AND RETURN TO CONTAINER OR ABSORB ONTO SAND, CLAY, ETC. AND PLACE INTO PLASTIC LINED CONTAINER FOR DISPOSAL. POLYMER IS SLIPPERY. WHEN FIREFIGHTING WEAR SCBA AND IMPERVIOUS CLOTHING. |
| CHARGE PAC(R) COAGULANT | ALUMINUM SULFATE 10 - 25%; pH - 2.2 - 2.8; CLEAR TO SLIGHTLY HAZY LIQUID; STABLE. | AVOID CONTACT WITH STRONG ALKALIES, ALKALI METALS AND STRONG OXIDIZING AGENTS. CAUSES IRRITATION OF EYES AND SKIN. MAY FORM TOXIC MATERIALS ON DECOMPOSITION. | USE ABSORBENT MATERIAL; FLUSH AREA WITH WATER AND SCRUB TO REMOVE RESIDUE. WEAR PROTECTIVE GLOVES AND CHEMICAL SPLASH GOGGLES, IMPERVIOUS CLOTHING AND BOOTS. USE SCBA WHEN FIREFIGHTING. |

TABLE A.4-4 - CONTINUED

| CHEMICAL TRADE NAME | PHYSICAL/CHEMICAL PROPERTIES | HAZARDS | EMERGENCY RESPONSE ACTIONS |
|---|---|---|---|
| HYDROCHLORIC ACID | CLEAR TO SLIGHT YELLOW IN COLOR; SHARP PUNGENT ODOR; VERY SOLUABLE; pH < 2.0; | REACTS WITH ALL METALS TO FORM HYDROGEN WHICH IS FLAMMABLE/EXPLOSIVE. CAN CAUSE SEVERE, PAINFUL BURNS ON CONTACT; IRRITATING TO MUCOUS MEMBRANES; | SPILLS INVOLVING LARGE QUANTITIES OF HCL SHOULD BE CONTROLLED AND CLEANED UP. SPILLS SHOULD BE NEUTRALIZED BY THE USE OF SODA ASH OR LIME WITH LARGE AMOUNTS OF WATER. FOR INTERIOR SPILLS NEUTRALIZING WILL EVOLVE $CO_2$ |
| ET 4 | CLARIFIER/EMULSION BREAKER; CORROSIVE LIQUID; LIGHT BROWN ODORLESS LIQUID; WATER SOLUABLE; STABLE. | VAPORS CAN IRRITATE MUCOUS MEMBRANES, INCOMPATIBLE WITH STRONG OXIDIZING AGENTS AND ALKALIS. KEEP AWAY FROM HEAT, SPARKS, OPEN FLAME. WHEN HEATED PRODUCES CO AND $CO_2$. | EVACUATE, LIMIT ACCESS. EQUIP RESPONDERS WITH PERSONAL PROTECTION EQUIPMENT. STOP ALL IGNITION SOURCES. RECOVER SPILLS. |
| ET 11 | CLARIFIER/EMULSION BREAKER; CORROSIVE LIQUID. WATER SOLUABLE; STABLE. | VAPORS CAN IRRITATE MUCOUS MEMBRANES; INCOMPATIBLE WITH STRONG OXIDIZING AGENTS AND ALKALIS. KEEP AWAY FROM HEAT, SPARKS, OPEN FLAME. WHEN HEATED PRODUCES CO AND $CO_2$. | EVACUATE, LIMIT ACCESS. EQUIP RESPONDERS WITH PERSONAL PROTECTION EQUIPMENT. STOP ALL IGNITION SOURCES. RECOVER SPILLS. |
| HYDRATED LIME | WHITE POWDER, FAINT MUSTY, EARTHY ODOR; | STRONG SENSITIZER, MILD IRRITANT, NON-TOXIC; CAN CAUSE EXCESSIVE DRYING OF THE SKIN AND POSSIBLE IRRITATION. | FLUSH IMMEDIATELY WITH WATER AND SEE A PHYSICIAN. WASH OFF LIME DUST WITH CLEAN WATER, RINSE SKIN WITH DILUTED VINEGAR, APPLY BURN OINTMENT TO AFFECTED AREAS |
| CALCIUM HYDROXIDE | WHITE POWDER FAINT EARTHY ODOR | STRONG SENSITIZER MILD IRRITANT WASH OFF WITH CLEAN WATER RINSE DILUTED WITH VINEGAR | |

TABLE A.4-4 - CONTINUED

| CHEMICAL TRADE NAME | PHYSICAL/CHEMICAL PROPERTIES | HAZARDS | EMERGENCY RESPONSE ACTIONS |
|---|---|---|---|
| LIQUID ALUMINUM SULFATE | ALUMINUM SULFATE 29% ; 100% WATER SOLUABLE; pH = 1 - 2; CLEAR TO GREENISH COLOR. | REACTS WITH LIME OR OTHER BASIC COMPOUNDS TO FORM INSOLUBLE NEUTRAL SALTS. AVOID SPLASHING ON SKIN. | NEUTRALIZE SPILLS WITH LIME AND REMOVE TO APPROVED LANDFILL. WASH AREA WITH WATER. NEUTRALIZE WITH LIMESTONE, HYDRATED OR SLATED LIME, CALCIUM OXIDE OR SODA ASH. |
| 8917 | ANTIFOAM/DEFOAMER; NO KNOWN HAZARDOUS COMPONENTS; INSOLUBLE IN WATER; ODOR BLAND; NO INCOMPATIBLE; STABLE. pH - 1.0 FOR A 1% SOLUTION | BURNING CAN PRODUCE CARBON MONOXIDE, CARBON DIOXIDE, AND OXIDES OF SILICON. NO CURRENTLY KNOWN EXPOSURE AFFECTS. | COVER WITH INERT ABSORBENT MATERIAL. FLUSH AREA WITH WATER. EXTINGUISH FIRES WITH CARBON DIOXIDE, FOAM OR DRY CHEMICAL. WEAR SAFETY GOGGLES OR CHEMICAL GOGGLES. WHEN FIREFIGHTING WEAR SCBA. |
| 8117 | POLYMERS - AQUEOUS SOLUTION; pH - 5.50; AMBER LIQUID; NO ODOR; STABLE; DECOMPOSES INTO CARBON MONOXIDE. NO KNOWN HAZARDOUS COMPONENTS. | INCOMPATIBLE WITH MOST METALS. MAY CAUSE EYE IRRITATION. BURNING MAY CAUSE TOXIC COMBUSTION PRODUCTS. TOXIC GAS MAY EVOLVE AFTER EVAPORATION OF WATER, UPON FIRE EXPOSURE. IGNITABLE RESIDUES MAY REMAIN. | WASH AREA OF SPILL WITH WARM WATER AND SOAP. LARGE SPILLS MAY BE SOAKED UP WITH ABSORBENT CLAY. EXTINGUISH WITH WATER OR ANY TYPE STANDARD FIRE EXTINGUISHER. WEAR SCBA AND FULL TURN OUT GEAR TO FIGHT FIRES. |
| 8091 | SODIUM DIMETHYLDITHIO-CARBAMATE. pH - 12.5; CLEAR GREENISH LIQUID WITH FISHY ODOR. STABLE; INCOMPATIBLE WITH ACIDS/OXIDANTS. | IRRITANT - HARMFUL OR FATAL IF SWALLOWED. PRODUCES FLAMMABLE BY-PRODUCTS ON CONTACT WITH STRONG ACIDS AND OR EXTREME TEMPERATURES. MAY CAUSE SKIN AND EYE IRRITATION. DECOMPOSES TO CARBON DISULFIDE AND HYDROGEN SULFIDE. | DIKE AND ABSORB SPILL WITH INERT MATERIAL. |

Table A. 4-4 C ntinued

| CHEMICAL TRADE NAME | PHYSICAL/CHEMICAL PROPERTIES | HAZARDS | EMERGENCY RESPONSE ACTIONS |
|---|---|---|---|
| 8023 | PETROLEUM DISTILLATES; pH - 8.2; SOLUBILITY IN WATER- MISCIBLE; OPAQUE WHITE LIQUID; NO ODOR; STABLE; INCOMPATIBLE WITH OXIDIZING AGENTS; FLASH POINT - >200$^0$F | BURNING MAY PRODUCE HIGHLY TOXIC COMBUSTION PRODUCTS. TOXIC GASES MAY EVOLVE AFTER EVAPORATION OF WATER, UPON FIRE EXPOSURE. IGNITABLE RESIDUES MAY REMAIN AFTER EVAPORATION OF WATER. IRRITANT TO EYES AND SKIN. INHALATION MAY CAUSE IRRITATION, FATIGUE, NAUSEA, UNCONSCIOUSNESS. | WASH AREA REPEATEDLY WITH WARM WATER AND SOAP. LARGE SPILLS CAN BE SOAKED UP WITH CLAY ABSORBENT. WEAR SCBA AND FULL TURN OUT GEAR TO FIGHT FIRES. WEAR EYE SPLASH PROTECTION, RUBBER OR PLASTIC GLOVES, APPROVED RESPIRATOR AND PROTECTIVE CLOTHING. |
| DW 5100 | CATIONIC POLYMER SOLUABLE IN WATER; pH=7-8; VISCOUS BROWN LIQUID - MILD ODOR; STABLE;INCOMPATIBLE WITH STRONG OXIDIZERS. | IRRITATING TO SKIN AND EYES. | ABSORB SPILL ONTO SAND OR CLAY. SHOVEL INTO STEEL CONTAINER FOR DISPOSAL. FLUSH WITH WATER. WEAR CHEMICAL SPLASH GOGGLES. |
| 5225 - FLUID FLOCCULENT | ACRYLAMIDE POLYMER WITH POTASSIUM ACRYLATE - 25- 40% FLASH POINT - 126$^0$F; WHITE OPAQUE VISCOUS LIQUID; STABLE; AVOID CONTACT WITH STRONG OXIDIZING AGENTS. REACTS SLOWLY WITH IRON, COPPER, BRASS, AND ALUMINUM. VAPORS HEAVIER THAN AIR | THERMAL DECOMPOSITION OR COMBUSTION MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE, AMMONIA, VARIOUS HYDROCARBONS, AND OXIDES OF NITROGEN. CAN IGNITE EXPLOSIVELY. MODERATE EYE IRRITATION AND SKIN IRRITATION. | SMALL SPILL - ABSORB AND CONTAIN. LARGE SPILL - ELIMINATE ALL IGNITION SOURCES. THOROUGHLY FLUSH WITH WATER AND SCRUB TO REMOVE RESIDUE. EXTINGUISH WITH ALCOHOL FOAM, OR CARBON DIOXIDE OR DRY CHEMICAL. FIREFIGHTERS WEAR SCBA. |

Table A. 4 – ›ntinued

| CHEMICAL TRADE NAME | PHYSICAL/CHEMICAL PROPERTIES | HAZARDS | EMERGENCY RESPONSE ACTIONS |
|---|---|---|---|
| 8102 | ORGANIC POLYMER; FLASH POINT 392$^0$ FL; SOLUABLE IN WATER; ACRYLIC ODOR; WHITE GRANULAR APPEARANCE; STABLE | NO UNUSUAL HAZARDS RELATED TO STORAGE KNOWN. | AREA BECOMES SLIPPERY UPON CONTACT WITH HUMID AIR. SWEEP UP AND PLACE IN WASTE DISPOSAL CONTAINER. |
| BLP XYLENE | PAINT THINNER; 100 % XYLENE; 100 % VOLATILE; FLAMMABLE LIQUID; FLASH POINT 79$^0$ ; LOWER EXPLOSIVE LIMIT - 1.0 ; STABLE | DO NOT STORE ABOVE 120$^0$; AVOID SKIN CONTACT; OVEREXPOSURE MAY CAUSE A HEALTH HAZARD. OBTAIN MEDICAL ATTENTION. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT, SPARKS AND FLAME. AVOID HIGH TEMPERATURES. INCOMPATIBLE WITH OXIDIZING MATERIALS. PRODUCES HAZARDOUS FUMES. | REMOVE ALL IGNITION SOURCES. AVOID BREATHING; CONTAIN AND REMOVE WITH INERT ADSORBENT AND NONSPARKING TOOLS. DISPOSE OF AS HAZARDOUS WASTE. WEAR APPROVED RESPIRATOR SAFETY GEAR. |
| ETHANOL FUEL 200 PROOF | DENATURED ANHYDROUS ETHYL ALCOHOL; FLASH POINT -F$^0$ F; SOLUABLE IN WATER; COLORLESS MOBILE LIQUID; CHARACTERISTIC ODOR. | FLAMMABLE LIQUID. NARCOTIC IN HIGH CONCENTRATIONS; IRRITATING TO MUCOUS MEMBRANES, STABLE; DECOMPOSES INTO ALDEHYDES AND CARBON OXIDES. | ELIMINATE ALL IGNITION SOURCES. FLUSH SMALL SPILLS WITH LARGE QUANTITIES OF WATER. COLLECT LARGE SPILLS FOR WASTE DISPOSAL. DO NOT ALLOW TO ENTER SEWERS OR DRAINS. CARBON DIOXIDE OR DRY CHEMICAL FOR SMALL FIRES. POLAR SOLVENT FOAM FOR LARGE FIRES. WEAR SCBA FOR HIGH CONCENTRATIONS. |
| ENRON<br>Tank is presently empty and not in service | NATURAL GASOLINE; FLASH POINT 0$^0$F; COLORLESS LIQUID WITH GASOLINE ODOR. 100 % VOLATILE. | INHALATION CAUSES IRRITATION TO UPPER RESPIRATOR TRACT AND CNS. CAUSES DEPRESSION, DIZZINESS AND HEADACHE. VAPORS CAN READILY FORM AN EXPLOSION MIXTURE WITH AIR. KEEP AWAY FROM OXIDIZERS, FIRE AND OTHER SOURCES OF IGNITION. WHEN OXIDIZES FORMS CARBON DIOXIDE AND CARBON MONOXIDE. | STOP LEAK, SHUT OFF IGNITION SOURCE. CONTAIN IN THE SMALLEST AREA POSSIBLE. EVACUATE IF NEEDED; USE ABSORBENT MATERIAL TO SOAK UP SMALL SPILL. DO NOT ALLOW TO ENTER SEWERS, DRAINS OR WATERWAYS. USE SCBA IN CONFINED SPACE WHEN VAPORS PRESENT. |

chemical spill in this area results in a confined space situation and the potential for a reaction in the event that incompatible chemicals are spilled. A spill of an ignitable material within a confined space may result in a fire or explosion hazard.

The criteria for implementing a facility evacuation are fires, potential explosion hazards and chemical spills that may be immediately dangerous to life or health or a potentially dangerous to human health.

(5) <u>Control Procedures</u>

(a) Tank Spills

In the event of a catastrophic tank failure, the site shall be inspected by the Plant Superintendent and Process Supervisor prior to the commencement of clean up activities. An inspection of the perimeter shall be conducted to immediately determine if the containment system has in any way been breached. If the facility's secondary containment area is intact, and no spills have occurred outside the facility confinement, the following should be implemented:

(i) Activate the internal facility alarm to notify all facility personnel.

(ii) The emergency coordinator must immediately identify the character, exact source, amount and the real extent of any released material. Once the spilled has been assessed and it has been determined that the situation is safe, response operations will begin.

(iii) Immediately attempt to contain the spill to prevent the spread of material. Control the extent of the spill by stopping processes or operations.

(iv) Attempt to return the release to an appropriate tank using a portable pump under the advisement of the Director of Operations or the Plant Supervisor. The facility's vacuum truck could also be utilized if necessary to transfer the material to a suitable storage vessel. Clean up efforts will continue until all material has been recovered.

(v) In the event of leaks from tank, pumps, pipes or valves, the equipment should be immediately voided and taken out of service until it can be properly repaired.

(vi) Immediate evacuation of plant personnel would take place in the event of a catastrophic failure of a gasoline tank due to an extreme explosion and fire hazard. The external alarm system would be activated for immediate assistance from the fire department.

(b) Spills Outside Secondary Containment

In the event the facility's containment area was permeated during a tank failure, the following would be implemented:

(i) Immediately notify appropriate local authorities.

(ii) Immediately attempt to stop the flow of material outside the containment wall by using controls such as sand bags. If any material escapes into the perimeter ditch, attempt to divert the flow by erecting a berm with available sand and sand bags.

(iii) If the containment area was sufficiently breached and clean up of a large area is necessary, contact outside emergency response contractors to assist in conducting clean up efforts.

(iv) Contaminated soil, debris, and absorbent material will be containerized and disposed of in accordance with applicable rules and regulations for hazardous and nonhazardous waste.

(c) Response to Leaks or Spills from Tank Systems

This section contains information for responding to leaks or spills regarding tank systems in accordance with 40 CFR Subpart J, 265.196.

A tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, must be removed from service immediately, and the owner or operator must satisfy the following requirements:

Immediately stop the flow of wastes into the tank system or secondary containment system and inspect the system to determine the cause of release.

If the release was from a tank system, the waste must be removed within 24 hours to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank system to be performed.

If the release was to the secondary containment area, all released materials must be removed within 24 hours to prevent harm to human health and the environment.

The owner or operator must immediately conduct a visual inspection of the release to prevent further migration of the leak or spills to surface water or soils, and remove and properly dispose of any visible contamination of the soil or surface water.

Any release to the environment, must be immediately reported to the Regional Administrator within 24 hours of detection unless the release was less than or equal quantity of one pound and immediately contained and cleaned up. Within 30 days of detection of a release to the environment, a report documenting the following information must be submitted to the Regional Administrator:

(i) Likely route of migration of the release

(ii) Characteristics of the surrounding soil

(iii) Results of monitoring or sampling conducted in connection with the release

(iv) Proximity to downgradient drinking water, surface water, and population areas, and

(v) Description of response actions taken or planned

If the cause of the release was a spill that has not damaged the integrity of the system, the system may be returned to service as soon as the release waste is removed.

If the cause of the release was a leak from the primary tank system into the secondary containment system, the system must be repaired prior to returning the tank system to service.

If the source of release was a leak to the environment from a component of a tank system without secondary containment, the owner or operator must provide the component of the system from which the leak occurred with secondary containment that satisfies the requirements of Section 265.193 before it can be returned to service, unless the source of the leak is an aboveground portion of a tank system.

The certification of the repair by a registered certified professional engineer must be submitted to the Regional Administrator within seven days after returning the tank system to use.

(d) Drum Spills

Spillage from drums could result from dropping during transfer of material, puncturing of drums from operation of heavy equipment around the chemical storage area and hazardous waste storage area, and accidents during delivery of chemicals to the facility should be handled in the following manner:

(i) Activate internal facility alarms to notify all facility personnel, if applicable. Notification of plant personnel will depend on the type and amount of material spilled and its potential hazard. The emergency coordinator will identify and assess the spill for proper notification and response procedures.

(ii) Immediately contain the spill after a determination of the type and nature of the chemical is made. The spill should be bermed with sand, absorbent clay or sandbags or other appropriate materials. Immediately attempt to stop the discharge from the drum by transferring the liquid to a good drum or by placing a damaged drum in an 85-gallon overpack drum. Refer to Table A.4-4 for information regarding response operations.

(iii) Appropriately trained personnel should don the correct personal protection equipment to avoid exposure to hazardous waste or hazardous materials and under the authorization of the Director of Operations and Safety Officer proceed with the clean up.

(iv) In the event of a spill indoors, attempt to improve ventilation in the confined area and follow instructions from the safety officer in accordance with Table A.4-4. The worker should enter the area with appropriate respiratory and dermal personal protective equipment.

(v) Decontamination of the affected area may be necessary depending on the type of material spilled and the area where it was spilled.

(vi) A chemical spill may result in a product becoming a hazardous waste. Additions of non-hazardous material into a container of waste may increase the amount of waste to be disposed. Consult with management for exact disposal methods.

(e) Spills During On/Off-Loading

Material which may be spilled during on or off loading may involve oily wastewater or D018 benzene contaminated wastewater or oil from the oil dock area. Spills resulting from the on or off-loading should be handled in the following manner:

(i) Activate internal communications to notify facility personnel, if applicable. The emergency coordinator will assess the spill for proper notification and response procedures.

(ii) Immediately try to contain the spilled material using sand, sand bags or absorbent clay.

(iii) Immediately attempt to stop the leak or flow from the tank truck or piping assembly by closing valves to stop or divert flow.

(iv) If the material discharges to the perimeter ditch use shovels to dig a berm that would prevent any material from draining into the east ditch. A discharge to the perimeter ditch would require notification of local authorities.

(v) Clean up of the spilled material will begin immediately under the direction of the Director of Operations and/or the Safety Officer.

(vi) The waste resulting from the spill shall be containerized in 55-gallon drums, isolated, sealed and labeled according to its contents.

(vii) Disposal of the spilled material, rinsewaters, and contamtinated personal protective clothing will be accordance with the applicable rules and regulations for hazardous and nonhazardous waste. Disposal will be dependent on the source of the spill and analytical data.

(f) Fires

In the event of a fire, standard fire evacuation will be implemented, and the fire department is notified. At the on set of the fire, if possible, attempt to extinguish using the appropriate fire extinguisher. Advise the local fire department of any chemicals that could be potentially involved or which may become involved in the fire. Refer to Table A.4-4 for information regarding fire fighting in conjunction with the various chemicals. To fight fire use: foam, carbon dioxide, or dry chemicals as designated by Table A.4-4 and the fire department.

(g) Decontamination Procedures
The response team involved in emergency response operations

will be involved with any decontamination procedures required after the clean up of a spill. The personal protection equipment is removed and disposed of and any non-disposable personal protection equipment is decontaminated properly prior to cleaning and storage. All contaminated impervious surfaces and equipment are cleaned. The residue from the spill clean up will be disposed of at the appropriate licensed facility.

OSHA has developed specific guidelines for decontamination procedures depending on the type and extent of the spill and chemicals involved. The OSHA decontamination procedures that will be implemented should a major spill occur are provided at the end of this section. IWS employees receive OSHA decontamination procedures training during the 24-hour course discussed in the training program.

(6) Post-Emergency Equipment Maintenance

The emergency coordinator is responsible for ensuring that all emergency equipment listed in the contingency plan is cleaned and fit for its intended use before normal operations are resumed.

The emergency coordinator will notify the regulatory compliance manager to conduct an inventory of all items in Table 6.1.1 that need to be replaced or decontaminated before reuse. Expendables such as absorbents or disposable protective clothing will be disposed of properly depending upon the contaminate. Respirators and equipment will be decontaminated using a recommended solvent by the chemical manufacturer before restocking the items.

(7) Emergency Equipment

(a) Spill Control Equipment

Table A.4-5 contains a list of emergency equipment dedicated for spills and unexpected occurrences at the I.W.S. facility. The emergency equipment consists of all equipment which may be needed or required in an emergency such as spill control equipment, personal protection equipment, decontamination equipment and communication equipment. The equipment is located and maintained inside the Emergency Equipment Storage Area or inside the physical plant. An inspection of the emergency and spill control equipment is conducted weekly as described in the facility's Inspection Plan.

This equipment list is kept up to date and includes the location, a physical description of each item and a brief outline of its capabilities. The facility layout, located in Figure A-1 of this Plan, indicates the exact location of fire

Table A. 4-5

**EMERGENCY EQUIPMENT**

| EQUIPMENT | DESCRIPTION | LOCATION |
|---|---|---|
| TELEPHONE | TELEPHONE COMMUNICATION FOR EMERGENCY NOTIFICATION | SHED, LABORATORY, SALES, PLANT AND ADMINISTRATIVE OFFICES |
| FIRE ALARM | DIRECT FIRE ALARM | NEXT TO DAF UNIT |
| FIRE EXTINGUISHERS | DRY CHEMICAL, CARBON DIOXIDE FOR EXTINGUISHING A VARIETY OF FIRES | THROUGHOUT PHYSICAL PLANT. SEE Figure A-5 FOR EXACT LOCATIONS |
| FIRE HYDRANTS | AVAILABLE WATER SOURCE FOR FIGHTING LARGER FIRES | 7TH AND TALLEYRAND |
| ABSORBENTS | CLAY ABSORBENTS, ABSORBENT PADS AND BOOMS FOR CLEANING UP AND CONTAINERIZING SPILLS | EMERGENCY EQUIPMENT STORAGE AREA |
| FIRST AID KITS | TREATING MINOR INJURIES | PLANT SUPERVISORS OFFICE, ADMINISTRATIVE OFFICE |
| EYE WASH | PERMANENTLY INSTALLED FOR FLUSHING EYES IN THE EVENT OF CHEMICAL CONTACT | PHYSICAL PLANT - SEE Figure A-5 FOR EXACT LOCATION |
| EMERGENCY SHOWERS | PERMANENTLY INSTALLED FOR RINSING IN THE EVENT OF CHEMICAL CONTACT | PHYSICAL PLANT - SEE Figure A-5 FOR LOCATION |
| PROTECTIVE CLOTHING | SARONEX/TYVEK COVERALLS. CHEMICALLY RESISTANT GLOVES, AND BOOTS DURING SPILL CLEAN UPS | EMERGENCY EQUIPMENT STORAGE AREA |

Table A.4-5

**- Continued**

**EMERGENCY EQUIPMENT**

| EQUIPMENT | DESCRIPTION | LOCATION |
|---|---|---|
| EYE PROTECTION | CHEMICAL SPLASH GOGGLES FOR EYE PROTECTION IN THE EVENT A FULL FACE RESPIRATOR IS NOT REQUIRED | EMERGENCY EQUIPMENT STORAGE AREA |
| RESPIRATOR | FULL FACE AIR PURIFYING RESPIRATOR FOR USE DURING SPILL CLEAN UPS | EMERGENCY EQUIPMENT STORAGE AREA |
| MISCELLANEOUS TOOLS | BUNG WRENCHES, DRUM OPENERS FOR OPENING AND SEALING DRUMS DURING AND AFTER EMERGENCIES | EMERGENCY EQUIPMENT STORAGE AREA |
| SANDBAGS | FOR CONTAINING SPILLS | EMERGENCY EQUIPMENT STORAGE AREA |
| VISQUENE | PLASTIC SHEETING AND BAGS FOR USE DURING SPILLS TO PREVENT CROSS CONTAMINATION | EMERGENCY EQUIPMENT STORAGE AREA |
| FORK LIFT | MOVING DRUMS AND LARGE OBJECTS DURING SPILLS AND EMERGENCIES | PHYSICAL PLANT |
| RAKES/SHOVELS | SPILL CONTROL EQUIPMENT FOR CLEAN UP AND CONTAINING SPILLS | EMERGENCY EQUIPMENT STORAGE AREA |
| DECONTAMINATION EQUIPMENT | SODA ASH FOR NEUTRALIZING ACID SPILLS | EMERGENCY EQUIPMENT STORAGE AREA |
| DRUMS AND OVERPACKS | 55-GALLON DRUMS AND 85-GALLON OVERPACKS TO USE IN CONTAINERIZING SPILLED MATERIAL AND OVERPACKING DAMAGED DRUM | EMERGENCY EQUIPMENT STORAGE AREA |

extinguisher, emergency equipment, alarms and communications. Table A.4-6 contains the information on the facility's fire control equipment. Table A.4-7 contains a current inventory of the emergency equipment on hand and any equipment which may be needed.

(b) Personnel Protective Items

Protective clothing, including coveralls, gloves and boots are provided for use by personnel during a spill. Personal eye protection is provided for use during a chemical spill when respirators are not required. Full-face respirators and cartridges are on hand and inspected to ensure their structural integrity and operations.

(c) Communications

I.W.S. has an internal communication system that consists of an intercom and paging system that allows for communication between all telephones and a loud speaker that can be heard throughout the physical plant. The loud speaker can also be used as an alert system in the event of an emergency, if an evacuation is necessary, or to give immediate instruction to facility personnel.

An audible fire alarm is located within the confines of the facility, and sounds a high decibel alarm that can be heard from all areas of the plant.

Two way radios are also available for use during situations where employees may be performing work in an area that is not easily accessible or where direct contact with other personnel within the physical plant is limited.

Telephones away from the physical plant in the I.W.S. sales office and administrative office are also readily available in the event it is necessary to summon emergency assistance from the local fire, police and state or local emergency response teams.

(d) Testing and Maintenance

All facility communications and alarm systems, fire protection equipment, spill control and decontamination equipment is maintained and tested, when required, to assure its proper operation in the event of an emergency or unexpected occurrence.

Internal communications are continuously monitored, and fire protection equipment, spill control equipment and decontamination equipment are inspected weekly as required in the facility's Inspection Plan for proper operation.

Table A. 4-6

## FIRE CONTROL EQUIPMENT

I.W.S. maintains a variety of fire extinguishers in the physical plant. The closest fire hydrant to the facility is located at the intersection of 7th and Talleyrand. The closest fire station, Station No. 11, is located approximately one mile from the facility at the intersection of 21st and Talleyrand. A fire hydrant to provide water at adequate volume and pressure is located at the corner of 7th street and Talleyrand. Listed below are the types, location and number of fire extinguishers at the I.W.S. facility. The exact locations of the fire extinguishers are identified in the Facility Layout Diagram located in Figure A-5 of this Plan.

## FIRE EXTINGUISHER INFORMATION

| NUMBER | LOCATION | TYPE |
|---|---|---|
| 1 | OUTSIDE LABORATORY | 10lb Ansel |
| 2 | OUTSIDE STORAGE SHED | 200lb $CO_2$ |
| 3 | INSIDE LABORATORY | 10 lb $CO_2$ |
| 4 | OIL DOCK AREA | 10 lb ABC |
| 5 | NEXT TO SEPARATOR | 30 lb $CO_2$ |
| 6 | DAF UNIT AREA | 30 lb $CO_2$ |
| 7 | BETWEEN AGITATOR TANKS | 10 lb DRY CHEMICAL |
| 8 | NEXT TO ETHANOL TANK | 30 lb DRY CHEMICAL |
| 9 | NEXT TO TANK NO. 1 | 30 lb DRY CHEMICAL |
| 10 | NEXT TO DISPATCH SHED | 30 lb DRY CHEMICAL |

Table A. 4-7

**EMERGENCY EQUIPMENT INVENTORY**

| ITEM | AMOUNT | EQUIPMENT NEEDED |
|---|---|---|
| RESPIRATORS - FULL FACE | 8 | |
| RESPIRATOR CARTRIDGES | 8 sets | |
| TYVEK COVERALLS | 24 | |
| SARANEX COVERALLS | 24 | |
| GLOVES - CHEMICALLY RESISTANT | 8 pairs | |
| SPLASH GOGGLES | 8 | |
| CLAY ABSORBENT | 100 LBS | |
| ABSORBENT PADS | 144 | |
| BOOMS | 5 | |
| ABSORBENT PILLOWS | 12 | |
| SAND BAGS | 20 | |
| SHOVELS | 2 | |
| RAKES | 2 | |
| VISQUENE | 1 roll | |
| DRUMS - 55-GALLON | 2 | |
| OVERPACK DRUMS | 2 | |
| NEUTRALIZERS | | |
| FIRST AID KITS | 2 | |
| EMERGENCY EYEWASH | 4 | |
| EMERGENCY SHOWER | 2 | |
| DRUM OPENER | 1 | |
| BUNG HOLE OPENER | 1 | |
| FIRE EXTINGUISHERS | 10 | |

(e) Access to Equipment

All personnel involved in the transferring or handling of hazardous waste have immediate access to emergency communication device either directly or through voice contact with another employee. If at any time only one employee is on the premises while the facility is operating, that employee must have immediate access to a device such as a telephone or two way radio capable of summoning external emergency assistance.

(8) <u>Coordination Agreements</u>

(a) Notification of Local Authorities

Arrangements have been made to familiarize the police, fire department and local emergency response teams with the layout of the facility, properties of hazardous waste and hazardous materials handled and associated hazards, places where facility personnel would normally be working, entrances to the facility and possible evacuation routes. Both the police department and the fire department's emergency response team provide first responder assistance in the event of an unexpected occurrence. The police department can provide assistance in the event traffic or crowd control is needed. The fire department can provide a trained hazardous materials team with experience in responding to a variety of chemical spills and fires. They have ample quantities of extinguishing agents for combating fires, trained in containing and controlling spills. They are also familiar and proficient in all levels of personal protection.

Primary and secondary emergency response contractors are identified in Table A.4-8 of this Plan. Emergency and spill control equipment suppliers are also identified in Table A.4-8. Both the primary and secondary emergency response contractors I.W.S. has contracted with to response in the event of an emergency provide immediate response within several hours on a 24 hour basis. The emergency response contractors can supply additional spill control equipment including absorbents, vacuum trucks and pumps, additional drums, overpacks and manpower.

Arrangements have been made to familiarize the local hospital with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which would result from fires, explosions, or releases. University Hospital, the closest hospital to I.W.S., has a trauma center that is more than capable of providing treatment to any injuries that arise.

Table A.4-8

## EMERGENCY RESPONSE CONTRACTORS AND VENDORS

### Emergency Response Contractors

Jacksonville Pollution Control, Inc.
P.O. Box 3005
Jacksonville, Florida 32206
(904) 355- 4164

Environmental Recovery Group
251 Levy Road
Atlantic Beach, Florida 32233
(904) 241-2200

### Vendors

Professional Safety Supplies, Inc.
8286 Western Way Circle, D-9
Jacksonville, Florida 32256
(904) 731-4126

(b) Copies of the Contingency Plan

Copies of the Contingency Plan and any subsequent revisions to the Plan are maintained at the I.W.S. facility. The copies of the Plan are kept in the following locations:

(i) Administrative Office - Charles Dudley
(ii) Sales Office - Daniel Maye
(iii) Plant Supervisor's Office - Bill Hatfield
(iv) Laboratory - John Stribling

Copies of the Plan have also been submitted to the local authorities as required by 40 CFR Part 265.37. Copies have been provided to:

(i) Fire Department - Station No. 11
(ii) Police Department
(iii) University Hospital
(iv) Emergency Response Contractors
(v) State Emergency Response Teams

(9) <u>Evacuation Plan</u>

Potential emergencies which may require evacuation from the I.W.S. are limited primarily to fire hazards from the storage or spillage of ignitable or flammable materials and large scale chemical spills. Evacuation routes from the I.W.S. facility are shown on Figure A-5. Copies of the site plan with evacuation routes identified are posted in the following locations:

(i) Dispatch Shed
(ii) Plant Supervisors Office
(iii) Laboratory
(iv) Operator's Office/Laboratory

The criteria for implementing a facility evacuation are fires, potential explosion hazards and chemical spills that may be immediately dangerous to life or health or a potentially dangerous to human health.

(a) Fires

All I.W.S. employees have been trained and authorized to activate fire alarms in the event of an emergency. In the event of a fire, the following events will occur:

(i) The fire alarm will be activated indicating evacuation is necessary within the compounds of the plant. The fire alarm is located within the plant next to the DAF unit and the triggering of this alarm will alert all employees within the compounds of the plant to evacuate immediately. Upon activation of the fire alarm, the fire department will be contacted from a telephone by dialing 911. In the event the fire alarm inside the plant compound is not accessible, than the internal paging system with will be activated from any telephone notifying employees to evacuate immediately, and the fire department will be contacted from the telephone by dialing 911.

(ii) All personnel will evacuate the plant area via the described evacuation routes detailed in Figure A-1. The diagram indicates several evacuation routes in the event that one route may be blocked by releases of hazardous waste or fires.

(iii) After plant evacuation, the emergency coordinator will ensure all personnel are accounted for and out of the endangered area.

(iv) In the event contracted emergency response teams or state emergency response teams assistance is required, the emergency coordinator will coordinate their assistance from a telephone located in the administrative office or sales office.

(v) Local authorities arriving at the scene will receive a copy of this Plan and be advised on the current situation by the emergency coordinator.

(b) Chemical Spills

In the event of a chemical spill in quantities which may require an evacuation, the emergency coordinator will activate the internal alarm system and order an evacuation until the type and amounts of material spilled can be assessed. If more than one type of chemical is involved, situations may arise regarding incompatibilities. In the event this occurs the laboratory director will be contacted to assess the situation.

If the spill can be handled safely by the I.W.S. spill team, clean up procedures will be implemented. In the event, the situation cannot be accurately assessed and safely handled by the I.W.S. spill team, the emergency coordinator will contact the fire department and outside emergency response contractors for immediate response. During an assessment or actual response to spill with potential exposure hazards present, all spill team personnel will be required to don the appropriate personal protection equipment to prevent the exposure to any hazardous waste or hazardous materials.

The command post area, the I.W.S. sales office located across the street from the physical plant, is the area to convene for assessing any emergency response actions to take place.

(10) Required Reports

(a) Operating Record

The owner or operator must note in the operating record the time, date, and details of any incident that require implementing the contingency plan. Within 15 days after the incident, he must submit a written report on the incident to the Florida Department of Environmental Regulation. The report must include:

(i) Name, address, and telephone number of the owner or operator;
(ii) Name, address, and telephone of facility;
(iii) Date, time, and type of incident (e.g. fire, explosion);
(iv) Name and quantity of material(s) involved;
(v) The extent of injuries, if any;
(vi) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and,
(vii) Estimated quantity and disposition of recovered material that resulted from the incident.

(b) Amendment of Contingency Plan

The Contingency Plan must be reviewed, and immediately amended, if necessary, whenever:

(i) Applicable regulations are revised.
(ii) The Plan fails in an emergency.
(iii) The facility changes in its design, construction, operation, maintenance, or other circumstances - in a way that materially increases the potential for fires explosions, or releases of hazardous constituents, or changes the response necessary in an emergency.
(iv) The list of emergency coordinators change.
(v) The list of emergency equipment changes.

## INDUSTRIAL WATER SERVICES

## PERSONNEL DECONTAMINATION PROCEDURES

Industrial Water Services will follow the attached decontamination procedures for the types of hazards for which Levels A, B, and C protection are appropriate. A description of Levels A, B, and C hazards is provided under 29 CFR 1910.120 Appendix B.

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ANNEX 1

# LEVEL A DECONTAMINATION

## A. EQUIPMENT WORN

The full decontamination procedure outlined is for workers wearing Level A protection (with taped joints between gloves, boots, and suit) consisting of:

- Fully encapsulating suit.
- Self-contained breathing apparatus.
- Hard hat (optional).
- Chemical-resistant, steel toe and shank boots.
- Boot covers.
- Inner and outer gloves.

## B. PROCEDURE FOR FULL DECONTAMINATION

Station 1: Segregated Equipment Drop

Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.

Equipment: various size containers
plastic liners
plastic drop cloths

Station 2: Boot Cover and Glove Wash

Scrub outer boot covers and gloves with decon solution or detergent/ water.

Equipment: container (20-30 gallons)
decon solution
or
detergent water
2-3 long-handle, soft-bristle scrub brushes

Station 3: Boot Cover and Glove Rinse

- Rinse off decon solution from Station 2 using copious amounts of water. Repeat as many times as necessary.

  Equipment: container (30-50 gallons)
  or
  high-pressure spray unit
  water
  2-3 long-handle, soft-bristle scrub brushes

Station 4: Tape Removal

Remove tape around boots and gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 5: Boot Cover Removal

Remove boot covers and deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners
bench or stool

Station 6: Outer Glove Removal

Remove outer gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 7: Suit/Safety Boot Wash

Thoroughly wash fully encapsulating suit and boots. Scrub suit and boots with long-handle, soft-bristle scrub brush and copious amounts of decon solution or detergent/water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
decon solution
or
detergent/water
2-3 long-handle, soft-bristle scrub brushes

Station 8: Suit/Safety Boot Rinse

Rinse off decon solution or detergent/water using copious amounts of water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
or
high-pressure spray unit
water
2-3 long handle, soft-bristle scrub brushes

Station 9: Tank Change

If worker leaves Exclusion Zone to change air tank, this is the last step in the decontamination procedure. Worker's air tank is exchanged, new outer gloves and boots covers donned, and joints taped. Worker then returns to duty.

Equipment: air tanks
tape
boot covers
gloves

Station 10: Safety Boot Removal

Remove safety boots and deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners
bench or stool
boot jack

Station 11: Fully Encapsulating Suit and Hard Hat Removal

With assistance of helper, remove fully encapsulating suit (and hard hat). Hang suits on rack or lay out on drop cloths.

Equipment: rack
drop cloths
bench or stool

Station 12: SCBA Backpack Removal

While still wearing facepiece, remove backpack and place on table. Disconnect hose from regulator valve and proceed to next station.

Equipment: table

Station 13: Inner Glove Wash

Wash with decon solution or detergent/water that will not harm skin. Repeat as many times as necessary.

Equipment: basin or bucket
decon solution
or
detergent/water
small table

Station 14: Inner Glove Rinse

Rinse with water. Repeat as many times as necessary.

Equipment: water basin
basin or bucket
small table

Station 15: Facepiece Removal

Remove facepiece. Deposit in container with plastic liner. Avoid touching face with fingers.

Equipment: container (30-50 gallons)
plastic liners

Station 16: Inner Glove Removal

Remove inner gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 17: Inner Clothing Removal

Remove clothing soaked with perspiration. Place in container with plastic liner. Inner clothing should be removed as soon as possible since there is a possibility that small amounts of contaminants might have been transferred in removing fully encapsulating suit.

Equipment: container (30-50 gallons)
plastic liners

Station 18: Field Wash

Shower if highly toxic, skin-corrosive or skin-absorbable materials are known or suspected to be present. Wash hands and face if shower is not available.

Equipment: water
soap
small table
basin or bucket
field showers
towels

Station 19: Redress

Put on clean clothes. A dressing trailer is needed in inclement weather.

Equipment: tables
chairs
lockers
clothes

C. FULL DECONTAMINATION (SIT. 1) AND THREE MODIFICATIONS

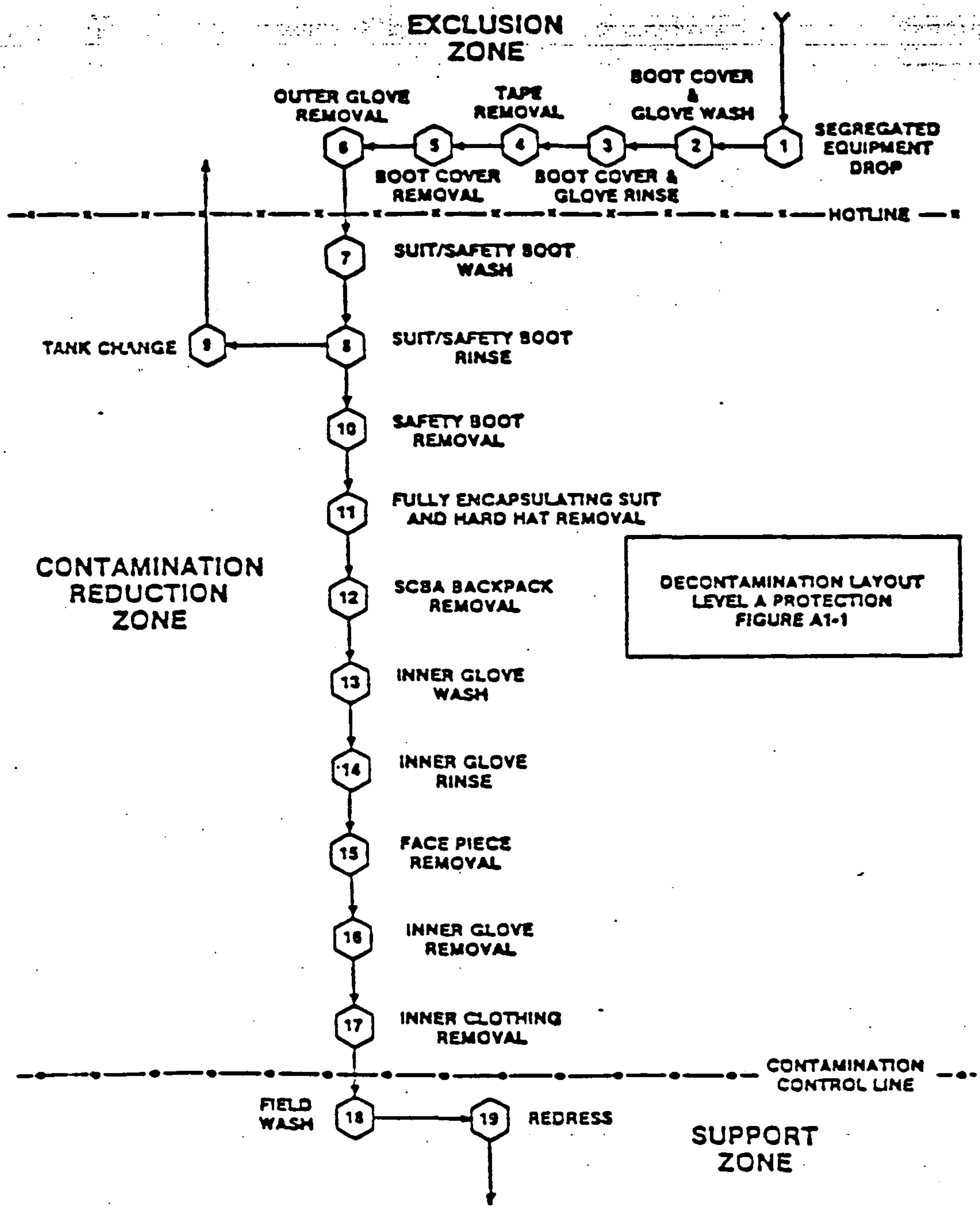
| SIT | STATION NUMBER | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 1 | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | X | X | X | X |
| 2 | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 3 | X | | | | | | X | X | | X | X | X | | | X | X | X | X | |
| 4 | X | | | | | | X | X | X | | | | | | | | | | |

Situation 1: The individual entering the Contamination Reduction Corridor is observed to be grossly contaminated or extremely toxic substances are known or suspected to be present.

Situation 2: Same as Situation 1 except individual needs new air tank and will return to Exclusion Zone.

Situation 3: Individual entering the CRC is expected to be minimally contaminated. Extremely toxic or skin-corrosive materials are not present. No outer gloves or boot covers are worn. Inner gloves are not contaminated.

Situation 4: Same as Situation 3 except individual needs new air tank and will return to Exclusion Zone.




DECONTAMINATION LAYOUT
LEVEL A PROTECTION
FIGURE A1-1

## ANNEX 2

## LEVEL B DECONTAMINATION

### A. EQUIPMENT WORN

The full decontamination procedure outlined is for workers wearing Level B protection (with taped joints between gloves, boot, and suit) consisting of:

- One-piece, hooded, chemical-resistant splash suit.
- Self-contained breathing apparatus.
- Hard hat.
- Chemical-resistant, steel toe and shank boots.
- Boot covers
- Inner and outer gloves.

### B. PROCEDURE FOR FULL DECONTAMINATION

<u>Station 1:</u> Segregated Equipment Drop

Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.

Equipment: various size containers
plastic liners
plastic drop cloths

<u>Station 2:</u> Boot Cover and Glove Wash

Scrub outer boot covers and gloves with decon solution or detergent/ water.

Equipment: container (20-30 gallons)
decon solution
or
detergent water
2-3 long-handle, soft-bristle scrub brushes

Station 3: Boot Cover and Glove Rinse

Rinse off decon solution from Station 2 using copious amounts of water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
or
high-pressure spray unit
water
2-3 long-handle, soft-bristle scrub brushes

Station 4: Tape Removal

Remove tape around boots and gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 5: Boot Cover Removal

Remove boot covers and deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners
bench or stool

Station 6: Outer Glove Removal

Remove outer gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons
plastic liners

Station 7: Suit/Safety Boot Wash

Thoroughly wash chemical-resistant splash suit, SCBA, gloves, and safety boots. Scrub with long-handle, soft-bristle scrub brush and copious amounts of decon solution or detergent/water. Wrap SCBA regulator (if belt-mounted type) with plastic to keep out water. Wash backpack assembly with sponges or cloths.

Equipment: container (30-50 gallons)
decon solution
or
detergent/water
2-3 long-handle, soft-bristle scrub brushes
small buckets
sponges or cloths

Station 8: Suit/SCBA/Boot/Glove Rinse

Rinse off decon solution or detergent/water using copious amounts of water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
or
high-pressure spray unit
water
small buckets
2-3 long-handle, soft-bristle scrub brushes
sponges or cloths

Station 9: Tank Change

If worker leaves Exclusion Zone to change air tank, this is the last step in the decontamination procedure. Worker's air tank is exchanged, new outer gloves and boots covers donned, and joints taped. Worker returns to duty.

Equipment: air tanks
tape
boot covers
gloves

Station 10: Safety Boot Removal

Remove safety boots and deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners
bench or stool
boot jack

Station 11: SCBA Backpack Removal

While still wearing facepiece, remove backpack and place on table. Disconnect hose from regulator valve and proceed to next station.

Equipment: table

Station 12: Splash Suit Removal

With assistance of helper, remove splash suit. Deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners
bench or stool

Station 13: Inner Glove Wash

Wash inner gloves with decon solution or detergent/water that will not harm skin. Repeat as many times as necessary.

Equipment: decon solution
or
detergent/water
basin or bucket
small table

Station 14: Inner Glove Rinse

Rinse inner gloves with water. Repeat as many times as necessary.

Equipment: water
basin or bucket
small table

Station 15: Facepiece Removal

Remove facepiece. Avoid touching face with gloves. Deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners

Station 16: Inner Glove Removal

Remove inner gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 17: Inner Clothing Removal

Remove clothing soaked with perspiration. Place in container with plastic liner. Do not wear inner clothing off-site since there is a possibility small amounts of contaminants might have been transferred in removing fully encapsulating suit.

Equipment: container (30-50 gallons)
plastic liners

Station 18: Field Wash

Shower if highly toxic, skin-corrosive, or skin-absorbable materials are known or suspected to be present. Wash hands and face if shower is not available.

Equipment: water
soap
small tables
basins or buckets
field showers

Station 19: Redress

Put on clean clothes. A dressing trailer is needed in inclement weather.

Equipment: tables
chairs
lockers
clothes

C. FULL DECONTAMINATION (SIT. 1) AND THREE MODIFICATIONS

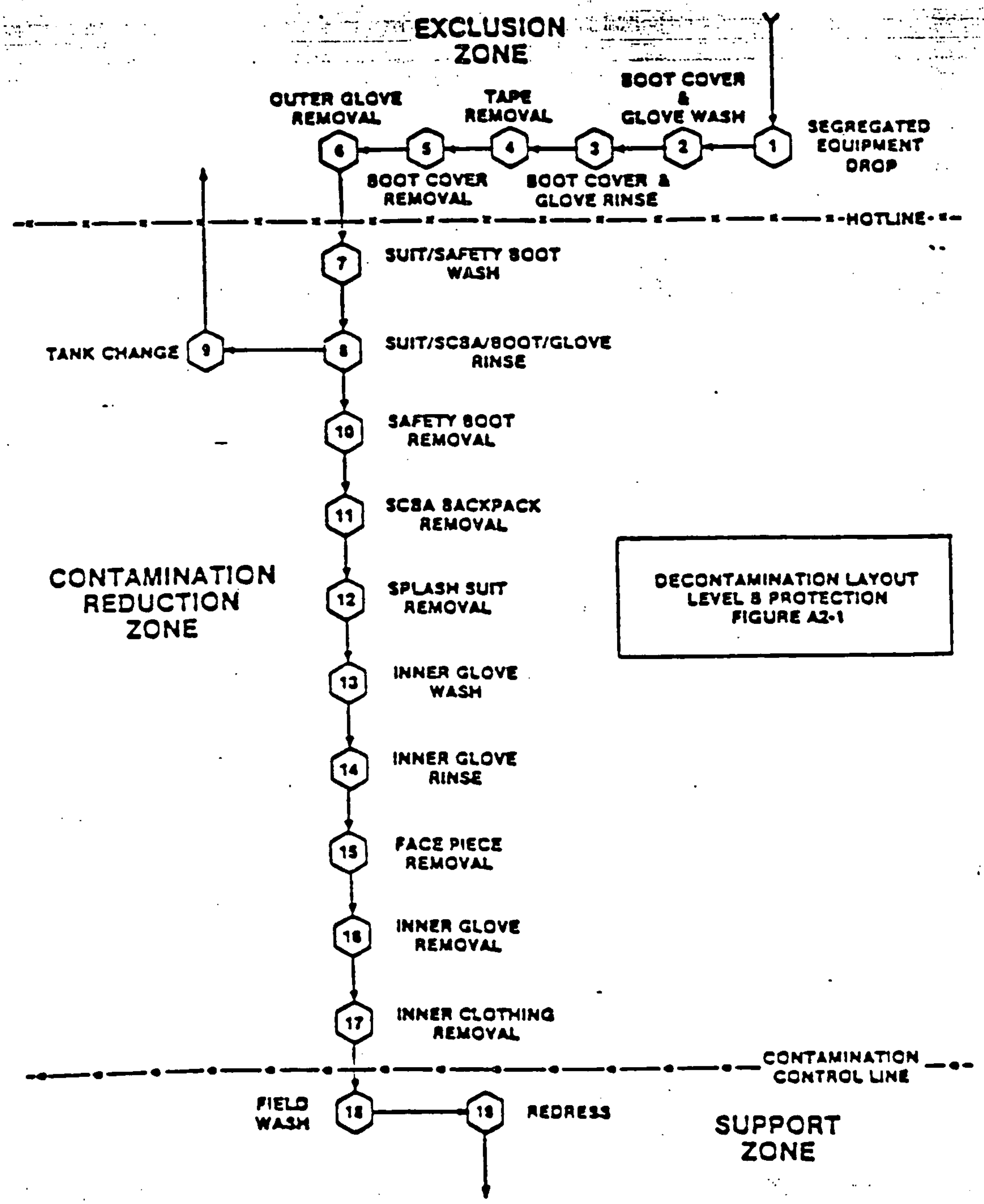
| SIT | STATION NUMBER | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 1 | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | X | X | X | X |
| 2 | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 3 | X | | | | | | X | X | | X | X | X | | | X | X | X | X | X |
| 4 | X | | | | | | X | X | X | | | | | | | | | | |

Situation 1: The individual entering the Contamination Reduction Corridor is observed to be grossly contaminated or extremely toxic substances are known or suspected to be present.

Situation 2: Same as Situation 1 except individual needs new air tank and will return to Exclusion Zone.

Situation 3: Individual entering the CRC is expected to be minimally contaminated. Extremely toxic or skin-corrosive materials are not present No outer gloves or boot covers are worn. Inner gloves are not contaminated.

Situation 4: Same as Situation 3 except individual needs new air tank and will return to Exclusion Zone.




DECONTAMINATION LAYOUT
LEVEL B PROTECTION
FIGURE A2-1

## ANNEX 3

## LEVEL C DECONTAMINATION

A. EQUIPMENT WORN

The full decontamination procedure outlined is for workers wearing Level C protection (with taped joints between gloves, boots, and suit) consisting of:

- One-piece, hooded, chemical-resistant splash suit.
- Canister equipped, full-face mask.
- Hard hat.
- Chemical-resistant, steel toe and shank boots.
- Boot covers.
- Inner and outer gloves.

B. PROCEDURE FOR FULL DECONTAMINATION

Station 1: Segregated Equipment Drop

Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.

Equipment: various size containers
plastic liners
plastic drop cloths

Station 2: Boot Cover and Glove Wash

Scrub outer boot covers and gloves with decon solution or detergent/ water.

Equipment: container (20-30 gallons)
decon solution
or
detergent water
2-3 long-handle, soft-bristle scrub brushes

Station 3: Boot Cover and Glove Rinse

Rinse off decon solution from Station 2 using copious amounts of water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
or
high-pressure spray unit
water
2-3 long-handle, soft bristle scrub brushes

Station 4: Tape Removal

Remove tape around boots and gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 5: Boot Cover Removal

Remove boot covers and deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners
bench or stool

Station 6: Outer Glove Removal

Remove outer gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 7: Suit/Safety Boot Wash

Thoroughly wash splash suit and safety boots. Scrub with long-handle, soft-bristle scrub brush and copious amounts of decon solution or detergent/water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
decon solution
or
detergent/water
2-3 long-handle, soft-bristle scrub brushes

Station 8: Suit/Safety Boot Rinse

Rinse off decon solution or detergent/water using copious amounts of water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
or
high-pressure spray unit
water
2-3 long-handle, soft-bristle scrub brushes

Station 9: Canister or Mask Change

If worker leaves Exclusion Zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boots covers donned, and joints taped. Worker returns to duty.

Equipment: canister (or mask)
tape
boot covers
gloves

Station 10: Safety Boot Removal

Remove safety boots and deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners
bench or stool
boot jack

Station 11: Splash Suit Removal

With assistance of helper, remove splash suit. Deposit in container with plastic liner.

Equipment: container (30-50 gallons)
bench or stool
liner

Station 12: Inner Glove Wash

Wash inner gloves with decon solution or detergent/water that will not harm skin. Repeat as many times as necessary.

Equipment: decon solution
or
detergent/water
basin or bucket

Station 13: Inner Glove Rinse

Rinse inner gloves with water. Repeat as many times as necessary.

Equipment: water
basin or bucket
small table

Station 14: Facepiece Removal

Remove facepiece. Avoid touching face with gloves. Deposit facepiece in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners

Station 15: Inner Glove Removal

Remove inner gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 16: Inner Clothing Removal

Remove clothing soaked with perspiration. Place in container with plastic liner. Do not wear inner clothing off-site since there is a possibility small amounts of contaminants might have been transferred in removing splash suite.

Equipment: container (30-50 gallons)
plastic liners

Station 17: Field Wash

Shower if highly toxic, skin-corrosive or skin-absorbable materials are known or suspected to be present. Wash hands and face if shower is not available.

Equipment: water
soap
tables
wash basins/buckets
field showers

Station 18: Redress

Put on clean clothes. A dressing trailer is needed in inclement weather.

Equipment: tables
chairs
lockers
clothes

C. FULL DECONTAMINATION (SIT. 1) AND THREE MODIFICATIONS

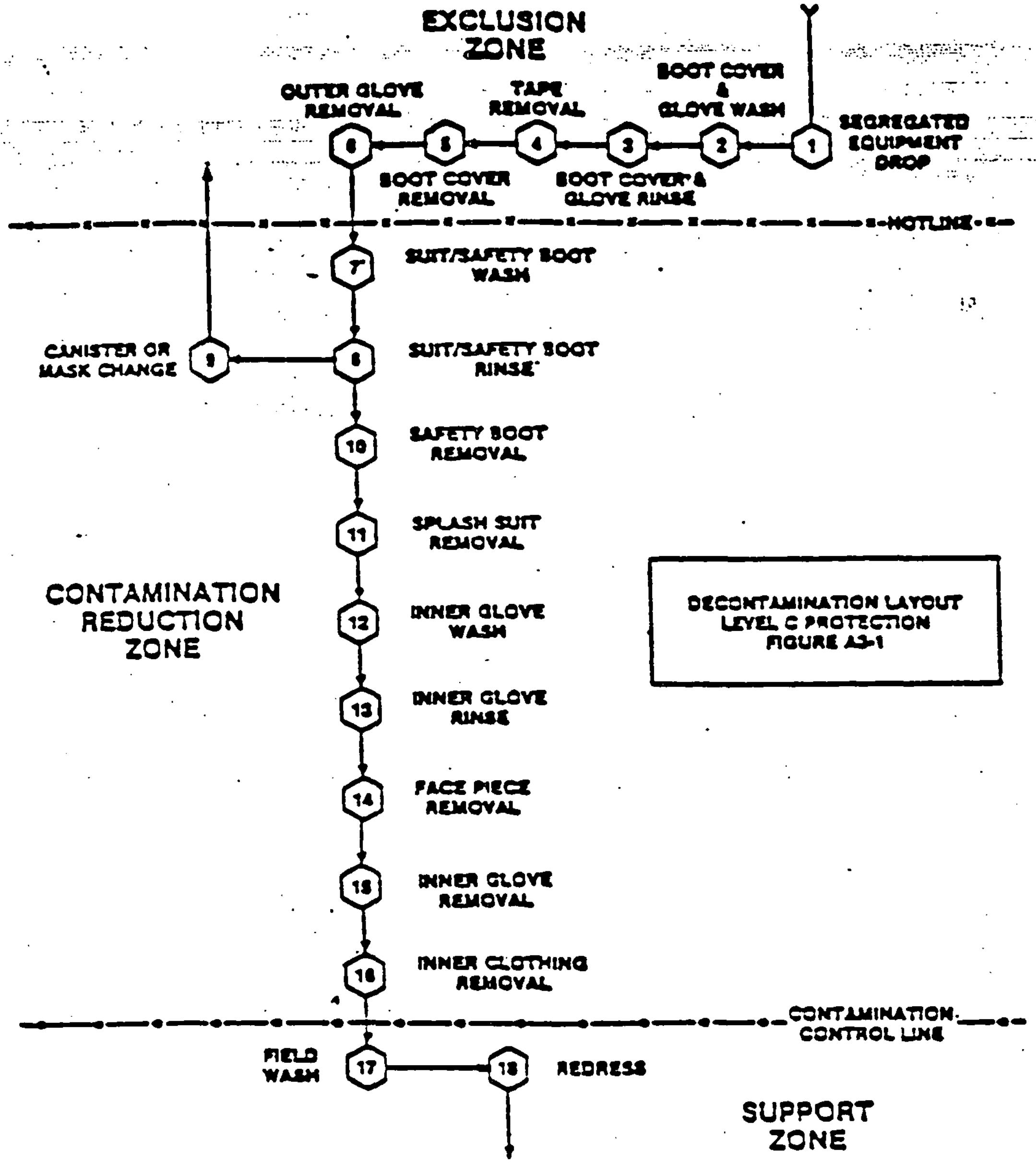
| SIT | STATION NUMBER | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 1 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 2 | X | X | X | X | X | X | X | X | X | | | | | | | | | |
| 3 | X | | | | | | X | X | | X | X | | | X | X | X | X | |
| 4 | X | | | | | | X | X | X | | | | | | | | | |

Situation 1: The individual entering the Contamination Reduction Corridor is observed to be grossly contaminated or extremely skin corrosive substances are known or suspected to be present.

Situation 2: Same as Situation 1 except individual needs new canister or mask and will return to Exclusion Zone.

Situation 3: Individual entering the CRC is expected to be minimally contaminated. Extremely skin-corrosive materials are not present. No outer gloves or boot covers are worn. Inner gloves are not contaminated.

Situation 4: Same as Situation 3 except individual needs new canister or mask and will return to Exclusion Zone.




DECONTAMINATION LAYOUT
LEVEL C PROTECTION
FIGURE A3-1

ANNEX 4

# LEVEL A DECONTAMINATION, MINIMUM LAYOUT

## A. EQUIPMENT WORN

The decontamination procedure outlined is for workers wearing Level A protection (with taped joints between gloves, boots, and suit) consisting of:

- Fully encapsulating suit with integral boots and gloves.
- Self-contained breathing apparatus.
- Hard hat (optional).
- Chemical-resistant, steel toe and shank boots.
- Boot covers.
- Inner and outer gloves.

## B. PROCEDURE FOR FULL DECONTAMINATION

Station 1: Segregated Equipment Drop

Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.

Equipment: various size containers
plastic liners
plastic drop clothes

Station 2: Outer Garment, Boots, and Gloves Wash and Rinse

Scrub outer boots, outer gloves, and fully-encapsulating suit with decon solution or detergent water. Rinse off using copious amounts of water.

Equipment: containers (30-50 gallons)
decon solution
or
detergent water

rinse water
2-3 long-handle, soft-bristle scrub brushes

Station 3: Outer Boot and Glove Removal

Remove outer boots and gloves. Deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners
bench or stool

Station 4: Tank Change

If worker leaves Exclusion Zone to change air tank, this is the last step in the decontamination procedure. Worker's air tank is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty.

Equipment: air tanks
tape
boot covers
gloves

Station 5: Boot, Gloves, and Outer Garment Removal

Boots, fully-encapsulating suit, and inner gloves removed and deposited in separate containers lined with plastic.

Equipment: containers (30-50 gallons)
plastic liners
bench or stool

Station 6: SCBA Removal

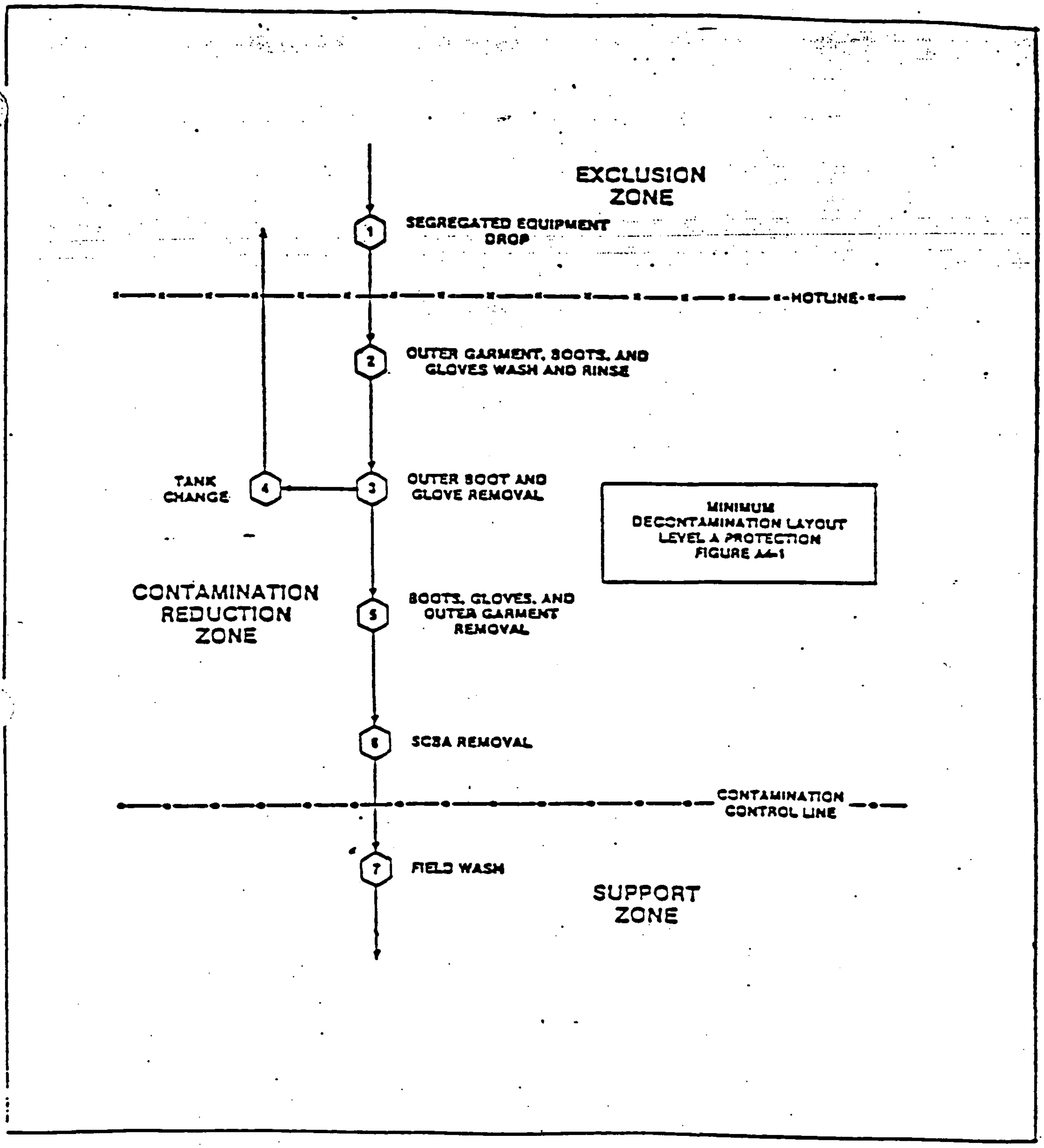
SCBA backpack and facepiece is removed. Hands and face are thoroughly washed. SCBA deposited on plastic sheets.

Equipment: plastic sheets
basin or bucket
soap and towels
bench

Station 7: Field Wash

Thoroughly wash hands and face. Shower as soon as possible.

Equipment: water
soap
tables
wash basin/bucket


EXCLUSION ZONE
1 SEGREGATED EQUIPMENT DROP
HOTLINE
2 OUTER GARMENT, BOOTS, AND GLOVES WASH AND RINSE
TANK CHANGE
4
3 OUTER BOOT AND GLOVE REMOVAL
MINIMUM DECONTAMINATION LAYOUT LEVEL A PROTECTION FIGURE A4-1
CONTAMINATION REDUCTION ZONE
5 BOOTS, GLOVES, AND OUTER GARMENT REMOVAL
6 SCBA REMOVAL
CONTAMINATION CONTROL LINE
7 FIELD WASH
SUPPORT ZONE

c. **Description of Procedures, Structures, or Equipment for:**

(1) Unloading Hazards Prevention

Material which may be spilled during on-or-off loading may involve oily wastewater or D018 benzene contaminated wastewater or oil from the oil dock area. Spills resulting from the on or off-loading should be handled in the following manner:

(a) Activate internal communications to notify facility personnel, if applicable. The emergency coordinator will assess the spill for proper notification and response procedures.

(b) Immediately try to contain the spilled material using sand, sand bags or absorbent clay.

(c) Immediately attempt to stop the leak or flow from the tank truck or piping assembly by closing valves to stop or divert flow.

(d) If the material discharges to the perimeter ditch use shovels to dig a berm that would prevent any material from draining into the east ditch. A discharge to the perimeter ditch would require notification of local authorities.

(e) Clean up of the spilled material will begin immediately under the direction of the Director of Operations and/or the Safety Officer.

(f) The waste resulting from the spill shall be containerized in 55-gallon drums, isolated, sealed and labeled according to its contents.

(g) Disposal of the spilled material shall be accordance with the applicable rules and regulations for hazardous and nonhazardous waste. Disposal will be dependent on the source of the spill and analytical data.

(2) Prevention of Contaminated Runoff

Regrading and resurfacing the tank truck off-loading area will prevent rainwater runoff that comes in contact with spilled material from leaving the IWS site. The runoff from this area will be collected in a center trench that flows to a sump directly beneath the tank truck off-loading area. The sump is connected to the TSD secondary containment area via an underground double-walled steel pipe. Stormwater runoff from the tank truck off-loading area will flow to and be temporarily stored in the TSD secondary containment area. The runoff will then be treated in the oil/water separator prior to discharge to the sanitary sewer system.

(3) Prevention of Flooding

The hazardous waste stormwater collection and storage facilities are designed for the 25-year, 24-hour storm event. The regrading and resurfacing of the tank truck off-loading area discussed above also provides for routing of existing stormwater run-on into a retention basin and diverting the stormwater to an existing drainage easement along the eastern boundary of the IWS property. This should eliminate most of the potential flooding of the TSD facility. However, should an unusually heavy rainfall event cause minor flooding of the area, the secondary containment walls are structurally designed to withstand the hydraulic pressure.

The storage tanks and oil/water separator will be raised above the floor surface of the secondary containment structure approximately 4 to 5 feet. This will ensure that flooding of the tanks will not occur.

(4) Protection of Water Supplies

There are currently no injection or potable water wells within one quarter mile of the site. The City of Jacksonville does have potable watermains in the area and serve the IWS facility. The watermains are operated under constant pressure of approximately 40 to 60 psi which should prevent seepage of contaminants into the pipeline. The facility's potable and fire service connections are equipped with backflow prevention devices at the tap to ensure that contaminated water from the facility does not enter the City's public drinking water supply.

(5) Back-up Power Generation

I.W.S. presently does not have an alternate power source in the event of a power outage. If a power outage occurs during an emergency, I.W.S. can utilize the facility's vacuum trucks for transferring spilled material. All plant operations cease during a power outage which minimizes the chance for spills or unexpected occurrences. I.W.S. also has contracted with local emergency response contractors to supply back up equipment and lighting during emergencies. I.W.S. maintains back up equipment in the event of an equipment failure occurs. Back up pumps and spare parts are kept on hand.

(6) Protective Clothing

Protective clothing, including coveralls, gloves and boots are provided for use by personnel during a spill. Personal eye protection is provided for use during a chemical spill when respirators are not required. Full-face respirators and cartridges are on hand and inspected to ensure their structural integrity and operations.

(7) Fire Protection

Precautions are taken to eliminate sources of ignition including open flames, smoking, cutting and welding hot surfaces, frictional heat and sparks from in and around the drum storage, tank storage and processing areas. Smoking is permitted in designated areas only, and no smoking signs are posted in all areas where a fire hazard exists.

Proper storage and usage of incompatible materials such as sulfuric acid and sodium hydroxide, both used for treatment, are adhered to prevent potential chemical exothermic reactions which may occur if mixed unknowingly. Equipment, pumps and lines used for incompatible chemicals are either dedicated for each chemical or thoroughly cleaned prior to use.

(8) Precautions to Prevent Ignition or Reaction

Precautions are taken to eliminate sources of ignition including open flames, smoking, cutting and welding hot surfaces, frictional heat and sparks from in and around the drum storage, tank storage and processing areas. Smoking is permitted in designated areas only, and no smoking signs are posted in all areas where a fire hazard exists.

Proper storage and usage of incompatible materials such as sulfuric acid and sodium hydroxide, both used for treatment, are adhered to prevent potential chemical exothermic reactions which may occur if mixed unknowingly. Equipment, pumps and lines used for incompatible chemicals are either dedicated for each chemical or thoroughly cleaned prior to use.

## d. Preparedness and Prevention Plan

The Preparedness and Prevention Plan was included in IWS's Contingency Plan and Emergency Response document prepared in November 1991 and submitted to the Environmental Protection Agency in February 1992.

### (1) Internal and External Communications

I.W.S. has an internal communication system that consists of an intercom and paging system that allows for communication between all telephones and a loud speaker that can be heard throughout the physical plant. The loud speaker can also be used as an alert system in the event of an emergency, if an evacuation is necessary, or to give immediate instruction to facility personnel.

An audible fire alarm is located within the confines of the facility, and sounds a high decibel alarm that can be heard from all areas of the plant.

Two way radios are also available for use during situations where employees may be performing work in an area that is not easily accessible or where direct contact with other personnel within the physical plant is limited.

Telephones away from the physical plant in the I.W.S. sales office and administrative office are also readily available in the event it is necessary to summon emergency assistance from the local fire, police and state or local emergency response teams.

### (2) Emergency Equipment

(a) Spill and Fire Control Equipment

Table A.4-5 contains a list of emergency equipment dedicated for spills and unexpected occurrences at the I.W.S. facility. The emergency equipment consists of all equipment which may be needed or required in an emergency such as spill control equipment, personal protection equipment, decontamination equipment and communication equipment. The equipment is located and maintained inside the Emergency Equipment Storage Area or inside the physical plant. An inspection of the emergency and spill control equipment is conducted weekly as described in the facility's Inspection Plan.

This equipment list is kept up to date and includes the location, a physical description of each item and a brief outline of its capabilities. The facility layout, located in Figure A-1 of this Plan, indicates the exact location of fire extinguisher, emergency equipment, alarms and communications. Table A.4-6 contains the information on the facility's fire control equipment. Table A.4-7 contains a current inventory of the emergency equipment on hand and any equipment which may be needed.

(b) Testing and Maintenance

All facility communications and alarm systems, fire protection equipment, spill control and decontamination equipment is maintained and tested, when required, to assure its proper operation in the event of an emergency or unexpected occurrence.

Internal communications are continuously monitored, and fire protection equipment, spill control equipment and decontamination equipment are inspected weekly as required in the facility's Inspection Plan for proper operation.

(c) Access to Equipment

All personnel involved in the transferring or handling of hazardous waste have immediate access to emergency communication device either directly or through voice contact with another employee. If at any time only one employee is on the premises while the facility is operating, that employee must have immediate access to a device such as a telephone or two way radio capable of summoning external emergency assistance.

(d) Aisle Space

Adequate aisle space, required as part of the facility's preparedness and prevention procedures, is maintained in the hazardous waste drum storage area to provide for the unobstructed movement of personnel, fire protection equipment, or spill control equipment in the event of an emergency. To ensure adequate aisle space is maintained properly, inspections are conducted weekly and any deficiencies regarding aisle space are immediately corrected.

e. <u>Training Program</u>

Industrial Water Systems RCRA Personnel Training Program was submitted to the Environmental Protection Agency in February 1992. The program includes an outline and provisions for introductory and continuing instruction in safety and proper handling and management of hazardous waste.

(1) <u>General Requirements</u>

All operating, laboratory, environmental, maintenance, and security personnel assigned to the hazardous waste treatment, storage, and disposal facility will attend OSHA training classes and will successfully complete the introductory training program within the first 6 months of employment at the facility.

These programs are designed to ensure the facility's compliance with RCRA requirements, and the employee's ability to properly respond to an emergency. The training includes hazardous waste treatment operations, the theory of phase separation, first aid and CPR, safety training, environmental compliance training regarding RCRA, review of the facility's Contingency Plan and associated documents, and review of the facility safety policies and procedures.

Facility administrative staff and non hazardous waste water treatment staff who will not be required to perform duties within the hazardous waste portion of the facility will complete a less detailed program emphasizing hazard recognition, chemical exposure Personal Protective Equipment (PPE), safety, contingency plan, and emergency procedures.

Maintenance personnel will also receive training on each piece of equipment in their respective skill areas including proper cleaning and decontamination procedures.

In general, proficiency training will be provided to ensure that every individual can competently and safely perform the duties outlined in his respective job description. Until the training has been completed no employee shall be allowed to work unsupervised in the facility.

Annual refresher training of operations personnel will be conducted covering the same areas, as appropriate. Personnel will also be notified of and adequately trained to handle future changes in the facility permit, process or facility design.

After completion of the training program, employees will be required to date and sign a class completion record verifying that they have attended the classes and are responsible for proper application of all information that was covered in the class. Records of current employees will be maintained on site until the closure of the facility. Training records of former employees will be maintained on site for at least 3 years from the date the employee last worked at the facility.

(2) Documentation

Facility personnel completing training will sign documentation records verifying that they have completed the required training. Certificates of training will be issued and signed by the General Manager and the Regulatory Compliance Manager indicating personnel have successfully completed the training. A training manual is also distributed to each employee for reference purposes.

Training records of employees are kept until closure of the facility. Training records of former employees will be kept for at least three years from the date the employee last worked.

Job titles and job descriptions for each employee involved in the handling and management of hazardous waste is included at the end of this section.

(3) Training Program

Training will be conducted by the Regulatory Compliance Manager experienced in hazardous waste management procedures. The training program is consistent with all personnel because only one process is involved in the handling, storage and treatment of the waste stream. The outlines included at the end of this section show the information reviewed in the training programs.

The training program is broken into the following major sections:

(1) General Operations Training
(2) 24 hour initial OSHA required hazardous waste operations training.
(3) 8 hour annual OSHA required hazardous waste operations training.
(4) Prescribed initial RCRA training.
(5) Prescribed annual RCRA training
(6) 8 hour initial OSHA supervisory training.
(7) 8 hour annual OSHA supervisory training
(8) Emergency response training.

A General Operations Training refresher course is also given annually for all employees associated with the hazardous waste management facilities.

The training is conducted by the Regulatory Compliance Manager who as a condition of employment is experienced and trained in hazardous waste management. The position is currently vacant and recruitment is in progress. Until the position is filled, training will be provided by the University of North Florida Environmental Education and Safety Institute.

The Regulatory Compliance Manager will have attended "outside courses" to be qualified in environmental protection and compliance, and industrial health and safety. The manager will conduct RCRA and OSHA training programs by means of seminars, video tape presentations and drills. The manager will be responsible for reviewing new regulations and developments within the industry (RCRA, water, air, solid waste, safety, first aid, decontamination technology, and new MSDS information) and ensuring IWS is in compliance. The manager will also attend, every year, a number of specific courses promoted nationally by professional agencies, such as hazardous materials/waste management training and certification courses.

INDUSTRIAL WATER SERVICES, INC.

JOB TITLES AND DESCRIPTIONS

GENERAL MANAGER
REPORTS TO: PRESIDENT OF INDUSTRIAL WATER SERVICES, INC.

EXPERIENCE AND QUALIFICATIONS:

B.S. Degree in technical or administrative field with 10-12 years business/operating management experience.

Excellent administrative skills to efficiently manage the organization and provide coordination among all affected disciplines.

Strong technical and analytical skills to resolve problems.

Knowledge of governmental and environmental regulations to ensure facility compliance.

Effective interpersonal skills to direct and control the work force and interface with company, governmental and community representatives.

DUTIES:

Overall responsibility for the safe operation of the facility.

Revenue generation while maintaining operations within environmental guidelines and operating permits.

Facility operation within budgetary constraints and IWS policies and procedures.

Directs a multi-disciplined organization comprised of salaried and hourly employees, including administrative, operations, laboratory, and environmental staff.

Administrative interface representing the facility to clients.

Development of an efficient organization characterized by competent, well trained supervisors and hourly personnel.

Keeps abreast of all matters dealing with public relations relative to the facility.

Provides leadership role in staffing and managing the safe and expedient start up of the new hazardous waste facility.

Participates in the preparation of budgets, planning, performance reporting, cost control and other management duties.

TRAINING REQUIREMENTS:

General Operations Training

Prescribed initial RCRA training.

Prescribed annual RCRA training

8 hour initial OSHA supervisory training.

8 hour annual OSHA supervisory training

Emergency response training.

FACILITY SUPERINTENDENT
REPORTS TO: GENERAL MANAGER

EXPERIENCE AND QUALIFICATIONS:

B.S. Degree in engineering or other relevant discipline.

Proven leadership and management skills.

Five or more years responsible experience in the operation and management of a hazardous waste facility or closely related chemical processing plant. An excellent prior safety record is essential.

DUTIES:

Safe and efficient daily management and review of all waste handling, storage, treatment, and disposal activities at the facility.

Manages the facility maintenance and laboratory activity.

Overall responsibility for the operating facility.

Provides a leadership role in staffing, training and motivation within a team oriented working environment.

Responsible for the development and updating of standard operating procedures.

Maintains an inventory of critical operating supplies and chemicals. Ensures the availability of critical spare parts, maintenance and technical resources.

Schedules production and maintenance activities and inspections.

Responsible for the attainment and enforcement of environmental, health and safety policies and requirements.

Performs other duties as assigned.

TRAINING REQUIREMENTS:

General Operations Training

24 hour initial OSHA required hazardous waste operations training.

8 hour annual OSHA required hazardous waste operations training.

Prescribed initial RCRA training.

Prescribed annual RCRA training

8 hour initial OSHA supervisory training.

8 hour annual OSHA supervisory training

Emergency response training.

MAINTENANCE SUPERVISOR
REPORTS TO: FACILITY SUPERINTENDENT

EXPERIENCE AND QUALIFICATIONS:

First line supervisor responsibility for the safe and efficient repair of plant instrumentation and equipment.

Institutes and maintains a preventive as well as predictive maintenance program.

Maintains equipment records, including calibration, repairs, modifications, expense and environmental compliance check lists.

Organizes, assigns and instructs maintenance personnel in details of the work to be done.

Maintains an inventory of spare parts, lubricants, etc.

Prepares maintenance schedules and expedites materials for daily, as well as shutdown activities.

Participates in safety inspection, compliance and the enforcement of safety rules.

Responsible for implementing the highest industry standards for safety, housekeeping, hygiene and the proper use of personal protective equipment (PPE).

Provides for the training of the maintenance staff.

Participates in the preparation and update of maintenance procedures.

Coordinates facility activities with related functions, operations, environmental, laboratory, etc., to ensure the achievement of all operating and reporting requirements.

Performs other duties as assigned.

TRAINING REQUIREMENTS:

General Operations Training

24 hour initial OSHA required hazardous waste operations training.

8 hour annual OSHA required hazardous waste operations training.

Prescribed initial RCRA training.

Prescribed annual RCRA training

8 hour initial OSHA supervisory training.

8 hour annual OSHA supervisory training

Emergency response training.

MAINTENANCE MECHANIC

REPORTS TO: MAINTENANCE SUPERVISOR

EXPERIENCE AND QUALIFICATIONS:

High School Diploma or equivalent

One or more years experience in maintenance of process equipment, preferably vocationally trained.

DUTIES:

Perform required facility maintenance and repair, both preventive and emergency.

Reporting to the process supervisor hazards or potential hazards.

Adhere to safety procedures, emergency procedures, operating policies and procedures.

Performs other duties as assigned.

TRAINING REQUIREMENTS:

General Operations Training

24 hour initial OSHA required hazardous waste operations training.

8 hour annual OSHA required hazardous waste operations training.

Prescribed initial RCRA training.

Prescribed annual RCRA training

Emergency response training.

LABORATORY DIRECTOR
REPORTS TO: FACILITY SUPERINTENDENT

EXPERIENCE AND QUALIFICATIONS:

B.S. degree in chemistry, chemical engineering, or related field.

Three or more years experience as a chemist in an analytical laboratory.

DUTIES:

Developing and implementing all laboratory procedures, analytical methods and techniques, and sampling/decontamination methods and procedures used in the characterization of on site hazardous wastes.

Implementation of laboratory equipment calibration procedures.

Evaluation and approval of hazardous waste streams for storage and treatment at the facility.

Evaluation/resolution of waste shipment discrepancies

Perform routine and specialized analyses, sampling, and decontamination as necessary.

Sample and laboratory record keeping, report preparation and review.

On the job training of laboratory technicians in proper sampling, analytical, and calibration methods and procedures.

Performs other duties as assigned.

TRAINING REQUIREMENTS:

General Operations Training

24 hour initial OSHA required hazardous waste operations training.

8 hour annual OSHA required hazardous waste operations training.

Prescribed initial RCRA training.

Prescribed annual RCRA training

8 hour initial OSHA supervisory training.

8 hour annual OSHA supervisory training

Emergency response training.

LABORATORY TECHNICIAN
REPORTS TO: LABORATORY DIRECTOR

EXPERIENCE AND QUALIFICATIONS:

B.S. Degree in chemistry or a closely related field such as chemical engineering or other physical or biological science.

Two or more years of experience working in an analytical laboratory.

DUTIES:

Developing and implementing representative sampling and sample preservation procedures for the waste and process streams handled at the facility.

Recommends analytical methods and techniques to be used to chemically and physically characterize the hazardous waste streams received on site.

Perform routine and specialized chemical analysis of the waste materials received by the laboratory.

Collect waste/process stream samples and inspect incoming waste manifests/shipments as necessary.

Perform sample and laboratory record keeping and report preparation.

Calibration and repair of laboratory equipment.

Follow the Permit operating procedures, safety procedures, emergency procedures for IWS.

Performs other duties as assigned.

TRAINING REQUIREMENTS:

General Operations Training

24 hour initial OSHA required hazardous waste operations training.

8 hour annual OSHA required hazardous waste operations training.

Prescribed initial RCRA training.

Prescribed annual RCRA training

Emergency response training.

OPERATOR
REPORTS TO: PROCESS SUPERVISOR

EXPERIENCE AND QUALIFICATIONS:

High School diploma or equivalent.

Prefer prior experience in process operations. Prefer familiarity with chemistry and RCRA documents.

DUTIES:

Broad category of outside operator responsible for material handling and equipment operation, under direction of process supv.

Reviews all documentation for accuracy and completion, including approvals, waste manifests, etc.

May assist with sampling, following suitable training.

Immediately alerts the process supervisor of discrepancies in documentation, leaks/spills, significant delays, problems with safety, security, exposure, etc.

Observes and instructs truck drivers and outside contractors to ensure compliance with facility health, safety and security rules and the protection of company assets.

Process control by monitoring and adjusting instruments and equipment.

Monitoring of equipment performance and servicing equipment.

Maintains accurate operating logs and records.

Unloads truck tankers.

Participates in facility maintenance, clean out and repairs during down time.

Responsible for maintaining the highest standards for housekeeping, hygiene and the proper care and use of personal protective equipment (PPE).

Tank gauging and inventory keeping.

Handles and disposes of drummed waste.

Performs other duties as assigned.

TRAINING REQUIREMENTS:

General Operations Training

24 hour initial OSHA required hazardous waste operations training.

8 hour annual OSHA required hazardous waste operations training.

Prescribed initial RCRA training.

Prescribed annual RCRA training

Emergency response training.

PROCESS SUPERVISOR
REPORTS TO: FACILITY SUPERINTENDENT

EXPERIENCE AND QUALIFICATIONS:

Prefer some college or technical training, ideally a B.A. or B.S. degree in chemistry.

Requires 3-5 years experience in process operations, chemical handling or safety training.

Requires strong organizational, interpersonal, and communication skills and a proven safety record. The knowledge of chemistry is desired.

DUTIES:

First line supervisor responsible for the off loading, sampling, storage, staging, treatment, and disposal of hazardous waste.

Organizes, assigns and instructs operators in the details of the work to be performed.

Frequently inspects, in detail, the safety of the handling equipment and methods, as well as the safety and compatibility of stored material.

Troubleshooting and implementation of corrective measures to resolve operational malfunctions and problems.

Maintains accurate daily records of material receipts, inventories, and feedstocks.

Maintains inventory records, storage levels, and procedures to be within permit and regulatory compliance requirements.

Maintains an inventory of critical operating supplies and emergency/spill response materials.

Participates in safety inspection, compliance and the enforcement of safety rules.

Implements the highest industry standards for safety, housekeeping, hygiene and the proper use of personal protective equipment (PPE).

Provides for the training of new and existing operators.

Participates in the preparation and update of standard operating procedures.

Coordinates facility activities with related support functions (lab, maintenance, environmental, transportation, etc.) to ensure the achievement of all operating and reporting requirements.

Performs other duties as assigned.

TRAINING REQUIREMENTS:

General Operations Training

24 hour initial OSHA required hazardous waste operations training.

8 hour annual OSHA required hazardous waste operations training.

Prescribed initial RCRA training.

Prescribed annual RCRA training

8 hour initial OSHA supervisory training.

8 hour annual OSHA supervisory training

Emergency response training.

OPERATIONS COORDINATOR
REPORTS TO: FACILITY SUPERINTENDENT

EXPERIENCE AND QUALIFICATIONS:

Minimum B.S. or B.A. degree in chemistry, environmental science or related field.

Training or experience in handling hazardous waste

Knowledge of USEPA, Florida DER, DOT, OSHA, TSCA, RCRA.

DUTIES:

Quality control for waste streams to ensure they are approved, meet specifications, and can be handled in an environmentally sound and safe manner.

Read and stay familiar with all federal and state permits and regulations governing TSD's.

Coordinate and expedite billing, customer relations, incoming waste scheduling, waste stream information sheets, marketing communications, transportation communications, special handling provisions.

Performs other duties as assigned.

TRAINING REQUIREMENTS:

General Operations Training

24 hour initial OSHA required hazardous waste operations training.

8 hour annual OSHA required hazardous waste operations training.

Prescribed initial RCRA training.

Prescribed annual RCRA training

Emergency response training.

SECURITY GUARD
REPORTS TO: FACILITY SUPERINTENDENT

EXPERIENCE AND QUALIFICATIONS:

High School Diploma or equivalent.

Prefer prior experience working as a security guard at an industrial or chemical plant.

DUTIES:

Facility security during closed hours at night and on Sunday.

Restricts facility entry to authorized personnel.

Alert on call personnel to leaks, drips, or equipment problems in the hazardous waste treatment, storage, and disposal area.

Liaison with emergency services including local police, fire department, and medical services during closed hours of operation.

Performs other duties as assigned.

TRAINING REQUIREMENTS:

General Operations Training

8 hour annual OSHA required hazardous waste operations training.

Prescribed initial RCRA training.

Prescribed annual RCRA training

Emergency response training.

REGULATORY COMPLIANCE MANAGER
REPORTS TO: GENERAL MANAGER

EXPERIENCE AND QUALIFICATIONS:

B.S. degree in a science related field or engineering.

Experience in environmental protection/monitoring and regulatory compliance at the plant operations level.

Experience in industrial health and safety at the plant operations level.

Experience in hazardous waste treatment operation, chemical plant operation, or other closely related industrial operation.

Knowledge of USEPA, Florida DER, DOT, OSHA, TSCA, RCRA.

DUTIES:

Emergency coordination of the hazardous waste facility and notification of proper authorities.

Consult with the process supervisor, facility superintendent, and general manager on questions involving emergency actions.

Responsible for all environmental, facility personnel, and facility related monitoring and operating permit compliance.

Implement Inspection Program for all Hazardous Waste Management Units.

Drafting and submittal to the proper authority all required reports for the USEPA, OSHA, the state of Florida, or the city of Jacksonville.

Perform scheduled and unscheduled inspections of all air, water, and solid waste emissions and controls.

Perform scheduled and unscheduled fire protection and facility safety and security inspections.

Conduct emergency response and emergency spill drills.

Maintain operating logs, environmental records, and reports, inspection reports, training records, and any other required record keeping.

Complete RCRA and OSHA training of personnel in the proper handling of hazardous wastes, operational procedures, emergency actions and response to emergencies or spills.

Attend regularly scheduled safety meetings.

Environmental and safety overview, and to gather, check , and transmit data to the appropriate regulatory agencies or IWS staff.

Coordinates emergency planning with local emergency response agencies.

Performs other duties as assigned.

TRAINING REQUIREMENTS:

General Operations Training

24 hour initial OSHA required hazardous waste operations training.

8 hour annual OSHA required hazardous waste operations training.

Prescribed initial RCRA training.

Prescribed annual RCRA training

8 hour initial OSHA supervisory training.

8 hour annual OSHA supervisory training

Emergency response training.

INDUSTRIAL WATER SERVICES, INC.

TRAINING PROGRAM OUTLINES

(1) General Operations Training
(2) 24 hour initial OSHA required hazardous waste operations training.
(3) 8 hour annual OSHA required hazardous waste operations training.
(4) Prescribed initial RCRA training.
(5) Prescribed annual RCRA training
(6) 8 hour initial OSHA supervisory training.
(7) 8 hour annual OSHA supervisory training
(8) Emergency response training.

### (1) GENERAL OPERATIONS TRAINING

The Facility Superintendent and appropriate staff will be required to receive approved training as defined in the job descriptions, prior to operating any component of the system. This training will consist of a combination of the following:

1. General IWS Overview
2. Phase separation theory
3. Facility Specific Equipment and Procedures
4. Emergency Procedures
5. Maintenance and Repair Procedures

### (2) 24 HOUR OSHA TRAINING PROGRAM - HAZARDOUS WASTE OPERATIONS

The Facility Superintendent and appropriate staff will be required to receive approved OSHA training as defined in the job descriptions, prior to operating any component of the system. This training will consist of a combination of the following:

1. Safety and health program
2. Hazard Communication
3. Medical Surveillance
4. Decontamination
5. New Technology Program
6. Material Handling
7. Training
8. Emergency Response
9. Chemical Exposure
10. Fire and Explosions
11. Heat and Cold
12. Electrical Hazards
13. Powered Equipment
14. Walking and Working Surfaces
15. Confined Space
16. Work Practices
17. Spills and Spill Control Techniques
18. Employee Right to Know
19. Personal Protective Equipment
20. Review of 29 CFR 1910.120
21. Toxicology
22. Hazardous Releases
23. Monitoring Equipment
24. Preplanning
25. Evacuation
26. First aid
27. Chemical Hazards
28. Site Control
29. Emergency Coordination
30. Accident Reporting
31. Equipment Operation
32. Check sheets

THE FOLLOWING ARE EXCERPTS FROM THE 24 HOUR OSHA TRAINING PROGRAM LESSON PLAN:

MONITORING EQUIPMENT 2.0 HOURS

1. Measuring instruments: FIDs, PIDs, other organic vapor detectors, LEL, O2, detector tubes.
2. How to use the field instruments in use at IWS.
3. Calibration of instruments.
4. Hands on practice of monitoring equipment use.
5. Definition of IDLH.
6. Low lying areas and hazardous concentrations of chemicals.
7. Confined spaces in addition to tanks - buildings, sumps, hollows, trenches.
8. Personal monitoring devices.

SPILL CONTROL TECHNIQUES 1.0 HOURS

1. Review of physical equipment in the facility which help prevent or control spills. High Level alarms, High High level shut downs, secondary containment, double wall piping, special seals on pumps and valves, free board requirement on tanks, level indicator.
2. Review of spill contingency shed and the use of materials contained.
3. Drum patch kit contents and use. Demonstration Procedures.

PRE PLANNING 1.0 HOURS

1. Organizational structure of IWS as it relates to the RCRA TSD facility. Includes the leader who has the authority to direct all activities, personnel needed for operations, lines of authority, responsibility, communication.
2. Assignment of Site Safety Officer and his responsibilities. Includes: selection of protective clothing and equipment, inspection of PPE, coordinates safety and health program, monitors members' suitability for work, monitors onsite hazards and conditions, prepares and implements site safety plan, enforces buddy system, knows emergency procedures, evacuation routes, telephone numbers for ambulance/hospital/poison control center/fire dept/police dept, coordinates emergency medical care.
3. IWS philosophies in regard to facility operation: strong management commitment to safety, close contact and interaction among workers/supervisors/management, high level of housekeeping, orderly work place conditions, effective environmental quality control, well developed selection/job placement/advancement procedures, training,

job safety procedures, effective disciplinary plan.

4. Explanation of Site Safety Plan. Elements include: key personnel list, risk assessment, training plan, protective equipment requirements, medical surveillance requirements, air monitoring plan, personnel monitoring plan, action plan to mitigate hazards, site control measures, site map, decontamination plan, SOPs and checklists for activities, emergency contingency plan.
5. Explanation of required safety meetings and inspections. Purpose: Describe tasks and potential hazards, coordinate activities, identify methods and precautions for injury prevention, emergency planning, changes to site safety plan, worker feedback on conditions, worker feedback on site safety plan, state of equipment maintenance, weather conditions which affect safety, inspection check lists, inspection results, documentation of safety meetings, frequency of safety meetings.

EVACUATION 0.5 HOURS

1. Evacuation routes for RCRA TSD.
2. Hand out of map of evacuation routes.
3. Alternate routes.
4. Marking of routes.
5. Need to keep clear.
6. Effect of wind on route.
7. Fires, spills, vapor clouds.
8. Location of ladders in routes.
9. Review of contingency plan section on EVACUATION PLAN.

FIRST AID 1.0 HOUR

1. First aid general directions: take care of urgent first aid, lie victim down and treat for shock, check for injuries, plan what to do, do it, get medical help.
2. List of persons trained in first aid in the facility.
3. List of persons who have advanced training in CPR, EMT, etc.
4. Procedure for calling an ambulance or summoning professional help.
5. Signs of over exposure to benzene.

CHEMICAL HAZARDS 0.1 hours

1. Essentially a statement that there are not normally any chemical hazards present in the RCRA portion of the facility except benzene. If there should be chemical hazards present (like degreaser, acid, caustic)) refer to MSDS.

FIRE AND EXPLOSIONS 1.0 HOURS

1. Flammability of IWS RCRA TSD wastes.
2. Location of fire alarms in facility.
3. Assigned response in case of fire.
4. Written emergency procedures.
5. Explanation of types of burning materials and classes of fires.
6. Explanation of extinguishing agents for CLASS A, B, C, D.
7. Location of fire extinguishers present in TSD facility.
8. Proper activation of fire extinguishers and procedure to turn in for recharge.
9. Explanation of automatic fire extinguisher system concepts.
10. Field exercise in the use of portable fire extinguishers.
11. Procedure for notification of the fire department.

SITE CONTROL 1.0 HOURS

1. The need for a site map.
2. Security provisions.
3. Locking devices and the responsibility for controlling access.
4. Required signs and their maintenance.
5. Communications systems within the TSD. Telephone, pager, radio.
6. Check in, check out procedure for visitors.

MINIMIZING CHEMICAL EXPOSURE 0.5 HOURS

1. Why it is better to avoid chemical exposure rather than protect against it.
2. Smoking/eating, chewing gum, chewing tobacco, drinking, cosmetics and chemical exposure.
3. Routine use of Personal Protective Equipment to minimize chemical exposure.
4. Dermal cream barriers.
5. Inhalation, skin absorption, ingestion, injection of chemical substances.
6. Definition of acute and chronic.
7. Symptoms of chemical exposure.
8. Contact lenses.
9. Punctured ear drums.
10. Safety shoes versus sandals.
11. Common sense.

EMERGENCY COORDINATION 0.5 HOURS

1. The existence of an Emergency Response Plan and its general contents.
2. Responsibility for reporting incidents to local, state,

and Federal governmental agencies (who is responsible).
3. Compatibility and integration with disaster, fire, and/or emergency response plans of local, state and Federal agencies.
4. Rehearsals for emergency response.
5. Alarm systems in place.
6. Responsibilities of RCRA TSD Facility operator.
7. Emergency communications and communications systems.
8. Emergency alarm systems and their use.

SPILLS 1.0 HOURS

1. Review of CONTINGENCY PLAN AND EMERGENCY PROCEDURES for spill response actions.
2. Review concept of SLIPERED: STOP, LIMIT, ISOLATE, PROTECT, EVACUATE, RECOVER, DECONTAMINATE.
3. Groundwater contamination incidents. Reporting and responding.

ACCIDENT REPORTING 0.5 HOURS

1. Review requirement that all accidents no matter how minor must be reported to Supervisor.
2. Hand out a copy of accident reporting form and go through an exercise regarding the proper completion of an accident reporting form.
3. Discuss the medical clinic that IWS uses for minor injuries and the procedure for using the medical clinic.
4. Review the procedure for calling 911 for major accident response.
5. Review IWS position on minimizing accidents and the benefits to company and employee of minimizing accidents which includes a lower Worker's Compensation Insurance premium rate and the pass on to the employee philosophy of IWS.

EQUIPMENT OPERATION 4.0 HOURS

1. Special valves used in the TSD facility.
2. Level indicating devices in the TSD and how to check them.
3. Check valve locations in the TSD and how they operate.
4. Description of each pump and how it operates. Special precautions to prevent and control packing leaks.
5. Lubrication systems associated with rotating equipment in the TSD.
6. Discuss the start up of electric motors in TSD. Location of switch gear and breakers. How to determine if breaker is tripped.
7. Special precautions regarding positive displacement pumps.
8. Discussion of diaphragm materials in diaphragm pumps.

9. Discussion of High level alarm and High High level shut down.
10. Flow diagram of the TSD with pumps, tanks, and instruments.
11. Plot plan of the TSD with identity of each piece of equipment.
12. Location of fire extinguishers and other emergency gear.
13. Proper method for unloading a tank truck. Proper sampling technique. Grounding considerations.
14. Steps and information sharing to take over a shift in progress. Duties of first operator to open in morning. Duties of last operator to close at night.
15. Special precautions for freeze protection. Hurricane protection.
16. Discussion of TSD rule book.
17. Discussion of what is meant by pH.
18. Discussion of the discharge permit limitations.
19. Discussion of the air distribution system.
20. Explanation of "available pump suction head", "cavitation".
21. Discussion of induction type electric motor. TEFC and Explosion proof electric motors.
22. When is the load on a centrifugal pump driver the greatest.
23. Four conditions that would cause a pump bearing to overheat.
24. When is the load on a positive displacement pump the greatest? Consequences of starting with a closed discharge.
25. Discuss control of the levels in the TSD sumps.
26. Discussion of communications systems in the TSD.
27. Eye wash systems in the TSD.
28. Equipment guards in the TSD.
29. Smoking areas in the TSD.
30. Discuss actions if the following is encountered in a load of TC Benzene water. High solids, Strainer plugging, Excessive gasoline, Excessive salts, Emulsified load, Excessive sludge, Foaming, High odors, H2S odor.
31. Discuss actions on loss of electricity.
32. Discussion of double wall piping.
33. Operator functions: monitor, operate and control; the storage tanks, separator, and sumps. Make rounds of area to ensure normal operations. Tank reading of equipment including level, volumes, recording on daily operating report. Sample as necessary. Check chemical injection system for proper operation. When necessary receive chemicals, move drum stock, unload trucks. Conduct periodic check of safety equipment. Wipe up minor spills and drips, clean out trash bins, insure a sufficient supply of absorbent pads.
34. Automatic waste feed cut-off systems and their key parameters.

35. Facility shutdown procedure. Planned and emergency procedures.

CHECK SHEETS 1.0 HOURS

1. Daily check sheet.
2. Monthly check sheet.
3. Who responsible to fill out.
4. Where filed.
5. How long kept
6. Exercise in filling out check sheets.
7. Regulatory requirement to fill out.
8. Penalty for non compliance.

LOG BOOK REQUIREMENTS 0.5 HOURS

1. Why an operating log is important in a RCRA TSD Facility.
2. How long an operating log must be kept.
3. Required entries in an operating log.
4. Responsibility for auditing the operating log.

**(3) 8 HOUR ANNUAL OSHA TRAINING - HAZARDOUS WASTE OPERATIONS**

Annual OSHA Training will consist of an eight hour review of the items listed under OSHA TRAINING PROGRAM above.

**(4) RCRA PERSONNEL TRAINING**

The Facility Superintendent and appropriate staff will be required to receive RCRA training as defined in the job descriptions, prior to operating any component of the system. This training will consist of a combination of the following:

I. General

- A. RCRA History
- B. Training

II. IWS Background

- A. History, Current Status, Future Plans

III. Identification and Listing

- A. Hazardous Waste Determination
  1. Definition of a Solid Waste
  2. Definition of a Hazardous Waste
- B. Characteristic Waste
  1. Ignitability
  2. Corrosivity
  3. Reactivity
  4. Toxicity

C. Listed Wastes
   1. Examples
D. Exclusions, Exemptions, Recyclable Materials
   1. Examples

V. Hazardous Waste Generators

A. Conditionally Exempt
B. Small Quantity
C. Large Quantity

VI. Treatment, Storage and Disposal (T,S,D) Facilities

VII. Transporters

VII. General Requirements

A. Hazardous Waste Determination
B. EPA Identification Number
C. Manifesting
D. Labeling and Marking
E. Accumulation Time
F. Aisle Space
G. Biennial Report
H. Contingency Plan
I. Waste Analysis Plan
J. Facility Security
K. Inspection Requirements
L. Personnel Training
M. Container Storage
   1. Condition, Compatibility
   2. Management
   3. Inspections
   4. Special Requirements
N. Tank Storage
   1. Requirements
   2. Inspections
O. Closure

IX. Review of Inspection Logs

X. Review of Contingency Plan

A. Purpose
B. Content
C. Copies
D. Emergency Coordinator
E. Emergency Equipment
F. Emergency and Safety Procedures

### (5) ANNUAL RCRA TRAINING

The annual refresher training will include the review of the following information:

1. Update of all environmental rules and regulations
2. Discussions of known spill events
3. Review of inspection procedures
4. Review of hazardous waste characteristics and properties handled at the facility
5. Review of Contingency Plan and Emergency Procedures

### (6) 8 HOUR INITIAL OSHA SUPERVISORY TRAINING

The Facility Superintendent and appropriate staff will be required to receive approved training as defined in the job descriptions, prior to operating any component of the system. This training will consist of a combination of the following:

1. Protective equipment
2. Respirator use
3. Safety
4. Health and hazards on a site
5. Overview of regulations
6. Basics of effective supervision
7. Record keeping and logs
8. Site maintenance and housekeeping
9. Site entry and control
10. Handling accidents
11. Handling emergencies
13. Other OSHA requirements
14. Working with regulatory personnel

### (7) 8 HOUR ANNUAL OSHA SUPERVISORY TRAINING

The annual OSHA supervisory training is a required annual refresher course on the items listed above.

### (8) EMERGENCY RESPONSE

The Facility Superintendent and appropriate staff will be required to receive approved training as defined in the job descriptions, prior to operating any component of the system. This training will consist of a combination of the following:

1. Coordination with local/state/federal emergency response teams.
2. Emergency Equipment location , description, availability, use and care.
3. Emergency procedures including first aid/cpr &

communication.

4. Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment
5. Automatic cut off devices and their parameters
6. Communications systems and alarm systems
7. Fire response
8. Ground water contamination response and procedures
9. Emergency shutdown of the facility
10. Control and containment
11. Removal and/or isolation
12. Decontamination
13. Treatment and disposal
14. Emergency reporting
15. Local/State/Federal Notification

5

## Notes

## 5. Chemical and Physical Analyses Reports

IWS is currently operating under interim status to accept, store and treat benzene contaminated wastewater (D018). The benzene contaminated wastewater is the only RCRA hazardous waste stream accepted by IWS. The wastewater accepted contains benzene in amounts equal to or exceeding 0.5 mg/l as measured by the toxicity characteristic leaching procedure (TCLP). Table A-5.1 provides a summary of sampling results from various waste generators that have sent waste to the facility since 1989. A representative is included following Table A-5.1.

The primary sources of this wastewater are petroleum refining, distribution, and storage facilities. These facilities handle large volumes of gasoline and diesel fuel both of which contain benzene. TCLP analysis of wastewater generated from these sources indicates that the wastewater typically contains benzene TC levels greater than 0.5 mg/l. The benzene level typically ranges from 0.5 mg/l to approximately 40.0 mg/l with mean levels under 20.0 mg/l.

### a. Petroleum Bulk Storage Facilities

Approximately 98% of D018 wastewater received at the IWS facility is generated from bulk gasoline storage terminals. The terminals generate D018 wastewater from tank bottoms, loading areas, and wastewater processing equipment, primarily oily water separators. The terminals store D018 wastewater in holding tanks, then transport the wastewater to IWS in tank trucks. Typical D018 wastewater received from terminal facilities is very lightly contaminated with gasoline (usually less than 1% by volume). The waste stream is very consistent from load to load and from generator to generator.

### b. Gasoline Filling Stations

Less than 1% of the D018 wastewater received at the IWS facility is generated from gasoline filling stations. The stations routinely remove water which has accumulated in their petroleum underground storage tanks in small quantities. This wastewater is brought to IWS in truckloads by contractors who remove the D018 wastewater from the filling station tanks. This category of D018 waste typically contains up to 25% gasoline as some product is pumped from the underground storage tanks along with the wastewater. The waste generated from underground storage tanks at filling stations is also very consistent from load to load and from generator to generator.

c. <u>Other Sources</u>

Less than 1% of the D018 wastewater received by IWS is generated from other sources, primarily mixtures of gasoline and groundwater removed from underground storage tanks during removal and remediation. This category of D018 wastewater is relatively consistent but may contain sediments from underground storage tanks which have been placed out of service.

d. <u>Laboratory Data</u>

A typical laboratory analysis required by I.W.S. to determine treatability of a particular waste is shown on the following pages. Analyses are submitted along with a waste profile sheet for acceptance by I.W.S. prior to the first shipment of waste from a proposed discharger. A blank "Waste Stream Information Form" is shown on the following page.

At a minimum, potential waste dischargers to the I.W.S. facility must provide a laboratory analysis which allows I.W.S. to determine whether or not adequate treatment of the waste will occur in its facility and will not cause I.W.S. to exceed its pretreatment limits.

TABLE A-5.1

**INDUSTRIAL WATER SERVICES, INC.**
**Hazardous Waste Management Facility**
**Wastewater Contaminent Concentrations**

| DATE | FUEL TYPE | CONSTITUENT LEVELS in mg/l BENZENE | TOLUENE | ETHYLENE | XYLENE |
|---|---|---|---|---|---|
| 11/07/90 | J-P-4-5-8 | 3.60 | 5.00 | - | 0.73 |
| 11/08/90 | Gasoline | 16.20 | 38.80 | 1.77 | 9.41 |
| 05/25/90 | Gasoline | 14.00 | - | - | - |
| 11/21/90 | Gasoline | 3.10 | 4.10 | 0.36 | 2.10 |
| 01/24/91 | Gasoline | 15.50 | 15.00 | 1.80 | 8.00 |
| 05/24/91 | Gasoline | 0.47 | 8.00 | 0.30 | 4.50 |
| 10/29/91 | Gasoline | 0.20 | 0.75 | 0.13 | 0.85 |
| 07/26/91 | Gasoline | 15.50 | 50.60 | 6.36 | 33.70 |
| 10/31/90 | Gasoline | 40.00 | 105.00 | - | - |
| 10/12/90 | Gasoline | 32.00 | - | - | - |
| 10/18/90 | Gasoline | 29.00 | - | - | - |
| 10/16/90 | Gasoline | 34.00 | - | - | - |
| 02/21/91 | Gasoline | 38.00 | 28.00 | 3.00 | 1.80 |
| 01/29/92 | Gasoline | 4.79 | 10.70 | 0.25 | 1.74 |
| 12/04/90 | Gasoline | 10.50 | 24.30 | 1.94 | 16.60 |
| ***AVERAGE*** ................. | | 17.12 | 26.39 | 1.77 | 7.94 |

NOTES:
1. Constituent Levels are that of raw wastewater.
2. The source is Terminal Tank Bottoms.

INDUSTRIAL WATER SERVICES, INC.

| | |
|---|---|
| Salesperson | |
| Date Submitted | |

# WASTE STREAM INFORMATION FORM

| | | |
|---|---|---|
| Customer Name | Phone | |
| Address | Contact | |
| City | State | Zip |

Generator Name

Waste Description

Specific Process(es) Generating Waste

Estimated Quantity ☐ ☐ gallons ☐ barrels per unit time

Accompanied By Sample ☐ Analysis ☐ MSDS ☐

Additional Information

Is the waste a US EPA RCRA hazardous material ? .......... yes ___ no ___

EPA hazardous waste code(s): ____________

Is the waste a "listed" hazardous waste as described in 40 CFR 261.31, 261.32 and 261.33? .......... yes ___ no ___

Is the waste an unused material which would carry a "U" or"P" EPA waste code? yes ___ no ___

Does the waste contain PCB's? .......... yes ___ no ___

GENERATOR CERTIFICATION

I HEREBY CERTIFY THAT ALL INFORMATION IN THIS AND ALL ATTACHED DOCUMENTS IS COMPLETE AND ACCURATE, AND THAT ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED. I FURTHER CERTIFY THAT THERE ARE NO INFECTIOUS, RADIOACTIVE, OR EXPLOSIVE MATERIALS IN THIS WASTE, AND THAT IF THE WASTE STREAM COMPOSITION OR PROCESS GENERATING THE WASTE CHANGES I WILL NOTIFY INDUSTRIAL WATER SERVICES, INC. PRIOR TO SHIPMENT OF THE WASTE

____________ ____________ ____________

authorized signature title date

**INDUSTRIAL WATER SERVICES, INC.**

Salesperson
R Wmson

Date Submitted
1-14-91

# WASTESTREAM INFORMATION SHEET

| | |
|---|---|
| Customer Name: PanOcean Southland | Phone: 912 964 1811 |
| Address: P.O. Box 7390 | Contact: Billy Bruggeman |
| City: Sav. | State: Ga. — Zip: 31418 |

| | |
|---|---|
| Generator Name | PanOcean Southland |
| Waste Description | Tank Bottom Water |
| Waste Process | — |
| Estimated Quantity | Unknown ☐ gallons ☐ barrels — other units: |
| Accompanied By | Sample ✓ Analysis ✓ MSDS ☐ |

Additional Information/Comments

Tank Bottoms From JP4 - JP5 - JP8

JP4 - 1-14-91B extra 0.01/gal for acid

JP5 1-14-91C

JP8 1-14-91D

JP4 segregate, pH high

ACCEPTED J. [signature]
1/15/91

**SL SAVANNAH LABORATORIES**
**& ENVIRONMENTAL SERVICES, INC.**

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-13535

Received: 08 NOV 90

Mr. Billy Bruggeman
PanOcean Southland Incorporated
P.O. Box 7390
Savannah, Georgia 31418

Purchase Order: 4437

Project: Jet Fuel Tank Bottoms

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-1 | J-P-4 Water Bottoms-Tank 10 (11/7/90) | Client |
| 13535-2 | J-P-5 Water Bottoms-Tank 13 (11/7/90) | |
| 13535-3 | J-P-8 Water Bottoms-Tank 14 (11/7/90) | |

| PARAMETER | 13535-1 | 13535-2 | 13535-3 |
|---|---|---|---|
| Volatiles by GC/MS | | | |
| Chloromethane, ug/l | <1000 | <100 | <1000 |
| Bromomethane, ug/l | <1000 | <100 | <1000 |
| Vinyl Chloride, ug/l | <1000 | <100 | <1000 |
| Chloroethane, ug/l | <1000 | <100 | <1000 |
| Methylene Chloride, ug/l | <500 | <50 | <500 |
| Acetone, ug/l | <2500 | <250 | <2500 |
| Carbon Disulfide, ug/l | <500 | <50 | <500 |
| 1,1-Dichloroethylene, ug/l | <500 | <50 | <500 |
| 1,1-Dichloroethane, ug/l | <500 | <50 | <500 |
| Trans-1,2-Dichloroethene, ug/l | <500 | <50 | <500 |
| Chloroform, ug/l | <500 | <50 | <500 |
| 1,2-Dichloroethane, ug/l | <500 | <50 | <500 |
| 2-Butanone, ug/l | <1000 | <100 | <1000 |
| 1,1,1-Trichloroethane, ug/l | <500 | <50 | <500 |
| Carbon Tetrachloride, ug/l | <500 | <50 | <500 |
| Vinyl Acetate, ug/l | <1000 | <100 | <1000 |
| Bromodichloromethane, ug/l | <500 | <50 | <500 |
| 1,1,2,2-Tetrachloroethane, ug/l | <500 | <50 | <500 |
| 1,2-Dichloropropane, ug/l | <500 | <50 | <500 |
| Trans-1,3-Dichloropropene, ug/l | <500 | <50 | <500 |
| Trichloroethylene, ug/l | <500 | <50 | 1500 |

**SAVANNAH LABORATORIES**
**& ENVIRONMENTAL SERVICES, INC.**

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: SO-13535

Received: 08 NOV 90

Purchase Order: 4437

Mr. Billy Bruggeman
PanOcean Southland Incorporated
P.O. Box 7390
Savannah, Georgia 31418

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| 13535-3 | J-P-8 Water Bottoms-Tank 14 (11/7/90) | |

| PARAMETER | 13535-1 | 13535-2 | 13535-3 |
|---|---|---|---|
| Dibromochloromethane, ug/l | <500 | <50 | <500 |
| 1,1,2-Trichloroethane, ug/l | <500 | <50 | <500 |
| Benzene, ug/l | 3600 | <50 | <500 |
| Cis-1,3-Dichloropropene, ug/l | <500 | <50 | <500 |
| 2-Chloroethylvinyl Ether, ug/l | <500 | <50 | <500 |
| Bromoform, ug/l | <500 | <50 | <500 |
| 2-Hexanone, ug/l | <1000 | <100 | <1000 |
| 4-Methyl-2-pentanone, ug/l | <1000 | <100 | <1000 |
| Tetrachloroethylene, ug/l | <500 | <50 | <500 |
| Toluene, ug/l | 5000 | 190 | <500 |
| Chlorobenzene, ug/l | <500 | <50 | <500 |
| Ethylbenzene, ug/l | 500 | 200 | <500 |
| Styrene, ug/l | <500 | <50 | <500 |
| Xylenes, ug/l | 730 | 530 | <500 |

**SL** *SAVANNAH LABORATORIES*
*& ENVIRONMENTAL SERVICES, INC.*

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| 13535-3 | J-P-8 Water Bottoms-Tank 14 (11/7/90) | |

| PARAMETER | 13535-1 | 13535-2 | 13535-3 |
|---|---|---|---|
| emivolatile Organics (8270) | | | |
| 1,3-Dichlorobenzene, ug/l | <50 | <350 | <100 |
| 1,4-Dichlorobenzene, ug/l | <50 | <350 | <100 |
| Hexachloroethane, ug/l | <50 | <350 | <100 |
| bis(2-Chloroethyl) ether, ug/l | <50 | <350 | <100 |
| 1,2-Dichlorobenzene, ug/l | <50 | <350 | <100 |
| Bis(2-chloroisopropyl)ether, ug/l | <50 | <350 | <100 |
| N-Nitrosodi-N-Propylamine, ug/l | <50 | <350 | <100 |
| Nitrobenzene, ug/l | <50 | <350 | <100 |
| Hexachlorobutadiene, ug/l | <50 | <350 | <100 |
| 1,2,4-Trichlorobenzene, ug/l | <50 | <350 | <100 |
| Isophorone, ug/l | <50 | <350 | <100 |
| Naphthalene, ug/l | 180 | 900 | 290 |
| bis(2-Chloroethoxy) methane, ug/l | <50 | <350 | <100 |
| Hexachlorocyclopentadiene, ug/l | <50 | <350 | <100 |
| 2-Chloronaphthalene, ug/l | <50 | <350 | <100 |
| Acenaphthylene, ug/l | <50 | <350 | <100 |
| Acenaphthene, ug/l | <50 | <350 | <100 |
| Dimethylphthalate, ug/l | <50 | <350 | <100 |
| 2,6-Dinitrotoluene, ug/l | <50 | <350 | <100 |
| Fluorene, ug/l | <50 | <350 | <100 |
| 4-Chlorophenyl-phenyl ether, ug/l | <50 | <350 | <100 |

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LOG NO: SO-13535

Received: 08 NOV 90

Purchase Order: 4437

Mr. Billy Bruggeman
PanOcean Southland Incorporated
P.O. Box 7390
Savannah, Georgia 31418

Project: Jet Fuel Tank Bottoms

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-1 | J-P-4 Water Bottoms-Tank 10 (11/7/90) | Client |
| 13535-2 | J-P-5 Water Bottoms-Tank 13 (11/7/90) | |
| 13535-3 | J-P-8 Water Bottoms-Tank 14 (11/7/90) | |

| PARAMETER | 13535-1 | 13535-2 | 13535-3 |
|---|---|---|---|
| 2,4-Dinitrotoluene, ug/l | <50 | <350 | <100 |
| Diethylphthalate, ug/l | <50 | <350 | <100 |
| N-Nitrosodiphenylamine, ug/l | <50 | <350 | <100 |
| Hexachlorobenzene, ug/l | <50 | <350 | <100 |
| gamma-BHC, ug/l | <50 | <350 | <100 |
| 4-Bromophenyl-phenyl-ether, ug/l | <50 | <350 | <100 |
| delta-BHC, ug/l | <50 | <350 | <100 |
| Phenanthrene, ug/l | <50 | <350 | <100 |
| Anthracene, ug/l | <50 | <350 | <100 |
| beta-BHC, ug/l | <50 | <350 | <100 |
| Heptachlor, ug/l | <50 | <350 | <100 |
| alpha-BHC, ug/l | <50 | <350 | <100 |
| Aldrin, ug/l | <50 | <350 | <100 |
| Di-n-butylphthalate, ug/l | <50 | <350 | <100 |
| Heptachlor epoxide, ug/l | <50 | <350 | <100 |
| Endosulfan I, ug/l | <50 | <350 | <100 |
| Fluoranthene, ug/l | <50 | <350 | <100 |
| Dieldrin, ug/l | <50 | <350 | <100 |
| 4,4'-DDE, ug/l | <50 | <350 | <100 |
| Pyrene, ug/l | <50 | <350 | <100 |
| Endrin, ug/l | <50 | <350 | <100 |
| Endosulfan II, ug/l | <50 | <350 | <100 |

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|---|---|---|
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| 13535-2 | J-P-5 Water Bottoms-Tank 13 (11/7/90) | |
| 13535-3 | J-P-8 Water Bottoms-Tank 14 (11/7/90) | |

| PARAMETER | 13535-1 | 13535-2 | 13535-3 |
|---|---|---|---|
| 4,4'-DDD, ug/l | <50 | <350 | <100 |
| Benzidine, ug/l | <400 | <2800 | <800 |
| 4,4'-DDT, ug/l | <50 | <350 | <100 |
| Endosulfan sulfate, ug/l | <50 | <350 | <100 |
| Endrin Aldehyde, ug/l | <50 | <350 | <100 |
| Butylbenzylphthalate, ug/l | <50 | <350 | <100 |
| bis(2-Ethylhexyl) phthalate, ug/l | <50 | <350 | <100 |
| Chrysene, ug/l | <50 | <350 | <100 |
| Benzo(a)Anthracene, ug/l | <50 | <350 | <100 |
| 3,3'-Dichlorobenzidine, ug/l | <100 | <700 | <200 |
| Di-n-octylphthalate, ug/l | <50 | <350 | <100 |
| Benzo(b)fluoranthene, ug/l | <50 | <350 | <100 |
| Benzo (k) Fluoranthene, ug/l | <50 | <350 | <100 |
| Benzo(a)pyrene, ug/l | <50 | <350 | <100 |
| Indeno (1,2,3-cd)pyrene, ug/l | <50 | <350 | <100 |
| Dibenz(a,h)anthracene, ug/l | <50 | <350 | <100 |
| Benzo(g,h,i)perylene, ug/l | <50 | <350 | <100 |
| N-Nitrosodimethylamine, ug/l | <50 | <350 | <100 |
| Chlordane, ug/l | <100 | <700 | <200 |
| Toxaphene, ug/l | <1000 | <7000 | <2000 |
| Aroclor-1016, ug/l | <500 | <3500 | <1000 |
| Aroclor-1221, ug/l | <500 | <3500 | <1000 |

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REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-1 | J-P-4 Water Bottoms-Tank 10 (11/7/90) | Client |
| 13535-2 | J-P-5 Water Bottoms-Tank 13 (11/7/90) | |
| 13535-3 | J-P-8 Water Bottoms-Tank 14 (11/7/90) | |

| PARAMETER | 13535-1 | 13535-2 | 13535-3 |
|---|---|---|---|
| Aroclor-1232, ug/l | <500 | <3500 | <1000 |
| Aroclor-1242, ug/l | <500 | <3500 | <1000 |
| Aroclor-1248, ug/l | <500 | <3500 | <1000 |
| Aroclor-1254, ug/l | <500 | <3500 | <1000 |
| Aroclor-1260, ug/l | <500 | <3500 | <1000 |
| 2-Chlorophenol, ug/l | <50 | <350 | <100 |
| 2-Nitrophenol, ug/l | <50 | <350 | <100 |
| Phenol, ug/l | 230 | <350 | <100 |
| 2,4-Dimethylphenol, ug/l | 1800 | <350 | <100 |
| 2,4-Dichlorophenol, ug/l | <50 | <350 | <100 |
| 2,4,6-Trichlorophenol, ug/l | <50 | <350 | <100 |
| 4-Chloro-3-methylphenol, ug/l | <50 | <350 | <100 |
| 2,4-Dinitrophenol, ug/l | <250 | <1800 | <500 |
| 2-Methyl-4,6-dinitrophenol, ug/l | <250 | <1800 | <500 |
| Pentachlorophenol, ug/l | <250 | <1800 | <500 |
| 4-Nitrophenol, ug/l | <250 | <1800 | <500 |
| Benzyl alcohol, ug/l | <50 | <350 | <100 |
| 2-Methylphenol (o-cresol), ug/l | 1300 | <350 | <100 |
| 4-Methylphenol (p-cresol), ug/l | 750 | <350 | <100 |
| Benzoic acid, ug/l | <250 | <1800 | <500 |
| 4-Chloroaniline, ug/l | <50 | <350 | <100 |
| 2-Methylnaphthalene, ug/l | <50 | <350 | <100 |
| 2,4,5-Trichlorophenol, ug/l | <50 | <350 | <100 |
| 2-Nitroaniline, ug/l | <250 | <1800 | <500 |
| 3-Nitroaniline, ug/l | <250 | <1800 | <500 |
| Dibenzofuran, ug/l | <50 | <350 | <100 |
| 4-Nitroaniline, ug/l | <250 | <1800 | <500 |

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Project: Jet Fuel Tank Bottoms

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-1 | J-P-4 Water Bottoms-Tank 10 (11/7/90) | Client |
| 13535-2 | J-P-5 Water Bottoms-Tank 13 (11/7/90) | |
| 13535-3 | J-P-8 Water Bottoms-Tank 14 (11/7/90) | |

| PARAMETER | 13535-1 | 13535-2 | 13535-3 |
|---|---|---|---|
| Antimony, mg/l | <0.050 | 0.16 | <0.050 |
| Arsenic, mg/l | <0.010 | <0.010 | <0.010 |
| Beryllium, mg/l | <0.0050 | <0.0050 | <0.0050 |
| Cadmium, mg/l | <0.0050 | <0.0050 | <0.0050 |
| Chromium, mg/l | <0.010 | <0.010 | <0.010 |
| Copper, mg/l | 0.054 | <0.025 | <0.025 |
| Lead, mg/l | <0.0050 | <0.0050 | <0.0050 |
| Mercury, mg/l | <0.00020 | <0.00020 | <0.00020 |
| Nickel, mg/l | <0.040 | <0.040 | <0.040 |
| Selenium, mg/l | <0.25 | <0.25 | <0.25 |
| Silver, mg/l | <0.010 | <0.010 | <0.010 |
| Thallium, mg/l | <0.010 | <0.010 | <0.010 |
| Zinc, mg/l | 1.3 | 0.11 | 0.080 |

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| LOG NO | SAMPLE DESCRIPTION , LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
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| 13535-2 | J-P-5 Water Bottoms-Tank 13 (11/7/90) | |
| 13535-3 | J-P-8 Water Bottoms-Tank 14 (11/7/90) | |

| PARAMETER | 13535-1 | 13535-2 | 13535-3 |
|---|---|---|---|
| esticides/PCB's | | | |
| Aldrin, ug/l | <0.10 | <0.010 | <0.010 |
| alpha-BHC, ug/l | <0.10 | <0.010 | <0.010 |
| beta-BHC, ug/l | <0.10 | <0.010 | <0.010 |
| gamma-BHC, ug/l | <0.10 | <0.010 | <0.010 |
| delta-BHC, ug/l | <0.10 | <0.010 | <0.010 |
| Chlordane, ug/l | <1.0 | <0.10 | <0.10 |
| 4,4'-DDT, ug/l | <0.50 | <0.050 | <0.050 |
| 4,4'-DDE, ug/l | <0.20 | <0.020 | <0.020 |
| 4,4'-DDD, ug/l | <0.20 | <0.020 | <0.020 |
| Dieldrin, ug/l | <0.20 | <0.020 | <0.020 |
| Alpha-Endosulfan, ug/l | <0.20 | <0.020 | <0.020 |
| Beta-Endosulfan, ug/l | <0.50 | <0.050 | <0.050 |
| Endosulfan sulfate, ug/l | <1.0 | <0.10 | <0.10 |
| Endrin, ug/l | <0.20 | <0.020 | <0.020 |
| Endrin Aldehyde, ug/l | <1.0 | <0.10 | <0.10 |
| Heptachlor, ug/l | <0.10 | <0.010 | <0.010 |
| Heptachlor epoxide, ug/l | <0.20 | <0.020 | <0.020 |
| Aroclor-1242, ug/l | <5.0 | <0.50 | <0.50 |
| Aroclor-1254, ug/l | <5.0 | <0.50 | <0.50 |
| Aroclor-1221, ug/l | <5.0 | <0.50 | <0.50 |
| Aroclor-1232, ug/l | <5.0 | <0.50 | <0.50 |
| Aroclor-1248, ug/l | <5.0 | <0.50 | <0.50 |
| Aroclor-1260, ug/l | <5.0 | <0.50 | <0.50 |
| Aroclor-1016, ug/l | <5.0 | <0.50 | <0.50 |
| Toxaphene, ug/l | <10 | <1.0 | <1.0 |

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LOG NO: S0-13535

Received: 08 NOV 90

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PanOcean Southland Incorporated
P.O. Box 7390
Savannah, Georgia 31418

Purchase Order: 4437

Project: Jet Fuel Tank Bottoms

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-1 | J-P-4 Water Bottoms-Tank 10 (11/7/90) | Client |
| 13535-2 | J-P-5 Water Bottoms-Tank 13 (11/7/90) | |
| 13535-3 | J-P-8 Water Bottoms-Tank 14 (11/7/90) | |

| PARAMETER | 13535-1 | 13535-2 | 13535-3 |
|---|---|---|---|
| Suspended Solids, mg/l | <5.0 | <5.0 | <5.0 |
| Chemical Oxygen Demand, mg/l | 260000 | 1000000 | 350000 |
| Ignitability-flash point, Degrees F | >140 | >140 | >140 |
| Petroleum Hydrocarbons (418.1), mg/l | 27 | 120 | 38 |
| pH, units | 5.6 | 5.0 | 5.3 |

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Project: Jet Fuel Tank Bottoms

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-4 | Method Blank-Liquid | Client |
| 13535-5 | Accuracy (Mean % Recovery)-Liquid | |
| 13535-6 | Precision (% RPD)-Liquid | |

| PARAMETER | 13535-4 | 13535-5 | 13535-6 |
|---|---|---|---|
| ›latiles by GC/MS | | | |
| Chloromethane, ug/l | <10 | --- | --- |
| Bromomethane, ug/l | <10 | --- | --- |
| Vinyl Chloride, ug/l | <10 | --- | --- |
| Chloroethane, ug/l | <10 | --- | --- |
| Methylene Chloride, ug/l | <5.0 | --- | --- |
| Acetone, ug/l | <25 | --- | --- |
| Carbon Disulfide, ug/l | <5.0 | --- | --- |
| 1,1-Dichloroethylene, ug/l | <5.0 | 99 % | 7.1 % |
| 1,1-Dichloroethane, ug/l | <5.0 | --- | --- |
| Trans-1,2-Dichloroethene, ug/l | <5.0 | --- | --- |
| Chloroform, ug/l | <5.0 | --- | --- |
| 1,2-Dichloroethane, ug/l | <5.0 | --- | --- |
| 2-Butanone, ug/l | <10 | --- | --- |
| 1,1,1-Trichloroethane, ug/l | <5.0 | --- | --- |
| Carbon Tetrachloride, ug/l | <5.0 | --- | --- |
| Vinyl Acetate, ug/l | <10 | --- | --- |
| Bromodichloromethane, ug/l | <5.0 | --- | --- |
| 1,1,2,2-Tetrachloroethane, ug/l | <5.0 | --- | --- |
| 1,2-Dichloropropane, ug/l | <5.0 | --- | --- |
| Trans-1,3-Dichloropropene, ug/l | <5.0 | --- | --- |
| Trichloroethylene, ug/l | <5.0 | 109 % | 10.1 % |

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REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-4 | Method Blank-Liquid | Client |
| 13535-5 | Accuracy (Mean % Recovery)-Liquid | |
| 13535-6 | Precision (% RPD)-Liquid | |

| PARAMETER | 13535-4 | 13535-5 | 13535-6 |
|---|---|---|---|
| Dibromochloromethane, ug/l | <5.0 | --- | --- |
| 1,1,2-Trichloroethane, ug/l | <5.0 | --- | --- |
| Benzene, ug/l | <5.0 | 91 % | 8.8 % |
| Cis-1,3-Dichloropropene, ug/l | <5.0 | --- | --- |
| 2-Chloroethylvinyl Ether, ug/l | <5.0 | --- | --- |
| Bromoform, ug/l | <5.0 | --- | --- |
| 2-Hexanone, ug/l | <10 | --- | --- |
| 4-Methyl-2-pentanone, ug/l | <10 | --- | --- |
| Tetrachloroethylene, ug/l | <5.0 | --- | --- |
| Toluene, ug/l | <5.0 | 104 % | 2.9 % |
| Chlorobenzene, ug/l | <5.0 | 106 % | 6.6 % |
| Ethylbenzene, ug/l | <5.0 | --- | --- |
| Styrene, ug/l | <5.0 | --- | --- |
| Xylenes, ug/l | <5.0 | --- | --- |

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Project: Jet Fuel Tank Bottoms

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-4 | Method Blank-Liquid | Client |
| 13535-5 | Accuracy (Mean % Recovery)-Liquid | |
| 13535-6 | Precision (% RPD)-Liquid | |

| PARAMETER | 13535-4 | 13535-5 | 13535-6 |
|---|---|---|---|
| Semivolatile Organics (8270) | | | |
| 1,3-Dichlorobenzene, ug/l | <10 | --- | --- |
| 1,4-Dichlorobenzene, ug/l | <10 | 49 % | 3.5 % |
| Hexachloroethane, ug/l | <10 | --- | --- |
| bis(2-Chloroethyl) ether, ug/l | <10 | --- | --- |
| 1,2-Dichlorobenzene, ug/l | <10 | --- | --- |
| Bis(2-chloroisopropyl)ether, ug/l | <10 | --- | --- |
| N-Nitrosodi-N-Propylamine, ug/l | <10 | 67 % | 0.1 % |
| Nitrobenzene, ug/l | <10 | --- | --- |
| Hexachlorobutadiene, ug/l | <10 | --- | --- |
| 1,2,4-Trichlorobenzene, ug/l | <10 | 56 % | 2.5 % |
| Isophorone, ug/l | <10 | --- | --- |
| Naphthalene, ug/l | <10 | --- | --- |
| bis(2-Chloroethoxy) methane, ug/l | <10 | --- | --- |
| Hexachlorocyclopentadiene, ug/l | <10 | --- | --- |
| 2-Chloronaphthalene, ug/l | <10 | --- | --- |
| Acenaphthylene, ug/l | <10 | 41 % | 109 % |
| Acenaphthene, ug/l | <10 | --- | --- |
| Dimethylphthalate, ug/l | <10 | --- | --- |
| 2,6-Dinitrotoluene, ug/l | <10 | --- | --- |
| Fluorene, ug/l | <10 | --- | --- |
| 4-Chlorophenyl-phenyl ether, ug/l | <10 | --- | --- |

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REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-4 | Method Blank-Liquid | Client |
| 13535-5 | Accuracy (Mean % Recovery)-Liquid | |
| 13535-6 | Precision (% RPD)-Liquid | |

| PARAMETER | 13535-4 | 13535-5 | 13535-6 |
|---|---|---|---|
| 2,4-Dinitrotoluene, ug/l | <10 | 64 % | 3.6 % |
| Diethylphthalate, ug/l | <10 | --- | --- |
| N-Nitrosodiphenylamine, ug/l | <10 | --- | --- |
| Hexachlorobenzene, ug/l | <10 | --- | --- |
| gamma-BHC, ug/l | <10 | --- | --- |
| 4-Bromophenyl-phenyl-ether, ug/l | <10 | --- | --- |
| delta-BHC, ug/l | <10 | --- | --- |
| Phenanthrene, ug/l | <10 | --- | --- |
| Anthracene, ug/l | <10 | --- | --- |
| beta-BHC, ug/l | <10 | --- | --- |
| Heptachlor, ug/l | <10 | --- | --- |
| alpha-BHC, ug/l | <10 | --- | --- |
| Aldrin, ug/l | <10 | --- | --- |
| Di-n-butylphthalate, ug/l | <10 | --- | --- |
| Heptachlor epoxide, ug/l | <10 | --- | --- |
| Endosulfan I, ug/l | <10 | --- | --- |
| Fluoranthene, ug/l | <10 | --- | --- |
| Dieldrin, ug/l | <10 | --- | --- |
| 4,4'-DDE, ug/l | <10 | --- | --- |
| Pyrene, ug/l | <10 | 68 % | 1.7 % |
| Endrin, ug/l | <10 | --- | --- |
| Endosulfan II, ug/l | <10 | --- | --- |

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REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-4 | Method Blank-Liquid | Client |
| 13535-5 | Accuracy (Mean % Recovery)-Liquid | |
| 13535-6 | Precision (% RPD)-Liquid | |

| PARAMETER | 13535-4 | 13535-5 | 13535-6 |
|---|---|---|---|
| 4,4'-DDD, ug/l | <10 | --- | --- |
| Benzidine, ug/l | <80 | --- | --- |
| 4,4'-DDT, ug/l | <10 | --- | --- |
| Endosulfan sulfate, ug/l | <10 | --- | --- |
| Endrin Aldehyde, ug/l | <10 | --- | --- |
| Butylbenzylphthalate, ug/l | <10 | --- | --- |
| bis(2-Ethylhexyl) phthalate, ug/l | <10 | --- | --- |
| Chrysene, ug/l | <10 | --- | --- |
| Benzo(a)Anthracene, ug/l | <10 | --- | --- |
| 3,3'-Dichlorobenzidine, ug/l | <20 | --- | --- |
| Di-n-octylphthalate, ug/l | <10 | --- | --- |
| Benzo(b)fluoranthene, ug/l | <10 | --- | --- |
| Benzo (k) Fluoranthene, ug/l | <10 | --- | --- |
| Benzo(a)pyrene, ug/l | <10 | --- | --- |
| Indeno (1,2,3-cd)pyrene, ug/l | <10 | --- | --- |
| Dibenz(a,h)anthracene, ug/l | <10 | --- | --- |
| Benzo(g,h,i)perylene, ug/l | <10 | --- | --- |
| N-Nitrosodimethylamine, ug/l | <10 | --- | --- |
| Chlordane, ug/l | <20 | --- | --- |
| Toxaphene, ug/l | <200 | --- | --- |
| Aroclor-1016, ug/l | <100 | --- | --- |
| Aroclor-1221, ug/l | <100 | --- | --- |

**SL** SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-13535

Received: 08 NOV 90

Purchase Order: 4437

Mr. Billy Bruggeman
PanOcean Southland Incorporated
P.O. Box 7390
Savannah, Georgia 31418

Project: Jet Fuel Tank Bottoms

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-4 | Method Blank-Liquid | Client |
| 13535-5 | Accuracy (Mean % Recovery)-Liquid | |
| 13535-6 | Precision (% RPD)-Liquid | |

| PARAMETER | 13535-4 | 13535-5 | 13535-6 |
|---|---|---|---|
| Aroclor-1232, ug/l | <100 | --- | --- |
| Aroclor-1242, ug/l | <100 | --- | --- |
| Aroclor-1248, ug/l | <100 | --- | --- |
| Aroclor-1254, ug/l | <100 | --- | --- |
| Aroclor-1260, ug/l | <100 | --- | --- |
| 2-Chlorophenol, ug/l | <10 | 54 % | 2.8 % |
| 2-Nitrophenol, ug/l | <10 | --- | --- |
| Phenol, ug/l | <10 | 19 % | 1.2 % |
| 2,4-Dimethylphenol, ug/l | <10 | --- | --- |
| 2,4-Dichlorophenol, ug/l | <10 | --- | --- |
| 2,4,6-Trichlorophenol, ug/l | <10 | --- | --- |
| 4-Chloro-3-methylphenol, ug/l | <10 | 63 % | 1.3 % |
| 2,4-Dinitrophenol, ug/l | <50 | --- | --- |
| 2-Methyl-4,6-dinitrophenol, ug/l | <50 | --- | --- |
| Pentachlorophenol, ug/l | <50 | 74 % | 0.8 % |
| 4-Nitrophenol, ug/l | <50 | 17 % | 1.3 % |
| Benzyl alcohol, ug/l | <10 | --- | --- |
| 2-Methylphenol (o-cresol), ug/l | <10 | --- | --- |
| 4-Methylphenol (p-cresol), ug/l | <10 | --- | --- |
| Benzoic acid, ug/l | <50 | --- | --- |
| 4-Chloroaniline, ug/l | <10 | --- | --- |
| 2-Methylnaphthalene, ug/l | <10 | --- | --- |
| 2,4,5-Trichlorophenol, ug/l | <10 | --- | --- |
| 2-Nitroaniline, ug/l | <50 | --- | --- |
| 3-Nitroaniline, ug/l | <50 | --- | --- |
| Dibenzofuran, ug/l | <10 | --- | --- |
| 4-Nitroaniline, ug/l | <50 | --- | --- |

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: SO-13535

Received: 08 NOV 90

Purchase Order: 4437

Mr. Billy Bruggeman
PanOcean Southland Incorporated
P.O. Box 7390
Savannah, Georgia 31418

Project: Jet Fuel Tank Bottoms

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-4 | Method Blank-Liquid | Client |
| 13535-5 | Accuracy (Mean % Recovery)-Liquid | |
| 13535-6 | Precision (% RPD)-Liquid | |

| PARAMETER | 13535-4 | 13535-5 | 13535-6 |
|---|---|---|---|
| ntimony, mg/l | <0.050 | 107 % | 0.93 % |
| Arsenic, mg/l | <0.010 | 80 % | 10 % |
| Beryllium, mg/l | <0.0050 | 97 % | 1.0 % |
| Cadmium, mg/l | <0.0050 | 83 % | 1.2 % |
| Chromium, mg/l | <0.010 | 92 % | 1.1 % |
| Copper, mg/l | <0.025 | 97 % | 1.0 % |
| Lead, mg/l | <0.0050 | 101 % | 2.1 % |
| Mercury, mg/l | <0.00020 | 107 % | 0.9 % |
| Nickel, mg/l | <0.040 | 93 % | 0 % |
| Selenium, mg/l | <0.010 | 91 % | 3.3 % |
| Silver, mg/l | <0.010 | 94 % | 1.1 % |
| Thallium, mg/l | <0.010 | 105 % | 3.3 % |
| Zinc, mg/l | <0.020 | 97 % | 2.1 % |

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& ENVIRONMENTAL SERVICES, INC.

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Received: 08 NOV 90

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Mr. Billy Bruggeman
PanOcean Southland Incorporated
P.O. Box 7390
Savannah, Georgia 31418

Project: Jet Fuel Tank Bottoms

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-4 | Method Blank-Liquid | Client |
| 13535-5 | Accuracy (Mean % Recovery)-Liquid | |
| 13535-6 | Precision (% RPD)-Liquid | |

| PARAMETER | 13535-4 | 13535-5 | 13535-6 |
|---|---|---|---|
| Pesticides/PCB's | | | |
| Aldrin, ug/l | <0.010 | 65 % | 15 % |
| alpha-BHC, ug/l | <0.010 | --- | --- |
| beta-BHC, ug/l | <0.010 | --- | --- |
| gamma-BHC, ug/l | <0.010 | 90 % | 10 % |
| delta-BHC, ug/l | <0.010 | --- | --- |
| Chlordane, ug/l | <0.10 | --- | --- |
| 4,4'-DDT, ug/l | <0.050 | 72 % | 25 % |
| 4,4'-DDE, ug/l | <0.020 | --- | --- |
| 4,4'-DDD, ug/l | <0.020 | --- | --- |
| Dieldrin, ug/l | <0.020 | 98 % | 12 % |
| Alpha-Endosulfan, ug/l | <0.020 | --- | --- |
| Beta-Endosulfan, ug/l | <0.050 | --- | --- |
| Endosulfan sulfate, ug/l | <0.10 | --- | --- |
| Endrin, ug/l | <0.020 | 104 % | 7.7 % |
| Endrin Aldehyde, ug/l | <0.10 | --- | --- |
| Heptachlor, ug/l | <0.010 | 53 % | 9.4 % |
| Heptachlor epoxide, ug/l | <0.020 | --- | --- |
| Aroclor-1242, ug/l | <0.50 | --- | --- |
| Aroclor-1254, ug/l | <0.50 | --- | --- |
| Aroclor-1221, ug/l | <0.50 | --- | --- |
| Aroclor-1232, ug/l | <0.50 | --- | --- |
| Aroclor-1248, ug/l | <0.50 | --- | --- |
| Aroclor-1260, ug/l | <0.50 | --- | --- |
| Aroclor-1016, ug/l | <0.50 | --- | --- |
| Toxaphene, ug/l | <1.0 | --- | --- |

**SAVANNAH LABORATORIES**
**& ENVIRONMENTAL SERVICES, INC.**

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: SO-13535

Received: 08 NOV 90

Purchase Order: 4437

Mr. Billy Bruggeman
PanOcean Southland Incorporated
P.O. Box 7390
Savannah, Georgia 31418

Project: Jet Fuel Tank Bottoms

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES | SAMPLED BY |
|---|---|---|
| 13535-4 | Method Blank-Liquid | Client |
| 13535-5 | Accuracy (Mean % Recovery)-Liquid | |
| 13535-6 | Precision (% RPD)-Liquid | |

| PARAMETER | 13535-4 | 13535-5 | 13535-6 |
|---|---|---|---|
| Chemical Oxygen Demand, mg/l | <10.0 | 100 % | 3.4 % |
| Petroleum Hydrocarbons (418.1), mg/l | <1.0 | 119 % | 2.5 % |

Methods: EPA 40 CFR Part 136

William D. Sherrod

William D. Sherrod

**INDUSTRIAL WATER SERVICES, INC.**

Salesperson: R Wmson

Date Submitted: 10-31-90B

# WASTESTREAM INFORMATION SHEET

| | |
|---|---|
| Customer Name: CITGO Petroleum Corp. | Phone: 704 392 3236 |
| Address: 7600 Mt. Holly Rd | Contact: DAVID JONES |
| City: Charlotte | State: NC / Zip: 28214 |

Generator Name: CITGO Petroleum Corp.

Waste Description: TANK BOTTOMS

Waste Process:

Estimated Quantity: 10,000 [X] gallons [ ] barrels — other units: YEAR

Accompanied By: Sample [ ] Analysis [ ] MSDS [ ]

Additional Information/Comments

sent to S.E. Chemists for Benzene Analysis 11-8-90

Analysis, benzene attributable to gasoline

ACCEPTED

10-31-90

Telephone
(904) 725-2040
FAX
(904) 727-9720

SOUTHEASTERN CHEMISTS' LABORATORIES
P.O. Box 8917
Jacksonville, FL 32239

Laboratory Marks: Job # 31254 Date Received: November 8, 1990

Sample of: Oil

Client: Industrial Water Services, Inc., P.O. Box 43369, Jacksonville FL

Sample Marks: Tank Bottom

## CERTIFICATE OF ANALYSIS

| PARAMETERS | RESULTS |
|---|---|
| Benzene | 16,200 ug/l |
| Toluene | 38,800 ug/l |
| Ethylbenzene | 1,770 ug/l |
| Xylene | 9,410 ug/l |

All samples analyzed in accordance with EPA, ASTM, or other approved methods.

Respectfully submitted,

Charles M. Ged

Charles M. Ged
Laboratory Director

CMG/dr

**INDUSTRIAL WATER SERVICES, INC.**

Salesperson

Date Submitted 8/9/91

# WASTESTREAM INFORMATION SHEET

| | |
|---|---|
| Customer Name: M+E/Pieso, INC. | Phone: 305-846-1882 |
| Address: 400 Sawgrass Corp. Parkway | Contact: Grant Chambless |
| City: Sun Rise | State: Fla. / Zip: 33325 |

Generator Name: Star enterprises

Waste Description: Tank Bottom water

Waste Process

Estimated Quantity: 1,100 ☑ gallons ☐ barrels; other units

Accompanied By: Sample ☐ Analysis ☑ MSDS ☐

Additional Information/Comments

2118

star/ente/prises. (20 Drums) $85 hr-yard yard

Plus $50. per/Drum.

ACCEPTED

JDO 8-9-91

Metcalf & Eddy
PIECO, Inc.

# FAX COVER SHEET

| | |
|---|---|
| DATE: | 8-9-91 |
| DELIVER TO: | Lawrence Helsland |
| COMPANY: | I. W. S. |
| TELEPHONE NO.: | Fax # 904 354-7612 |
| FROM: | Grant Chandler |
| NO. OF PAGES (Including cover sheet): | 3 |
| SUBJECT: | Waste Water Disposal |
| | |
| COMMENTS: | Call me for questions<br>Thanks<br>Grant |

CALL BACK IS REQUIRED: YES ☐ NO ☐

NOTE: IF TRANSMISSION IS NOT COMPLETED, PLEASE CALL (305) 846-8611

400 Sawgrass Corporate Parkway
Tel 305-846-8611 • Fax 305-846-8886

AWT Air & Water Technologies Corporation

CHEMICAL LABORATORIES INCORPORATED

Received From:
M&E Pieco/CHAMBLESS
400 SawgrassCorp.Prk
Sunrise,FL 33325

Date Reported: Aug 1 1991
PO Number: EV09954
PO Number F91-8046-63
FDHRS Lab# : 83139
FDER Lab# : E83018
NCDEHNR Lab# : 296
SCDHEC Lab# : 96019

For: 601 602 PB TCLP BENZENE
Sampled:Jul24 1991 Analyzed:Jul26 1991 Received:Jul26 1991Lab Num: 13491-13491

REPORT OF ANALYSIS

| Parameter | Unit | Method Detection Limit | %ACC | %PRC | 13491 TANK BOTTOM WATER |
|---|---|---|---|---|---|
| Lead | mg/L | .001 | 103 | .359 | 0.09 |
| TCLP Dilution_Factor | | - | | | 10 |
| TCLP Benzene | ug/L | 0.5 | | | 15500 |
| TCLP PID_Spike | ug/L | 0.5 | | | 116 |
| - | | - | | | - |
| Dilution_Factor | | - | | | 10 |
| 1,1,1-trichloroethan | ug/L | 1 | 93.5 | 3.75 | <10 |
| 1,1,2,2-tetrachloroe | ug/L | 1 | 92.6 | 4.06 | <10 |
| 1,1,2-trichloroethan | ug/L | 1 | 94.8 | 7.36 | <10 |
| 1,1-dichloroethane | ug/L | 1 | 96.3 | 2.63 | <10 |
| 1,1-dichloroethene | ug/L | 1 | 95.7 | 3.31 | <10 |
| 1,2-dichloroethane | ug/L | 1 | 89.5 | 8.38 | <10 |
| 1,2-dichloropropane | ug/L | 1 | 94.6 | 5.31 | <10 |
| 2-chloroethylvinylet | ug/L | 1 | 97.8 | 5.51 | <10 |
| Bromodichloromethane | ug/L | 1 | 93.9 | 6.13 | <10 |
| Bromoform | ug/L | 1 | 92.9 | 7.36 | <10 |
| cis-1,3-dichloroprop | ug/L | 1 | 94.8 | 5.71 | <10 |
| Carbon tetrachloride | ug/L | 1 | 93.7 | 4.37 | <10 |
| Chloroform | ug/L | 1 | 93.9 | 5.51 | <10 |
| Dibromochloromethane | ug/L | 1 | 94.6 | 8.24 | <10 |
| Methylene chloride | ug/L | 1 | 92.6 | 7.19 | <10 |
| trans-1,3,-dichlorop | ug/L | 1 | 97.8 | 5.51 | <10 |
| Trichlorofluorometha | ug/L | 2 | 93.7 | 4.37 | <20 |
| 1,2-dichloroethene | ug/L | 1 | 95.7 | 3.31 | <10 |
| Trichloroethene | ug/L | 1 | 94.3 | 4.78 | <10 |
| Tetrachloroethene | ug/L | 1 | 92.7 | 6.00 | <10 |

Data Release Authorization

Sample integrity and reliability certified by Lab personnel prior to analysis.
Methods of analysis in accordance with FCL QA and EPA approved methodology.

Jefferson S. Flowers, Ph.D.
Technical Director



Jefferson L. Flowers, Ph.D.
Jefferson S. Flowers, Ph.D.
481 NEWBURYPORT
P.O. BOX 150-597
ALTAMONTE SPRINGS
FLORIDA 32715-0597
BUS: (407) 339-5984
FAX: (407) 260-6110

08.09.91 09:19AM P02

CHEMICAL LABORATORIES INCORPORATED

:ceived From:
M&E Pieco/CHAMBLESS
400 SawgrassCorp.Prk
Sunrise,FL 33325

Date Reported: Aug 1 1991
PO Number: EV09954
PO Number F91-8046-63
FDHRS Lab# : 83139
FDER Lab# : E83018
NCDEHNR Lab# : 296
SCDHEC Lab# : 96019

or: 601 602 PB TCLP BENZENE
mpled:Jul24 1991 Analyzed:Jul26 1991 Received:Jul26 1991Lab Num: 13491-13491

REPORT OF ANALYSIS

| Parameter | Unit | Method Detection Limit | %ACC | %PRC | 13491 TANK BOTTOM WATER |
|---|---|---|---|---|---|
| ,2-dibromo-3-chloro | ug/L | 1 | 93.4 | .264 | <10 |
| Bromomethane | ug/L | 5 | 92.6 | 7.19 | <50 |
| Chlorobenzene | ug/L | 0.5 | 94.1 | 6.44 | <5 |
| Chloroethane | ug/L | 3 | 95.7 | 3.31 | <30 |
| Chloromethane | ug/L | 5 | 92.6 | 7.19 | <50 |
| ichlorodifluorometh | ug/L | 2 | 93.7 | 4.37 | <20 |
| Vinyl chloride | ug/L | 0.5 | 95.7 | 3.31 | <5 |
| Hall_Spike | ug/L | 0.5 | 100 | 3.26 | 80.8 |
| ichlorobenzene | ug/L | 0.5 | 93.6 | 5.06 | <5 |
| dichlorobenzene | ug/L | 0.5 | 94.6 | 4.68 | <5 |
| dichlorobenzene | ug/L | 0.5 | 95.6 | 4.44 | <5 |
| Benzene | ug/L | 0.5 | 93.9 | 4.78 | 15500 |
| Ethylbenzene | ug/L | 0.5 | 93.3 | 5.67 | 6360 |
| Toluene | ug/L | 0.5 | 94.0 | 6.40 | 50600 |
| Xylene | ug/L | 0.5 | 95.4 | 5.65 | 33700 |
| ethyl-tert-butyleth | ug/L | 0.5 | 94.9 | 6.33 | 112000 |
| PID_Spike | ug/L | 0.5 | 93.9 | 6.40 | 116 |

Data Release Authorization
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ethods of analysis in accordance with FCL QA and EPA approved methodology.

Jefferson S. Flowers, Ph.D.
Technical Director



Jefferson L. Flowers, Ph.D.
Jefferson S. Flowers, Ph.D.
481 NEWBURYPORT
P.O. BOX 150-597
ALTAMONTE SPRINGS
FLORIDA 32715-0597
BUS: (407) 339-5984
FAX: (407) 260-6110

** TOTAL PAGE

INDUSTRIAL WATER SERVICES, INC.

Salesperson: R Wmson

Date Submitted: 10-29-91

# WASTESTREAM INFORMATION SHEET

| | |
|---|---|
| Customer Name: GATX TERMINALS | Phone: 813 248 2148 |
| Address: 100 GATX DR. | Contact: CAREN LINNIE |
| City: TAMPA | State: FL. Zip: 33605 |

Generator Name: GATX

Waste Description: WASTE WATER

Waste Process: TANK BOTTOMS - GROUND WATER-MOSTLY

Estimated Quantity: 200,000 ☑ gallons ☐ barrels other units: 

Accompanied By: Sample ☐ Analysis ☑ MSDS ☐

Additional Information/Comments

2683

ACCEPTED

JDO 10-30-91

OCT-29-1991 16:03 FROM GATX TERMINALS CORP. TO 19043547612 P.01

**GATX TERMINALS CORPORATION**

100 GATX DRIVE
TAMPA, FLORIDA 33605
(813) 248-2148
AUTO FAX # (813) 247-4274

DATE: 10/29/91 TO: (FAX#) (904) 354-7612

COMPANY: Industrial Water Services

ATTENTION: Robert Williamson

FROM: Caren Lennie

TOTAL PAGES WITH/~~WITHOUT~~ COVER LETTER: 4

SENDER: MAYDA RIVERA

VERIFICATION PHONE NUMBER: (813) 248-2148

Robert-
Pls. find attached the analytical
for the wastestream I requested
a proposal from you on. (approx 200,000 gals.)
Thank you. Caren

10.29.91 02:52PM P01

,... -- ---- -- .

THORNTON LABORATORIES, INC.
1145 EAST CASS STREET
TAMPA, FLORIDA 33601 - 2880
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
HRS #84147 & HRS #E84100

AX 813 223-9332
THORNT LAB TPA

TELEPHONE (813) 223-9702
P.O. BOX 2880

18-Oct-1991


Report For: GATX Terminals Corp.
100 GATX Drive
Tampa, Florida 33605

Sample Identification:

Wastewater
Location: GATX
Sampled by: JH
on 10-7-91 @ 9:20 am

Attn: Caren Lennie
Project: Temporary Tank

Date Received: 7-Oct-1991

Laboratory Number: 795524

## CERTIFICATE OF ANALYSIS

| Method | Parameter | Result* | Standard Detection Limit-Units |
|---|---|---|---|
| EPA 410.2 | | | |
| | Chemical Oxygen Demand (COD) | 92 | 1.6 mg/L |
| EPA 610 | POLYNUCLEAR AROMATICS | | |
| | Acenaphthene | 500 | 10 ug/L |
| | Acenaphthylene | 170 | 10 ug/L |
| | Anthracene | 390 | 10 ug/L |
| | Benzo (A) Anthracene | 210 | 10 ug/L |
| | Benzo (A) Pyrene | 100 D | 10 ug/L |
| | Benzo (B) Fluoranthene | 100 D | 10 ug/L |
| | Benzo (GHI) Perylene | 250 D | 25 ug/L |
| | Benzo (K) Fluoranthene | 100 D | 10 ug/L |
| | Chrysene | 100 D | 10 ug/L |
| | Dibenzo (A,H) Anthracene | 250 D | 25 ug/L |
| | Fluoranthene | 260 | 10 ug/L |
| | Fluorene | 430 | 10 ug/L |
| | Indeno (1,2,3-CD) Pyrene | 250 D | 25 ug/L |

* A letter D indicates that none of that parameter was found at the standard detection limit. Values followed by D indicate that a different detection limit was determined for this sample.

THORNTON LABORATORIES, INC.
Katherine Linton-Smith

THORNTON LABORATORIES, INC.
1145 EAST CASS STREET
TAMPA, FLORIDA 33601 - 2880
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
HRS #84147 & HRS #E84100

FAX 813 223-9332
THORNT LAB TPA

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18-Oct-1991


Report For: GATX Terminals Corp.
100 GATX Drive
Tampa, Florida 33605

Sample Identification:

Wastewater
Location: GATX
Sampled by: JH
on 10-7-91 @ 9:20 am

Attn: Caren Lennie
Project: Temporary Tank

Date Received: 7-Oct-1991

Laboratory Number: 795524

CERTIFICATE OF ANALYSIS

| Method | Parameter | Result* | Standard Detection Limit Units |
|---|---|---|---|
| EPA 610 | POLYNUCLEAR AROMATICS | | |
| | 1-Methylnaphthalene | 250 | 10 ug/L |
| | 2-Methylnaphthalene | 440 | 10 ug/L |
| | Naphthalene | 410 | 10 ug/L |
| | Phenanthrene | 260 | 10 ug/L |
| | Pyrene | 360 | 10 ug/L |
| EPA 420.1 | | | |
| | Total Phenols | 0.11 | 0.01 mg/L |
| EPA 601 | PURGEABLE HALOCARBONS | | |
| | Bromodichloromethane | 50 D | 1 ug/L |
| | Bromoform | 50 D | 1 ug/L |
| | Bromomethane | 50 D | 1 ug/L |
| | Carbon Tetrachloride | 50 D | 1 ug/L |
| | Chloroethane | 50 D | 1 ug/L |
| | 2-Chloroethylvinyl Ether | 50 D | 1 ug/L |
| | Chloroform | 50 D | 1 ug/L |
| | Chloromethane | 50 D | 1 ug/L |

* A letter D indicates that none of that parameter was found at the standard detection limit. Values followed by D indicate that a different detection limit was determined for this sample.

THORNTON LABORATORIES, INC.
Katherine Linton-Smith

THORNTON LABORATORIES, INC.
1145 EAST CASS STREET
TAMPA, FLORIDA 33601 - 2880
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
HRS #84147 & HRS #E84100

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18-Oct-1991


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100 GATX Drive
Tampa, Florida 33605

Sample Identification:

Wastewater
Location: GATX
Sampled by: JH
on 10-7-91 @ 9:20 am

Attn: Caren Lennie
Project: Temporary Tank

Date Received: 7-Oct-1991

Laboratory Number: 795524

CERTIFICATE OF ANALYSIS

| Method | Parameter | Result* | Standard Detection Limi Units |
|---|---|---|---|
| EPA 601 | PURGEABLE HALOCARBONS | | |
| | Dibromochloromethane | 50 D | 1 ug/L |
| | 1,2 Dichlorobenzene | 50 D | 5 ug/L |
| | 1,3 Dichlorobenzene | 50 D | 5 ug/L |
| | 1,4 Dichlorobenzene | 50 D | 5 ug/L |
| | Dichlorodifluoromethane | 50 D | 1 ug/L |
| | 1,1 Dichloroethane | 50 D | 1 ug/L |
| | 1,2 Dichloroethane | 50 D | 1 ug/L |
| | 1,1 Dichloroethene | 50 D | 1 ug/L |
| | trans 1,2 Dichloroethene | 50 D | 1 ug/L |
| | 1,2 Dichloropropane | 50 D | 1 ug/L |
| | cis 1,3 Dichloropropene | 50 D | 1 ug/L |
| | trans 1,3 Dichloropropene | 50 D | 1 ug/L |
| | Methylene Chloride | 50 D | 1 ug/L |
| | 1,1,2,2, Tetrachloroethane | 50 D | 1 ug/L |
| | Tetrachloroethene | 50 D | 1 ug/L |
| | 1,1,1 Trichloroethane | 50 D | 1 ug/L |

* A letter D indicates that none of that parameter was found at the standard detection limit. Values followed by D indicate that a different detection limit was determined for this sample.

THORNTON LABORATORIES, INC.

THORNTON LABORATORIES, INC.
1145 EAST CASS STREET
TAMPA, FLORIDA 33601 - 2880
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
HRS #84147 & HRS #E84100

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18-Oct-1991


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100 GATX Drive
Tampa, Florida 33605

Sample Identification:

Wastewater
Location: GATX
Sampled by: JH
on 10-7-91 @ 9:20 am

Attn: Caren Lennie
Project: Temporary Tank

Date Received: 7-Oct-1991

Laboratory Number: 795524

CERTIFICATE OF ANALYSIS

| Method | Parameter | Result* | Standard Detection Limit Units |
|---|---|---|---|
| EPA 601 | PURGEABLE HALOCARBONS | | |
| | 1,1,2 Trichloroethane | 50 D | 1 ug/L |
| | Trichloroethene | 50 D | 1 ug/L |
| | Trichlorofluoromethane | 50 D | 1 ug/L |
| | Vinyl Chloride | 50 D | 1 ug/L |
| EPA 602 | PURGEABLE AROMATICS | | |
| | Benzene | 196 | 1 ug/L |
| | Chlorobenzene | 50 D | 1 ug/L |
| | Ethylbenzene | 126 | 1 ug/L |
| | Toluene | 745 | 1 ug/L |
| | Xylenes | 850 | 1 ug/L |
| EPA 1010 | | | |
| | Flash Point, Pensky Martins Closed Cup | >140 | o F |

* A letter D indicates that none of that parameter was found at the standard detection limit. Values followed by D indicate that a different detection limit was determined for this sample.

THORNTON LABORATORIES, INC.
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Notes

ATTACHMENT 5

PART II - A. 6. WASTE ANALYSIS PLAN

REVISION 1, 1-11-93

# WASTE ANALYSIS PLAN

## 1.0 INTRODUCTION

1.1. Purpose The Waste Analysis Plan (WAP) documents acceptance procedures, sampling and analysis methods, and standard operating procedures for the management of D018 hazardous waste at the Jacksonville, Florida facility of Industrial Water Services, Inc. The facility is designed to be a commercial RCRA permitted Treatment, Storage, and Disposal Facility (TSDF). Only waste which is hazardous solely due to benzene toxicity characteristic (waste containing benzene in an amount equal to or greater than 0.5 mg/L as measured by the Toxicity Characteristic Leaching Procedure [TCLP]) will be managed under this plan. Other hazardous wastes exhibiting the characteristics of ignitabilty, reactivity, corrosivity, or toxicity characteristics other than D018 will not be treated at the facility. In addition to externally generated D018 waste streams, the facility will also generate and manage three D018 waste streams.

1.2 Regulatory Basis. The WAP has been developed to comply with 40 CFR Parts 260, 264, 266, and 268. The following USEPA documents were also consulted in the development of the WAP:

a. Waste Analysis Plans--A Guidance Manual, EPA/530-SW-84-012, Environental Protection Agency, Office of Water and Waste Management, Washington DC 20406, October 1984.

b. Test Methods for Evaluating Solid Waste: Physical /Chemical Methods, Third Edition, SW-846, Environmental Protection Agency, Office of Water and Waste Management, Washington DC 20406, November 1986, and additions.

1.3 Facility Description. The IWS facility is located in Duval County, Florida at 1640 Talleyrand Avenue in the City of Jacksonville. The facility is approximately 1.6 acres in area and operates Monday through Saturday, 7:00 a.m to 11:00 p.m. The facility may remain open during off-hours or on Sunday by appointment.

IWS collects and treats wastewater from marine, manufacturing, transportation, petroleum, and environmental industry sources. Approximately 75% of waste streams managed by IWS are non-hazardous. However, wastewater which exhibits the toxicity characteristic for benzene and is not hazardous by any other criterion (hereafter, such a waste stream shall be referred to simply as "D018 wastewater" ) will be handled in and restricted to a designated portion of the facility (hereafter referred to as the "RCRA facility" ). This RCRA facility (Figure A1) is the only area to which hazardous waste will be introduced.

The D018 wastewater will be trucked to the facility by licensed hazardous waste transporters. The waste will then be off-loaded and processed by removal of free hydrocarbons via phase separation. The processed wastewater will then be stored in a designated holding tank, and pending successful evaluation by the IWS Laboratory, discharged to the sanitary sewer under a City of Jacksonville discharge permit.

The RCRA facilty will be composed of the following systems:

- Waste Receiving and Sampling System
- Waste Storage System
- Waste Treatment System

These systems include a number of physical areas and/or units of operation which are referred to as Hazardous Waste Management Units (HWMUs).

1.3.1 Waste Receiving and Samplng System The HWMUs included in this system consist of the Receiving Station and the Unloading Rack #3. The receiving station shall be a designated area through which all trucks must pass, pausing while samples are taken and evaluated by IWS Laboratory personnel. All shipments manifested as D018 wastewater must be sampled and evaluated by IWS Laboratory personnel to verify waste characteristics and acceptability before they are officially accepted for treatment and disposal. IWS will not accept the following wastes at the facility:

- Radioactive wastes
- Explosives and blasting materials
- RCRA listed wastes of the F, K, U, or P series
- RCRA characteristic wastes hazardous by ignitability, reactivity, corrosivity, or toxicity by "D" codes other than D018.
- Polychlorinated biphenyls (PCB's) in amounts greater than 50 parts per million
- Compressed gases
- Infectious, biohazardous, and medical wastes
- Municipal solid wastes and domestic sewage

At the Receiving Station IWS Laboratory personnel will also evaluate the hazardous waste manifests associated with each shipment impinging upon the facility and correlate them with pre-acceptance paperwork associated with each generator. Detailed procedures and contingencies for the Receiving Station functions are addressed in section 5.0 of this WAP.

IWS Unloading Rack #3 has been dedicated as a HWMU for the off-loading of D018 waste water. Pending a successful evaluation of the D018 wastewater by the Receiving Station, the truck will be allowed to move to Unloading Rack #3 for off-loading. Rack #3 features secondary containment and drainage to a sump within the RCRA facility. An upgrade to this HWMU is planned with the addition of a new unloading rack, with double-walled piping leading from drain to sump.

1.3.2 Waste Storage System The HWMUs in this system will consist of four approximately 7,000 gallon cone-bottomed holding tanks for holding D018 wastewater prior to treatment. Vent gases from these tanks will be channeled through granular activated carbon adsorption units. No waste other than D018 wastewater will be placed in these tanks. Alternatively, the D018 wastewater may be off-loaded directly from the tanker into the treatment system, bypassing the holding tanks.

Treated waste will be stored in two 25,000 gallon tanks prior to analysis and discharge. Vent gases from these tanks will be channeled through granular activated carbon adsorption units. Only treated water derived from D018 wastewater will be placed in these holding tanks.

1.3.3 Waste Treatment System The HWMU for the treatment of D018 wastewater will consist of a parallel plate separator with a processing capacity of 200 gpm. Free petroleum hydrocarbons will be separated from the D018 wastewater and will enter the IWS Fuel Recycling Program. Destinations for recovered free petroleum include the Oil Dock and Tank 4B. Treated water will be free of visible free petroleum hydrocarbons and shall have a flash point greater than 140°F by the Pensky-Martens closed cup method.

## 2.0 IDENTIFICATION OF WASTE TO BE MANAGED

The IWS facility will operate as a commercial hazardous waste treatment, storage, and disposal facilty. It will accept only one class of hazardous waste: waste which is RCRA hazardous solely due to D018 toxicity characteristic. Waste shipments will be received in bulk tankers and vacuum trucks of certified hazardous waste transporters. Drummed waste may be received provided that the material can be removed from the drums as part of the off-loading process; the drums themselves will not be accepted for management by IWS and shall remain the responsibility of the customer.

2.1 Wastes Accepted from Off-Site Generators Three general waste types have been identified as typical of the hazardous waste streams which will be received from off-site generators. These include:

- Petroleum storage tank bottom water
- D018 contaminated groundwater
- Waters resulting from incidental contact with spillage, leakage, or seepage of petroleum products

These processes all result from contact between benzene-containing petroleum products and incidental water. Therefore, the anticipated ranges of analyte concentrations and associated parameters are rather uniform from one source to the next. The set of parameters associated with the D018 wastewater which IWS will accept are listed in section 4.1.1.2 of this WAP.

2.2 Internally Generated D018 Wastes In addition to D018 wastes received from clients, three D018 waste streams will be generated at the facility. These are:

- Strainer basket debris This material is derived from debris intercepted by the strainer baskets protecting liquid transfer pumps. Since IWS is a recycler of waste fuels there will be opportunities for this debris to come into contact with benzene-containing petroleum hydrocarbon mixtures, even outside the RCRA facility. This internally generated debris will be transferred to the RCRA facility for management.

- D018 waste solids All waste streams contain some suspended solids. Through treatment and settling much of this solid material eventually accrues to form sediments. As cleaning of tanks, the separator, and other HWMUs occurs, these solids will be disposed of by IWS at an appropriately permitted TSDF.

- Vibrating screen solids The IWS waste oil processing area is equipped with a vibrating screen device which separates solids from oil. This material consists of oily grit and debris which has accumulated in used oil. These solids, which typically contain enough benzene to test D018 by TCLP, are accumulated in a satellite drum directly beneath the device, moved when full to a 90-day storage area, and transported off-site for disposal at an appropriately permitted TSDF.

## 3.0 PROCESS TOLERANCE LIMITS

The facility is designed to receive, store, and process liquid D018 wastewater which is not corrosive, reactive, or ignitable, nor characteristic by toxicity for any waste code other than D018. The facility infrastructure is designed to handle any D018 waste which meets these criteria. Waste which does not meet these criteria will be excluded from the facility. Therefore, only the following process tolerance limits are defined, both of which are applicable to the proper functioning of the separator:

- percent suspended solids
- separator throughput rate

3.1 Suspended Solids The parallel plate separator is designed to separate immiscible liquid phases from one another. Excessive suspended solids may interefere with this process. Therefore IWS has established a process tolerance limit of 5% suspended solids on D018 waters entering the separator.

3.2 Separator Throughput Rate The average effective rate of the separator is 150 gpm with a maximum rate of 200 gpm. Separator feed pumps will be governed to prevent exceeding the process tolerance limit of 200 gpm.

## 4.0 WASTE PARAMETERS TO BE MONITORED

Prior to receiving any shipment of D018 hazardous waste for treatment at the facilty, the physical and chemical characteristics of the waste will have been analyzed, documented, evaluated, and approved by IWS. Once IWS grants approval of a waste stream to a generator, the generator may ship waste to the facility. When the waste shipment arrives at the facility a composite sample of the waste will be taken prior to off-loading. The sample will be analyzed to determine if its "fingerprint", or its set of values and ranges, corresponds to the fingerprint established during initial pre-approval evaluation. The accompanying manifest will also be scrutinized and the shipment inspected for shipment integrity. After successful matching of "fingerprint" and actual load characterstics the shipment is granted on-site approval and it may be directed to the D018 Rack area and off-loaded.

4.1 <u>Waste Characterization</u>

4.1.1 <u>Pre-acceptance characterization</u> All D018 wastewater to be treated, stored, and disposed at the facility will be characterized by the facility's Laboratory Director or his/her designee. Information used in the review will consist of a completed IWS Waste Profile Form (WPF).

4.1.1.1 <u>Analytical data</u> TCLP metals, pH, reactive cyanides, and reactive sulfides data, performed by a certified testing laboratory, will be required to accompany the WPF for a first time submission. Where the generator is a new customer and/or the waste process is not clearly defined, a physical sample of the waste may be required prior to completing the pre-approval process. Where process knowledge engenders suspicion of volatile organic compounds, halogenated volatile organic compounds, or contamination by other TCLP analytes including herbicides or pesticides, these TCLP analyticals may also be required to accompany the WPF, at the discretion of the IWS Laboratory Director. Once the requisite data is assembled, the waste stream will be evaluated according to the criteria described below. Documentation of this pre-acceptance evaluation will be maintained as part of the facility manifesting and record keeping system.

4.1.1.2 <u>Acceptable D018 wastewater parameters</u> The expected parameter ranges and values associated with D018 wastewater accepted by IWS will be:

- benzene content = > 0.5 mg/L
- flash point = >140°F
- pH = >2.0 - <12.5
- total reactive cyanides less than or equal to 250 ppm

- total reactive sulfides less than or equal to 500 ppm
- temperature = <160°F
- color = clear to straw dark amber
- viscosity = flows readily at ambient room temperature; no visually discernible difference in viscosity from ordinary water.
- suspended solids = < 5%
- all other TCLP analytes including metals, volatile organics, halogenated volatile organics, acid extractables, base neutral extractables, herbicides, pesticides, and PCB's below RCRA limits
- radioactivity no higher than background

The parameters below shall constitute the waste stream initial characterization chemical fingerprint. This chemical fingerprint will be recorded on or appended to the WPF and used as a baseline for comparison to Receiving Station screening of future shipments.

- flash point
- pH
- cyanide screen
- sulfide screen
- color
- viscosity (pourability)
- turbidity
- specific gravity

- suspended solids
- water reactivity (exothermy when mixed with water from destination tank
- composite sample phase inspection (number and distribution of separate phases)
- radioactivity

4.1.1.3 Waste Profile Form As described in section 4.1.1 of this WAP, an IWS Waste Profile Form (WPF) is required to be completed by each generator prior to approval of that generator's waste for acceptance by the IWS RCRA facility. The WPF details the description, chemical and physical analyses and process knowledge of a waste stream. Additionally, the final section of the WPF consists of a signed and dated certification that the waste:

1. is thoroughly, accurately and truthfully described in the WPF
2. that the generator or his/her duly authorized representative promises to inform IWS if the actual waste to be shipped to IWS differs in any way from the process, description, regulatory classification, or physical and chemical parameters described in the WPF.

4.1.1.4 Initial characterization (pre-approval) The Laboratory Director or his/her designee will review available analytical data, physical sample, and completed WPF in order to determine the acceptability or unacceptability of a waste stream. The processed WPF will serve as the physical record of IWS activities concerning initial characterization of a waste stream, and will contain annotations and attached data as are deemed appropriate by the Laboratory Director or his/her designee.

If approval for acceptance is granted, the IWS Laboratory will supply the IWS Operations Coordinator with a copy of the appropriately annotated WPF, and file the original. The Operations Coordinator will then supply the appropriate information and documentation to the IWS Sales Department, Transportation Coordinator, Processing Department, and Management. D018 wastewater clients will be instructed to manifest D018 wastewater shipments using Uniform Hazardous Waste Manifest Forms. No shipment of D018 wastewater will be admitted to the RCRA facility which is not properly and accurately manifested.

If approval for acceptance is denied, the IWS Laboratory will supply the Operations Coordinator with a copy of the appropriately annotated WPF, and file the original. The Operations Coordinator will then inform the Sales Department who will in turn inform the generator of the reason(s) the waste was denied approval for acceptance.

4.1.2 Incoming waste fingerprint analysis

Once approval to begin accepting a D018 waste stream as been granted shipments of the waste to the IWS RCRA facility may commence. Upon arrival at the IWS facility all D018 loads will be directed to the Receiving Station where they will await sampling and laboratory analytical evaluation, manifest scrutiny and shipment inspection, and referencing of approval records.

4.1.2.1 Manifest scrutiny and shipment inspection When a D018 waste shipment arrives at the IWS facilty we will check its manifest for completeness and correctness. At a minimum, we will look for the following information on each manifest:

- a manifest document number
- the generator's name, address, and EPA identification number
- the destination of the waste shipment, i.e. hazardous waste management facility, address and EPA identification number
- a Department of Transportation shipping name and number

- the quantity or volume of waste in the shipment
- the number and type of containers in the shipment (if applicable)
- a signed and dated certification of the shipment's content
- the material must be correctly identified (e.g. D018 contaminated waste water, etc.)

We will then visually inspect the shipment, noting --

- if the number and type of containers match the manifest
- if the shipment labels/placards match the manifest
- the presence of free liquids and the consistency with the manifest
- any irregularities with the shipment, (e.g., leaks)
- if any restricted wastes are visibly present
- if the waste appearance matches any previously noted description

Waste shipments which succesfully pass this stage will be sampled and analyzed for waste fingerprint correlation. Wastes for which manifest or shipment discrepancies are noted will not be allowed to off-load until the discrepancies are resolved. Waste shipments for which discrepancies cannot be resolved will be refused permission to off-load.

4.1.2.2 <u>Incoming waste sampling schedule</u> All shipments of D018 wastewater will be appropriately sampled by laboratory personnel (sampling techniques are described in section 5.0 of this WAP) and the samples analyzed to determine their set of parameters.

4.1.2.3 <u>Laboratory evaluation of samples</u> All samples of incoming D018 wastewater will have the same initial battery of laboratory tests (fingerprint analyses) performed which will include:

- flash point (Pensky-Martens closed cup)
- pH
- temperature (°F)
- cyanide screen
- sulfide screen
- visual inspection of color
- visual inspection of viscosity (pour test)
- visual inspection of turbidity
- specific gravity (bulk density)
- visual estimation of suspended solids. If significant amounts of solids are present, perform % solids determination by centrifugation or filtration.
- water reactivity (amount of exothermy exhibited on mixing with water)
- composite sample phase inspection (number and distribution of separate phases
- radioactivity

The set of values yielded by these analyses will be compared against:

1. the list of parameter values and ranges expected for D018 wastewater in general, listed in section 4.1.1.2 of this WAP.

2. the specific qualities of the waste recorded by laboratory personnel on the WPF at the time of initial laboratory review for approval to accept the waste.

If the D018 waste stream conforms to the parameters listed in section 4.1.1.2 of this WAP and no discrepancies are noted between the actual waste arriving at the facility and a comparison with the wastestream's documentation of approval for acceptance (WPF and attachments), then the load will be allowed to proceed to Rack #3 for offloading.

If the D018 waste stream does not conform to the parameters listed in section 4.1.1.2 of this WAP, the waste stream will be refused and not allowed to off-load. In this case, the Operations Coordinator will be instructed to notify the Sales Department, who in turn will notify the customer of the reason(s) the wastewater was refused by IWS (e.g., the flash point is too low, the pH is too high)

If the D018 waste stream does conform to the parameters listed in section 4.1.1.2 of this WAP, but discrepancies *are* noted between the the actual waste arriving at the facility and a comparison with the wastestream's documentation of approval for acceptance (WPF and attachments), then the load will be denied permission to off-load until such time as the discrepancy(ies) can be satisfactorily resolved.

4.1.2.4 Resolution of incoming waste fingerprint discrepancies

This section will describe pathways and procedures that IWS will follow in response to various fingerprint discrepancies. Each of these contingencies assumes that there exists no evidence to categorize the waste stream as falling outside the range of parameters and regulatory classifications listed in section 4.1.1.2 of this WAP, nor would the would the wastestream exceed the process tolerance limits. In other words, since all D018 waste streams accepted by IWS must lie within the boundaries proscribed under section 4.1.1.2 of this WAP, then fingerprint discrepancies must also initially lie within the same boundaries in order to be given a chance for resolution. Fingerprint discrepancies which lie outside these boundaries (e.g., a pH of 1.5) would be cause for immediate refusal of the waste stream. Fingerprint parameters must lie within the set of acceptable regulatory and process limit parameters.

An unusual color associated with an incoming load (e.g. bright green) and not noted at the time of initial characterization would be an example of a fingerprint discrepancy which would call for resolution prior to acceptance of the waste stream. Factors contributing to successful resolution of the discrepancy might include more detailed information about the current circumstances associated with the process generating the waste stream, supplemental analytical data, etc.

The following table is meant to serve as a general guide to possible course of action to be followed in an effort to resolve fingerprint discrepancies:

| parameter | discrepancy | action |
|---|---|---|
| flash point | > 20% reduction | additional process info., directed organic analyses |
| pH | > 2.5 s.u. fluctuation | additional process info. |
| temperature | > 160°F | allow load to cool, warn customer |
| cyanide | bright blue or green color | additional process info., perform total reactive cyanide testing |

| | | |
|---|---|---|
| sulfide | lead acid paper turns brown or silvery black at pH < 2 | additional process info., perform total reactive sulfide testing |
| color | unusual | additional process info., perform TCLP metals, possibly directed organic analysis |
| viscosity | visually thicker than plain water | additional process info., possible analyticals based on process info. |
| turbidity | opaque or highly emulsified-- differing significantly from initial fingerprint | additional process info., TCLP metals |
| specific gravity | differs by more than 0.15 from initial fingerprint | additional process info., organic analyses |
| suspended solids | > 1.5% increase over initial fingerprint | additional process info., possible TCLP metals |
| water reactivity | exhibits exothermy on mixing with water where none was previously noted during initial characterization | additional process info., attempt to identify reactants through analysis |

| | | |
|---|---|---|
| phase | number of separate phases differs from initial fingerprint | additional process info., attempt to characterize additional phases through analysis |
| radioactivity | exhibits radioactivity where none was previously noted during initial characterization | no resolution possible, waste will be rejected |

These fingerprint discrepancy resolution pathways are proposed in order to allow for reasonable waste stream parameter fluctuations, and for reasonable attempts to explain waste stream fingerprint discrepancies. However, once a fingerprint discrepancy has been detected further acceptance of a waste stream, without full recharacterization, shall be at the discretion of the IWS Laboratory Director or his/her designee. If a fingerprint discrepancy cannot be resolved to the satisfaction of the IWS Laboratory Director or his/her designee, the waste stream will be prohibited from acceptance at the facility pending complete recharacterization.

All information gathered during the fingerprint discrepancy resolution process will be annotated to and filed with the waste stream's WPF.

## 4.2 Waste Recharacterization

Many factors affect the frequency and intensity of recharacterization scrutiny. Among these factors are:

- the potential for restricted waste to be inadvertently included in a shipment
- the inherent degree of variability of a given waste stream
- the waste generator's performance trends and history of reliability

The IWS waste recharacterization policy is designed to insure that deviations from the set of parameters and regulatory classification presented at initial characterzation will be detected.

### 4.2.1 Routine recharacterization

All D018 waste streams will be subject to a recharacterization schedule of once annually or every fifth load, whichever comes last. At minimum, routine recharacterization will consist of TCLP metals. Depending on the fingerprint history of the waste stream, additional testing may also be required by IWS for recharacterization of the waste stream.

A database will be used to track recharacterization dates. The initial characterization of a waste stream will be entered into the database. The recharacterization date will be calculated at one year from the characterization date. After ten months from characterization the record will appear in a list of customers to be notified of pending recharacterization of their waste streams. Each customer will then have nearly two months to obtain the necessary recharacterization analyticals.

The waste streams identified by the database as approaching their annual recharacterization date will be checked against a list of all D018 deliveries since the characterization date in question. If the customer has delivered at least four loads to IWS without recharacterization, then annual recharacterization shall be required.

If the customer has not delivered four loads within the year since characterization, then recharacterization may be differed until the fourth load has arrived. Recharacterization must take place before a fifth shipment may be accepted.

No customer shall deliver waste to IWS under a single characterization for a period exceeding three years. All waste streams, regardless of delivery frequency must be recharacterized at least once every three years.

### 4.2.2 If waste stream recharacterization indicates unacceptability

Waste stream recharacterization procedures may indicate that the waste stream is no longer acceptable or manageable by IWS. In this case, the information used to make this determination will be documented by IWS Laboratory personnel and appended to the waste stream's WPF. The IWS Operations Coordinator will be notified of the change in acceptability status of the waste stream and the reasons for the change. The Operations Coordinator will then oversee the process of informing the Sales Department, who in turn will inform the customer of the change in acceptability status of the waste stream.

### 4.2.3 Spot checks

IWS will perform TCLP metals analysis on 1 % of all D018 wastewater loads arriving at the facility. The selection schedule will be predetermined to be every 100th load arriving at the facility, thus insuring impartial sampling.

Additional analytical testing may be performed on any incoming D018 wastewater at the discretion of the IWS Laboratory Director or IWS Management.

## 5.0 WASTE SAMPLING

IWS Laboratory personnel, or appropriately trained designees, will be responsible for obtaining representaive samples of incoming wastes, transferred and stored wastes, in-process materials. The Laboratory Director will designate the personnel responsible for sampling and delivery of samples to either the IWS on-site laboratory or outside laboratory contracted by IWS.

Sampling procedures used at the facility will be based on the individual wastes physical and chemical properties, as well as the waste's container. These procedures will be employed to obtain a representative sample of the waste stream. The techniques and devices employed will be consistent with the guidelines as outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods" SW-846.

Sampling technicians will be trained to sample waste as described in this WAP. The skills of sampling technicians will be observed quarterly during sampling events by the Laboratory Director.

Sampling technicians will observe all IWS safety rules and regulations. All personnel engaged in sampling operations will, at a minimum, employ the following personal protective equipment:

- safety goggles
- rubber, vinyl, or PVC gloves

Additional personal protective equipent may be employed, depending on the exigencies of a particular sampling event.

5.1 Bulk liquid sampling Each load of bulk liquid waste arriving at the facility will be sampled. Samples will be collected at the at the manhole entrance port on top of the tank truck or through a sampling valve located on the bottom of the tank truck. The sampling location chosen and the type of sampling device employed will depend on the physical qualities displayed by the waste, as evidenced by a visual inspection of material at the top of the tank truck and at the bottom sample port. Bottom sample valve lines will be purged prior to taking the sample. The drained waste will be collected in a container and sequestered pending laboratory evaluation of the waste. If the material is accepted, the drained material will combined with the waste received. If the waste is refused the material will be returned to the truck.

If no visual difference is noted between the material taken from a bottom sample port and the material at the surface of the tank, the material may be assumed to be homogenous and a sample will be taken by any appropriate technique from the most convenient port. However, if there is a visual difference between material at the two locations, then the material is evidently stratified. In the latter case, sampling must be performed in such a manner as to result in a representative vertical composite. For bulk liquid sampling where vertical strata are present, the Coliwasa is the sampling device of choice.

The Coliwasa consists of a glass, metal or plastic tube equipped with a closure on the lower end which can be opened and closed while the tube is submerged in the liquid to be sampled. The Coliwasa will be inserted into the liquid waste in the open position and submerged until contact is made with the bottom of the container. The Coliwasa will then be closed and withdrawn from the waste. The bottom of the Coliwasa will be placed over a suitable receiving container ( see section 5.4 of this WAP regarding container selection) and emptied by opening the bottom closure. If properly executed, the resulting sample will represent a vertical composite column of the waste.

5.2 Drummed liquid sampling Each shipment of drummed D018 wastewater to facility will be sampled. The number of drums sampled to form a composite will be equal to or greater than at least 10% or the square root (rounded to the next highest integer) of the total number of drums. For example in a shipment of 6 drums, 10% of the total number of drums would equal 0.6. This figure, rounded to the next highest integer equals 1. However, the square root of 6 is 2.449. 2.449 rounded to the next highest integer is 3. Therefore, 3 being greater than 1, three drums would be sampled.

In a shipment of 144 drums the square root of the total number of drums is 12. However, 10% of 144 = 14.4. This figure, rounded to the next highest integer is 15. Therefore, in a shipment of 144 drums, 15 drums would be sampled.

Drums to be sampled will be selected in as random a manner as possible. Drum sampling will account for any layering or stratification which may be present. Drum sampling will normally be performed using a Coliwasa.
If the drummed material is too thick or sticky to sample with a Coliwasa, a slotted tube or trier will be used. Where the drummed material is clearly homogenous, a dipper or similar sampling device may be employed.

5.3 Sampling equipment maintenance All sampling equipment will be cleaned after each use to prevent cross contamination. Normally, sampling equipment will be washed with a good grade of laboratory detergent, triple rinsed with tap water, and rinsed with deionized water. Occasionally, sampling devices may require stronger cleaning measures, especially when contaminated with hydrophobic substances. In this case the sampling devices may be pressure steam cleaned within the confines of the RCRA facility, followed by washing and rinsing as described above. Disposable samplers may be used where appropriate and economical. Disposable samplers will be disposed of at an appropriately permitted landfill. Cleaned samplers will be protected from contamination by wrapping in aluminum foil or other clean, protective material, when appropriate.

5.4 Sample containers and preservation methods   Sample containers will be selected according to compatibility of the waste with the container material, cost, resistance to breakage, and analytical requirements. Sampling containers will typically be either plastic or glass vessels with teflon or foil coated closures.

Sample preservation will be consistent with recommendations of USEPA publications, "Methods for Chemical Analysis of Water and Wastes", USEPA (600/4-79-020), Revised March, 1983, and SW-846. For organic analyses, preservation will be consistent with methods outlined in "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", USEPA (600/4-82-057), July, 1982.

Analysis of all samples will be performed within the time periods consistent with the recommendations of the above referenced USEPA documents.

5.5 Sample labelling and recording   At the receiving station all samples will be labelled with the the following information:

- date of collection
- time of collection
- transporter name
- generator name
- waste manifest number
- signature of sampler

Receiving Station personnel will also maintain an operating log in which the following data will be recorded:

- date of collection
- time of collection
- transporter name
- generator name
- waste manifest number
- signature of sampler

The labelled sample will be submitted to the IWS Laboratory along with a completed Laboratory Work Request and a photocopy of the waste manifest.

Samples received will be logged-in by the IWS Laboratory. The information on the sample label, Laboratory Work Request, and waste manifest will be entered into a database. The results of the fingerprint analysis will also be logged into the database. This database will contain cross references to the hard copy WPF files and will also contain the baseline fingerprint of the waste approved for acceptance under the appropriate WPF. Thus, the database will simultaneously serve as a tool for efficiently comparing waste fingerprints, and for documenting waste fingerprinting activities.

The Laboratory Director will assign and schedule personnel responsible for performing the specified analyses.

5.6 Retain samples For every D018 waste stream accepted by IWS, a sample will be taken just prior to directing the load to the Unloading Rack. This sample shall be labelled with the date, the generator, and the manifest number and will be retained for a period of 30 days. This will be done in order to insure that a sample of the waste, before combination with other waste streams, will be available for examination until well after the material as been processed and discharged.

5.7 Sample disposal Unused portions of samples taken from wastes which prove to be unacceptable will be returned to their source. Acceptable samples and retain samples will be combined with D018 treatment influent.

## 6.0 METHODS OF WASTE ANALYSIS

All hazardous waste materials will undergo a series of analyses. Waste will have been characterized before approval is granted for the generator to ship the waste to the facility for treatment. When the waste shipment arrives at the facility, it will be analyzed for selected fingerprint tests to verify the identity of the waste. Following treatment, the wastewater will be evaluated using a variety of tests prior to discharge from the IWS facility. Chemical and physical analyses required for evaluation of wastes at various stages in the approval process and of the treatment cycle are discussed in this section.

The IWS WAP has divided the analyses to be performed into three areas. The first area dicusses tests used for the initial characterization and the annual recharacterization of a waste stream. The second area is the waste fingerprint analyses that comprise the set of tests performed when the waste is received on site. The third area is the analyses associated with the evaluation of treated wastewater prior to discharge from the IWS facility.

6.1 Waste Characterization Methods Wastes will be initially characterized by the following methods:

- TCLP metals (TCLP organic analytes are not anticipated), extraction Method 3010, followed by Method 6010 of SW-846. Mercury will be analyzed by Method 7470 of SW-846.

- pH, Method 9040 of SW-846

- reactive cyanide, Method 9010 of SW-846

- reactive sulfide, Method 9030 of SW-846

- full battery of fingerprint analyses (listed in section 4.1.2.3) performed by IWS laboratory.

- completed IWS WPF with signed customer certification

Additionally, process information or generator knowledge may suggest contamination by TCLP organic analytes.
At the discretion of the IWS Laboratory Director or his/her designee, additional TCLP analytes may require testing up to and including full TCLP with herbicides and pesticides. Should organic analyses be required, the methods employed for various classes of analytes will be selected as follows:

| Analytical Classification | Method | GC detector |
|---|---|---|
| Volatile Halides | 8010 | Halide Specific |
| Nonhalogenated Volatiles | 8015 | FID |
| Aromatic Volatiles | 8020 | PID or FID |
| Acrolein, Acrylonitrile Acetonitrile | 8030 | FID |
| Phenols | 8040 | FID or ECD |
| Phtalate Esters | 8060 | FID |
| Halogenated Pesticides, PCB's | 8080 | ECD |
| Nitroaromatics, Cyclic Ketones | 8090 | FID or ECD |
| Polynuclear Aromatic Hydrocarbons | 8100 | FID or HPLC/uv |
| Chlorinated Hydrocarbons | 8120 | ECD |
| Organophosphorus Pesticides | 8140 | FPD |
| Chlorinated Herbicides | 8150 | ECD |
| Volatile Compounds | 8240 | GC/MS |

| Analytical Classification | Method | GC detector |
|---|---|---|
| Semi-volatile Compounds | 8250 | GC/MS |
| Volatile Organics | 8260 | GC/MS/cap |
| Semi-volatile Compounds | 8270 | GC/MS/cap |

Halide specific = Hall Electrolytic Conductivity Detector, FID = Flame Ionization Detector, PID = Photo-ionization Detector, ECD = Electron Capture Detector, HPLC/uv = High Performance Liquid Chromatography with ultraviolet absorption detector, FPD - Flame Photometric Detector, GC/MS - Gas Chromatography coupled to Mass Spectrometer, GC/MS/cap - GC/MS with capillary columns.

6.1.1 Annual recharacterization Annual recharacterization will consist of:

- TCLP metals (TCLP organic analytes are not anticipated), extraction Method 3010, followed by Method 6010 of SW-846. Mercury will be analyzed by Method 7470 of SW-846.

- pH, Method 9040 of SW-846

- full battery of fingerprint analyses (listed in section 6.2 of this WAP) performed by IWS laboratory.

A completed Waste Profile Form (WPF) will already be on file for each waste stream undergoing recharacterization. A new WPF will not normally be required for recharacterization. However, where fingerprint analyses indicate a possible change in the process generating the waste, the customer, at the discretion of the IWS Laboratory Director or his/her designee, will be required to submit a new WPF and signed certification. The waste stream will then be treated as a new stream under a new "initial" characterization. The old waste profile will then be designated as inactive.

Depending on the degree of instability associated with fingerprint analyses on a given waste stream, additional analytical testing may, at the discretion of the IWS Laboratory Director or his/her designee, be required for recharacterization including, but not necessarily limited to:

- reactive cyanide, Method 9010 of SW-846
- reactive sulfide, Method 9030 of SW-846
- directed organic analyses (e.g., PCB scan, herbicides, etc.)

6.2 Waste Fingerprinting Methods The following table lists the parameters examined by fingerprint analysis, method references, and the rationale for employing each test:

| parameter | method | rationale |
|---|---|---|
| flash point | Method 1010, SW-846 | determine characteristic of ignitabilty |
| pH | Method 9040, SW-846 | determine characteristic of corrosivity |
| temperature | thermometer | determine if load is cool enough to accept |
| cyanide screen | wet chemical colorimetric technique | screen for characteristic of reactivity |

| | | |
|---|---|---|
| sulfide screen | wet chemical colorimetric technique | screen for characteristic of reactivity |
| color | subjective visual evaluation | establish visual profile |
| viscosity | subjective visual evaluation | establish visual profile, determine pumpability |
| turbidity | subjective visual evaluation | establish visual profile, significant deviation from established profile calls for TSS analysis |
| specific gravity | weight to volume ratio (electronic balance) | establish physical profile |
| suspended solids | 1. visual examination (low suspended solids anticipated) | determine if suspended solids testing is needed |
| | 2. SM 2540 D (glass fiber filter method) | determine if process limits can be met |
| water reactivity | 50:50 mixture of waste and destination tank water. Measure temperature before and after. Average temp. should not rise by more than 15°F | measure of reactivity, compatibility |

| | | |
|---|---|---|
| phase | visual examination | establish physical profile |
| radioactivity | Geiger-Mueller counter | determine natural or artificial radioactivity in relation to IWS ambient background |

6.3 Evaluation of treated waste Before discharge from the IWS facility all treated wastewater will be analyzed for the following parameters:

- pH
- Total Recoverable Oil & Grease
- Chemical Oxygen Demand
- Total Suspended Solids

Samples of treated D018 wastewater will be submitted to the IWS Laboratory by Processing Personnel. The above tests have been selected as a routine battery of analyses to be performed in order to insure a high degree of probability of compliance with regulatory discharge limits. Water which does not meet discharge limits will not be discharged until it is reprocessed and/or equalized to conform to regulatory requirements. In addition to these tests, a comprehensive battery of self-monitoring discharge analytical testing will be performed by IWS quarterly. These tests will include:

| Analysis | # of Samples | Sample Type |
|---|---|---|
| pH (EPA 150.1) | five, consecutive | grab |
| Chemical Oxygen Demand (SM 508 A) | five, consecutive | 24 hr composite |
| Total Suspended Solids (EPA 160.2) | five, consecutive | 24 hr composite |

| | | |
|---|---|---|
| Total metals [cadmium, chromium, lead, mercury, silver, copper, nickel, zinc] (EPA 6010, EPA 245.1) | five, consecutive | 24 hr composite |
| Total Recoverable Oil & Grease (EPA 413.1) | five, consecutive | grab |
| Cyanides (EPA 335.3) | five, consecutive | grab |
| Total Toxic Organics (EPA 8260, 8270) | one | grab |

6.4 Description of test methods Some methods described below will be performed by the laboratory of Industrial Water Services, Inc.. Other methods, for which the IWS Laboratory is not equipped, or which are required for regulatory compliance monitoring, will be performed by independent testing laboratories. The choice of testing laboratory is up to the client; IWS will, however, make laboratory recommendations if requested by the client. IWS reserves the right to refuse to honor analytical data from laboratories lacking demonstrated proficiency and proper certification. The use of "IWS" (Industrial Water Services, Inc.) or "OS" (outside) indicates where the method will be performed. The use of "IWS/OS" indicates that the procedure may be performed by either the on-site laboratory or by outside labs, depending on the exigencies of a particular job and whether the data is required for regulatory compliance monitoring.

6.4.1 Physical Description (IWS) Physical description information is first gleaned from the completed Waste Profile Form. Physical inspection of a physical sample of the waste allows IWS Laboratory personnel to correlate the WPF description with firsthand observations. Characteristics such as color, odor, visually perceived viscosity, number and distribution of phases are appended to the WPF during sampling or upon laboratory examination.

6.4.2 Flash Point (Ignitability) (IWS/OS) Flash Point is used to determine the temperature at which the vapors from a waste stream will ignite in the presence of an ignition source. The flash point will be determined using Method 1010, using the Pensky-Martens Closed Cup Tester.

6.4.3 pH (IWS/OS) pH is used as a gross measure of corrosivity. Corrosivity must be considered in determining the compatibility of wastes with other wastes and the materials composing their containers. pH will be measured according to Method 9040 of SW-846. This method involves calibrating a pH electrode with sandard pH buffer solutions. The pH is then measured directly by placing the electrode in the sample.

6.4.4 Cyanide Screen (IWS) An aliquot of sample is placed in a beaker and then diluted with water. The pH is adjusted to 12 or greater with sodium hydroxide. Ferrous sulfate is then added and mixed with the sample. The pH is then adjusted to 2 or less with sulfuric acid. A bright blue or green color indicates the presence of cyanide. This technique is sensitive to concentrations of cyanide as low as 100 mg/kg.

6.4.5 Sulfide Screen (IWS) An aliquot of sample is placed in a beaker and mixed with water. Hydrochloric acid is added to adjust the pH to 2 or less. Moist lead acetate paper is held over the sample. If the color changes to brown or silvery black, the sample contains sulfide. Sulfide concentrations as low as 10 mg/kg can be detected with this technique.

6.4.6 Color (IWS) This test is simply a subjective visual evaluation of the color of the waste, to be recorded as part of the waste fingerprint.

6.4.7 Viscosity (IWS) This test is used to determine the pumpability of a waste stream and is part of the set of waste fingerprint analyses. The test will employ no special apparatus but will consist of a subjective visual evaluation of the pourability of the waste.

6.4.8 Turbidity (IWS) This test is simply a subjective visual evaluation of the turbidity of the waste, to be recorded as part of the waste fingerprint and to be used a preliminary to indicate the need for more stringent solids analyses, including Total Suspended Solids.

6.4.9 Specific gravity (IWS) Specific gravity (bulk density) will be determined by weighing a known volume of the waste.

6.4.10 Total Suspended Solids (IWS/OS) Total Suspended Solids (SM 2540 D) will be performed by filtering an aliquot of sample of known volume through a glass fiber filter disk. The residue will be oven dried at 105°C, cooled and weighed.

6.4.11 Water Reactivity (IWS) This waste fingerprinting test will measure the potential reactivity of a sample will be assesed by mixing equal volumes of sample and water from the destination tank. The amount of ensuing exothermy will be assessed with a thermometer. A rise of more than 15°F will be considered evidence of potentially hazardous reactivity.

6.4.12 Composite Sample Phase Inspection (IWS) This test consists of a visual inspection of a waste stream to determine the number and distribution of separate phases of the waste, and is used as a characterization and fingerprinting measure.

6.4.13 Radioactivity (IWS) This test will be used for fingerprinting and waste screening. A Geiger-Mueller counter will be held in close proximity to the open surface of the waste (i.e., over the top of an open beaker).

6.4.14 TCLP (OS) TCLP analyses will be performed by independent testing laboratories with demonstrable competence in TCLP, as evidenced by successful completion of EPA proficiency testing. Subsets of the full TCLP may be performed, depending on the situation (e.g., metals only for recharacterization -- or, herbicides/pesticides only if a waste is suspected of bearing this type of contamination).

6.4.15 (OS) Directed Organic Analyses Directed organic analyses will be performed by independent testing laboratories with demonstrable competence in the analysis techniqe of choice, as evidenced by successful completion of EPA proficiency testing. The type(s) of test(s) performed will be chosen in an effort to disclose the anticipated organic contaminant(s) presumed to be present in the waste.

6.4.16 (OS) Total and Amenable Cyanide Total and Amenable Cyanide testing will be performed when initially characterizing wastes and wherever waste fingerprinting suggests possible cyanide contamination. The test will be performed in accordance with SW-846 Method 9010.

6.4.17 (OS) Sulfides Sulfide testing will be performed when initially characterizing wastes and wherever waste fingerprinting suggests possible sulfide contamination. The test will be performed in accordance with SW-846 Method 9030.

INDUSTRIAL

SERVICES, INC.

# WASTE PROFILE FORM INSTRUCTIONS

Information on this form is used to determine if the waste may be transported, treated, stored, or disposed in a legal, safe and environmentally sound manner. This information will be held in strict confidence. Answers must be provided for all sections of this form, and must be printed in ink or typed. A response of "NONE" or "NA" (not applicable) may be made, if appropriate. If additional space is needed, indicate on the form that additional information is attached, and attach the information to the Waste Profile Form. **Shaded areas of the attached form are for Industrial Water Services, Inc. use only.** If you have questions concerning this form, please contact your Industrial Water Services, Inc. Sales Representative.

## PART A. CUSTOMER INFORMATION

1. CUSTOMER NAME - Enter the customer's name.
2. FACILITY ADDRESS - Enter the address of the customer's facility or place of business.
3. FACILITY CITY, 4. STATE, 5. ZIP - Enter the City, State, and Zip of the customer's facility, or place of business.
6. BILLING ADDRESS - if other than the information in item 2 of this section, enter the address to which invoices will be sent.
7. CITY, 8. STATE, 9. ZIP - Enter the City, State, and Zip of the customer's billing address.
10. TECHNICAL CONTACT - Enter the name of the person who can answer technical questions about the waste.
11. PHONE - Enter the technical contact's telephone number.

## PART B. GENERATOR INFORMATION

1. GENERATOR NAME - Enter the name of the facility where the waste is generated.

## PART C. WASTE STREAM GENERAL INFORMATION

1. NAME OF WASTE - Enter a name generally descriptive of this waste (e.g. petroleum contaminated water, boiler cleanout water, waste oil, etc.)
2. ESTIMATED VOLUME - Enter the appropriate number.
3. UNIT(S) - Use appropriate units to describe the number in item 2 of this section (e.g. gallons, cubic yards, metric tons, etc.)
4. PER TIME - Indicate the frequency of the volume described by item 2 and 3 of this section (e.g. year, month, week). If waste will be disposed of only once (if it does not represent an ongoing stream) check the appropriate box.

## PART D. PROCESS GENERATING WASTE

1. Give a detailed description of the process generating the waste. Include all constituents, all steps in the process, approximate age of the waste, and suspected or known contaminants.

## PART E. LABORATORY REVIEW

Do not write in this shaded section. This section is reserved for the use of Industrial Water Services, Inc. employees.

## PART F. QUESTIONNAIRE

1-5. Provide a yes or no answer for each check box. "40 CFR" refers to the Code of Federal Regulations, Title 40. If you have questions concerning how to complete this section, please contact your Industrial Water Services, Inc. Sales Representative.

## PART G. PHYSICAL CHARACTERISTICS OF WASTE

1. COLOR - Enter a description of the color of the waste (e.g. cloudy gray, light yellow and transparent)
2. ODOR - Indicate whether the waste has an incidental odor. If "yes" give a verbal description of the odor.
3. PHYSICAL STATE - Indicate the physical state of the waste at 70°F.
4. LAYERS - Indicate whether the waste is single-phased, bi-layered, or multi-layered.
5. pH - Check the appropriate box to indicate the pH range of the waste or give the actual value.
6. FLASH POINT - Indicate the flash point range of the waste and the test method by which it was obtained (closed or open cup).
7. VISCOSITY - Indicate the pourability of the waste (how easily the material pours).
8. TOTAL SUSPENDED SOLIDS - Indicate the percent by weight of suspended solids in the waste.
9. TOTAL ORGANIC HALOGENS (hydrocarbons only) - Indicate the Total Organic Halogens range of the hydrocarbons or give the actual value.

## PART H. CONSTITUENTS

Use the following table for reference:

| Contaminants EPA # | Name | Regulatory Level (mg/L) | Contaminants EPA # | Name | Regulatory Level (mg/L) |
|---|---|---|---|---|---|
| D004 | ARSENIC | 5.0 | D032 | HEXACHLOROBENZENE | 0.13 |
| D005 | BARIUM | 100.0 | D033 | HEXACHLOROBUTADIENE | 0.5 |
| D018 | BENZENE | 0.5 | D034 | HEXACHLOROETHANE | 3.0 |
| D006 | CADMIUM | 1.0 | D008 | LEAD | 5.0 |
| D019 | CARBON TETRACHLORIDE | 0.5 | D013 | LINDANE | 0.4 |
| D020 | CHLORDANE | 0.03 | D009 | MERCURY | 0.2 |
| D021 | CHLOROBENZENE | 100.0 | D014 | METHOXYCHLOR | 10.0 |
| D022 | CHLOROFORM | 6.0 | D035 | METHYL ETHYL KETONE | 200.0 |
| D007 | CHROMIUM | 5.0 | D036 | NITROBENZENE | 2.0 |
| D024 | CRESOL (M) | 200.0 | D037 | PENTACHLOROPHENOL | 100.0 |
| D023 | CRESOL (O) | 200.0 | D038 | PYRIDINE | 5.0 |
| D025 | CRESOL (P) | 200.0 | D010 | SELENIUM | 1.0 |
| D026 | CRESOL | 200.0 | D011 | SILVER | 5.0 |
| D016 | 2,4–D | 10.0 | D039 | TETRACHLOROETHYLENE | 0.7 |
| D027 | 1,4–DICHLOROBENZENE | 7.5 | D015 | TOXAPHENE | 0.5 |
| D028 | 1,2–DICHLOROETHANE | 0.5 | D040 | TRICHLOROETHYLENE | 0.5 |
| D029 | 1–1–DICHLOROETHYLENE | 0.7 | D041 | 2,4,5–TRICHLOROPHENOL | 400.0 |
| D030 | 2.4–DINITROLUENE | 0.13 | D042 | 2,4,6–TRICHLOROPHENOL | 2.0 |
| D012 | ENDRIN | 0.02 | D017 | 2,4,5–TP (SILVEX) | 1.0 |
| D031 | HEPTACHLOR (AND ITS EPOXIDE) | 0.008 | D043 | VINYL CHLORIDE | 0.2 |

1. Indicate whether the waste contains any of the above listed constituents in amount(s) equal to or greater than the regulatory level (mg/L) as measured by TCLP (Toxicity Characteristic Leaching Procedure)
2. If the waste does not contain any of the above listed constituents in amount(s) equal to or greater than the regulatory level (mg/L) as measured by TCLP, indicate the means by which the determination is made.
3. If the waste does contain any of the above listed constituents in amount(s) equal to or greater than the regulatory level (mg/L) as measured by TCLP, list the "D" code(s) present, the amount(s) present, and the means by which the determination is made.
4. Indicate whether the waste contains any PCBs (polychlorinated biphenyls), cyanides, or sulfides. If the waste contains any of these constituents indicate the concentration range or give the actual value.

## PART I. SAMPLE.

1. Describe exactly where the sample was taken (drain, tank, lagoon, etc.) If no sample accompanies the Waste Profile Form indicate this in the checkbox provided.

## PART J. REPRESENTATIVE SAMPLE CERTIFICATION

<u>This section only needs to be completed when providing a waste sample to Industrial Water Services, Inc.</u>

The sample should be collected in accordance with "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846, USEPA, and/or 40 CFR 261.20(c), or equivalent rules. A suitable sample container for most wastes is a wide mouth glass bottle with a plastic cap having a non-reactive liner. Fill to approximately 90% of capacity to allow for expansion during transportation. The sample must be packed and shipped in accordance with U.S. DOT regulations and any specific requirements imposed by the carrier. Improperly packaged samples may be disposed upon receipt.

1. PRINT SAMPLER'S NAME - Enter the sampler's name.
2. SAMPLE DATE - Enter the date that the sample was collected.
3. SAMPLER'S TITLE - Enter the sampler's title.
4. SAMPER'S EMPLOYER - Enter the name of the sampler's employer.
5. SAMPLER'S SIGNATURE - The sampler must sign in the space provided.

## PART K. GENERATOR CERTIFICATION

By signing this Generator's Waste Profile Sheet, the Generator certifies that the statements in Section K, Nos. 1, 2, 3, 4, 5 and 6 are true and accurate with respect to the waste stream(s) listed.

7. SIGNATURE - An authorized employee or representative of the Generator must sign this Generators Waste Profile Sheet.
8. TITLE - Enter employee's title.
9. NAME - Enter employee's name.
10. DATE - Enter the date signed.

**KEEP A COPY OF THIS GENERATOR'S WASTE PROFILE SHEET FOR YOUR RECORDS. SEND THE ORIGINAL AND ALL ATTACHMENTS TO THE CONTRACTOR'S SALES REPRESENTATIVE.**

**INDUSTRIAL SERVICES, INC.**

*Mailing Address:*
P.O. Box 43369
Jacksonville, FL 32203
(800) 447-3592 (904) 354-0372

*Shipping Address:*
1640 Talleyrand Ave.
Jacksonville, FL 32206
FAX (904) 354-7612

Waste Profile Form Code
010004

This form is to be used to comply with the requirements of a waste service agreement

# WASTE PROFILE FORM

Instructions for completing this form are attached.

*(Shaded Areas For IWS Use Only)*
Sales Representative:________________________ Date submitted ____/____/____

## A. CUSTOMER INFORMATION

1. Customer Name ________________________
2. Facility Address ________________________
3. Facility City ________________________ 4. State ______ 5. Zip ______
6. Billing address (if other than above) ________________________
7. City ________________________ 8. State ______ 9. Zip ______
10. Technical Contact ________________________ 11. Phone: ( ) ____ - ____

## B. GENERATOR INFORMATION

1. Generator Name ________________________

## C. WASTE STREAM GENERAL INFORMATION

1. Name of Waste ________________________
2. Estimated volume ____________ 3. Unit(s) ______ 4. Per time ______ if only once, check here ☐

## D. PROCESS GENERATING WASTE (Give a detailed description of process generating waste. Include all constituents, all steps in process, approximate age of waste, and suspected or known contaminants):

1. ________________________

## E. LABORATORY REVIEW

(check one) ☐ APPROVED ☐ DISAPPROVED ☐ ADDITIONAL INFORMATION REQUIRED

If Disapproved, Explain: ________________________

1. Management Method(s) ________________________

2. Precautions, Conditions, or Limitations on Approval: ________________________

## F. QUESTIONNAIRE

1. Is the waste hazardous by:
   - ignitability? (regulated under 40 CFR § 261.21) ☐ Yes ☐ No
   - corrosivity? (regulated under 40 CFR § 261.22) ☐ Yes ☐ No
   - reactivity? (regulated under 40 CFR § 261.23) ☐ Yes ☐ No
2. Does the waste contain:
   - herbicides or pesticides ☐ Yes ☐ No
   - dioxins ☐ Yes ☐ No
   - radioactive substances ☐ Yes ☐ No
   - domestic sewage ☐ Yes ☐ No
   - biohazardous materials ☐ Yes ☐ No
3. Is this a hazardous waste (F, K, U, or P "listed") as defined under 40 CFR subpart D (§ 261.30 - 261.33)? ☐ Yes ☐ No
4. If yes to the above identify listing ____________
5. Is the waste derived from an underground storage tank (UST)?: ☐ Yes ☐ No
   If yes to the above, list materials stored.
   ________________________

**F. PHYSICAL CHARACTERISTICS OF WASTE** (See Instructions)

| 1. Color | 2. Does the waste have a strong incidental odor? | 3. Physical State @ 70°F: | 4. Layers: |
|---|---|---|---|
| ____________ | ☐ No ☐ Yes; if so, describe: ____________ | ☐ Solid ☐ Semi-Solid ☐ Liquid ☐ Powder ☐ Other: ____________ | ☐ Multi-layered ☐ Bi-layered ☐ Single Phased |

5. pH: ☐ ≤2 ☐ >2-4 ☐ 4-7 ☐ 7 ☐ 7-10 ☐ 10-<12.5 ☐ ≥12.5 Actual____________

6. Flash Point: ☐ None ☐ <140°F ☐ 140-199°F ☐ ≥200°F ☐ Closed Cup ☐ Open Cup

7. Viscosity (pourability) ☐ very thin ☐ thin ☐ moderate ☐ thick ☐ does not pour
8. Total Suspended Solids (% wt) ☐ <0.5 ☐ 0.5 - 2.0 ☐ 2.0 - 5.0 ☐ 5.0 - 20 ☐ >20 Actual ____________%
9. Total Organic Halogens (hydrocarbons only) ☐ ≤1000 mg/L ☐ >1000 mg/L Actual ____________ mg/L

**H. CONSTITUENTS** (See Instructions)

1. Does the waste contain any constituents listed in Part H of the attached instruction sheet in excess of the regulatory level? ☐ Yes ☐ No
2. If the answer to question 1 of this section is "no," how was the determination made (check either or both applicable) ☐ Laboratory analysis (attach copies) ☐ Generator knowledge ☐ Not Applicable
3. If the answer to question 1 of this section is "yes," please list the "D" codes present, the amount present (mg/L), and the means by which the determination is made.

| Constituent "D" code | Amount Present (mg/L) | Laboratory analysis (attach copies) TCLP | Total | Generator Knowledge |
|---|---|---|---|---|
| ____________ | ____________ | ☐ | ☐ | ☐ |
| ____________ | ____________ | ☐ | ☐ | ☐ |
| ____________ | ____________ | ☐ | ☐ | ☐ |

*Please photocopy this page and attach if additional spaces are required to list "D"code constituents.*

4. Does the waste contain any of the following? (provide concentration if known):

| | NO | or | LESS THAN | or | ACTUAL |
|---|---|---|---|---|---|
| PCBs | ☐ | | ☐ < 2 mg/L | | ____________ |
| Cyanides | ☐ | | ☐ < 250 mg/L | | ____________ |
| Sulfides | ☐ | | ☐ < 500 mg/L | | ____________ |

**I. SAMPLE**

1. Sample source (drum, tank, lagoon, etc.) ____________ ☐ this form unaccompanied by sample.

**J. REPRESENTATIVE SAMPLE CERTIFICATION**

1. Print Sampler's Name: ____________ 2. Sample Date: ____________
3. Sampler's Title: ____________
4. Sampler's Employer (if other than Generator): ____________
The sampler's signature certifies that any sample submitted is representative of the waste described above pursuant to 40 CFR 261.20(c) or equivalent rules.
5. Sampler's Signature ____________

**K. GENERATOR CERTIFICATION**

By signing this profile sheet, you certify:

1. You are the generator or the duly authorized representative of the generator.
2. This waste is not a "Hazardous Waste" as defined by USEPA Federal regulation, unless noted in section H of this form.
3. This waste does not contain regulated radioactive materials or regulated concentrations of PCB's (polychlorinated biphenyls).
4. The unshaded portions of this sheet and the attachments contain true and accurate descriptions of the waste material. All relevant information in your possession regarding known or suspected hazards has been disclosed.
5. The analytical data presented herein or attached hereto were derived from testing a representative sample taken in accordance with 40 CFR 261.20(c) or equivalent rules.
6. If any changes occur in the character of the waste, you shall notify the Contractor prior to providing the waste to the Contractor.
7. Signature ____________ 8. Title ____________
9. Name (Type or Print) ____________ 10. Date ____________

7

# Notes

ATTACHMENT 6

PART II A. 7. MANIFEST SYSTEM, RECORD KEEPING AND REPORTING

REVISION 1, 1-11-93

## 7. Manifest System, Record Keeping and Reporting

Industrial Water Services, Inc. will inform all generators utilizing its facility in writing that it has the appropriate permits for, and will accept the waste the generator is shipping. Industrial Water Services, Inc. will also notify the EPA and DER four weeks in advance of receipt of any hazardous waste from foreign sources. IWS will keep a copy of these written notices as part of the operating record. A sample form letter for the generator notification is shown in Exhibit A-1.

Before transferring ownership or operation of the facility during its operating life, IWS will notify the new owner or operator in writing of the notification requirements of 40 CFR 264.12 and 40 CFR 270.

All D018 wastewater is transported to IWS by appropriately permitted hazardous waste transporters using tank trucks or vacuum trucks. When an approved waste shipment arrives at the facility, the transporter checks in with the unloading rack attendant and presents the uniform hazardous waste manifest. The rack attendant inspects the manifest for completeness and accuracy including generator name, address, EPA ID Number, and telephone number; transporter name and EPA ID Number; DOT shipping name and number; quantity of waste in shipment; generator signature and date.

The manifests are completed and executed in accordance with the regulations as follows:

i. Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received;

ii. Note any significant discrepancies in the manifest (as defined in 40 CFR 264.72(a)) on each copy of the manifest;

iii. Immediately give the transporter at least one copy of the signed manifest;

iv. Within 30 days after the delivery, send a copy of the manifest to the generator; and

v. Retain at the facility a copy of each manifest for at least three years from the date of delivery.

a. Sampling

Properly manifested loads are placed in position for unloading. The laboratory technician then takes a sample of the load from the access port on the truck following the procedures described in Section 6.0.

b. Screening

Fingerprint screening of the waste is conducted by observing the physical characteristics of the waste. The waste stream is inspected by the laboratory technician for consistency with the manifest and conformance with typical D018 wastewater. Fingerprinting is performed on the waste following the procedures described in the Waste Analysis Plan. Any irregularities of the waste are noted during the screening process, and the waste shipments are inspected against the manifest for correctness.

c. Acceptance

When the load has been determined to be acceptable, information is recorded on the Cradle to Grave TC Benzene Record Sheet and the unloading proceeds with the waste routed to either the separator for treatment or to one of the cone bottom tanks for storage. The record sheet indicates the date received, generator manifest number, gallons received, the in-plant destination of the waste, the treatment method, and the date of disposal. This log is routed to the regulatory compliance manager who completes the operating record in accordance with 40 CFR Part 265.73. The amount stored and discharged along with all the above information is recorded on this log. A copy of the record sheet is included in the Plan.

Acceptance of a load is documented by the IWS rack attendant signing the T,S,D portion of the manifest.

d. Discrepancies

If a D018 shipment exhibits any discrepancies such as inconsistency with typical D018 wastewater or incompleteness or inaccuracy in the manifest, the shipment will be held on-site in the truck staging area until the discrepancy is resolved. Discrepancies which may arise regarding the physical characteristics of D018 waste streams include the presence of solids and contamination of the waste with oil laden waste. Atypical waste streams identified during screening are considered a discrepancy. Also incorrect manifesting regarding the nature of the waste stream or the volume is considered a discrepancy.

In the event of a discrepancy, the process supervisor will notify the regulatory compliance manager. The regulatory compliance manager will attempt to contact the generator by telephone and an attempt made to resolve the discrepancy. IWS will attempt to properly characterize the waste by information received from the generator by telephone and/or by fax, and if necessary a fingerprint screening will be performed by the laboratory director to validate the initial screening.

If the discrepancy is not resolved within 15 days after receiving the waste, IWS will submit to the DER a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue. If the discrepancy cannot be resolved after attempts to contact the generator, or the waste fails to meet acceptance criteria, the waste will be rejected and returned to the generator.

No un-manifested waste will be received by IWS. No hazardous waste will be received on a nonhazardous waste manifest.

If a suspected D018 waste stream is manifested as nonhazardous waste, IWS will attempt to contact the generator regarding the manifest discrepancy and either the waste will be re-manifested as hazardous waste, or the generator will provide analytical data indicating the constituent levels are below the maximum concentration levels, or document the waste is a recoverable hydrocarbon. If the generator cannot provide this information, the load will be rejected.

No unapproved hazardous waste will be received. If the load comes to the facility without pre-approval, the process supervisor will contact the operations coordinator to verify the load has not been pre-approved. If the load has not been previously approved, the regulatory compliance manager will be notified and attempts to contact the generator will be made. If the properly manifested D018 hazardous waste cannot be properly characterized by contacts with the generator, the waste will be rejected.

e. Operating Record

All hazardous waste currently received at the facility is logged in on the operating record. A blank copy of the operating record is included in this plan. The record consists of the following:

1. Cradle to grave TC Benzene Record Sheet

2. Transfer record of hydrocarbons exported from hazardous waste treatment area

3. Transfer record of solids exported from hazardous waste treatment area

Relevant information shown on the logs include date and time received or removed; quantity; generator; transporter; manifest number; and receiving employee.

All hazardous waste is currently routed either to Tank B or to the separator. Tank levels are gauged and recorded daily. The log of the accepted waste will be kept until closure.

Pursuant to 40 CFR 264.73, the following information will be recorded as it becomes available and maintained in the operating record until closure of the proposed facility:

i. A description and quantity of each hazardous waste received, and the method(s) and date(s) of its treatment and storage at the proposed facility;

ii. The location of each hazardous waste within the facility and the quantity at each location. This information will include cross-references to specific manifest document numbers;

iii. Records and results of waste analyses performed as specified in 40 CFR 264.13 and 40 CFR 264.17. If or when D018 hazardous waste becomes subject to the waste analyses requirements of 40 CFR 268.7, IWS will conduct the required analyses for determining compliance with treatment standards for land disposal;

iv. Summary reports and details of all incidents that require implementing the contingency plan as specified in 40 CFR 264.56(j);

v. Records and results of inspections as required by 40 CFR 264.15(d) (to be maintained for at least three years);

vi. Notices to generators as specified in 40 CFR 264.12(b);

vii. Closure cost estimates as specified under 40 CFR 264.142. Closure costs have been estimated and will be updated in accordance with 40 CFR 264.142;

viii. A certification by the permittee no less often than annually that the permittee has a program in place to reduce the volume and toxicity of hazardous waste generated to the degree determined by the permittee to be economically practicable; and the proposed method of treatment, storage or disposal is that practicable method currently available to the permittee which minimizes the present and future threat to human health and the environment;

ix. If or when D018 hazardous waste becomes subject to the record keeping and reporting requirements of 40 CFR 268, then IWS will provide the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or the operator under 40 CFR 268.7 or 40 CFR 268.8.

f. <u>Biennial Report</u>

The IWS facility will file a report every other year listing hazardous waste received. This report is filed in accordance with the regulations and submitted on EPA form 8700-13B or the appropriate DER form. In addition, the facility will file additional reports covering any releases, fires, explosions, closures, or other events as required.

Pursuant to 40 CFR 264.74 the following will be included in the biennial report:

i. The EPA identification number, name, and address of the facility;

ii. The calendar year covered by the report;

iii. the EPA identification number of each hazardous waste generator from which the facility received a hazardous waste during the year; for imported shipments, the report must give the name and address of the foreign generator.

iv. A description and the quantity of each hazardous waste the facility received during the year. This information must be listed by the EPA identification number of each generator;

v. The method of treatment, storage, or disposal for each hazardous waste;

vi. The most recent closure cost estimate under 40 CFR 264.142;

vii. A description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated;

viii. A description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent such information is available.

ix. The certification on EPA form 8700-13A/B signed by the owner or operator of the facility or his authorized representative.

EXHIBIT A-1

SAMPLE GENERATOR NOTIFICATION

Date:

Generator Name:

Generator Address:

RE.: D018 Waste Disposal
Industrial Water Services, Inc.
Jacksonville, Florida

Gentlemen:

This letter is to inform you that Industrial Water Services, Inc. has the appropriate permits for and will accept the proposed waste shipment. This acceptance is based on the Waste Profile Sheet received (date) and analytical data received (date) which characterizes the waste.

Our laboratory will conduct a fingerprint analysis of the waste at our facility upon arrival. Should there be any discrepancies between the fingerprint analysis and the Waste Profile Sheet or analytical data we will contact you immediately. For any discrepancies that cannot be resolved, Industrial Water Services reserves the right to reject the waste. Please be advised that we are required to notify the Florida Department of Environmental Regulation of any discrepancies which cannot be resolved after a 15-day period.

Should you have any questions, please feel free to contact our office at (904) 354-0372.

Sincerely,
Industrial Water Services, Inc.

cc.: Operating Record

# CRADLE TO GRAVE TC BENZENE RECORD SHEET

**UNLOADING**

DATE:__________

TRANSPORTER:__________

GALLONS:__________

GENERATOR:__________

MANIFEST #:__________

TIME UNLOADED:__________

pH:__________

TANK:__________

OPERATOR:__________

**********************************************************************

**TRANSFER**

DATE:__________

TIME TRANSFER BEGAN:__________

TIME TRANSFER ENDED:__________

DESTINATION:__________

OPERATOR:__________

**********************************************************************

**TREATMENT**

DATE:__________

TIME:__________

TREATMENT:__________

OPERATOR:__________

**********************************************************************

**DISPOSAL**

DATE:__________

TIME OF DISPOSAL:__________

DESTINATION:__________

OPERATOR:__________

**********************************************************************

**********************************************************************

TRANSFER RECORD OF

HYDROCARBONS EXPORTED FROM HAZARDOUS WASTE TREATEMENT AREA

**********************************************************************

T
R DATE: ____________
A
N TIME: ___________
S
F VOLUME OF ENERGY RECOVERABLE HYDROCARBONS: __________gallons
E
R DESTINATION: ___________

OPERATOR: ___________

**********************************************************************

TRANSFER RECORD OF
SOLIDS EXPORTED FROM HAZARDOUS WASTE TREATEMENT AREA

**********************************************************************

T
R DATE:___________
A
N TIME:__________
S
F VOLUME OF SOLIDS:__________drums
E
R DESTINATION:__________

MANIFEST NUMBER__________

OPERATOR:__________

**********************************************************************

DATE ______________________________

| | TRANSPORTER | GALLONS | GENERATOR | MANIFEST # | TIME | PH | TANK # | INITIALS | DESCRIPTION / REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |
| 13 | | | | | | | | | |
| 14 | | | | | | | | | |
| 15 | | | | | | | | | |
| 16 | | | | | | | | | |
| 17 | | | | | | | | | |
| 18 | | | | | | | | | |
| 19 | | | | | | | | | |

8

Notes

8. Other Applicable Federal Laws

Information will be provided in accordance with the requirements of 40 CFR &270.3 at the request of the Regional Administrator, Region IV, United States Environmental Protection Agency. However, based on a preliminary review of the statutory language, IWS does not believe any of the following federal laws are applicable to the operation of the Hazardous Waste Fuel activities at the facility.

* The Wild and Scenic River Act, 16 U.S.C. &1273 et.seq.
* The National Section Preservation Act of 1966, 16 U.S.C. &470 et. seq.
* The Endangered Species Act, 16 U.S.C. &1531 et. seq.
* The Coastal Zone Management Act, 16 U.S.C. &1451 et. seq.
* Fish and Wildlife Coordination Act, 16 U.S.C. &661 et. seq.

ATTACHMENT 2

PART II - C. TANK SYSTEMS

**REVISION 2, 4-4-93**

## C. TANK SYSTEM

1. Structural Integrity

a. System Description

Four (4), new, 7,000-gallon, shell bottom tanks will be installed for storage of D018 TC benzene contaminated wastewater. Tanks HW1 through HW3 will receive incoming contaminated wastewater. Tank HW5 is an existing, 150 gpm oil/water separator which will be relocated to within the secondary containment structure. Tank HW6 will be a new, two-compartment rectangular tank containing a 650 gallon effluent sump, (HW6A) and 325 gallon oil sump, (HW6B).

Treated effluent will be pumped from the effluent sump to two (2) new 25,000 gallon steel flat bottom tanks (HW7 and HW8) for final effluent storage. The final effluent will be discharged at a predetermined rate to the sanitary sewer in accordance with the Industrial Water Services' POTW Industrial Pretreatment Permit.

Recovered Hydrocarbons from the oil sump (Tank HW6B) will be discharged to Tank HW4 inside the containment area where it will be held for further gravity separation and concentration. Following holding in Tank HW4, the waste oil will be pumped to the IWS Used Oil Recycling facility.

b. Assessment of Existing Tanks

The only existing tank that will be used in the process operation is the FRAM Industrial Model VPS-4, 150 gpm oil/water separator (Tank HW5). The separator has an exterior shell of 3/8 inch, A-36 carbon steel and is coated on the interior and exterior. The interior coating system is compatible with the waste. A visual inspection of the tank shows it to be in good condition and no leaks have been observed.

The oil/water separator will be relocated to within the secondary containment vault and a written assessment by a registered professional engineer of the tank's structural integrity is included herein. A leak test will be conducted following relocation of the tank and proper handling procedures will be observed during moving and installation.

c. New Tank System Design

(1) Design Standards - The construction of the four (4) 7,000 gal. storage tanks, the effluent and oil sump tank, and the two (2) 25,000 gal. storage tanks will be

in accordance with the following standards:

(a) American Petroleum Institute's (API 650)
(b) Underwriters Limited (UL 142)
(c) National Fire Protection Assoc. (NFPA 30)

The circular storage tanks (HW1-4) will have dish bottoms and be raised above grade by four leg supports. The effluent and oil sumps will be contained in a rectangular, flat-bottom tank. The circular storage tanks, HW7 and 8 are also flat bottom tanks.

The tank shells will be constructed of ASTM-A-36 carbon steel (.33% carbon) with a tensile strength of 58,000 to 80,000 psi. Shell thickness will be certified at the time of installation by an independent, registered professional engineer.

The structural design of the new tanks is shown on the Construction drawings. The Structural Engineer's design summary report is included herein.

Other features of the tank systems will be access manholes, vent manifold, an air/vacuum release valve, a liquid level monitoring system and tank inlets and outlets. Control valves used for filling or emptying a tank must be manually opened or closed.

(2) Hazardous Characteristics of the Waste - The wastewater accepted by the IWS Facility contains benzene in amounts equal to or exceeding 0.5 mg/l as measured by the toxicity characteristic leaching procedure (TCLP). TCLP analysis indicates that the wastewater typically contains benzene TC levels greater than 0.5 mg/l. The benzene level ranges from 0.5 mg/l to 40 mg/l with mean levels below 10.0 mg/l.

ENGINEER'S STRUCTURAL DESIGN AND ASSESSMENT

OF TANK SYSTEM

FOR

PROPOSED D018 HAZARDOUS WASTE TSD FACILITY

INDUSTRIAL WATER SERVICES, INC.

JACKSONVILLE, FLORIDA

*MITTAUER/FITZPATRICK, INC.*
CONSULTING ENGINEERS
767 Blanding Blvd., Suite 102
Orange Park, FL 32065
Tel: (904) 276-5236
Fax: (904) 276-5919

1-11-93

Mr. Ashwin B. Patel, P.E.
Florida Department of Environmental Regulation
Northeast District
7825 Baymeadows Way, Suite B200
Jacksonville, FL 32256

RE.: Warning Letter No. WL92-0343HW16NED
FLD 981 928 484
HC 16-218826
Industrial Water Services, Inc.
Mittauer/Fitzpatrick, Inc. Project No. 9122-02-1

Dear Mr. Patel,

This letter will serve as our engineer's assessment for the proposed D018 Hazardous Waste Treatment and Storage Facility Tank System in accordance with 40 CFR 264.191 and 264.192.

Please find attached our structural design and assessment calculations of the tanks and supports for the proposed facility. We have adequately designed the system to have sufficient structural strength to ensure it will not collapse, rupture or fail. We have also performed structural calculations of the existing oil/water separator and found it to be adequately designed. All system components are compatible with D018 waste.

Our internal inspection of the oil/water separator on December 31, 1992 revealed the tank interior and appurtenances to be in excellent structural condition. No leaks were observed before or after the tank was drained. Our assessment included an evaluation of the existing, tank-shell thickness. No loss of metal was observed. The bottom exterior surface has some surface rust which should be remove and re-painted prior to relocation.

Thank you and please call if you have any questions.

Sincerely,
Mittauer/Fitzpatrick, Inc.

Joseph A. Mittauer, P.E.
President

JOSEPH A. MITTAUER
CERTIFICATE
No. 22111
STATE OF
FLORIDA
REGISTERED ENGINEER

attachments
cc.: Charles Dudley

**MITTAUER/FITZPATRICK, INC.**
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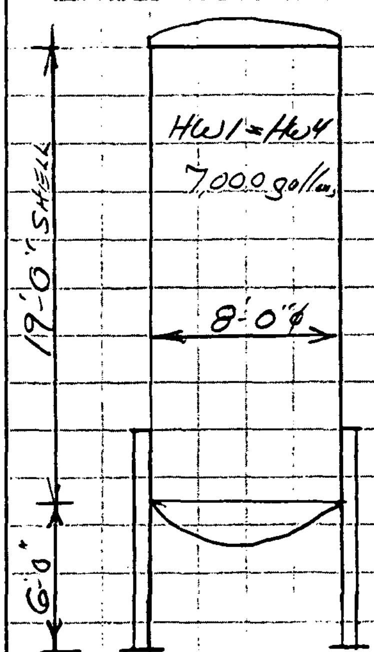
Orange Park, FL 32065
Tel: (904) 276-5236
Fax: (904) 276-5919

Job Name: ICWS - Haz Waste Mtg. Facility
Structural Design - Tanks HW1-4
Job No. 9122-02-1 Sheet No. 1 of 7
Calculated By: JAM Date 1-4-93
Scale:

SCOPE Engineering Design to meet 40CFR 264.192
"Design & Installation of new tank systems or components"
Storage Tanks HW1-4

DESIGN DATA




SIZE = 8'-0"φ × 19'-0" shell Ht + Ends
Nom. Cap. = 7,000 gallons
Liquid Ht. = Design for Full Ht.
Oper. Temp. = Ambient
Oper. Pressure = Atmospheric
Fluid = D018 Oily Wastewater
Sp. Gr. = 1.0
Tank Matl. A36 Steel Plate & Shapes
Design Code - API Std. 650

DISHED BOTTOM DESIGN - API 650

REF.
API 650 3.5.3 → Table 3-1
per 3.4 min. thickness = 0.25", Try 0.25" for Annular Bottom Design

Hydrostatic Test Stress = $\frac{2.6 D (H-1)}{t}$   D = 8.0'φ, H = 20' High, t = 0.25"

= 1,580

1580 << 30,000 max for 1/4"
∴ OK for Annular bottom, ck ASME code

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Job Name IWS-Haz Waste Facility
Structural Design-Tanks HW1-4
Job No. 9122-02-1 Sheet No. 2 of 7
Calculated By: JAll Date 1-5-93
Scale:

## DISHED BOTTOM DESIGN: ASME SEC VIII

REF ASME Sec VIII UG-32(d)

$$t = \frac{PD}{2SE - 0.2P}$$

$P = \frac{20'}{2.31'/psi} = 8.66 psi$

$D = 8'0" = 96"$

$E = $ Joint Eff $= 70\% = 0.70$

S = use std ASME value of 13,750 psi

$$t = \frac{8.66 psi \times 96}{2 \times 13,750 \times 0.70 - (0.2 \times 8.66)}$$

$= 0.04"$

∴ min thickness controls, use 0.25"

## SHELL DESIGN

REF API 650 Sections 3.6
Appendix A.4
Appendix J.3.3

REF 3.6.1.1 min Thickness for tank dia < 50' = 3/16"
J.3.3 OR min. Thickness for Tank dia ≤ 10.5' = 3/16"
OR "Design shell thickness + Corrosion Allowance" method
OR "Hydrostatic Test shell Thickness + Corrosion Allowance" Method

## DESIGN SHELL THICKNESS METHOD

per table 3-2 Product Design Stress Sd = 23,200 (A-36)

3.6.3.2 $$td \geq \frac{2.6 D (H-1) G}{Sd} + CA$$

D = 8.0' Tank Dia
H = use 20'
G = 1.0 SG
CA = 0

$$td \geq \frac{2.6 \times 8.0 (20-1) 1.0}{23,200} + 0$$

$td \geq 0.02$ inches

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SHELL DESIGN (CONT.)

HYDROSTATIC TEST SHELL THICKNESS METHOD

per Table 3-2 Hydrostatic Test Stress $S_t = 24{,}900$ (A-36)

3.6.3.2 $t_t = \dfrac{2.6\,D\,(H-1)}{S_t}$

$t_t = \dfrac{2.6 \times 8.0' \times (20'-1)}{24{,}900}$

$t_t = 0.02''$

APPENDIX "A" OPT. DESIGN BASIS FOR SMALL TANKS METHOD

$t = \dfrac{2.6\,D\,(H-1)\,G}{E \times 21{,}000} + CA$ $E = 70\%$

$t = \dfrac{2.6 \times 8.0'(20-1) \times 1.0}{0.70 \times 21{,}000} + 0$

$t = 0.03''$

INTERMEDIATE WIND GIRDERS

Ref API 650 3.9.7

$H_1 = 6(100t)\sqrt{\left(\dfrac{100t}{D}\right)^3}$

$H_1$ = Max Vert Tank Ht. allowed w/o using wind girders

$H_1 = 6(100 \times \tfrac{3}{16})\sqrt{\left(\dfrac{100 \times 3/16}{8'}\right)^3}$

t = shell thickness use min of 3/16"

$H_1 = 403'$ max >> 19'

D = tank Dia in ft.

∴ OK w/o wind girders

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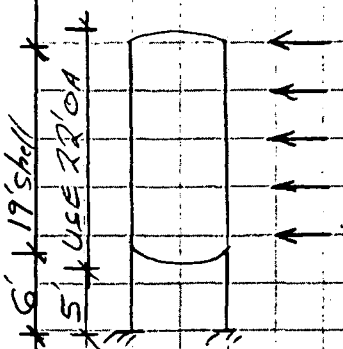
Job Name IWS - Haz Waste Fac
Structural Design Tanks HW1-4
Job No. 9122-02-1 Sheet No. 4 of 7
Calculated By: JAM Date 1-6-93
Scale:

SHELL DESIGN (CONT)

AISC DESIGN METHOD

Consider wind load on tank in addition to internal weight of the fluid




Wind 90 mph per SBCCI
30' HT± → 21 psf std pressure

D = 8.0'   $q_z$ = 23 psf gust vel pressure

$\frac{D}{\sqrt{q_z}} = \frac{8}{\sqrt{23}} = 1.67 \leq 2.5$

$\frac{h}{D} = \frac{27}{8} = 3.38$   Table 1205.4B   $C_f = 0.75$

HORZ WIND FORCE

8'w × 0.75 × 23 psf = 138#/LF of Ht

TOTAL HORZ FORCE

138#/LF × 0.75 × 22' + (Legs = 2'w × 23 psf × 5' × 1.7) = 2670#

MOMENT AT BASE

$138\#/LF \times 22' \times \left(\frac{22}{2} + 5'\right) + \left(2 \times 23 \times 5 \times 1.7 \times \frac{5}{2}\right) =$

48.57'K + 0.98 = 49.55'K ≈ 50'K

$S_x$ in Tank Shell $= \frac{\pi(d^4 - d'^4)}{32d}$   d = 8.0' = 96"
$d_{ID}$ = 95.625"
(based on 3/16" shell)

$S_x$ = 1,350 in³

$F_b = 0.6 \times 36 = 21.6$ KSI
(Ref 1.5.1.4.5)

$M_x$ allowed = $F_b \times S_x$
= 21.6 KSI × 1,350 in³
= 29,140 in Kip
= 2,430 Ft Kip >> 48.57'K in shell from wind
∴ OK

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ROOF DESIGN

REF API 650 3.10.6 Self Supporting Dome Roofs

Min Thickness $\geq \frac{r_r}{200} \geq 3/16"$ $0.8D \leq (r_r \text{ Roof Radius}) \leq 1.2D$

$0.8 \times 8.0' \leq r_r \leq 1.2 \times 8.0$

$6.4' \leq r_r \leq 9.6'$

Min Thickness $\geq \frac{9'}{200} = 0.05'' \geq 3/16"$ use 9' Radius

∴ Min Thickness = 3/16" w/ 9' Radius Dome

OVERTURNING STABILITY

REF API 650 3.11.1

(Overturning Wind Moment = 50'K) ≤ 2/3 Resisting Moment

TANK DEAD LOAD

Wt of tank Bottom = 10.4#/SF (1/4" PL) × π (8'/2)² = 523#

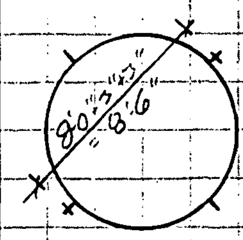
Wt of Shell = 19' π × 8' × 7.8#/SF (3/16" PL) = 3725#

Wt of Roof = 7.8#/SF π × (8/2)² = 392#

Columns 4 × (6' + 3') × 15#/LF = 540#

Bracing 4 × 15' × 3#/LF = 180#

5,360#




C.C. Column spacing = 8'-6" × Sin 45° = 6.0'

Uplift = $50'^K \leq \frac{2}{3}\left[5.36^K \times \frac{6'}{2} + \text{Uplift} \times 6'\right]$

Uplift = 9.82K

or 4.91K/column

Thd A307 3/4"φ A/B = 6.69K Capacity Each

Thd A36 3/4"φ A/B = 7.34K Cap. ea

Use 2 Bolts (3/4"φ) per Column

CHECK FLOTATION UPLIFT

Note tank is on columns such that the tank is above the level of the containment wall.

∴ No Flotation Uplift

**MITTAUER/FITZPATRICK, INC.**
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Job Name: IWS - Haz Waste Fac
Structural Design - Tanks HW1-4
Job No. 9172-02-1 Sheet No. 6 of 7
Calculated By: JAK Date 1-6-93
Scale:

DESIGN COLUMNS FOR TANK

Load per Column $= \frac{DL = 5.36^k}{4\ columns} + \frac{Wind = 50'^k}{6' c/c \times 2\ col} + \frac{(LL = 7000\ gal \times 8.34\#/gal) + 10\%}{4\ col.}$

$= 23.2^k$ / column Max.

w/ X-Braced Columns $k = 0.8$

TRY W6×15 COL

$A = 4.43\ in^2$ $r_x = 2.56\ in$ $S_x = 9.72$
$d = 6''$ $r_y = 1.46\ in$ $S_y = 3.11$
$b_f = 6''$

X-Axis $= \frac{kl}{r} = \frac{0.8 \times 6'0'' \times 12''/ft}{2.56} = 22.50 \rightarrow F_a = 20.45\ ksi$

Y-Axis $= \frac{kl}{r} = \frac{0.8 \times 6'0'' \times 12''/ft}{1.46} = 39.45 \rightarrow F_a = 19.23\ ksi$

Allowable Load (Y-Axis) $= (A = 4.43\ in^2) \times (F_a = 19.23\ ksi)$
$= 85^k >> 23.2^k$ actual ∴ OK

CK ECCENTRIC LOAD IN X-AXIS

$M_x$ due eccentricity $= 23.2^k \times \frac{3''}{12''/ft}$
$= 5.8'^k$

$f_a = \frac{23.2^k}{A = 4.43\ in^2} = 5.24\ ksi$

CK $\frac{f_a}{F_a} = \frac{5.24}{20.45} = 0.26 \nleq 0.15$

∴ Use Formula 1.6-1a & b

1.6-1a (modified)

Equiv. $P_{concentric} = P + \left[B_x M_x C_{mx} \left(\frac{F_a}{F_{bx}}\right)\left(\frac{a_x}{a_x - P(Kl)^2}\right)\right] + [0\ \text{for Y-axis}]$

$P = 23.2^k$
$B_x = \frac{Area}{S_x} = \frac{4.43\ in^2}{9.72} = 0.46$
$M_x = 5.8'^k = 69.6\ in\ k$
$C_m = 0.85$
$F_a = 20.45$
$F_{bx}$ $L_c = 6.3$ $L_u = 12.0$
∴ $F_{bx} = 0.66 \times 36 = 23.76\ ksi$
$a_x = 4.33 \times 10^6$ $k = 0.8$ $l = 72''$

$= 23.2 + 23.63$
$= 46.83\ k$ equiv.

$f_a = \frac{46.83^k}{4.43\ in^2} = 10.57\ ksi$ actual $< 20.45\ ksi$ allow.

∴ OK

USE W 6×15 columns

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Job Name: IWS - Haz Waste Fac
Structural Design - Tanks HW1-4
Job No. 9122-02-1 Sheet No. 7 of 7
Calculated By: JAM Date 1-6-93
Scale:

## COLUMN X-BRACE DESIGN

Horz. Wind Load = $2.67^k$ or $1.34^k$ per X-Brace Pair

load per brace $\dfrac{1.34^k}{\cos 45°} = 1.90^k$

For tension, Min Area $= \dfrac{1.90^k}{0.6 \times 36\,ksi} = 0.09\,in^2$

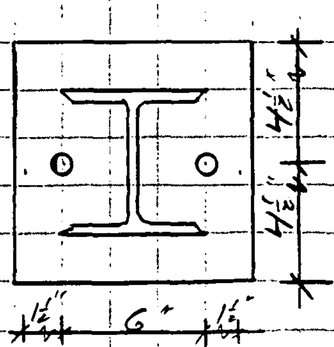
$L\,2 \times 2 \times 1/4$ $A = 0.938\,in^2 \gg 0.09$ ∴ OK

## COLUMN BASE PL DESIGN

TRY $9'' \times 9''$ Base PL

$23.2^k$/col max load

X-Axis will control on SQ Base PL




$f_p = \dfrac{23.2^k}{9'' \times 9''} = 0.29\,ksi$

$F_p = 0.35 \times (f'_c = 4000) = 1.40\,ksi \gg 0.29$ ∴ OK

$B = 9''$

$2n = 9'' - 0.8(6'' = b_f)$

$n = 2.10''$

$t_p \geq 2n\sqrt{\dfrac{f_p}{F_y}} = 2 \cdot 2.10\sqrt{\dfrac{0.29}{36\,ksi}}$

$t_p \geq 0.38''$ ∴ USE $1/2''$ PL

USE $1/2'' \times 9'' \times 9''$ Base PL w/ (2) $1''\phi$ holes for $3/4''\phi$ A/B

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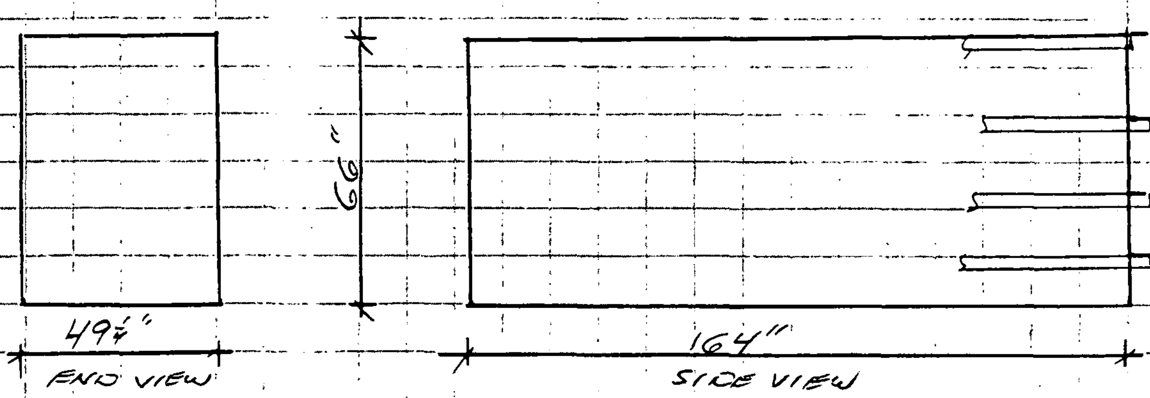
Job Name: IWS - Haz Waste Mg. Fac.
Structural/Design - Oil/Water Sep HW-5
Job No. 9122-02-1 Sheet No. 1 of 5
Calculated By: JAM Date 1-3-93
Scale: 1/4" = 1'0" ELEV.

SCOPE Engineering Assessment of existing Oil-Water Separator to meet 40 CFR 264.191 "Assessment of Existing Tank Systems Integrity"

TANK DATA

Existing From Model VPS-4 (Quantek)
Drained & Inspected by JAM 12-31-92
Shipping Wt. 5830 lbs.




All plates are 1/4" thick A-36 per manual
steel work is in excellent cond per field inspection.
the interior paint has peeled off in several locations but
no rusting or loss of metal has occured due to to
oily nature of D018 waste. The bottom exterior surface
has some surface rust and should be cleaned &
repainted prior to relocation, No loss of metal has
occured on the exterior surface either, at this time.

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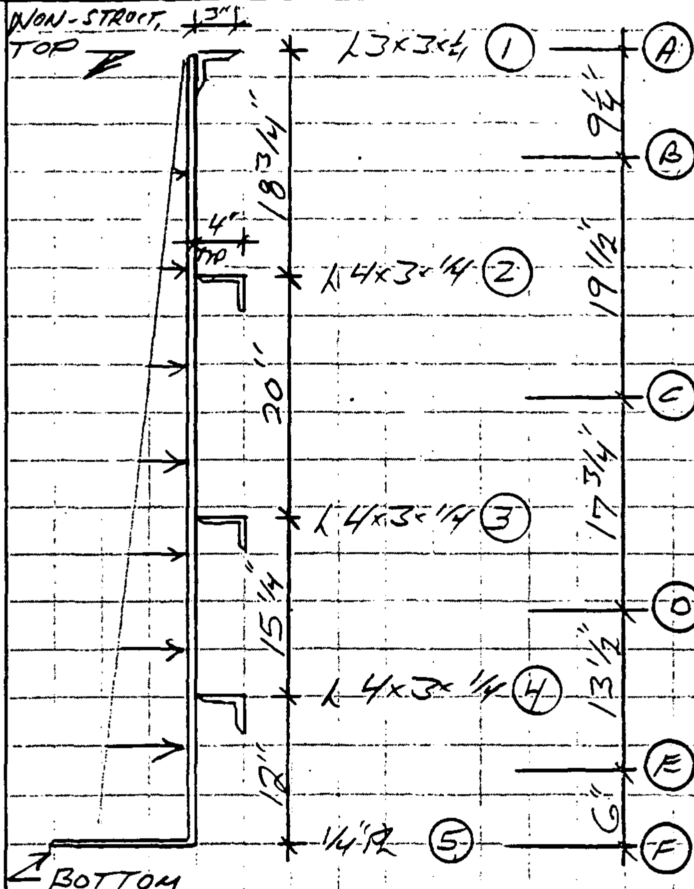
Job Name IWS-Haz Waste Fac
Structural Design - Oil/Water Sep. HW-5
Job No. 9122-02-1 Sheet No. 2 of 5
Calculated By: JAM Date 1-3-93
Scale: 3/4" = 1'-0" Section

CHECK SIDE WALL STIFFENERS  S.G = 1.0, Max Fluid Depth = 66"




PRESSURE AT Ⓐ

$P = 0$ psi

PRESSURE AT Ⓑ

$\frac{62.4 \text{ pcf}}{1728 \text{ ci/cf}} \times 9\frac{1}{4}" = 0.334$ psi

PRESSURE AT Ⓒ

$\frac{62.4 \text{ pcf}}{1728 \text{ ci/cf}} \times 28\frac{3}{4}" = 1.038$ psi

PRESSURE AT Ⓓ

$\frac{62.4 \text{ pcf}}{1728 \text{ ci/cf}} \times 46\frac{1}{2}" = 1.679$ psi

PRESSURE AT Ⓔ

$\frac{62.4 \text{ pcf}}{1728 \text{ ci/cf}} \times 60" = 2.167$ psi

PRESSURE AT Ⓕ

$\frac{62.4 \text{ pcf}}{1728 \text{ ci/cf}} \times 66" = 2.383$ psi

LOAD ON MEMBER ①

$\frac{0 + 0.334 \text{ psi}}{2} \times 9\frac{1}{4}" = 1.545$ lb/LI

$M = \frac{1}{8} W l^2 = \frac{1}{8} \times 1.545 \text{ lb/LI} \cdot (164")^2$

$= 5.19$ In-Kip

$= 0.43$ Ft-Kip

Allowable load on L3x3x1/4, $S_x = 0.577 \text{ in}^3$

$M_x = F_b S_x$  $F_b = 0.60 \times 36 \text{ ksi} = 21.6$ ksi

$= 21.6 \text{ ksi} \times 0.577 \text{ in}^3$

$= 12.46$ in-K

$= 1.04$ Ft-Kip allowed >> 0.43 Ft-Kip Actual

∴ OK

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Job Name: ILCAS - Haz. Waste Fac.
Struct. Design - Oil/Waste Sep. HW-5
Job No. 9122-02-1 Sheet No. 3 of 5
Calculated By: JAM Date 1-3-93
Scale:

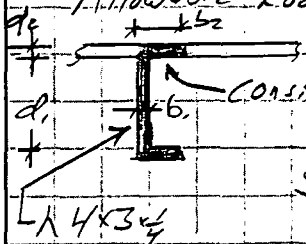
## CK. SIDEWALL STIFFENERS (CONT.)

LOAD ON MEMBER ②

$$\frac{0.334 + 1.038\,psi}{2} \times 19\tfrac{1}{2}'' = 13.38\ LB/LI$$

$$M = \tfrac{1}{8} w l^2 = \tfrac{1}{8} \times 13.38\,lb/LI \times (164'')^2$$
$$= 44.97\ In\text{-}K$$
$$= 3.75\ Ft\text{-}K$$

Allowable Load on ∟4×3×¼ (Long Leg Horz) composite w/ Tank Wall




Consider 3" wide section of Pl Wall

$$S_x = \frac{b_1 d_1^2}{6} + \frac{b_2 (d_2)^3 + 3 b_2 d_2 (d_1 + d_2)^2}{3 d_1 + 6 d_2}$$

$b_1 = 1/4''$ wide
$d_1 = 4'' - \tfrac{1}{4}'' = 3\tfrac{3}{4}$ deep
$b_2 = 3''$ wide
$d_2 = 1/4''$ deep

$$S_x = \frac{1/4 \times (3\tfrac{3}{4})^2}{6} + \frac{3'' \times (\tfrac{1}{4})^3 + 3 \times 3'' \times \tfrac{1}{4}'' (3\tfrac{3}{4} + \tfrac{1}{4})^2}{3 \times 3\tfrac{3}{4}'' + 6 \times \tfrac{1}{4}''}$$

$$S_x = 0.59 + 2.83$$

$$S_x = 3.41\ in^3$$

$$\text{Allowable Load} = M_x = F_b S_x = 21.6\,ksi \times 3.41\,in^3$$
$$= 73.72\ In\text{-}Kp$$
$$= 6.14\ Ft\text{-}Kp$$

$6.14'^K$ allowable >> $3.75'^K$ actual ∴ OK

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Job Name: IWS - Haz Waste Fac
Struct Design - Oil/Waste Sep. HW-5
Job No. 9122-02-1 Sheet No. 4 of 5
Calculated By: JAM Date 1-3-93
Scale:

CK SIDEWALL STIFFENERS (CONT)

LOAD ON MEMBER 3

$\frac{1.038psi + 1.679psi}{2} \times 17\frac{3}{4}'' = 24.11 Lb/LI$

$M = \frac{1}{8} wl^2 = \frac{1}{8} \times 24.11 Lb/LI \times (164'' - 18'')^2$
= 64.25 In Kip
= 5.35 Ft Kip actual

↑ stilling well cross PL location

From Pg 3, Allowable = 6.14 Ft Kip

6.14 Ft Kip Allowable > 5.35 Ft Kip Actual ∴ OK

LOAD ON MEMBER 4

$\frac{1.679psi + 2.167psi}{2} \times 13\frac{1}{2}'' = 25.96 LB/LI$

$M = \frac{1}{8} wl^2 = \frac{1}{8} \times 25.96 Lb/LI \times (164'' - 18'')^2$
= 69.17 In Kip
= 5.76 Ft Kip actual

↑ stilling well cross PL

From Pg 3, Allowable = 6.14 Ft Kip

6.14 Ft Kip allowable > 5.76 Ft Kip actual ∴ OK

LOAD ON MEMBER 5

$\frac{2.167 + 2.383psi}{2} \times 6'' = 13.65 Lb/LI$

$M = \frac{1}{8} wl^2 = \frac{1}{8} \times 13.65 \times (164)^2$
= 45.89 In Kip
= 3.82 Ft Kip Actual

Allowable = $S \times F_b = \frac{bd^2}{6} \times 21.6 ksi$
$= \frac{\frac{1}{4}'' \times (49\frac{1}{4}'')^2}{6} \times 21.6 ksi$

= 2,183 In Kip
= 182 Ft Kip >> 3.82 Ft Kip ∴ OK

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Job Name IWS-Haz Waste Fac
Struct. Design - Oil Waste Sep. HW-5
Job No. 9122-02-1 Sheet No. 5 of 5
Calculated By: JAM Date 1-3-93
Scale:

CHECK PLATE DEFLECTION

Note: Bottom plate will be worst case as opposed to side PL
Consider 1" wide unit strip 49" long.

$$I_{xx} = \frac{bd^3}{12} = \frac{1''\text{wide}\,(1/4''\text{ thick})^3}{12}$$

$$= 0.0013 \text{ in}^4$$

Use AISC Load Condition 15, PL Fixed at both ends.

$$\Delta_{max} = \frac{wL^4}{384EI}$$

$w = 2.383\text{ psi LL} + \frac{10.4\#/\text{sf}}{144\text{ si/sf}} = 0.072\text{ psi DL}$
$= 2.455\text{ psi}$
$L = 49''$
$E = 29{,}000{,}000\text{ psi}$
$I = 0.0013\text{ in}^4$

$$\Delta_{max} = \frac{2.455\text{ psi} \times (49'')^4}{384 \times 29{,}000{,}000\text{ psi} \times 0.0013\text{ in}^4}$$

$$\Delta_{max} = 0.978'' \approx 1''$$ one-way action

Note, Floor is supported by cross beams, thus 2-way action exist
∴ OK

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Job Name: IWS - HazWaste Mg. Facility
Structural Design - Sumps - HW6
Job No. 9122-02-1 Sheet No. 1 of 3
Calculated By: JAM Date 1-3-93
Scale: 3/4" = 1'-0" Section

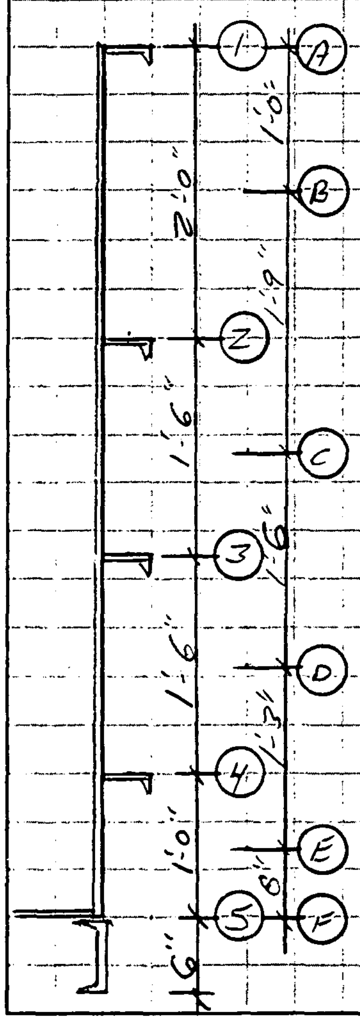
**SCOPE** Engineering Design to meet 40 CFR 264.192
"Design & Installation of new tank Systems or Components"
Effluent Sump & Oil Sump

**DESIGN DATA**

Effluent Sump 4'W x 4'D x 6'H
normally operates @ 3'-0" max level
design for liquid full Height = 6'-0"

Oil Sump 2'W x 4'D x 6'H
normally operates @ 2' max level
design for liquid full height = 6'-0"

Sp. Gravity: Use 1.0 for both sumps,
Oper Temp = Ambient
Opr Press = Atmospheric
Tank Material = A36 steel Pl & shapes




PRESSURE AT (A) = 0

PRESSURE AT (B)
$\frac{62.4^{\#}/cf}{(12"/ft)^3} \times 12" = 0.433$ psi

PRESSURE AT (C)
$\frac{62.4}{(12)^3} \times 33" = 1.192$ psi

PRESSURE AT (D)
$\frac{62.4}{(12)^3} \times 51" = 1.842$ psi

PRESSURE AT (E)
$\frac{62.4}{(12)^3} \times 66" = 2.383$ psi

PRESSURE AT (F)
$\frac{62.4}{(12)^3} \times 72" = 2.600$ psi

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SIDEWALL STIFFENERS

LOAD ON MEMBER (1)

$\frac{0 + 0.433 psi}{2} \times 12'' = 2.60 Lb/LI$

$M = \frac{1}{8} wl^2 = \frac{1}{8} \times 2.60 \times (48'')^2 = 0.75 In Kip$
$= 0.06 Ft Kip$

LOAD ON MEMBER (2)

$\frac{0.433 + 1.192}{2} \times 1'9'' = 17.06 Lb/LI$

$M = \frac{1}{8} wl^2 = \frac{1}{8} \times 17.06 Lb/LI \times (48)^2 = 4.91 In-Kip$
$= 0.41 Ft-Kip$

LOAD ON MEMBER (3)

$\frac{1.192 + 1.842}{2} \times 18'' = 27.31 Lb/LI$

$M = \frac{1}{8} wl^2 = \frac{1}{8} \times 27.31 \times (48)^2 = 7.86 In Kip$
$= 0.66 Ft Kip$

LOAD ON MEMBER (4)

$\frac{1.842 + 2.383}{2} \times 15'' = 31.69 Lb/LI$

$M = \frac{1}{8} wl^2 = \frac{1}{8} \times 31.69 \times (48)^2 = 9.13 In Kip$
$= 0.76 Ft Kip$

LOAD ON MEMBER (5)

$\frac{2.383 + 2.600}{2} \times 6'' = 14.95 Lb/LI$

$M = \frac{1}{8} wl^2 = \frac{1}{8} \times 14.95 \times (48)^2 = 4.31 In Kip$
$= 0.36 Ft Kip$

Worst Case is Member (4) $M = 0.76$ Ft Kip

$S_x$ Reqd $= \frac{M_x}{F_b} = \frac{0.76^{1k} \cdot 12,000}{0.6 \times 36,000 psi}$

$S_x$ Reqd $= 0.42 in^3$

$\angle 3 \times 3 \times 1/4$ $S_x = 0.577 > 0.42 in^3$ ∴ OK

USE $\angle 3 \times 3 \times \frac{1}{4}$

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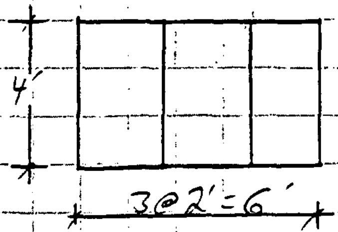
## PLATE THICKNESS

Note Bottom of Tank will be controlling factor w/ most load pressure on tank floor is 2.60psi




TRY 3 equally spaced supports @ 2'-O.C.

REF AISC Load Table 3C

$\Delta_{max} = \dfrac{0.0069\,w\ell^4}{EI}$

$w = 2.60\times10^{-3}$ k/in
$\ell = 24$ in
$E = 29{,}000$ KSI
$I = \dfrac{bd^3}{12} = \dfrac{1(\frac{1}{4})^3}{12}$
$= 0.0013$ in⁴

$\Delta_{max} = 0.158''$ ∴ OK

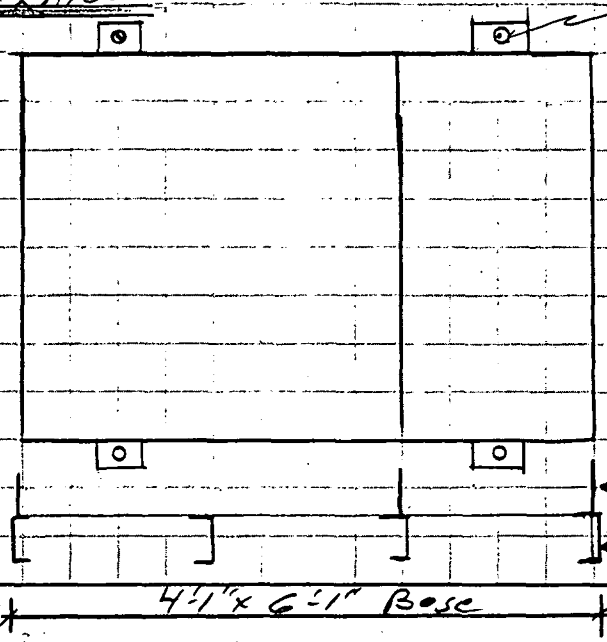
USE 1/4" PL Throughout

## CHECK FLOTATION

DESIGN FOR: Max Water Level of 4'0" w/ 6" [ base, buoyant force = $3\frac{1}{2}\times4\times6\times62.4$#/cf − DL
= 5.24K − DL of tank

USE (4) 1/2"φ A/B to secure Tank
A307 or A36 Bolts

## TANK LAYOUT



3/4"φ hole for 1/2"φ AB in 1/4" PL w/ 1/4" gusset plates

5 1/4" PL

C6x8.2 Base around entire perimeter w/ Inspect Ports

4'1" x 6'1" Base

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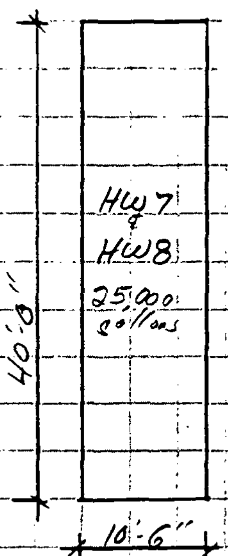
Job Name IWS - Haz Waste Mtg. Fac.
Structural Design Tanks HW 7 & 8
Job No. 9122-02-1 Sheet No. 1 of 6
Calculated By: JAM Date 12-30-92
Scale:

SCOPE Engineering Design to meet 40CFR 264.192
"Design & Installation of new Tank Systems or Components"

DESIGN DATA




SIZE = 10'-6" Dia. x 40'-0" Ht.
Nom. Cap = 25,000 gallons
Liquid Ht. = Design for full Height
Oper. Temp. = Ambient
Oper. Press. = Atmospheric ( Conservation vent release: @ 0.5 OZ water per In = 0.07' water)
Fluid = Treated D018 oily wastewater
Sp. Gr. = 1.0
Lining = None
Tank Mat'l = A36 Steel plate & shapes
Design Code = API Standard 650

BOTTOM PLATE DESIGN

REF API 650 Sections 3.4 & Appendix J.3.2.1

minimum bottom thickness = 0.25"
Note: Tank bottom is flat and is uniformly supported on a concrete foundation. ∴ Min. Thickness OK

SHELL DESIGN

REF API 650 Sections 3.6
Appendix A.4
Appendix J.3.3

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Job Name IWS-Haz Waste Mtg Fac.
Structural Design Tanks HW7&8
Job No. 9122-02-1 Sheet No. 2 of 6
Calculated By: JAM Date 12-30-92
Scale:

SHELL DESIGN (CONT.)

3.6.1.1 min. thickness for tank dia < 50' = 3/16"
J.3.3 OR min. thickness for tank dia ≤ 10.5' = 3/16"
"Design shell Thickness" + Corrosion Allowance
or
"Hydrostatic Test shell Thickness"

DESIGN SHELL THICKNESS METHOD

Per table 3-2 Product Design Stress Sd = 23,200 (A-36)

3.6.3.2

$$t_d \geq \frac{2.6D(H-1)G}{S_d} + CA$$

D = 10.5' Tank Dia.
H = 40.0' Liquid Ht.
G = 1.0 S.G.
CA = 0

$$t_d \geq \frac{2.6 \times 10.5(40-1)1.0}{23{,}200\text{psi}} + 0$$

$t_d \geq 0.05$ inches

HYDROSTATIC TEST SHELL THICKNESS METHOD

Per table 3-2 Hydrostatic Test Stress St = 24,900 (A-36)

3.6.3.2 $$t_t = \frac{2.6D(H-1)}{S_t}$$

$$t_t = \frac{2.6 \times 10.5" \times (40-1)}{24{,}900\text{psi}}$$

$t_t = 0.04"$

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SHELL DESIGN (CONT.)

APPENDIX "A" OPT. DESIGN BASIS FOR SMALL TANKS METHOD

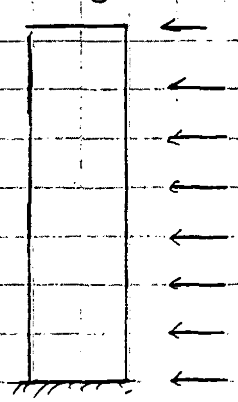
$$t = \frac{2.6\, D \times (H-1)\, G}{E \times 21{,}000} + CA \qquad E = 0.70$$

$$t = \frac{2.6 \times 10.5' \times (40-1) \times 1.0}{0.70 \times 21{,}000} + 0$$

$$t = 0.07''$$

AISC DESIGN METHOD

Consider wind load on a tank in addition to the internal weight of the fluid



Wind 90 mph per SBCCI

40' HT → 23 psf std pressure

$D = 10.5'$ $q_z = 27$ psf gust vel. pressure

$$\frac{D}{\sqrt{q_z}} = \frac{10.5}{\sqrt{27}} = 2.02 \leq 2.5$$

$$\frac{h}{D} = \frac{40'}{10.5'} = 3.81 \quad \text{Table 1205.4B} \quad C_f = 0.75$$

HORZ WIND FORCE = 10.5' w × 0.75 × 27 psf
= 213 #/LF of Ht

TOTAL HORZ FORCE = 213 × 40' H = 8.52$^K$

MOMENT AT BASE = 213#/LF × 40' × 40/2 = 170 ft-kip

$$S_x = \frac{\pi (d^4 - d'^4)}{32 d}$$

$d = 10.5' = 126''$ Assume 3/16" thick

$d'_{ID} = 125.63''$

$S_x = 2{,}327 \text{ in}^3$

$F_b = 0.60 F_y\ (1.5 \cdot 1.45)$

$M_x$ allowed $= F_b \times S_x$ = 21.6 ksi

= 50,274 in·k = 4190'$^K$ >> 170'$^K$ actual ∴ OK (also OK for 100 mph wind)

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Job Name: IWS - Haz Waste Fac.
Structural Design Tanks HW 7 & 8
Job No. 9122-02-1 Sheet No. 4 of 6
Calculated By: JAM Date 1-2-93
Scale:

SHELL DESIGN (CONT.)

INTERMEDIATE WIND GIRDERS REF API 650 3.9.7

$H_1 = 6(100t)\sqrt{\left(\frac{100t}{D}\right)^3}$

$= 6 \times (100 \times \frac{3}{16}) \sqrt{\left(\frac{100 \times 3/16}{10.5}\right)^3}$

$= 268'$ max allowed >> 40'

$H_1$ = max Vert. Tank Ht. w/o intermediate stiff rings
t = shell thickness (inches)
D = Tank Dia. (ft)

∴ OK No wind girders are reqd.

ROOF DESIGN (see ALT pg 5)
REF API 650 3.10.5 Self-Supporting Cone Roofs
Min. Roof angle = 2/12 pitch for Self supporting
min Roof thickness = 3/16" thickness

Min Thickness $= \frac{D}{400 \sin\theta}$

$\theta$ = 2/12 pitch = 9.46°
D = 10.5 ft.

= 0.160 inches Based on DL + LL = 45 psf

$= \frac{2.55}{16}$" ∴ 3/16" minimum Controls

OVERTURNING STABILITY
REF API 650 3.11.1
(Overturning Wind moment = 170'k) ≤ 2/3 (Wt. of Tank) × $\frac{Dia.}{2}$

Overturning Moment = 170,000 ft-lbs (pg 3)
Wt. of tank Bottom $= (10.4^{\#}/sf = \frac{1}{4}" R) \times \pi \times \left(\frac{10.5}{2}\right)^2 =$ 900#
Wt. of Shell $= 40' \times \pi \times 10.5' \times (7.8^{\#}/sf = \frac{3}{16}" R)$ = 10,300#
Wt. of Tank Roof $(7.8^{\#}/sf = \frac{3}{16}" R) \times \pi \times \left(\frac{10.5}{2}\right)^2 =$ 680#
11,880#

170,000 ft-lb ≤ 2/3 (11,880#) × $\frac{10.5'}{2}$
170,000'# ≰ 41,600'#
∴ Anchor Bolts Reqd ≥ 128,400'k Resistance

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## OVERTURNING STABILITY (CONT.)

Ref API 650 3.11.3

$d$ = Anchor Bolt Circle, ft ≈ 10.75'

$$t_b = \frac{4M}{dN} - \frac{W}{N}$$

$N$ = 8 anchor bolts

$$t_b = \frac{4 \times 170{,}000^{\#}}{10.75' \times 8} - \frac{11{,}880^{\#}}{8}$$

$t_b$ = 6,420 lbs / bolt

A307 Thd Bolt 3/4"φ = 6,690#
A36 Thd Bolt 3/4"φ = 7,340#

## SUMMARY

TANK SIZE = 10'-6" O.D. × 40'-0" SIDE HT.
25,000 gallon Cap. Nominal

Bottom Pl = 1/4" plus Corrosion Allowance

Shell Pl = 3/16" plus Corrosion Allowance

Roof Pl = 3/16" (2/12 Pitch) plus Corrosion Allowance

Anchor Bolts = (8) 3/4" dia min A-307

Tank Pl = A36 steel

## ALT ROOF DESIGN

REF API 650 3.10.6 Self Supporting Dome Roofs

Min Thickness $\geq \frac{r_r}{200} \geq 3/16"$ $0.8D \leq r_r$ = Roof Radius $\leq 1.2D$

$0.8 \times 10.5' \leq r_r \leq 1.2 \times 10.5'$

Min Thickness $\geq \frac{12'}{200} = 0.06" \geq 3/16"$ $8.4' \leq r_r < 12.6'$

Use 12' Radius

Min Thickness = 3/16" w/ 12' Radius Dome

**MITTAUER/FITZPATRICK, INC.**
CONSULTING ENGINEERS
767 Blanding Blvd., Suite 102
Orange Park, FL 32065
Tel: (904) 276-5236
Fax: (904) 276-5919

Job Name IWS- Haz Waste Fac
Structural Design Tanks HW 7 & 8
Job No. 9122-02-1 Sheet No. 6 of 6
Calculated By: JAM Date 1-4-93
Scale:

CHECK FLOATATION UPLIFT

Wt. of Tank DL = 11,880#

Design for Max water level of 4'-0"

uplift = $4'\text{-}0'' \times \pi\left(\frac{10.5'}{2}\right)^2 \times 62.4\#/CF$

= 21,610#

Net uplift = 21610# - 11,880#

= 9730#

A/B Capacity = 8 A/B @ 6690# ea

= $53.5^K >> 9.73^K$ ∴ OK

2. Tank Dimensions and Capacity

The capacity and dimensions of each tank within the secondary containment system are provided in Table C-1 below:

Table C-1
Tank Dimensions and Capacity

| Tank | Dimensions | Capacity |
|---|---|---|
| Holding Tank HW1 | 8'- 0" diameter x 19'- 0" on shell | 7,000 gal |
| Holding Tank HW2 | 8'- 0" diameter x 19'- 0" on shell | 7,000 gal |
| Holding Tank HW3 | 8'- 0" diameter x 19'- 0" on shell | 7,000 gal |
| Holding Tank HW4 | 8'- 0" diameter x 19'- 0" on shell | 7,000 gal |
| Oil/Water Sep. HW5 | 13'- 8" L x 4'-7 3/4" W x 5'- 6" H | 2,600 gal |
| Effluent Sump HW6A | 4' - 0" L x 4' - 0" W x 5' - 6" H | 650 gal |
| Oil Sump HW6B | 2' - 0" L x 4' - 0" W x 5' - 6" H | 325 gal |
| Holding Tank HW7 | 10'- 6" diameter x 40'- 0" on shell | 25,000 gal |
| Holding Tank HW8 | 10'- 6" diameter x 40'- 0" on shell | 25,000 gal |

# GENERAL NOTES

A. GENERAL CONSTRUCTION NOTES

1. Elevations are referenced to City of Jacksonville Benchmark with an elevation of 9.027 N.G.V.D. and described as follows: x-cut on top of wall at west end of bridge at DEER CREEK on Talleyrand Avenue.

2. The existing industrial, wastewater pretreatment plant and other utility services shall be maintained during the construction of the new facilities.

3. The Contractor shall employ a land surveyor, registered in the State of Florida to reference and restore property corners and land markers which may be disturbed by construction.

4. The Contractor shall be responsible for establishing project temporary bench marks, elevation, lines and grades for construction.

B. GENERAL STRUCTURAL NOTES

1. DESIGN CRITERIA (All Design per latest edition of the Standard Building Code.)

2. Live Loads (Minimum)

| | | |
|---|---|---|
| Roofs & Canopies | - | 20 psf |
| Public Spaces | - | 150 psf |
| Equipment Areas | - | 300 psf |

3. Winds Loads: In accordance with SBCCI SBC for 90 mph in a coastal zone.

4. The design of all structural concrete conforms to "A.C.I. 318 Building Code Requirements For Reinforced Concrete."

5. All structural concrete shall have a min. compressive strength of 4000 psi after 28 days unless otherwise noted, designed in accordance with Chapter 3 of A.C.I. 318 Building Code Requirements For Reinforced Concrete."

6. All reinforcing steel shall conform to ASTM A615 Grade 60, except bars to be welded shall conform to ASTM A706.

7. For size and location of embedded items and openings, the Contractor must refer to mechanical, structural, piping and vendors drawings.

8. Equipment anchor bolts shall be set from templates made to fit holes in equipment according to approved manufacturers shop drawings.

9. Contractor shall verify all dimensions and existing conditions at the site before proceeding with construction.

10. Unless otherwise shown on drawings, min. cover for reinforcing steel shall be as follows:
Concrete Cast Against Earth – 3"
Slabs on Grade – Centered
All Other – 2"
Note: 6 Mil High Density Polyethylene Membrane required under all base slabs.

11. All reinforcing shall be fabricated and held securely in position with standard accessories in accordance with ACI 315-80 "Manual of Standard Practice for Detailing Reinforced Concrete Structures"

12. Splices in reinforcing, where permitted, shall be as noted, or as follows:
Welded Wire Mesh – One Mesh + 2" (Min.)
Temperature Reinforcing – 12" Min.
All Other Bars – Class "C" Lap.
Splices in Top Reinforcing Shall Be Made at Midspan, Bottom Reinforcing At Support, Or As Noted On Drawings.

13. Location of construction joints, proposed by the Contractor, shall be submitted to the Engineer for approval prior to initiating any construction or fabrication which could be affected by the location. All construction joints shall incorporate a properly designed and fabricated PVC waterstop.

14. Provide 3/4" chamfer on all exposed edges of concrete.

15. All structural openings around, affected by or framing to support mechanical, electrical or plumbing equipment shall be verified with equipment furnished before proceeding with structural work affected.

16. COMPACTION
Unless otherwise noted the required percentage of maximum compaction shall be as follows: (Per modified proctor max. dry density)
Under Structures and Slabs – 95%
Under Paved Areas (Subgrade) – 98%
Under Paved Areas (Below 12") – 95%
Landscaped Areas and Other – 90%
Adjacent to Walls and Above Footing – 92%

17. STRUCTURAL STEEL
All structural steel and miscellaneous metals work shall be in accordance with the AISC "Manual Of Steel Construction."
Connections not detailed shall be capable of carrying 100 percent of the maximum web shear as indicated in the beam tables of Part 2 of the AISC Manual. Connection details shall be in accordance with the standard framed beam connections indicated in Part 4 of the AISC Manual.

Materials shall comply with the following standard specifications:
a. Steel Plate, Sections, Angles, Etc. – ASTM A36
b. Bolts – ASTM A325-X High Strength Bolts
c. Anchor Bolts – Type 304 Stainless Steel
d. Welds – AWS A5.1 Or A5.5, E70XX Electrodes

C. COATINGS:

1. Apply asphalt paint coating between dissimilar metals and between metals and concrete.

2. Exposed concrete surfaces shall be primed and coated with a two component, tar modified, self leveling, polyurethane sealant meeting U.S. Federal Specification SS-S-200D, Type H. Primer shall be compatible with sealant. Concrete surface coatings shall be installed in strict conformance to manufacturer's recommendations. Acceptable Manufacturers: Mameco International, Vulkem 202; Euclid; Thoro Products.

3. Non-submerged metal surfaces shall be sandblasted to meet SSPC-SP6 Commercial Blast Cleaning primed and coated with two coats of Epoxy/High Build Urethane Paint equal to TNEMEC System No. 74-1 as follows:

| | | | Dry Film-Mils |
|---|---|---|---|
| Shop Coat: | 66-1211 | Epoxoline Primer | 3.0-4.0 |
| 2nd Coat: | 66-Color | Hi Build Epoxoline | 4.0-6.0 |
| 3rd Coat: | 74-Endura-Shield | | 3.0-5.0 |
| | Total Dry Film Thickness | | 10.0-15.0 |

4. Submerged metal surfaces shall be sandblasted to meet SSPC-SP10 Near White Blast and coated with two coats of Coal Tar Epoxy to a minimum thickness of 8 to 10 mils each. Finish coat must be applied within 96 hours of first coat at 75 F.

D. GENERAL MECHANICAL NOTES

1. Steel storage tanks shall be built in accordance with the following standards:

API 650-1988, Welded Steel Tanks For Oil Storage
ANSI/NFPA 30-1990, Flammable And Combustible Liquids Code
UL 142-1987, Steel Above Ground Tanks For Flammable And Combustible Liquids

Tanks shall be supplied with the required openings and connection fittings at the location and size indicated on the drawings. Ladders and platforms shall be supplied meeting or exceeding OSHA Safety Standards. Tanks shall be factory coated in accordance with C.3. of these specifications and shall require field touch-up following installation and substantial completion of the project.

2. Tank vents shall meet the requirements of the following standards:

API 2000-1982, Venting Atmospheric And Low-Pressure Storage Tanks
UL 142-1987, Steel Above Ground Tanks For Flammable And Combustible Liquids

a. Conservation vents shall be a pressure and vacuum relief vent with Viton seating diaphragms capable of adjustable pressure settings of 0.5 oz./ sq. in. gauge to 15 psig and vacuum settings of 0.5 oz/sq. in. gauge to 12 psig, non-steam jacketed. Body and pallet shall be Type 304 SS. Acceptable Manufacturer: Growth Model 1220 or equal.

b. Flame arrester shall be Factory Mutual approved to 10 psig and utilize a spiral wound, crimped ribbon constructed flame elements body and fasteners shall be Type 304 SS. Acceptable Manufacturer: Growth Model 7618 vertical or equal.

3. All piping shall be welded seamless schedule 40 standard weight carbon steel pipe meeting the specifications of ASTM A 53 unless otherwise noted.

4. Flanges shall be 150 lb welding flanges; screw on or uniflanges are not acceptable. All welds shall be full fillet welds, at least 1/8 – inch radius.

5. Gate valves shall conform to AWWA 509. Valve shall be iron body, non-rising bronze stem, resilient seated type manufactured to equal or exceed all applicable AWWA Standards. Valves shall have a working water pressure rating of 150 psi or better, shall open left and be provided with 2" square wrench nuts, and connections furnished with all necessary joint materials. Valve shall have a full opening flow way of equal diameter of the nominal size of connecting pipe. Valve body, bonnet, stuffing box and disc castings shall be manufactured of ASTM A 126 Class B Gray Iron. All internal ferrous metal surfaces shall be fully coated with an epoxy coating to resist corrosion or tuberculation buildup. The sealing mechanism shall provide zero leakage at working water pressures up through 150 psi with flow in either direction. Approved: Mueller Company; American Darling; or equal.

6. Swing check valves shall be cast iron, bronze mounted and conform to AWWA C508-82. Ends shall be flanged joint. Valves shall be furnished with all jointing accessories. Lever and weight, or spring shall be provided where required. All check valves shall be from a single manufacturer. Acceptable manufacturers: American Darling, Clow, Mueller or equal.

7. True Union Ball Valves, smaller than three inches, shall conform to ASTM D17894. Ball Valves shall be manually operated and constructed of PVC Type 1, Grade 1, having VITON "O" rings, Teflon seats and high-impact ABS handle. Approved: Plastic Piping Systems, Inc.; Hayward Manufacturing Company, Inc., or equal.

8. Air Operated Butterfly Valve shall be a resilient valve with cast iron lug style body, NBR ( Acrylonitrile – Butadiene) shaft seal and resilient seat material, Type 316 SS disc and shaft. Cylinder actuator shall be a rotary diaphragm type accepting a 45 psig supply air pressure sized for maximum shutoff pressure differential of 175 psig. Positioner shall accept 3-15 psig signal and open valve on increasing signal and spring close (fail closed). Acceptable manufacturer DeZurik or equal.

9. Basket Strainers shall be high capacity, heavy duty baskets with 150 lb flange end connections. Basket housing and mesh linings shall be Type 304 SS. Provide adjustable-height leg stand Type 304 SS. Acceptable Manufacturer: Rosedale Model 8-30 or equal.

10. End Suction Centrifugal Pumps (Pump 1 and Pump 6) shall be horizontal self-priming type. Pump casing shall be cast of Grey Iron No. 30 for maximum operating pressure of 85 psig. Impeller shall be 2-vane, open-type, non-clog, 60-40-18 ductile iron. Shaft shall be 4140 alloy steel and sealed against leakage by a balanced mechanical seal of tungsten-titanium carbide alloy. Mechanical seal shall be immersed in separate oil filled reservoir equipped with electrode sensing device to indicate presence of water in reservoir and seal failure. Upon sensing water in oil reservoir, a signal shall be sent to the control panel to de-energize the pump motor and activate the alarm. Acceptable Manufacturer: Gorman Rupp Model T3A-B or equal.

Operating Conditions:

| | | Pump 1 | Pump 6 |
|---|---|---|---|
| a. | Discharge Size | 3" FL | 3" FL |
| b. | Suction Size | 3" FL | 3" FL |
| c. | Pump Speed | 1050 rpm | 750 rpm |
| d. | Guarantee Point | 150gpm @22'TDH | 150gpm @11'TDH |
| e. | Efficiency @ Guarantee Point | 45% | 47% |
| f. | Impeller Diameter | 8-1/2" | 8-1/2" |
| g. | Min. Motor Size | 3 BHP | 1.5 BHP |

Pump Motors shall be horizontal, solid shaft, squirrel-cage, high-efficient-type, explosion proof, induction type with normal starting torque and low starting current characteristics, suitable for 3 phase, 60 hertz, 230-460 volts AC electrical current. Motor shall be equipped with corrosion resistant hardware.

11. Air Operated Diaphragm Pump shall be a double diaphragm, seal-less type of cast iron construction with integral ball check valves and Viton elastomer. Acceptable Manufacturer: ITT Marlow Model 2AOD-C or equal.

| | Operating Characteristics: | Pump 2 | Pump 3 |
|---|---|---|---|
| a. | Air Supply Volume | 60 scfm | 20 scfm |
| b. | Air Supply Pressure | 45 psig | 24 psig |
| c. | Pump Capacity | 100gpm @ 50'TDH | 40gpm @40'TDH |
| d. | Model | 2AOD-C | 1-1/2 AOD-C |

12. Submersible Effluent Pump and Sump Pump shall be constructed of grey cast iron. All exposed fasteners in contact with the effluent shall be 316 stainless steel. Pump exterior shall be sprayed with PVC epoxy primer and shall have a chloric rubber paint finish. All mating surfaces requiring water tight sealing shall be machined and fitted with nitrile rubber o-rings. Cable shall enter the pump through a water tight seal and junction chamber shall be sealed from the motor. Each pump shall be provided with mechanical shaft seals which operate in an oil bath. Seal faces shall be self-aligning and positively driven. Each seal shall be held in place by separate springs. The pump shaft shall be stainless steel and shall rotate on two oil lubricated bearings. The pump impeller shall be nodular or ductile iron, statically and dynamically balanced.

Pumps shall be submersible non-clog sewage pumps as manufactured by Davis EMU or approved equal meeting the following conditions:

| | | Pump 4 | Pump 5 |
|---|---|---|---|
| a. | Model | 3"FA 101-195 | 3" FA 82-150 |
| b. | Pump Speed | 1740 rpm | 1740 rpm |
| c. | Capacity | 150 gpm @ 53' TDH | 41 gpm @ 31' TDH |
| d. | Motor Size | 10 BHP | 2 BHP |
| e. | Efficiency | 49% | 40% |

Pump motor shall be Class F insulated, NEMA B design squirrel cage induction type housed in a watertight chamber with normal starting torque and low starting current characteristics, suitable for 3 phase, 60 hertz, 230-460 volts AC electrical current. Motor shall be equipped with corrosion resistant hardware. Thermal and moisture sensing shall be provided.

13. Float Switches: Level control shall be magnetically operated and include cast iron float chamber with bolted inspection plate. Float shall be removable for cleaning without disconnecting piping. Contacts shall be hermetically sealed mercury switch type. Unit shall be Mercoid Corp. Model 102 WT-4815 or approved equal.

14. Control panel and components shall be suitable for outdoor use in Class 1 Division I environment. A single control panel shall be provided with circuit breakers and control features for the six pumps and flow metering equipment. Cabinet shall be completely factory wired, assembled and tested, and clearly show the Underwriter's Laboratory label. All wiring shall be in accordance with the National Electric Code. Run all wiring external to the cabinet in rigid conduit.

15. Carbon Adsorption units shall be modular, deep bed refillable units with integral vapor distributors and low pressure drop not to exceed 8 inches of water column per 100 cfm of air flow. Units shall be provided with rainshield and condensate drain. Vessel shall be D.O.T. 58 steel drums with Type 304 SS air distributor. Interior shall be double lined with epoxy/phenolic coating. Provide one saturation indicator. Acceptable Manufacturer: NIXTOX-N50 distributed by the TIGG Corp. or equal.

16. Orifice Plate shall conform to applicable portions of ASME "Fluid Meters" (Sixth Edition) and AGA Report 3 (1969), adopted as ANSI/API 2530. Plate shall be constructed of 316 SS with concentric square inlet edge. The plate shall be labeled to indicate flow direction and shall be suitable for use with ANSI Class 150 lb. flanges. Orifice Plate shall be Series 120 as manufactured by The Foxboro Company or approved equal. The orifice plate shall be equipped with a pneumatic d/p Cell Transmitter to measure differential pressure and transmit a proportional pneumatic output signal. Output signal shall be 3 to 15 psi with a supply pressure of 20 psi. Pneumatic transmitter shall have an accuracy of +/-0.5% and shall be Series 15A as manufactured by the Foxboro Company or approved equal.

17. Compound gauges shall be installed on all tank bridles and on the suction and discharge of all pumps and flow metering devices. Case and face ring shall be 304 SS, bourdon tube and movement shall be 304 SS, dials shall be 4-1/2 inch diameter with black lettering on white background. Dial range shall be 30 inches mercury vacuum to 60 psi pressure. All gauges shall be glycerin filled and equipped with 1/4 inch brass threaded fittings. Acceptable manufacturers: McDaniel Safety Gauge, Heksler, Ashcroft or equal.

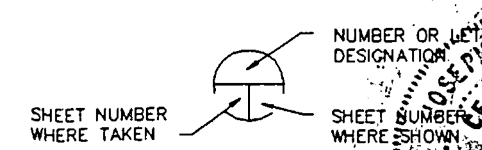
18. Thermometer shall have a 5-inch head size with adjustable angle capability. Case and face ring shall be type 304 SS; socket and stem shall be type 304 SS. Provide thermometer well (type 304 SS). Temperature range 0 to 250 degrees F. Acceptable manufacturers: Foxboro, or approved equal.

19. Temperature transmitter shall be either resistance temperature detector (rtd) or thermocouple type, fully adjustable over entire range and span to limits specified herein. Transmitter shall transmit signal to sound alarm at control cabinet at upper and lower limits of specified temperature range. Provide all ac/dc conversion, control wiring, conduits, fasteners and appurtenances for complete installation ready for operation. Acceptable manufacturer: Foxboro or equal.

20. Pressure transmitter shall connect to tank bridle and shall monitor internal tank pressure. Unit shall be an electronic gauge transmitter and shall be fully adjustable over entire span d and range of limits specified herein. Transmitter shall transmit signal to sound alarm at control cabinet at upper and lower limits of specified temperature range. Provide all ac/dc conversion, control wiring, conduits, fasteners and appurtenances for complete installation ready for operation. Acceptable manufacturer: Foxboro or equal.

# DRAWING INDEX

| SHEET NO. | SHEET TITLE |
|---|---|
| C-1 | GENERAL NOTES & DRAWING INDEX |
| C-2 | PROCESS & STORAGE AREA – PLAN |
| C-3 | PROCESS & STORAGE AREA – SECTIONS |
| C-4 | PROCESS & STORAGE AREA – SECTIONS |
| C-5 | STRUCTURAL – SITE PLAN & SECTIONS |
| C-6 | STRUCTURAL – TANK PLANS & SECTIONS |
| C-7 | PIPING SCHEMATIC |




DETAIL/SECTION KEY

JOSEPH A. MITTAUER CERTIFICATE No. 23111 STATE OF FLORIDA PROFESSIONAL ENGINEER

| NO | DATE | BY | REVISION DESCRIPTION |
|---|---|---|---|

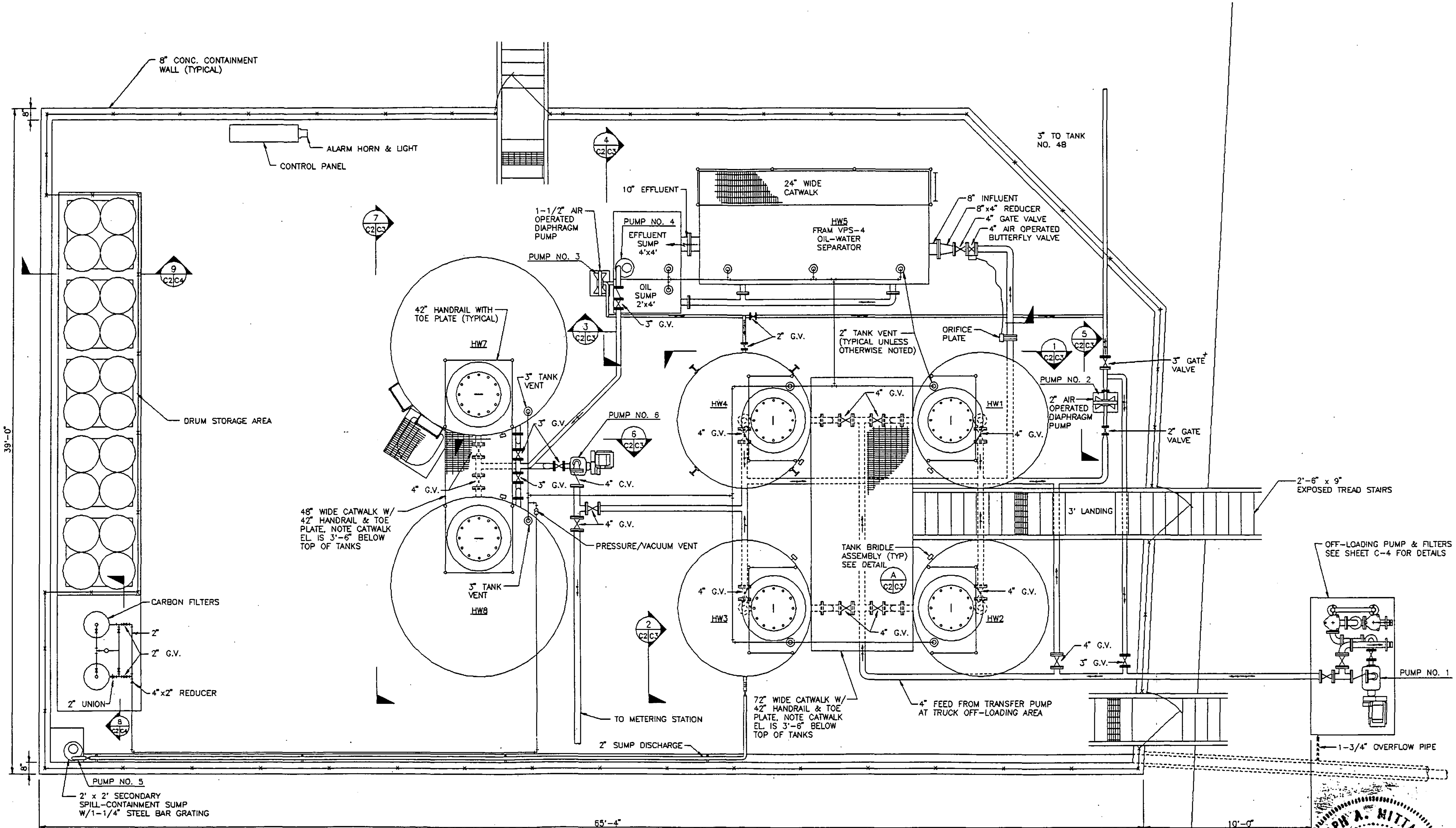
DESG ___ DRWN ___ CHKD ___ APRV ___ DATE 3/30/93

MITTAUER/FITZPATRICK, INC.
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 278-5236

INDUSTRIAL WATER SERVICES, INC.
Hazardous Waste Management Facility
General Notes & Drawing Index
Jacksonville, Florida

JOB NO. 9122-02-1
SHEET C-1 OF

APR 30 1993




PROCESS & STORAGE AREA PIPING PLAN

SCALE 3/8" = 1'-0"

MITTAUER/FITZPATRICK, INC.
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 278-5238

DESC
DRWN
CHKD
APRV
DATE 3/30/93

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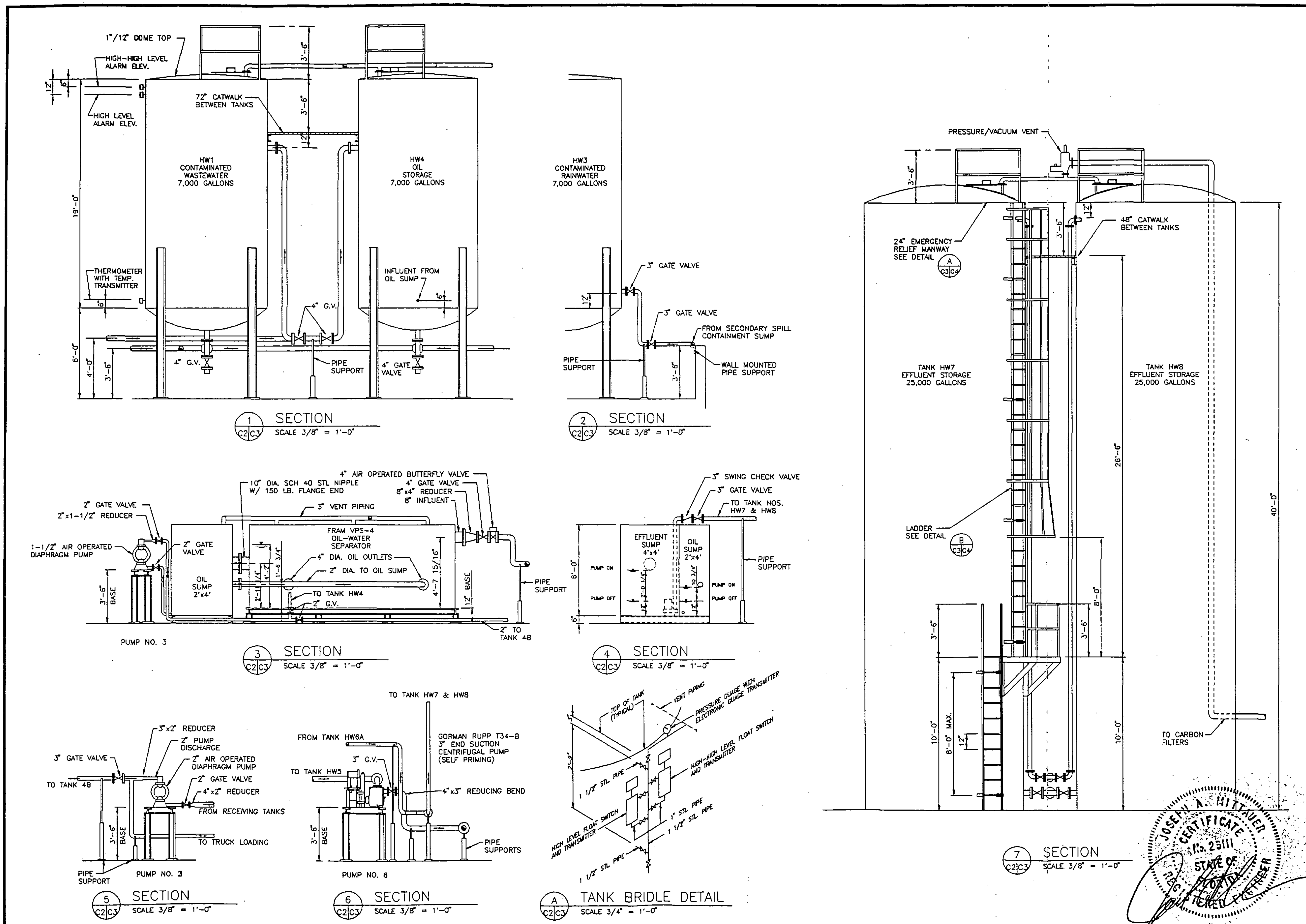
INDUSTRIAL WATER SERVICES, INC.
Hazardous Waste Management Facility
Process & Storage Area Plan & Sections
Jacksonville, Florida

JOSEPH A. MITTAUER CERTIFICATE No. 23111 STATE OF FLORIDA REGISTERED ENGINEER
APR 30 1993

JOB NO. 9122-02-1
SHEET C-2

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APRV
DATE 3/30/93

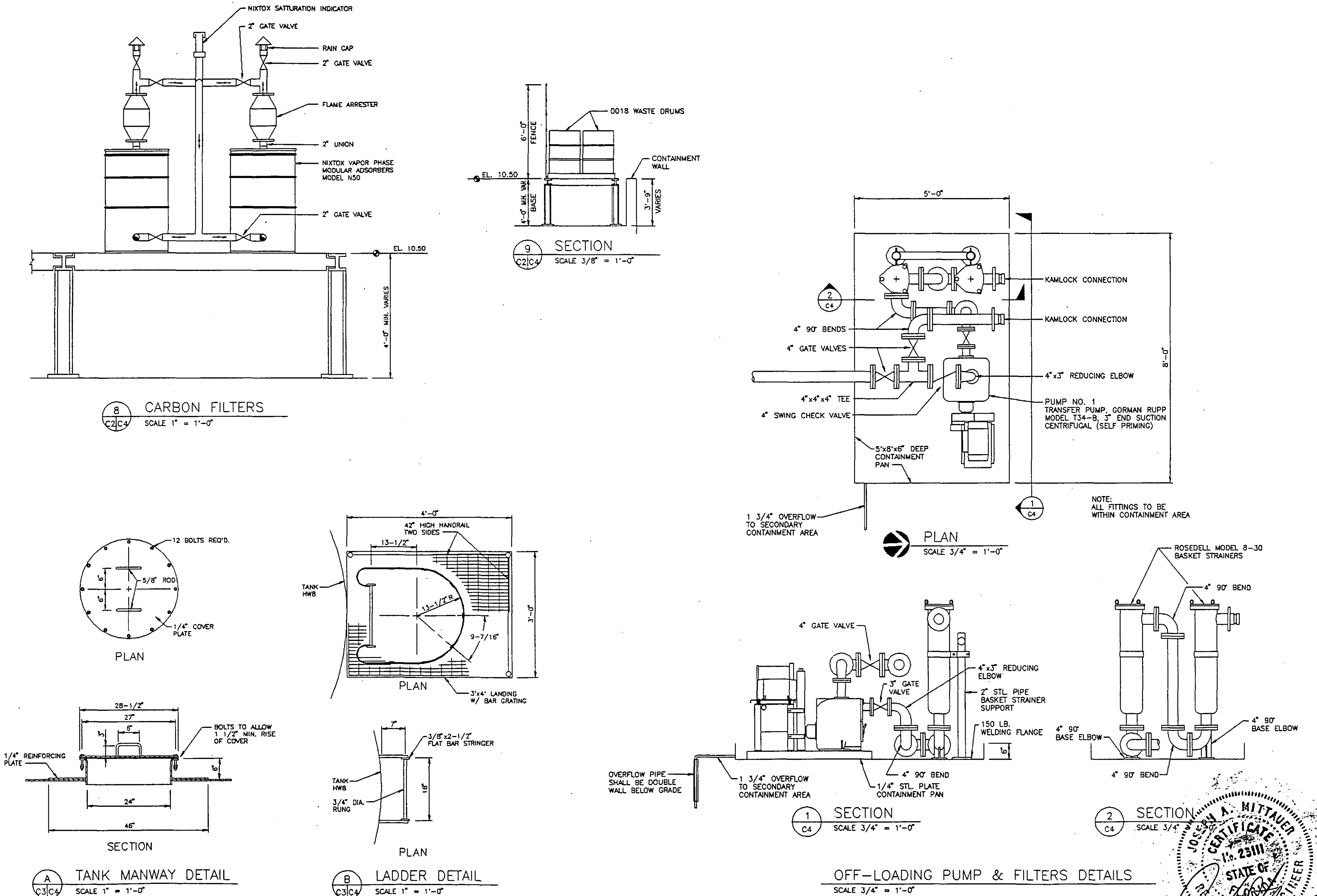
**MITTAUER/FITZPATRICK, INC.**
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 278-5236

INDUSTRIAL WATER SERVICES, INC.
Hazardous Waste Management Facility
Process & Storage Area – Sections
Jacksonville, Florida

JOB NO. 9122-02-1
SHEET C-3
OF

JOSEPH A. MITTAUER CERTIFICATE NO. 25111 STATE OF FLORIDA REGISTERED ENGINEER

APR 30 1993




JOSEPH A. MITTAUER
CERTIFICATE No. 25111
STATE OF FLORIDA
REGISTERED ENGINEER

APR 30 1993

| NO | DATE | BY | REVISION DESCRIPTION |
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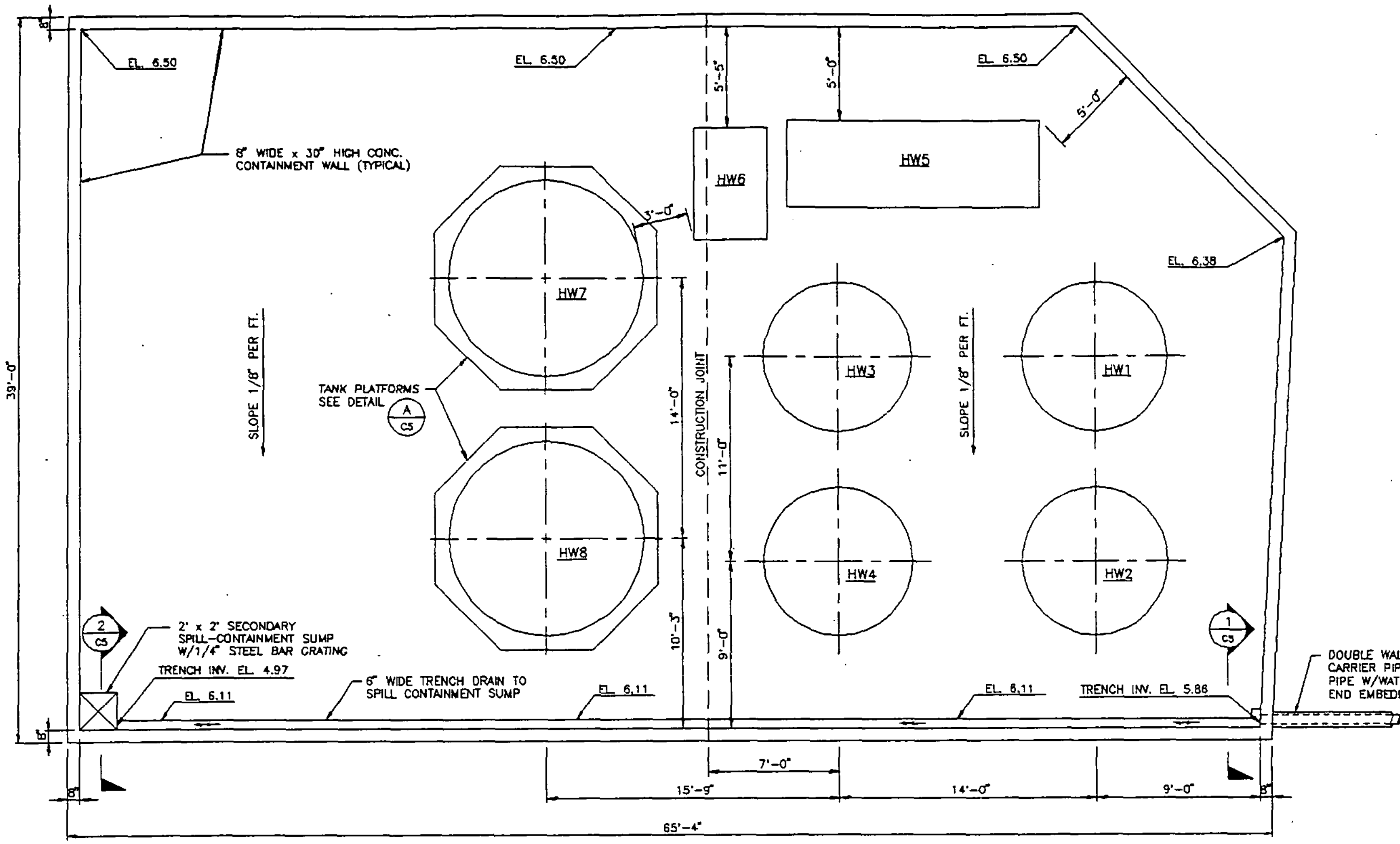
APRV ___
DATE 12/22/92

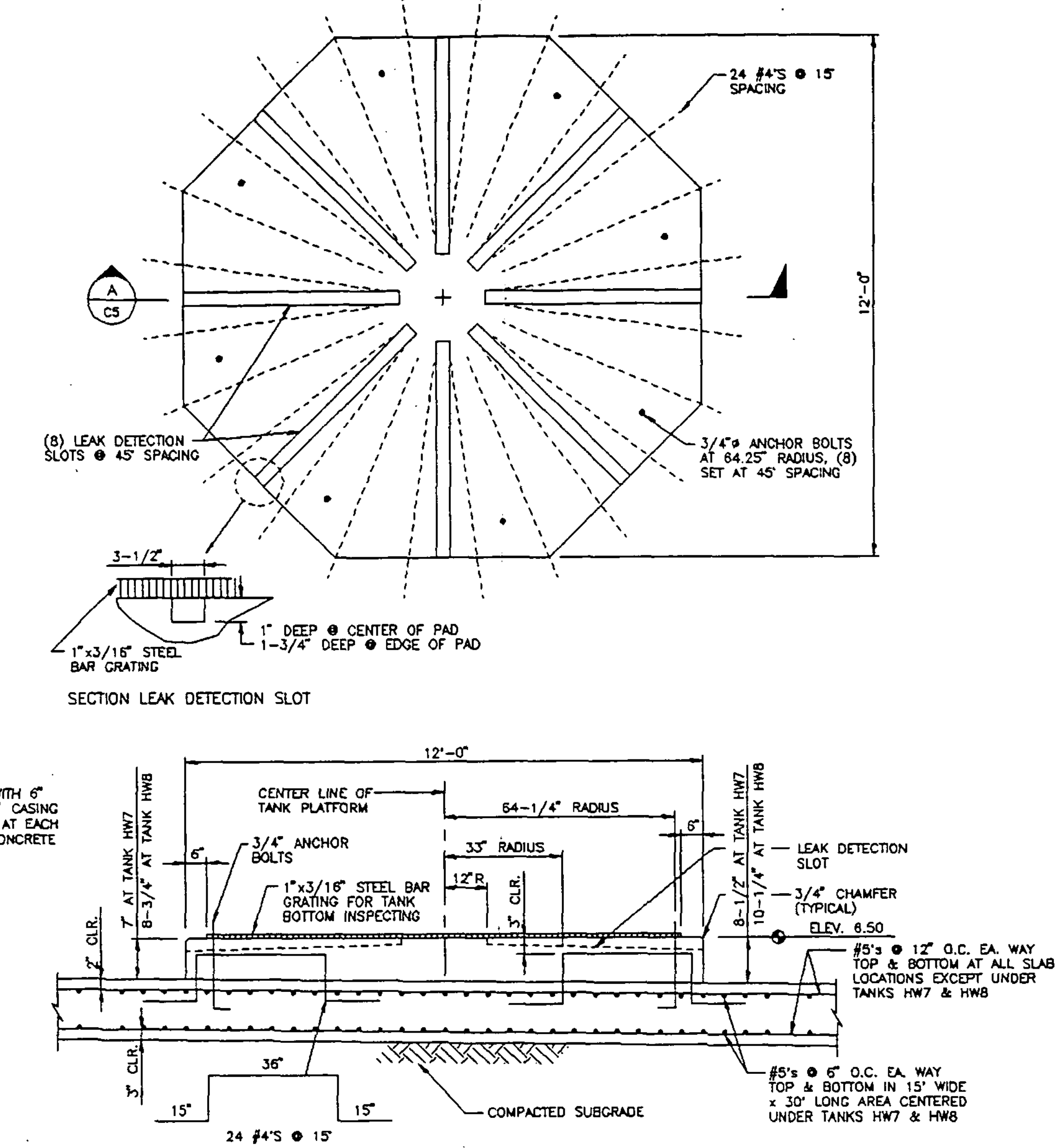
MITTAUER/FITZPATRICK, INC.
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 278-5236

INDUSTRIAL WATER SERVICES, INC.
Hazardous Waste Management Facility
Process & Storage Area Plan & Sections
Jacksonville, Florida

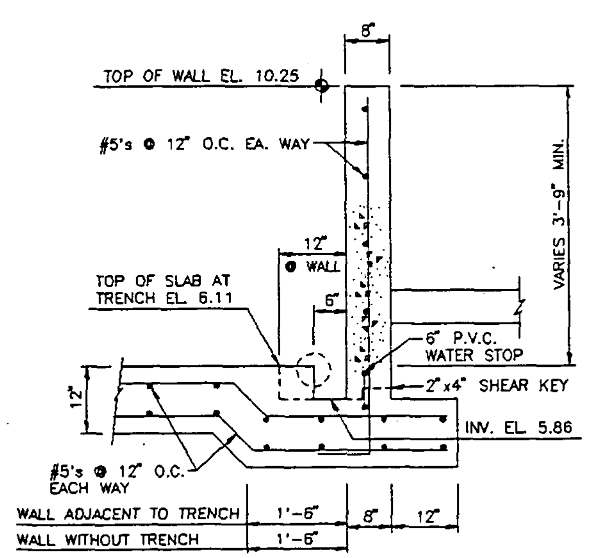
JOB NO. 9122-02-1
SHEET C-4
OF



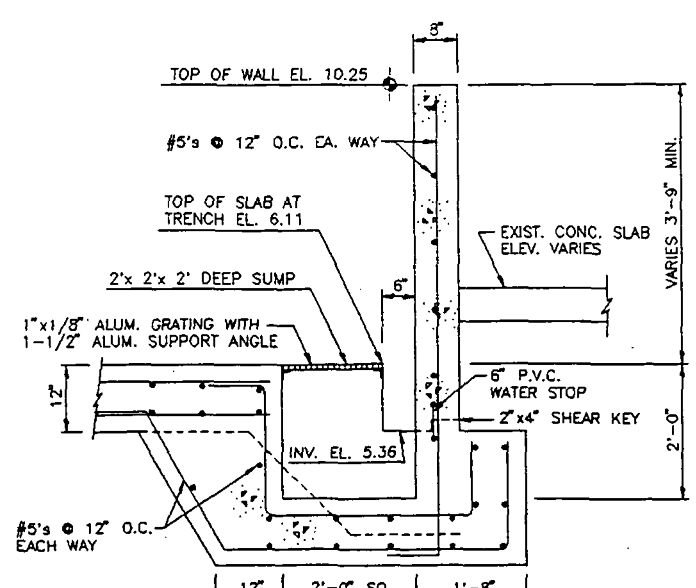

PROCESS & STORAGE AREA – PLAN
SCALE 1/4" = 1'-0"




A C5 TANK PAD DETAILS – HW7 & HW8
N.T.S.




1 C5 SECTION
SCALE: 3/4" = 1'-0"




2 C5 SECTION
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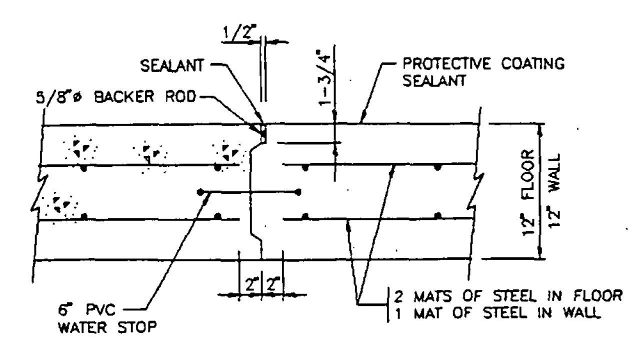
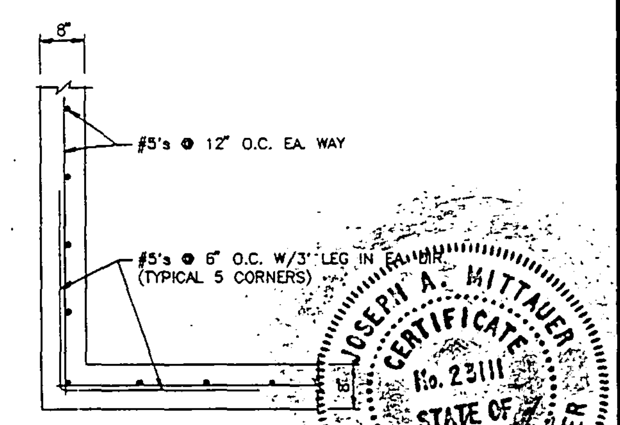



CONSTRUCTION JOINT – FLOOR OR WALL
SCALE: 1-1/2" = 1'-0"




WALL CORNER DETAIL
SCALE: 3/4" = 1'-0"

REVISION DESCRIPTION

| NO | DATE | BY |
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MITTAUER/FITZPATRICK, INC.
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 278-5238

INDUSTRIAL WATER SERVICES, INC.
Hazardous Waste Management Facility
Structural – Site Plan & Sections
Jacksonville, Florida

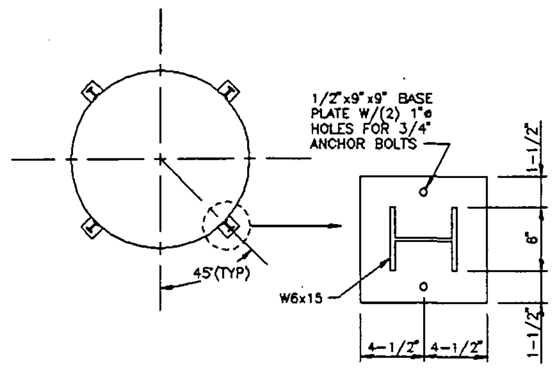
JOB NO. 9122-02-1
SHEET C-5
OF

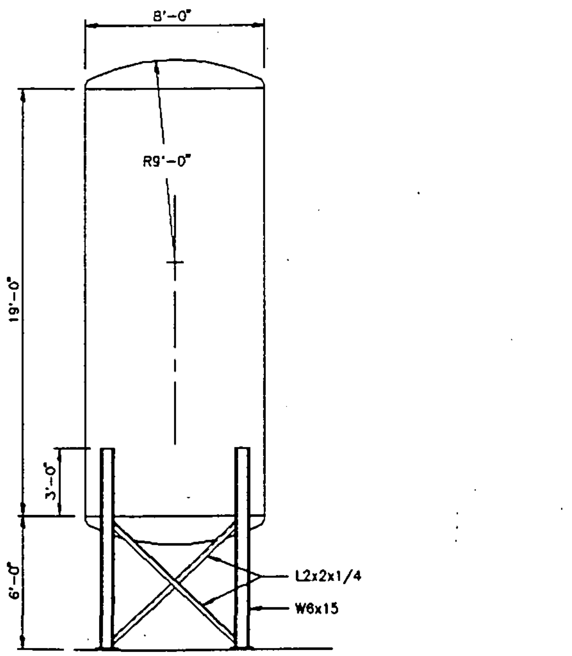
NOTE:
PIPE NOZZLES, HATCHES, ECT. HAVE NOT BEEN SHOWN FOR CLARITY. TANK FABRICATOR SHALL FURNISH SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION.

DESIGN DATA TANKS 1-4

SIZE: 8'-0" DIA. x 19'-0" HT.
CAPACITY: 7,000 GALLONS, NOMINAL
MIN. THICKNESS TOP DISHED HEAD: 3/16"
MIN. THICKNESS SHELL PLATES: 3/16"
MIN. THICKNESS BOTTOM DISHED PLATE: 1/4"
LIQUID HEIGHT: FULL HEIGHT
OPER. TEMP.: AMBIENT
OPER. PRESSURE: ATMOSPHERIC
FLUID: D018 OILY WASTEWATER
SP. GR.: 1.0
TANK MAT'L.: A36 STEEL PLATE & SHAPES
CORROSION ALLOWANCE: NONE
DESIGN CODE: API STANDARD 650 (SHELL & DOME)
AISC (TANK SUPPORTS)

ALL FLANGED NOZZLES TO HAVE 6" PROJECTION FROM SHELL TO FACE ON FLANGE (UNLESS NOTED OTHERWISE)



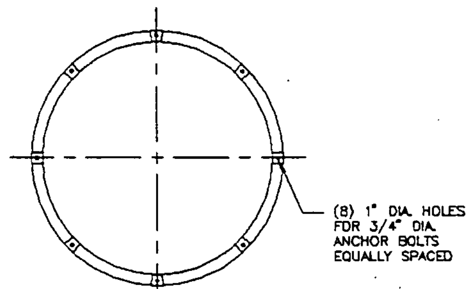



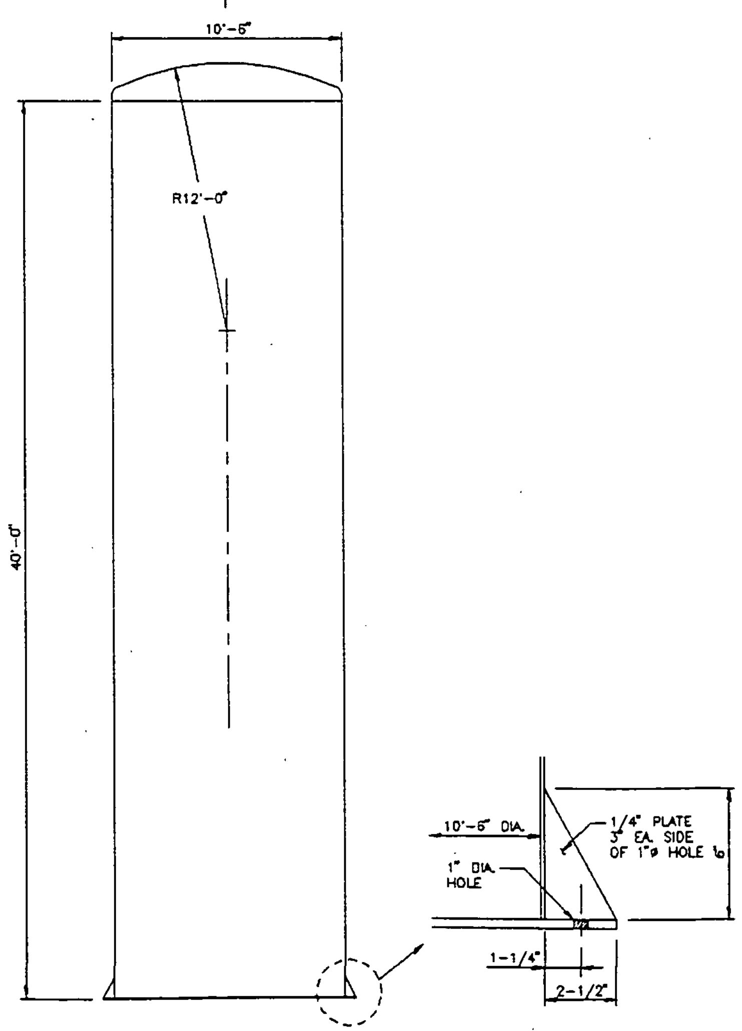

STRUCTURAL DETAIL TANKS 1-4
SCALE: 1/4" = 1'-0"

DESIGN DATA TANKS 7 & 8

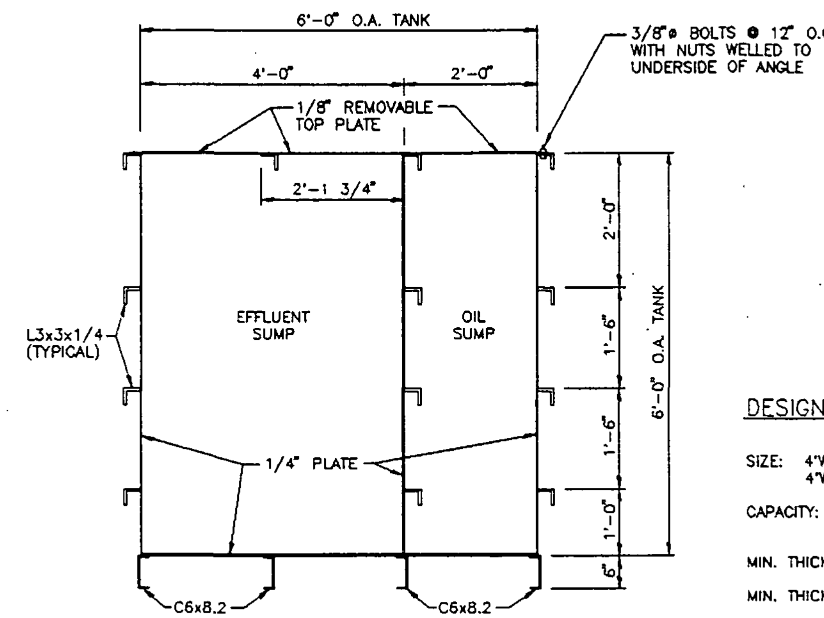
SIZE: 10'-6" DIA. x 40'-0" HT.
CAPACITY: 25,000 GALLONS, NOMINAL
MIN. THICKNESS TOP DISHED HEAD: 3/16"
MIN. THICKNESS SHELL PLATES: 3/16"
MIN. THICKNESS BOTTOM PLATE: 1/4"
LIQUID HEIGHT: FULL HEIGHT
OPER. TEMP.: AMBIENT
OPER. PRESSURE: ATMOSPHERIC
FLUID: TREATED D018 OILY WASTEWATER
SP. GR.: 1.0
TANK MAT'L.: A36 STEEL PLATE & SHAPES
CORROSION ALLOWANCE: NONE
DESIGN CODE: API STANDARD 650

ALL FLANGED NOZZLES TO HAVE PROJECTION FROM SHELL TO FACE ON FLANGE (UNLESS NOTED OTHERWISE)




STRUCTURAL DETAIL TANKS 7 & 8
SCALE: 1/4" = 1'-0"

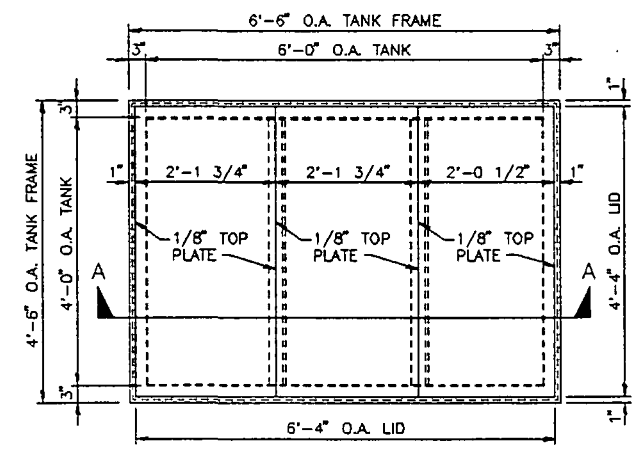



SECTION A

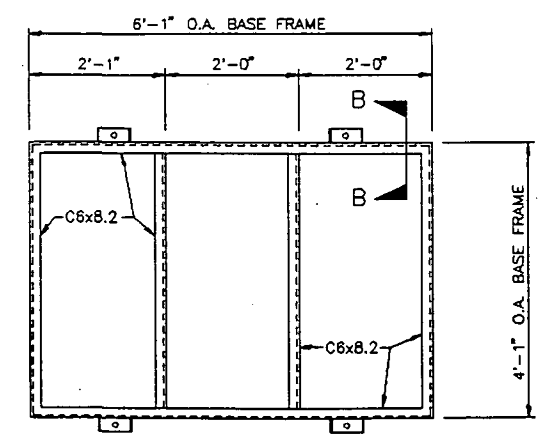
DESIGN DATA TANK 6

SIZE: 4'W x 4'D x 6'H (EFFLUENT SUMP)
4'W x 2'D x 6'H (OIL SUMP)
CAPACITY: 650 GALLONS (EFFLUENT SUMP)
325 GALLONS (OIL SUMP)
MIN. THICKNESS TOP PLATE: 1/8"
MIN. THICKNESS SHELL PLATES: 1/4"
MIN. THICKNESS BOTTOM PLATE: 1/4"
LIQUID HEIGHT: FULL HEIGHT
OPER. TEMP.: AMBIENT
OPER. PRESSURE: ATMOSPHERIC
FLUID: TREATED D018 OILY WASTEWATER (EFFLUENT SUMP)
RECOVERED OIL (OIL SUMP)
SP. GR.: 1.0
TANK MAT'L.: A36 STEEL PLATE & SHAPES
CORROSION ALLOWANCE: NONE
DESIGN CODE: AISC

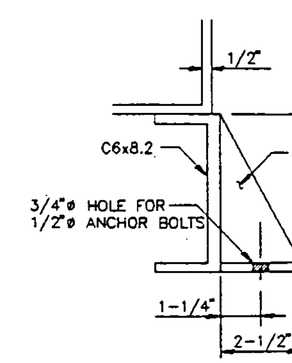
ALL FLANGED NOZZLES TO HAVE PROJECTION FROM SHELL TO FACE ON FLANGE (UNLESS NOTED OTHERWISE)




TOP PLAN




BASE PLAN




SECTION B

STRUCTURAL DETAIL TANK 6
SCALE: 3/4" = 1'-0"

JOSEPH A. MITTAUER
CERTIFICATE No. 23111
STATE OF FLORIDA
REGISTERED ENGINEER
APR 30 1993

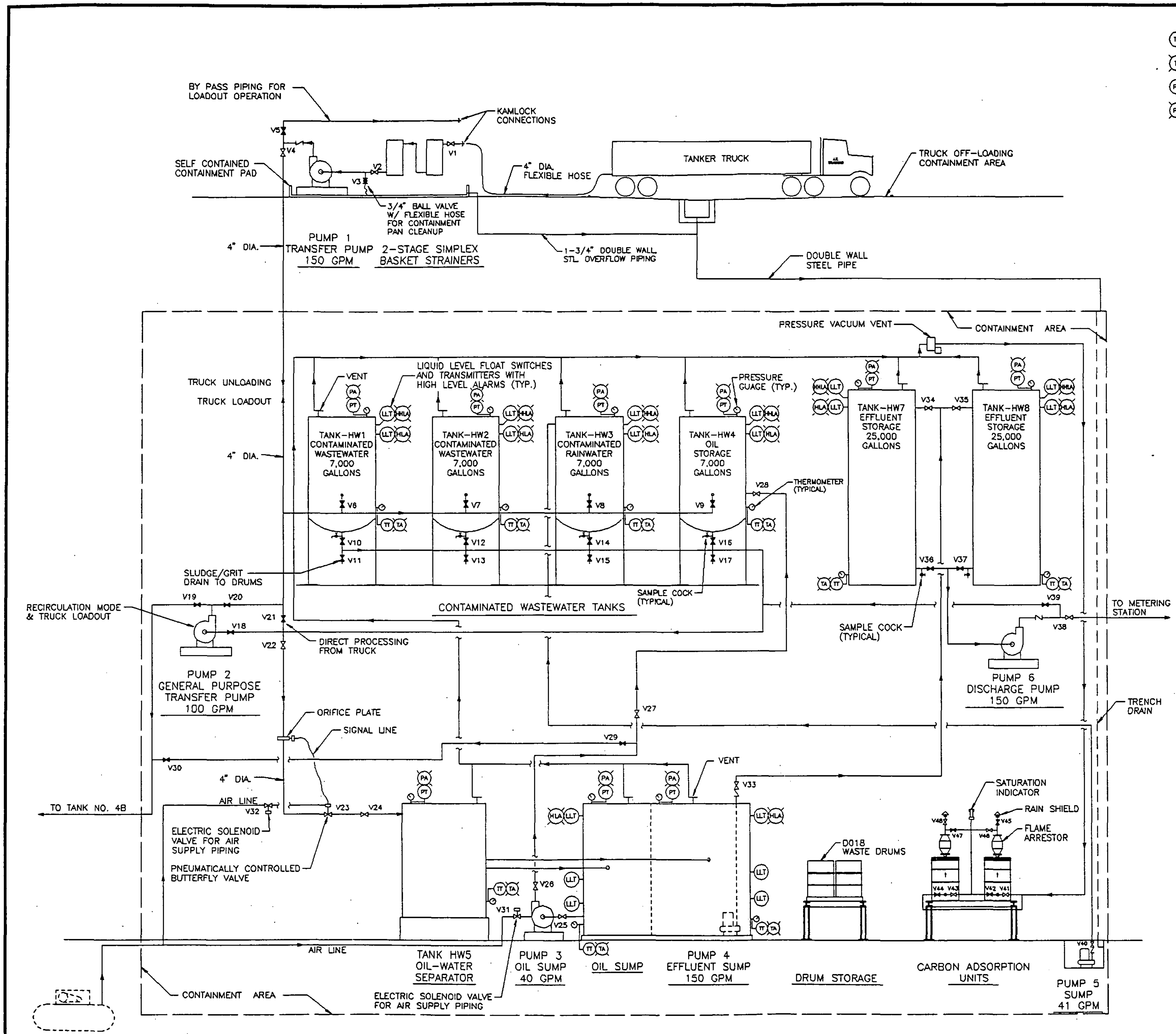
| NO | DATE | BY | REVISION DESCRIPTION |
|---|---|---|---|

DESG
DRWN
CHKD
APRV
DATE 1/7/93

MITTAUER/FITZPATRICK, INC.
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 278-5236

INDUSTRIAL WATER SERVICES, INC.
Hazardous Waste Management Facility
Structural - Tank Plans & Details
Jacksonville, Florida

JOB NO. 9122-02-1
SHEET C-6
OF




PIPING & INSTRUMENTATION DIAGRAM

N.T.S.

## LEGEND

| | | | |
|---|---|---|---|
| TT | TEMPERATURE TRANSMITTER | LLT | LIQUID LEVEL TRANSMITTER |
| TA | TEMPERATURE ALARM | HHLA | HIGH HIGH LEVEL ALARM |
| PT | PRESSURE TRANSMITTER | HLA | HIGH LEVEL ALARM |
| PA | PRESSURE ALARM | LLA | LOW LEVEL ALARM |
| | | | VALVE NORMALLY OPEN |
| | | | VALVE NORMALLY CLOSED |

## OPERATION SEQUENCE

1. TANK TRUCK UNLOADING
   a. Position tanker truck within containment area.
   b. Connect and secure flexible fuel hoses with kamlocks.
   c. Position selector switch in Control Panel on Tank HW 1, 2, 3 or 4 for fill and open Valve V6, V7, V8 or V9.
   d. Start Pump 1 and fill tank to High Level Alarm.

Note: High High Level Alarm will automatically stop and lock out Pump 1.

   e. Stop pump, close tank valve and disconnect tanker truck.

2. PROCESS WATER TREATMENT
   a. Open Valve V10, V12, V14 or V16 selected for tank draw.
   b. Orifice plate and pneumatically controlled butterfly valve will automatically regulate flow rate at 150 GPM to Oil/Water Separator. Fail safe butterfly valve is spring controlled to close upon loss of pneumatic signal.
   c. Floating oil collected by skimmers flow to an oil sump. Oil sump pump (Pump 3) operation is automatically controlled by float switches. High oil level float switch signals visual and audible alarm @ control panel and signals closure of pneumatic butterfly valve.
   d. Treated effluent from Oil/Water Separator flows to an effluent sump and is subsequently pumped to Tank HW 7 or 8. Effluent sump pump (Pump 4) operation is automatically controlled by float switches. High water level float switch signals visual and audible alarm @ control panel and signals closure of the pneumatic butterfly valve.

3. EFFLUENT STORAGE AND DISCHARGE TO POTW
   a. Pump 4 pumps treated effluent to Tank HW 7 or 8. Tanks are gauged and operator monitors tank level. Overfill protection includes audible alarm at high level to signal operator to close valve at Tank HW 1, 2, 3 or 4 which stops flow to Oil/Water Separator. If Tank HW 7 or 8 liquid level reaches High High Level, a transmitter signals Pump 4 to stop and closes pneumatic butterfly valve.
   b. Tank contents are sampled and monitored in I.W.S., Inc. laboratory prior to discharge. Samples are analyzed in accordance with I.W.S.'s Industrial User Permit.
   c. Tank HW 7 or 8 contents acceptable for discharge are pumped to City sewer through I.W.S. Metering Station located adjacent to the TSD Facility. Unacceptable Water is returned to Tank HW 1, 2, 3, or 4 for further treatment.

4. TEMPORARY RECYCLABLE HYDROCARBONS STORAGE AND PROCESSING
   a. Recyclable Hydrocarbons from the Oil/Water Separator will normally be pumped from the oil sump to Tank HW 4 which is located within the TSD Facility. Recyclable Hydrocarbons pumped to Tank HW 4 are no longer a hazardous waste and will be exported to the IWS Used Oil Facility.
   b. Recyclable Hydrocarbons will be pumped to Tank 4B for temporary storage or treatment prior to pumping to tanker truck for re-sale. Pump 2 is a general purpose air operated diaphragm pump used for tanker truck loading and transfer.

5. TANK VENT SYSTEM
   a. Each tank has a vent which is connected to a vent manifold. The vent manifold has an adjustable vacuum and pressure relief mechanism to protect the tank.
   b. The piping manifold consists of seamless welded schedule 40 steel pipe.
   c. The vent manifold piping terminates in a double carbon adsorption unit for odor control and VOC removal.

6. TEMPERATURE AND PRESSURE MONITORING
   a. Each tank will be equipped with a temperature and pressure transmitter to signal an alarm should the temperature or pressure exceed specified ranges.
   b. The normal storage tank operating ranges for temperature and pressure are as follows:

| | Range | Average |
|---|---|---|
| Temperature: | 50 F to 80 F | 68 F |
| Pressure | -1.0 to 1.0 psig | 0.0 psig |

   c. The alarm will be an integrated portion of the control cabinet.

| NO | DATE | BY | REVISION DESCRIPTION |
|---|---|---|---|
| | | | |

DESG ____ DRWN ____ CHKD ____ APRV ____ DATE 3/30/93

*MITTAUER/FITZPATRICK, INC.*
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 278-5236

INDUSTRIAL WATER SERVICES, INC.
Hazardous Waste Management Facility
Piping Schematic
Jacksonville, Florida

JOB NO. 9122-02-1
SHEET C-7
OF

A. MITTAUER CERTIFICATE No. 23111 STATE OF FLORIDA REGISTERED ENGINEER

APR 30 1993

3. Tank Management Practices

a. Tanker Truck Off-Loading and Transfer Facility

D018 wastewater is off-loaded from tanker trucks via a flexible hose connection which feeds a 3" end suction centrifugal transfer pump. Prior to the transfer pump, grit and sand is removed from the wastewater by two (2) simplex basket strainers placed in series. The grit and sand removed from the two-stage strainers is placed into satellite drums for removal to the drum storage area adjacent to the secondary containment area. The strainers and transfer pump are self-contained in a metal drip pan and can be by-passed in case of emergency or system failure.

The drip pan will capture any spills from leaks in the transfer pump or basket strainers and a flexible hose and ball valve is provided on the suction of the transfer pump to remove any spillage or leakage. Overflow piping for the drip pan will be provided and will terminate in the T,S,D Facility secondary containment. All underground hard piping will be double walled steel pipe which meets the requirements of the American Petroleum Institute.

b. Holding and Process Tanks

(1) Liquid Level Control

Each of the four (4), 7,000-gallon capacity, receiving holding tanks are equipped with float switches to control the transfer pump operation and signal high water conditions. Tank liquid control levels have been shown on the construction drawings with the high level alarm located one-foot below the top of the tank shell and the high-high level pump shut-off at six inches below the top of the tank shell. The high level alarm alerts the on-duty operator to manually stop the transfer pump. Should the operator fail to stop the pump, the high-high level switch will automatically signal the pump to stop and will interlock the pump. The transfer pump can only be restarted after the tank level has been lowered to inactivate the high-high level alarm.

D018 wastewater is withdrawn from the bottom of the hopper bottom tanks through a common, 4-inch, pipe header to either the Oil/Water Separator (Tank HW5) or a 2" air operated diaphragm pump which transfers the liquid to another storage tank or to a tanker truck. The Oil/Water Separator cannot be by-passed. Flow to the Oil/Water Separator is controlled by a combination orifice plate and pneumatically controlled butterfly valve. This is a fail safe metering device designed to maintain a relatively constant 150 gpm flow rate to the separator regardless of variable head conditions. The butterfly valve is spring loaded and will close upon loss of air pressure to the valve positioner. The butterfly valve will open and close to maintain a predetermined pressure differential across the orifice plate thereby maintaining a constant flow rate to the separator. Air will be supplied from an existing plant compressor.

A signal from either of the high-high level switches in Tanks HW 6a, 6b, 7 or 8 will close an electric solenoid air valve resulting loss of air supply to the pneumatic butterfly valve. Upon loss of air, the butterfly valve will close and stop the flow of liquid to the Oil/Water Separator. This condition can only be reversed by lowering the water level in the tank where the signal originated and following a predetermined time delay.

The liquid level controls in Tanks HW 7 & 8 function in the similar manner as the controls in Tanks HW 1 - 4. The high water alarm alerts the on-duty operator to switch the flow from one tank to the other and the high-high level signal automatically stops the flow to the Oil/Water Separator.

The liquid level controls in Tanks HW 6a & 6b also consist of float switches but the switches are set at a predetermined level to automatically start and stop the transfer pump. Three floats will be provided: a pump on level, a pump off level and a high-high level which signals the pneumatic butterfly valve to close.

(2) <u>Vapor Emissions Control</u>

Venting of the storage and process tanks will be via a 3-inch steel pipe manifold with terminal discharge in a carbon adsorption unit. The tank vent system will include a conservation vent for normal venting which is a combination pressure/vacuum relief vent located in the highest point of the piping manifold.

The carbon adsorption system will consist of two activated carbon adsorbers placed in series. The system will be equipped with a saturation indicator located in between the two units which changes color to show when free organic or other oxidizable material has penetrated the first unit. The change of color is an irreversible reaction and when this occurs, the first unit in series will be replaced along with the indicator. A vent manifold system has been designed to allow switch over from one adsorber to another prior to removing the spent carbon unit from service. This will ensure that a vapor control unit is always in service. Final venting to the atmosphere will be through a flame arrestor.

(3) <u>Temperature and Pressure Monitoring</u>

Tanks HW 1-4 will be equipped with a thermometer located approximately six inches above the bottom of the tank shell. This will allow temperature measurement (from the ground) of the fluid as the tank fills or empties.

The internal tank pressure will also be measured by a compound gauge connected to the tank level control bridle. This gauge will measure the vapor space pressure above the liquid. Both pressure and temperature of the receiving tanks will be monitored during fill periods.

The thermometer will measure temperatures from 0 to 250 degrees Fahrenheit. The compound gauge will be connected to the tank level control bridle above the high-high water level. Low pressure/vacuum conditions generally require a compound gauge which measures 30" of Mercury vacuum to 60 psi pressure. Accuracy of the thermometers and compound gauges shall be within 2% of scale.

The normal storage tank operating ranges for temperature and pressure are as follows:

| | Range | Average |
|---|---|---|
| Temperature: | 50 F to 80 F | 68 F |
| Pressure | -1.0 to 1.0 psig | 0.0 psig |

The tank monitoring system will include sensors and an alarm system for temperature or pressure. The system will notify the on duty operator should the temperature or pressure exceed the limits noted above.

4. Diagram of Piping, Instrumentation and Process Flows

The piping and instrumentation diagram in Drawing C-7 of the construction drawings show the various process tanks and equipment proposed for the IWS T,S,D Facility. A sequence of operation is also provided which describes the normal operation of the facility. This sequence of operation is provided below:

OPERATION SEQUENCE

1. TANK TRUCK UNLOADING

   a. Position tanker truck within containment area.

   b. Connect and secure flexible fuel hoses with kamlocks.

   c. Position selector switch in Control Panel on Tank HW 1, 2, 3 or 4 for fill and open Valve V6, V7, V8 or V9.

   d. Start Pump 1 and fill tank to High Level Alarm.

Note: High High Level Alarm will automatically stop and lock out Pump 1.

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   a. Open Valve V10, V12, V14 or V16 selected for tank draw.

   b. Orifice plate and pneumatically controlled butterfly valve will automatically regulate flow rate at 150 GPM to Oil/Water Separator. Fail safe butterfly valve is spring controlled to close upon loss of pneumatic signal.

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b. The normal storage tank operating ranges for temperature and pressure are as follows:

| | Range | Average |
|---|---|---|
| Temperature: | 50 F to 80 F | 68 F |
| Pressure | -1.0 to 1.0 psig | 0.0 psig |

c. The alarm will be an integrated portion of the control cabinet.

5. Corrosion Protection

Generally, the D018 wastewater is either slightly corrosive or neutral depending on the source; however, to ensure that there is no corrosion of the steel tanks, the tanks will be coated with special coatings to protect the steel shell. The tank interiors will be coated with two coats of coal tar epoxy to a minimum thickness of 8 to 10 mils each. The epoxy coating will protect the steel shell from any corrosive gases that may be released from the wastewater. The exterior of the tank will also be primed and coated with protective urethane coats suitable for marine environments. Specifications for the coating systems are provided on the construction drawings.

The tanks and support structures will be constructed of A-36, carbon steel which is appropriate for storage of the D018 wastewater. The tanks are designed and will be constructed in accordance with the American Petroleum Institutes requirements for fuel storage tanks. The support structures will also receive coating systems in accordance with the specifications shown on the construction drawings.

Metal surfaces that will be in submerged service for extended periods of time will receive near white blast treatment in accordance with SSPC-SP10 prior to coating application. Non-submerged surfaces will receive commercial blast cleaning in accordance with SSPC-SP6.

An asphalt paint coating will be applied between dissimilar metals and in between metal surfaces and concrete.

Both the tank shell thickness and coating thickness will be inspected annually. An electronic thickness meter will be utilized to check the tank shell thickness. Tank manholes are provided to allow for visual inspection of the interior coating system.

The fitness of API tanks is based on the stress exerted on the tank shell from the stored material. A tank shell thickness equation is utilized to determine the minimum shell thickness for the size of the tank and the material it will store. Corrosion and erosion allowances are factored into the calculations to determine the minimum allowable shell thickness. Any shell thickness below this level is considered unsafe and the tank will be removed from service, replaced or repaired.

6. Tank Installation Procedures

a. Certification of Proper Handling Procedures

During construction and prior to placing the storage or process tanks into service, IWS will hire an independent qualified inspector or registered professional engineer to ensure the proper handling and erection procedures are followed during installation. The tank systems shall be inspected for the following:

(1) weld breaks
(2) tank shell punctures
(3) scrapes and thickness of protective coatings
(4) cracks in tank shell and piping
(5) corrosion of system
(6) overall structural integrity of tank system

IWS will have an independent registered professional structural engineer to inspect and certify the tank installations. The engineer shall have experience in the design and certification of similar tank installations and shall be registered in the State of Florida.

IWS will require all discrepancies regarding the tank system fabrication and installation to be remedied prior to ordering and/or installing the tanks and equipment and prior to placing the tank system in service. Any discrepancies encountered during the project will be documented in the construction correspondence, inspection, and shop drawing files for review by DER officials during the construction period. The Engineer's Certification of construction completion will signify the project was built in accordance with the construction drawings. The certification will include a report of any discrepancies and the corrective measures or remedial action taken. The report will also include unforeseen modifications completed during the construction that resulted in deviations from the design. Any major deviations will be discussed with DER and receive department approval prior to completion.

b. Tightness Testing

IWS shall test the new tank systems and ancillary equipment for tightness prior to placing the system(s) into service. Any leaks found will be repaired and the system retested. The Engineer or his representative shall be present during the testing and will certify the test is complete.

The storage tanks will be fabricated in accordance with API Standard 650 and will be furnished with a certification letter from the manufacturer. This certification obligates the manufacturer to repair or replace any defective workmanship that may be discovered in the field. Should the tank(s) be found not to be tight, IWS, Inc. will require these repairs prior to placing the tank system in use. Any leaks discovered will be documented in the inspection log and repaired prior to start-up. Any leak that may result in a release of DO18 waste to the environment will be cleaned up immediately and reported to the DER in accordance with 40 CFR 264.196(d). IWS will prepare a report to be included with the Engineer's Certification of Completion that will summarize any leaks discovered during the inspections and the repairs performed to correct the problems.

Field tightness testing of the tanks will be in accordance with AWWA D100 for steel storage tanks. Piping systems will be pressure tested in accordance with AWWA standards. Each tank and piping system will be certified free of leaks prior to start-up.

7. Secondary Containment Systems

a. System Design

The size of the secondary containment structure is based on containing 100 percent of the capacity of the largest tank which is 25,000 gallons (3,342 cubic feet) and retaining the run-on of rainwater from the 25-year, 24-hour storm.

The drainage area consists of approximately 3,800 sf in the tank truck off-loading area and approximately 2,439 sf that includes the transfer pump containment area and process and storage area. The total area contributing stormwater run-on is as follows:

Run-on Area = 3,800 sf + 2,439 sf = 6,239 sf

In Jacksonville, Florida, the 25-year, 24-hour storm produces 8.64 inches of rainfall. This rainfall event would produce the following volume of run-on (assuming 100 percent impervious surface):

Volume Run-on = 6,239 sf x 8.64"/12" = 4,492 cf

The total volume that must be contained includes the volume of run-on and the volume of the largest tank. This volume is as follows:

Total Req'd. Volume = 4,492 cf + 3,342 cf = 7,834 cf

The area of footage within the secondary containment vault that is utilized by tanks and equipment and miscellaneous support structures was determined to be approximately 178.8 sf. Therefore the available area for storage is determined as follows:

Storage Area = 2,439 sf - 178.8 sf = 2,260.2 sf

The minimum height of the concrete containment wall that will provide the necessary secondary containment volume is determined as follows:

Min. Wall Ht. = 7,834 cf/2,256.2 sf = 3.5 ft

A 3.75-foot high, concrete containment wall has been designed for the storage and process area to provide approximately 8,500 cf of secondary containment volume.

The sump pump will have a minimum pumping capacity of 41 gpm which will allow removal of the run-on from the 25-year, 24-hour storm in less than 24 hours. The concrete floor of the containment area will be sloped towards a trench along the eastern wall which will drain into a collection sump at the southeast corner. The sump pump will deliver the water to Tank HW 3. During off-duty hours, security guards will monitor the facility. Should a heavy rainfall occur and the run-on exceed the capacity of Tank HW-3, the guard will notify the operator on call to come to the facility and begin the treatment process. The treatment system components have sufficient capacity (150 gpm) to handle the flow from the sump pump.

b. Compatibility of Construction Materials with Waste

The concrete surface will be coated with a two part, tar-modified polyurethane sealant. This coating will not allow the benzene to migrate into the concrete. The proposed concrete sealant is primarily used for protecting concrete airport runway pavements from leakage of jet fuels through cracks and construction joints. The manufacturer's specification data indicate the sealant is compatible with concrete and passes the bonding requirements of Federal Specification SS-S-200D, Type H.
Any construction joints will be sealed with an elastomeric compound and have a polyvinyl chloride (PVC) water stop to inhibit contaminated water from seeping through the joints; however no construction joints are anticipated for the size of the concrete vault.

The concrete sealant, the joint compound and water stop are compatible with benzene at the concentrations anticipated in the wastewater.

The inspection schedule calls for daily inspections of the tank system, equipment and secondary containment area. This should be sufficient to detect any releases.

c. Device Used for Secondary Containment

The secondary containment system will consist of a water-tight, concrete vault system designed and built to prevent release of D018 wastewater to the environment. Any spills or leakage of contaminated wastewater into the secondary containment structure will be either cleaned up by IWS personnel or allowed to flow to the collection sump. The collection sump will pump the spill to storage tank HW 3. The structural design of the secondary containment structure is shown in the construction drawings.

The secondary containment structure will be constructed one to two feet below grade elevations and should not be subject to excessive hydraulic uplift pressures from below the vault. However, the system has been designed to withstand total saturation of the surrounding area to the top of the secondary containment wall. The Structural Engineers design summary report of the proposed secondary containment structure is included herein.

# Mameco Polyurethane Sealants Vulkem 200 & 202

## Jet-fuel resistant

MAMECO
Specification
Data

**Product Description:**
Vulkem 200 and Vulkem 202 are jet-fuel resistant, tar-modified, self-leveling, polyurethane sealants. Vulkem 200 is a one-component moisture curing sealant. Vulkem 202 is a two-component chemically curing sealant, meeting U.S. Federal Specification SS-S-200D, Type H.

**Basic Uses:**
For sealing concrete joints in airport runways, concrete highways and other areas that may be subject to fuel spillage.

When properly applied Vulkem 200 and Vulkem 202 form a durable seal which is resistant to jet-fuel, puncture and weathering.

**Limitations:**
... Vulkem 202 is a two-component sealant that must be thoroughly mixed prior to installation.

... The products contain tar and have a tar odor. For exterior use only.

... Concrete joint interfaces must be primed with Vulkem Primer.

... For joints over one inch in width consult your Mameco representative.

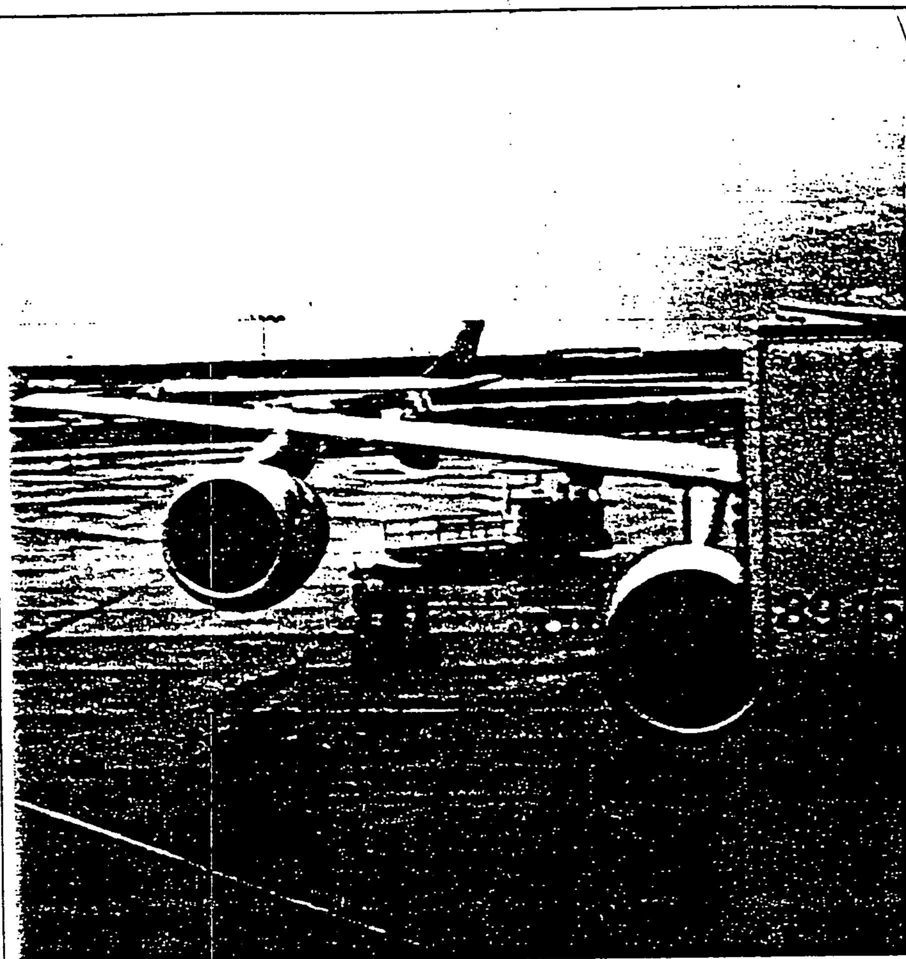
**Packaging:**
2-gallon pails; 5-gallon pails, 55-gallon drums.

**Color:**
Black only.

**APPLICABLE STANDARDS:**
Vulkem 202 meets the requirements of U.S. Federal Specification SS-S-200D, Type H; and SS-S-195. Complete data available upon request.

Vulkem 200 meets the requirements of U.S. Federal Specification SS-S-200D, Type H, but the specification is written around two-component sealants.

**Joint Design:**
Vulkem 200/202 may be used in any level horizontal paving joint, limited to a maximum of a 1.5 percent incline.



For installations on airport runways, Federal Specifications require a 1/2 inch width by 2 inch depth.

For other installations, joints should be designed in accordance with accepted architectural practices. Consult your local Mameco Representative and/or Distributor for specific installation details.

It is recommended that the sealant be recessed 1/8 inch.

**SURFACE PREPARATION:**
Joints must be clean, dry, and free of contamination. Depending upon the condition of the joint, wire brushing, grinding or sandblasting may be required, to expose a clean, solid substrate.

**Priming:**
After proper "Surface Preparation" joint interfaces shall be primed with Vulkem Primer. Allow primer to dry to the touch (usually 30-40 minutes) before application of Vulkem 200/202.

**APPLICATION**

**Joint Backing:**
Round closed-celled polyethylene joint backing under 30% compression is recommended.

**Mixing:**
Vulkem 202 is a two-component material, that requires proper mixing before application. Refer to the mixing instructions on the con-

# Typical Physical Properties

| SS-S-200-D | | Requirement | 200 | 202 |
|---|---|---|---|---|
| 3.3.1 | Accelerated Aging | No Change | Passes | Passes |
| 3.3.2 | Self-leveling | 1/16 in. Flow 1.5% incline | 1/16 in. Flow | 1/16 in. Flow |
| 3.3.3 | Change in weight after Fuel Immersion | Less than 5.0% | 4.5% | 4.5% |
| 3.3.4 | Change in Volume | Less than 5.0% | 4.8% | 4.8% |
| 3.3.5 | Resilience | 75% Recovery | | |
| | | Room Temperature Cure | 90-95% | 90-95% |
| | | One Week 158°F. | 85-90% | 85-90% |
| 3.3.6 | Artificial Weathering | 160 hrs. Exposure | Passes | Passes |
| 3.3.7 | Bond to Concrete Nonimmersed Fuel-immersed Water-immersed | No Surface Degradation or loss of Bond | Passes | Passes |
| 3.3.8 | Flame Resistance | 500°F. for 120 seconds | Passes | Passes |
| 3.3.9 | Flow | 5 hrs. @ 200°F. No Change | Passes | Passes |

tainer label. Proper mixing is achieved using a heavy-duty, slow speed drill and a standard mixing paddle. Mix for 10 minutes.

**Work Life/Pot Life:**
3-4 hours at 70°F.

**Cure Rates (70°-50%R.H.):**
Vulkem 200 becomes tack free in 24 to 48 hours and can be opened to traffic in 96 hours.

Vulkem 202 becomes tack free in 18 to 24 hours and can be opened to traffic in 48 hours.

**Methods:**
Vulkem 200/202 is supplied in a pourable, self-leveling consistency. It can be poured directly from the container, applied by bulk caulking gun or pumped.

**Maintenance:**
Damaged sealant can be replaced. Consult your local Mameco Representative for proper repair procedures.

**Cleaning:**
Uncured Vulkem 200/202 can be easily removed using Xylol or Toulene.

**Shelf Life:**
One year in unopened containers.

## AVAILABILITY

Immediately available from distributors located throughout the United States, Canada and overseas.

## WARRANTY

MAMECO warrants its Vulkem Sealants to be free of defects in materials but makes no warranty as to appearance or color. Since methods of application and on-site conditions are beyond our control and can affect performance, MAMECO makes no other warranty, express or implied, including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, with respect to Vulkem Sealants. MAMECO'S sole obligation shall be, at its option, to replace, or to refund the purchase price of, the quantity of Vulkem Sealant proved to be defective and MAMECO shall not be liable for any loss or damage, including incidental or consequential damages, arising from the use of Vulkem Sealants.

6/4/82

RELIEVE THE CONTRACTOR OF ANY
RESPONSIBILITY FOR THE WORK.

MAMECO
International
4475 East 175th Street • Cleveland, Ohio 44128
Telephone: (216) 752-4400 1-(800) 321-6412 TELEX: 98-5567
Europe N.V.
Industrial Estate North
H. Dunanstraat IIb • 8880 Tielt, Belgium
Telephone: (051) 40 38 01 TELEX: 82-214
Canada Ltd.
1557 Sedlescomb Dr., Mississauga, Ont. L4X 1M4
Telephone: (416) 624-2410 TELEX: 06-961466

**1. PRODUCT NAME** — **TUNDRA FOAM**
**OPEN CELL POLYURETHANE**
**BACKER ROD FOR HOT AND**
**COLD SEALANT APPLICATIONS**

**2. MANUFACTURER** — **INDUSTRIAL THERMO POLYMERS LIMITED**
**7676 KIMBEL STREET, UNIT 18,**
**MISSISSAUGA, ONTARIO, CANADA L5S 1J8**
**TEL: (416) 677-0932 TLX: 06-968890 ITP MSGA**
**U.S. TOLL FREE 1 (800) 387-3847**

# TECH DATA

FORM 103

## 3. PRODUCT DESCRIPTION

***Basic Use:*** TUNDRA FOAM is an ideal non-gassing backup material which is inserted into construction and pavement joints to control sealant and caulking depth, create a backstop to allow proper sealant tooling & configuration, allow proper sealant airing and yield proper bond breaker. Perfect for non-uniform joint sizes.

***Specific Uses:*** Commonly used in expansion and contraction joints, window glazing, curtain wall construction partitions, precast assemblies and copings, parking decks, bridge construction etc. (see below).

***Compatability:*** TUNDRA FOAM is basically an inert material and therefore compatible both physically and chemically with virtually all known hot pour and cold applied sealants including silicone and rubber asphalt.

***Composition and Material:*** TUNDRA FOAM is a fabricated round, open cell polyurethane foam material. It is highly flexible and compressible for easy application. Available in a golden beige colour and in a wide variety of sizes each capable of fitting a number of differing joint sizes. (SEE TABLE I ABOVE).

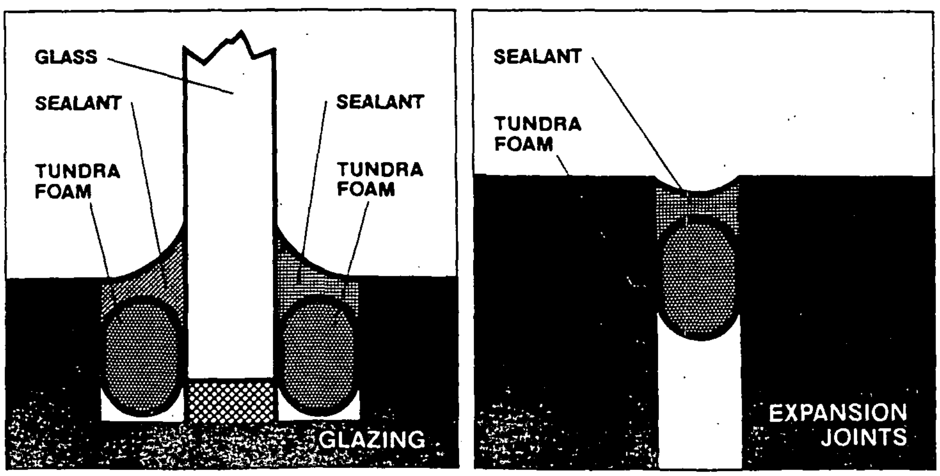
**TABLE I**
**SIZES AND PACKAGING**

| ROD DIAMETER | FEET PER SINGLE PACK | WEIGHT PER 6-PACK | APPROXIMATE MEASUREMENT |
|---|---|---|---|
| ⅝" | *2,000 | 50 lbs | 19" x 21" x 30" |
| ⅞" | 1,050 | 50 lbs | 19" x 21" x 30" |
| 1⅛" | 600 | 50 lbs | 19" x 21" x 30" |
| 1½" | 350 | 50 lbs | 19" x 21" x 30" |
| 2" | 200 | 50 lbs | 19" x 21" x 30" |

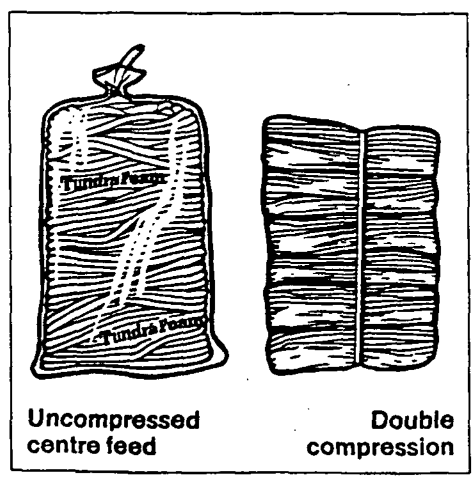
**Shipped in 2-1,000 ft. lengths per single pack.*

*Furnished in twice compressed six-pack quantities (6 x single packs) only. Sizes may be mixed in each six pack bundle. To avoid compression set, remove fibre strap from six-pack and store in single compressed pack only. (SEE BELOW).*

**Common Applications of Tundra Foam**




**Packaging**



## 4. TECHNICAL DATA

TUNDRA FOAM will resist oil, gasoline and most solvents. This material is odorless, will not stain and will not adversely adhere to sealant and caulking materials (Refer to Table II for typical physical properties)

## 5. INSTALLATION

The joint depth must be great enough to allow for the proper installation of the TUNDRA FOAM and the hot or cold sealant or caulking material. Joint walls must be as smooth and even as possible and be free of any loose residues or foreign materials. Joints should also be dry and frost free. With a convenient tool or by hand insert TUNDRA FOAM into joint at a level recommended by the sealant manufacturer. Cold applied sealants generally recommend that the depth of the joint after the backer rod is installed be one half the width. In hot pour applications, it is generally recommended the depth of the joint be a 1:1 ratio in terms of backer rod to sealant.

## 6. PURCHASING AND PRICING

TUNDRA FOAM is widely available throughout the United States and Canada. Please contact Industrial Thermo Polymers Limited, 7676-18 Kimbel Street, Mississauga, Ontario, Canada L5S 1J8, for the name and address of your local distributor. This source will provide you with samples and pricing information as required.

## 7. TECHNICAL ASSISTANCE

Industrial Thermo Polymers Limited has qualified representatives available to assist users of the various backer rod materials referenced herein. Please contact your local ITP distributor should assistance be required.

**TABLE II**
**PHYSICAL PROPERTY ANALYSIS**

| PROPERTY | VALUE |
|---|---|
| Polyurethane Quality | ASTM 1564 |
| Non-Compressed Density | 2-3 lbs/cu. ft. |
| Compressed Density | 4-6 lbs/cu. ft. |
| Compression Deflection | 1 PSI @ 25% |
| Elongation | 130% |
| Tensile Strength | 15 lbs MIN. |
| Temperature range (intermittent) | −70° to 450°F |

**TABLE III**
**TUNDRA FOAM ADVANTAGES**

- One size fits many joint sizes.
- Non-gassing, damage-proof.
- Generally compatible with varying joint size.
- Compressed for easy storage and economical shipping.
- Highly flexible and easy to install.
- Premium quality polyurethane, uniform roundness and highest compression rating.
- Prompt availability and delivery.
- Can be shipped separately or combined with closed cell requirements.
- No better foam available anywhere.

## ALSO AVAILABLE FROM INDUSTRIAL THERMO POLYMERS:

1. Standard Closed-Cell Polyethylene backer rod ¼″ to 3″
2. Flame retarded Closed Cell Polyethylene backer rod ¼″ to 2″
3. HOT ROD XL (Hot pour) Closed cell backer rod ⅜″ to 2″
4. TUNDRA POLYETHYLENE PIPE INSULATION (Pkgd/Bulk)

North Americas' only full line/full service backer rod supply source. One stop shopping for all of your backer rod requirements.

T.M. Tundra Foam    T.M. HOT ROD XL    T.M. ITP Backer Rod

* TRADEMARKS OF INDUSTRIAL THERMO POLYMERS LTD.

**GUARANTEE/WARRANTY**

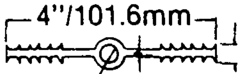
Industrial Thermo Polymers Limited believes the information and recommendations herein to be accurate and reliable and the products are reasonably fit for the applications mentioned. However, as uses, conditions and application methods are not within the sellers control, ITP does not guarantee nor warrant these products nor results from the use of these products or information given. It is therefore the responsibility of the buyer to determine the suitability of these products in applications intended and determine the appropriateness of the products. Sizes and lengths per spool are those at times of packaging and may vary with climatic conditions after manufacture.

# Ribbed Center Bulb

**Catalog Number** | **Wt. per 100 lin. Ft. (Kg)**

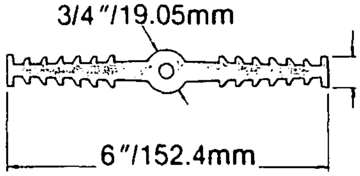
**Hd. Ft. (Meters) $H_2O$**

**8013** 48 (21.79Kg)



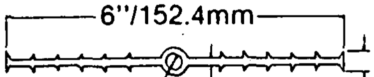

65' (19.8m)

**8014** 140 (63.50Kg)



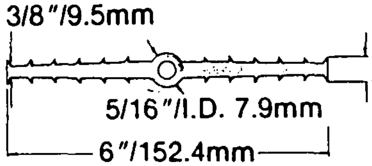

125' (38.1m)

**8021** 74 (33.59Kg)



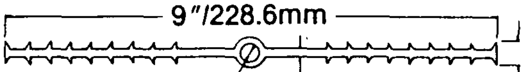

100' (30.5m)

**8015** 125 (56.74Kg)



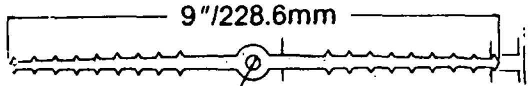

125' (38.1m)

**8024** 105 (47.66Kg)




150' (45.7m)

**8041** 150 (68.09Kg)



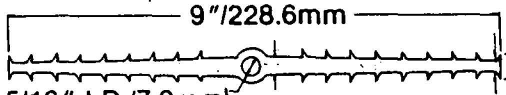

150' (45.7m)

# Ribbed Center Bulb

**Catalog Number** | **Wt. per 100 lin. Ft. (Kg)**

**Hd. Ft. (Meters) $H_2O$**

**8017** 168 (76.26Kg)

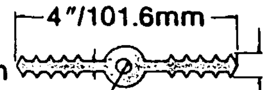



150' (45.7 + m)

**8066** 240 (108.94Kg)

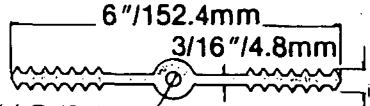

150' (45.7 + m)

**8067** 68 (30.87Kg)



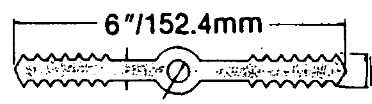

100' (30.5m)

**8068** 90 (40.85Kg)



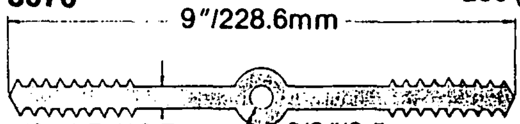

125' (38.1m)

**8069** 162 (73.53Kg)




150' (45.7 + m)

**8070** 230 (104.40Kg)




150' (45.7 + m)

# ENGINEER'S STRUCTURAL DESIGN AND ASSESSMENT

# OF SECONDARY CONTAINMENT SYSTEM

# FOR

# PROPOSED D018 HAZARDOUS WASTE TSD FACILITY

# INDUSTRIAL WATER SERVICES, INC.

# JACKSONVILLE, FLORIDA

*MITTAUER/FITZPATRICK, INC.*
CONSULTING ENGINEERS
767 Blanding Blvd., Suite 102
Orange Park, FL 32065
Tel: (904) 276-5236
Fax: (904) 276-5919

1-11-93

Mr. Ashwin B. Patel, P.E.
Florida Department of Environmental Regulation
Northeast District
7825 Baymeadows Way
Jacksonville, FL 32256

RE.: Warning Letter No. WL92-0343HW16NED
FLD 981 928 484
HC 16-218826
Industrial Water Services, Inc.
Mittauer/Fitzpatrick, Inc. Project No. 9122-02-1

Dear Mr. Patel:

This letter will serve as our engineer's assessment for the proposed D018 Hazardous Waste Treatment and Storage Facility Secondary Containment System in accordance with 40 CFR 264.193.

Please find attached our structural design calculations for the secondary containment system which show the concrete structure will have sufficient strength and thickness to prevent failure from pressure gradients, both static-head and external hydrological forces. The structure will support the tank system during daily operations including stresses from nearby vehicular traffic.

The concrete will be lined with a two-part, polyeurethane coating which is compatible with both the concrete and the D018 waste. The lining will serve to prevent migration of wastes from spills or releases out of the secondary containment system. The floor of the secondary containment structure is sloped to a trench which empties into a collection sump. Any rain water or spillage which may be present in the structure will flow to the sump and subsequently pump through the TSD Facility within 24 hours.

Thank you and please call if you have any questions.

Sincerely,
Mittauer/Fitzpatrick, Inc.

Joseph A. Mittauer, P.E.
President

JOSEPH A. MITTAUER
CERTIFICATE
No. 23111
STATE OF
FLORIDA
REGISTERED ENGINEER

attachments
cc.: Charles Dudley

**MITTAUER/FITZPATRICK, INC.**
CONSULTING ENGINEERS
767 Blanding Blvd., Suite 102
Orange Park, FL 32065
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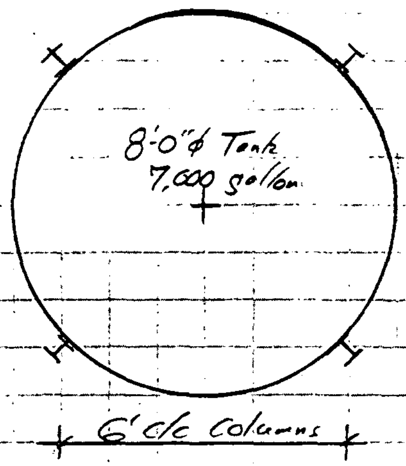
Job Name IWS-HAZ WASTE FACILITY
STRUCTURAL DESIGN - CONCRETE
Job No. 9122-02-1 Sheet No. 1 of 8
Calculated By: JAM Date 1-6-93
Scale: PLAN 1/4" = 1'-0"

SCOPE: Engineering Design of Concrete foundations for Tanks and supports including containment area and containment walls

## TANK HW1 - HW4 FOUNDATIONS




$$DL + LL = \frac{5.36^K}{4} + \frac{7000\,gal \times 8.34 \times 110\%}{4}$$

$$= 17.4^K/\text{COLUMN} \downarrow$$

$$DL + LL + WL = 17.4^K + \frac{50^{1K}}{6'\,c/c \times 2\,col}$$

$$= 21.6^K/\text{col} \downarrow$$

$$DL - WL = \frac{5.36^K}{4} - \frac{50^{1K}}{6'\,c/c \times 2\,col}$$

$$= 2.83^K/\text{col} \uparrow$$

CHECK BEARING AREA - SINGLE COLUMN

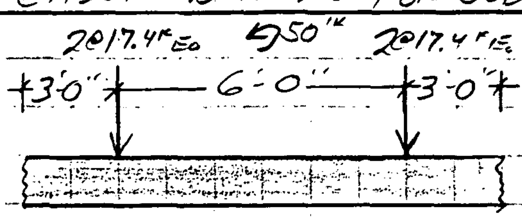
Assume $1.5^K/SF$ allowable soil bearing value.

$$\text{Reqd Area/col} = \frac{21.6^K}{1.5^K/SF} = 14.4\,SF \text{ OR } 3.8' \times 3.8'\text{ SQ}$$

∴ w/ Tank Columns on 6' Centers, max bearing is OK

From pg 5/7 of Tank Calcs, uplift = $4.91^K$/col or $\frac{4910^{\#}}{145^{\#}/cf} = 34\,cf/col$ or $6' \times 6' \times 1'$

CHECK BEARING FOR OVER-ALL PAD DL+LL+WL




$M_x = 50^{1K}$ unfactored

$S_x = \frac{1}{6} b d^2$

$= \frac{1}{6}\, 12' \times (12')^2$

$= 288\ ft^3$

WT. of conc. - Try 1' Thick

$1' \times 12' \times 12' \times 145^{\#}/cf$

$20.9^K$

$$f_{max} = \frac{P}{A} + \frac{M_x}{S_x}$$

$$= \frac{4 \times 17.4^K + \text{Conc} = 20.9^K}{12' \times 12'} + \frac{50^{1K}}{288\,Ft^3}$$

$$= 0.80^{KSF}$$

∴ 12' × 12' area OK for Soil Bearing

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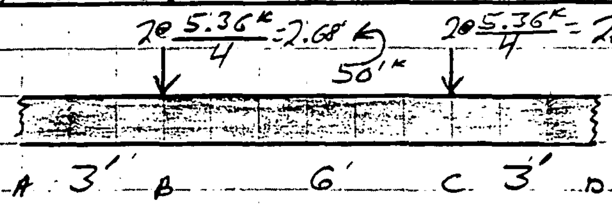
CHECK UPLIFT FOR OVERALL PAD 12'x12' DL - WL

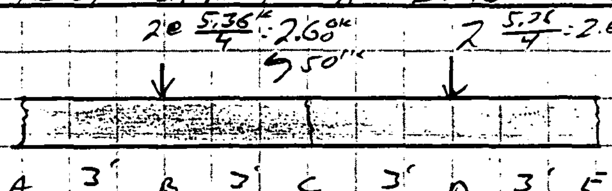



1.5 Overturning Moment ≤ Resist. Moment @ Pt. A

$1.5 \cdot 50'^k \leq \quad 2.68^k \cdot 3' + 2.68^k \cdot 9' + 12' \times 12' \times 1' \times 145\#/cf/1000 \times 6'$

$75'^k \leq 157'^k \therefore OK$

CHECK UPLIFT AS INDIVIDUAL 6'x6'x1' FOOTINGS DL - WL




$\Sigma M_B$ Resisting $\geq 50'^k \times 1.5$

$\Sigma M_B = 2.68^k \cdot 6' + 2 \times 6' \times 6' \times 1' \times 0.145^{kcf} \times 6'$

$= 78.72 \geq (50'^k \times 1.5)$

$78.72 \geq 75'^k \therefore OK$

NOTE: By sizing Foundation Size & Thickness for Individual 6'x6'x1' Vs overall pad 12'x12' the bending moment in the base slab will be greatly reduced as will reverse bending moment, thereby reducing the probability of cracking

$\therefore$ USE 12' x 12' x 1' for ea tank. due to tank spacing actual area will be ≈ 11'x13'

DESIGN REINFORCING STEEL

$M_{ox}$ $P$ = DL = $\frac{5.36^k}{4} \times 1.4$ $= 1.9^k$

LL = $\frac{1}{4} \times 7000\,gal \times 8.34\#/gal \times 110\% \cdot 1.7$ $= 27.3^k$

WL = $1/2 \cdot 50'^k / 6' \times 1.7$ $= 7.1^k$

$U = DL + LL = 29.2^k$

OR $U = 0.75 \cdot (DL + LL + WL) = 27.2^k$

$\therefore U = 29.2^k$

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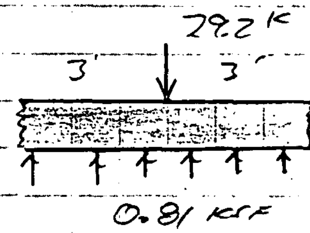
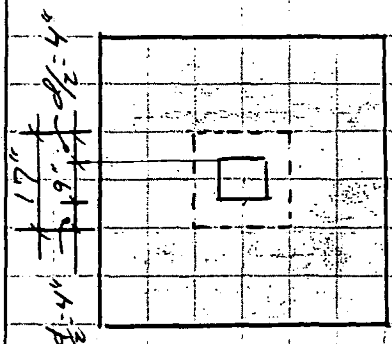
HW1-HW4 REBAR DESIGN (CONT.)

$P = 29.2^k$/col (factored)

$\frac{29.2^k}{6' \times 6'} = 0.81$ ksf




CK PUNCHING SHEAR (2-WAY ACTION)

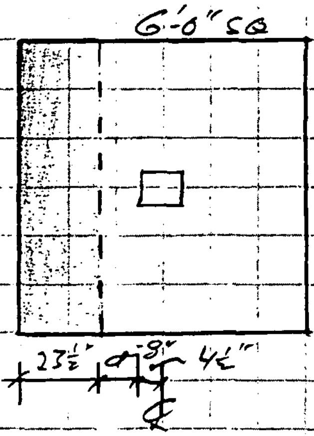
$V_u = 29.2^k - \frac{17"}{12} \times \frac{17}{12} \times 0.81$ ksf $= 27.57^k$

$V_n = \frac{V_u}{\phi} = \frac{27.57}{0.85} = 32.44^k$

$V_c$ allowed $= 4\sqrt{f_c'}\, b_o d = 4\sqrt{4000} \times (4 \times 17") \times (d = 8")$
$= 137.6^k$

$137.6^k$ allowed $>> 32.44^k$ actual $\therefore$ OK

CK DIAGONAL TENSION SHEAR (1-WAY ACTION)



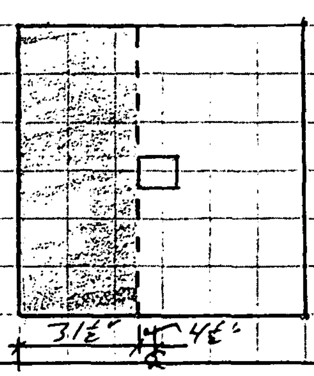

$V_u = \frac{23\frac{1}{2}"}{12} \times 6 \times 0.81$ ksf $= 9.52^k$

$V_n = \frac{V_u}{\phi} = \frac{9.52}{0.85} = 11.2^k$

$V_c$ allowed $= 2\sqrt{f_c'}\, b_w d = 2\sqrt{4{,}000} \times 72" \times 8"$
$= 72.8^k$

$72.8^k$ allowed $>> 11.2^k$ actual $\therefore$ OK

CK BENDING




$M = \frac{1}{2} w l^2 = \frac{1}{2} \times 0.81$ ksf $\times \left(\frac{31\frac{1}{2}"}{12}\right)^2 \times 6'$ wide $= 16.74^{1k}$
OR $2.79^{1k}$/LF of width

$\rho_{min} = 0.0020$ (slab design)

$A_{s\,min} = 0.0020 \times 12" \times 8" = 0.19$ in²/LF

#4's @ 12" o.c. $= 0.2/(8 \times 12) = \rho = 0.0021$

$\omega = \frac{\rho F_y}{f_c'} = 0.031$ $M_u = K_u b d^2 = 84{,}900$ in-lb

$K_u = \phi[f_c' \times \omega(1 - 0.59\omega)]$ $= 7.07^{1k} >> 2.79^{1k} \therefore$ OK

$= 110.43$ USE MIN #4's @ 12" o.c. ea way.

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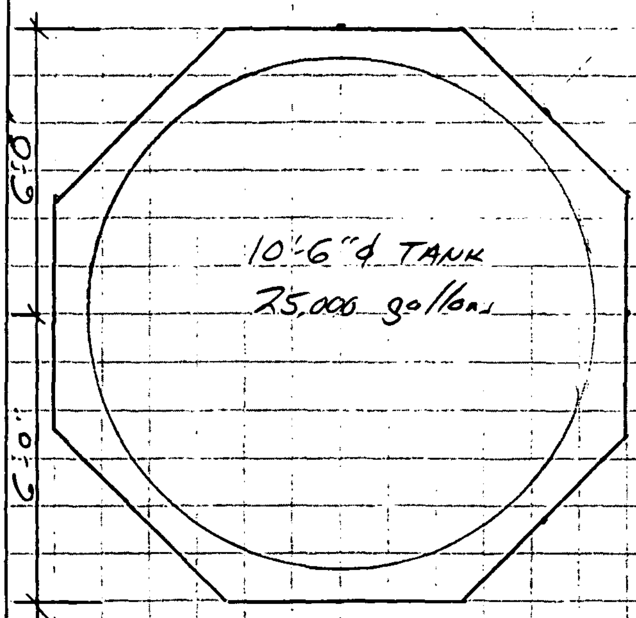
## TANK HW7 & HW8 FOUNDATIONS



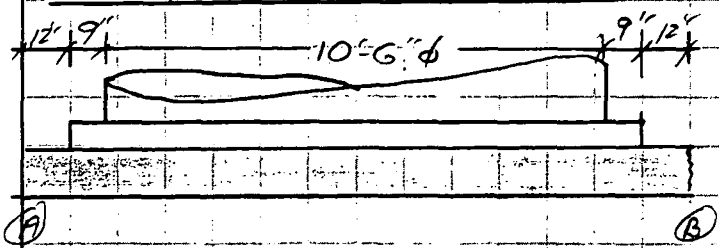

$DL_{TANK} \approx 12.0^K$ (pg 4/6)

$LL = 25000\,gal \times 8.34\#/gal \times 110\%$
$= 230^K$

$WL = 170'^K$ (pg 3/6)

$DL_{CONC\ PIER}: \left[12' \times 12' \times \frac{6''}{12}\,min - 2 \times 3\tfrac{1}{2}' \times 3\tfrac{1}{2}' \times \frac{6}{12}\right]$
$\times 145\#/CF$
$= 8.7^K$

CK BEARING ON OVERALL PAD TRY 14'×14'×1'




$S_x = \frac{1}{6} b d^2 = \frac{1}{6} \times 14' \times (14')^2 = 457\,FT^3$

WT of Found: $14' \times 14' \times 1' \times 0.145\,KCF$
$= 28.4^K$

$$f_{max} = \frac{P}{A} + \frac{M_x}{S_x}$$

$$= \frac{12.0^K + 230^K + 8.7^K + 28.4^K}{14' \times 14'} + \frac{170'^K}{457\,FT^3}$$

$= 1.80\,KSF < 2.0\,KSF$ allowed ∴ OK

$$f_{min} = \frac{P}{A} - \frac{M_x}{S_x} \quad \text{w/o LL}$$

$f_{min}(w/LL) = 1.05$

$$= \frac{12.0 + 8.7 + 28.4}{14 \times 14} - \frac{170}{457}$$

$= -0.12\,KSF$ ∴ uplift of $0.12^K/LF$ exists along B or $\frac{120\#}{145\#/CF} = 0.84'$ more

CK OVERTURNING STABILITY at A as we may have to increase Found Size

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CK OVERTURNING STABALITY TANKS HW7 & HW8

14'×14' Found.

Resisting Moment ≥ 1.5 Overturning Moment $(1.5 \times 170'^k = 255'^k)$

$\Sigma M_A = 12^k \cdot \frac{14'}{2} + 8.7^k \frac{14'}{2} + 28.4^k \cdot \frac{14}{2}$

$= 343.7'^k$ resisting ≤ $255'^k$ (1.5 × Overturning) ∴ OK

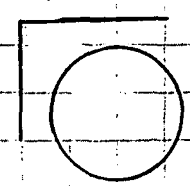
USE 14'×14'×1' FOUNDATION

CHECK SHEAR IN FOUNDATION

Punching Shear will not be a problem due to size of tank base

1-WAY ACTION

1.75'



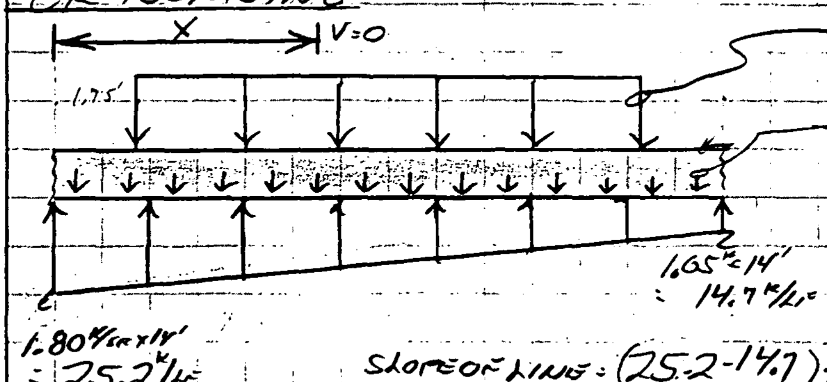
$V_u = 1.75' \times 1.8\text{ksf} \times 1'$ unit strip $\times 1.7\,SF = 5.36^k$

$V_n = \frac{V_u}{\phi} = \frac{5.36}{0.85} = 6.3^k$

$V_c$ allowed $= 2\sqrt{f'_c}\, bd = 2\sqrt{4000} \times 12'' \times 8'' = 12.1^k/LF$

$6.3^k$ actual ≤ $12.1^k$ allowed ∴ OK

CK BENDING




Tank LL+DL = $12.0^k + 230^k$
$= 242^k / 10.5'$
$= 23.05^k/LF$

CONC DL = $8.7^k + 28.4^k$
$= 37.1^k / 14'$
$= 2.65^k/LF$

SLOPE OF LINE = $(25.2 - 14.7) \div 14'$
$= 0.75^k/LF^2$

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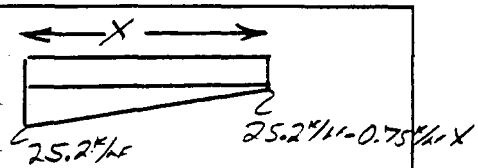
Job Name IWS-Haz Work Fac.
Structural Design - Concrete
Job No. 9122-02-1 Sheet No. 6 of 8
Calculated By: JAM Date 1-9-93
Scale:

CK BENDING - TANKS HW7 & HW8 (CONT)

Max Moment Occurs @ V = 0




$$[(X-1.75)\,23.05^{k/lf}] + [X \cdot 2.65^{k/lf}] = \frac{25.2 + (25.2 - 0.75X)}{2}\,X$$

$$23.05X - 40.34 + 2.65X = 12.6X + 12.6X - 0.375X^2$$

$$0.50X - 40.34 = -0.375X^2$$

$$X^2 + 1.33X - 107.57 = 0$$

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-1.33 \pm \sqrt{(1.33)^2 - 4 \times 1 \times (-107.57)}}{2a}$$

$$X = 9.73'$$

$$M@x = 23.05^{k/lf} \times (9.73 - 1.75')^2 \times \tfrac{1}{2}$$
$$+ 2.65^{k/lf} \times (9.73')^2 \times \tfrac{1}{2}$$
$$- 17.9^{k/lf} \times (9.73')^2 \times \tfrac{1}{2}$$
$$- (25.2 - 17.9) \times 9.73 \times \tfrac{1}{2} \times (\tfrac{2}{3} \times 9.73)$$

$(25.2 - 0.75X) = 17.9^{k/lf}$

$$= 733.92 + 501.77 - 847.32 - 230.37$$
$$= 158^{1k} \text{ OR } \frac{158^{1k}}{14' \text{ wide}} = 11.28^{1k}/\text{LF of Found. for unfactor}$$

Factored Moment $= 11.28' \times 0.75 \times 1.7$
$= 14.4^{k}$ DL + LL + WL

OR $170^{1k}/14' \times 1.7 = 20.64^{1k}$ WL only ← CONTROLS

TRY #5's @ 6" OC Ea. Way $\rho = \frac{0.31 \times 2}{6 = 12" \times d = 8"} = 0.0065$

$\omega = \frac{\rho F_y}{f_c'} = 0.097$

$K_u = \phi\,[f_c' \times \omega\,(1 - 0.59\omega)] = 329$

$M_u = K_u b d^2 = 329 \times 12 \times 8^2 = 252{,}500''^{\#}$

$= 21.04^{1k}$ allowable $> 20.64^{1k}$ actual $\therefore$ OK

USE #5's @ 6" OC Ea. Way T & B in 12" slab
in area of 25,000 gallon Tanks
min 14' × 14' ea.

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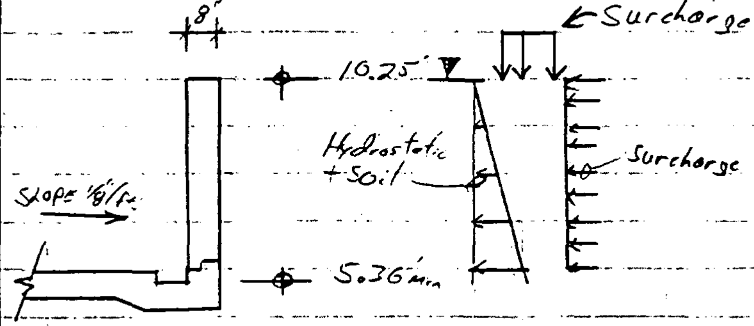
Job Name: IWS - Haz Waste Fac.
Structural Design - Concrete
Job No. 9122-02-1 Sheet No. 7 of 8
Calculated By: JAM Date 1-8-98
Scale:

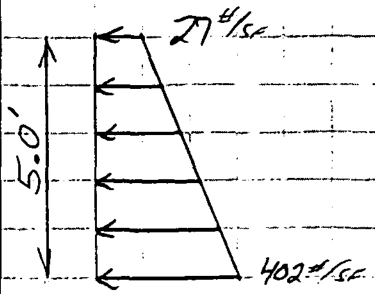
CONTAINMENT AREA WALL

Surcharge from Vehicle 100#/SF




$\gamma = 110^{\#}/cf$
$K_o = Tan^2(45° \pm \frac{\phi}{2})$
$\phi = $ Sand $= 35°$
$K_o = 0.27$

HORZ PRESSURE = Hydrostatic Load + Soil Pressure + Surcharge
$= 62.4^{\#}/cf \times 1'$ water $+ [(110^{\#}/cf - 62.4^{\#}/cf) \times 0.27] + [100^{\#}/sf \times 0.27]$
$= 62.4^{\#}/sf/lf + 12.85^{\#}/sf/lf + 27^{\#}/sf$
$= 75^{\#}/sf/lf + 27^{\#}/sf$




Ht = 10.25' - 5.36' = 4.89' use 5.0'
Min = $75^{\#}/sf \times 0'H + 27^{\#}/sf = 27^{\#}/sf$
Max = $75^{\#}/sf \times 5'H + 27^{\#}/sf = 402^{\#}/sf$

M@Base $= 27^{\#}/sf \times 5' \times \frac{5'}{2} + (402 - 27) \times \frac{1}{2} \times 5' \times \frac{5'}{3}$
$= 1.90'^{K} \times 1.7$
$= 3.23'^{K}$

TRY 8" wall w/ 1 mat of steel centered
$d = 3\frac{1}{2}"$
Try #4's @ 12" o.c. Ea. Way

$\rho = \frac{A_s}{bd} = \frac{0.20}{12" \times 3\frac{1}{2}"} = 0.0048$

$\omega = \frac{\rho F_y}{f'_c} = \frac{0.0048 \times 60KSI}{4KSI} = 0.071$

$K_u = \phi[f'_c \times \omega(1 - 0.59\omega)] = 0.9[4000 \times 0.71(1 - 0.59 \times 0.71)] = 246$

$M_u = K_u b d^2 = 36,207''^{\#} = 3.02'^{K} \ngtr 3.23'^{K}$ actual $\therefore$ No Good
TRY #5's @ 12" o.c.

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Job Name IWS - Haz Waste Fac
Structural Design - Concrete
Job No. 9122-02-1 Sheet No. 8 of 8
Calculated By: Date 1-8-93
Scale:

CONTAINMENT AREA WALL (CONT.)

TRY 8" wall w/ 1 mat of #5's 12" oc Ea Way

$\rho = \frac{0.31}{12 \times 3\frac{1}{2}} = 0.007$

$\omega = \frac{\rho f_y}{f_c'} = 0.111$

$K_u = \phi\left[f_c'\,\omega(1-0.59\omega)\right] = 372$

$M_u = K_u b d^2 = 54{,}760$ "#

$= 4.56$ 'K allowed $> 3.23$ 'K actual $\therefore$ OK

USE 8" wall w/ #5's @ 12" oc. E. Way

## 9. Spill Prevention Control System

### a. General Spill Prevention and Response

To eliminate potential spill routes, the entire I.W.S. facility has been designed and constructed for maximum containment to prevent any discharge from reaching the soil, groundwater or surface waters. The entire facility is located within an earthen berm and a concrete block wall coated with epoxy tar sealant. The three off-loading areas are bordered by curbs. At the center of each off-loading area are drains which discharge to a sump within the plant. The areas are designed to contain minimal amounts of spillage which may occur during hose changing. In the unlikely event a tanker developed a major leak, the containment curbing could be supplemented with sandbags. Chemical storage containment includes container boxes for drum and tote containers and secondary containment from surrounding curbing and slab.

To eliminate releases due to operator error, all tanks, piping, pumps and ancillary equipment and secondary containment structures are inspected daily in accordance with the facility's inspection plan to assure that any mechanical, structural or equipment failures are minimized. Tank level indicators are checked to prevent overflows.

During the transfer of hazardous waste drums and chemical products, due care is taken to prevent accidental dropping of drums and all forklift operators are instructed in proper and safe operation of the forklift. During the loading and off-loading of bulk materials from tankers, the tanker is moved after rack attendant has completed a walk around inspection to ensure all connections have been secured and all outlets examined for leakage. If necessary, such outlets shall be tightened, adjusted or replaced to prevent leakage while in transit. Warning signs are posted in the rack area to remind attendants to adhere to the above procedure.

### b. TSD Facility Spill Prevention Controls

The proposed storage tank monitoring system will include float switches to indicate high liquid level and high-high liquid level. A high liquid level condition will cause an alarm to sound. A high-high liquid level condition will signal either the transfer pump to stop operation or the pneumatic butterfly valve to close. Either of the above high-high liquid level operations will terminate the flow of liquid to a storage tank thereby preventing an overflow. The system is designed to fill each storage tank to a level of 95 percent of full tank capacity.

The vent system is designed to allow constant atmospheric conditions in the tank during either fill or draw. The liquid piping is all hard piped and tank and pump control valves must be manually operated. Check valves are provided where the potential for backflow exists that could result in a spill.

All of the sump pumps, including the secondary containment sump pumps, will be automatically controlled by float switches. The sump pumps will also be controlled by the storage tank liquid level and will automatically shut off when a storage tank becomes full.

c. <u>Required Notifications</u>

Any release to the environment greater than one pound or not immediately contained and cleaned up will be reported to the Regional Administrator within 24 hours of its detection.

Within 30 days of detection of a release to the environment, a report will be submitted containing the following in accordance with 40 CFR 264.196(d):

(1) Likely route of migration of the release;

(2) Characteristics of the surrounding soil including soil composition, geology, hydrology, and climate;

(3) Results of any monitoring or sampling conducted in connection with the release. Any sampling or monitoring data collected in response to the release will be submitted as it becomes available;

(4) Proximity to downgradient drinking water, surface water and populated areas; and

(5) Description of response actions taken or planned.

## 10. General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste

### a. Waste Characterization

Sources of D018 wastewater include petroleum bulk storage facilities, gasoline filling stations and other sources. Approximately, 98 percent of the D018 wastewater received at IWS is from petroleum storage facilities and the wastewater is very lightly contaminated, usually less than 1% by volume. This waste would not be considered ignitable or reactive in accordance with Sections 261.21 or 261.23.

Less than 1 percent of the D018 wastewater is received from gasoline filling stations which remove water which has accumulated in their underground storage tanks. The D018 wastewater from these sources typically contains as much as 25 percent gasoline which is a recoverable hydrocarbon and would not be considered a hazardous waste under 40 CFR 261. The remaining D018 wastewater received by IWS is primarily mixtures of gasoline and groundwater which is collected during the removal and clean up of underground storage tanks. This D018 wastewater is relatively consistent and is similar in nature to the D018 wastewater from bulk petroleum storage facilities. The D018 wastewater received from other sources would not be considered an ignitable or reactive waste.

### b. Design Requirements

The T,S,D Facility layout with regards to tank spacing and minimum distances to adjacent tanks, property lines, public rights-of-way, and important buildings and structures have been designed in accordance with ANSI/NFPA 30, Flammable and Combustible Liquids Code, 1990. Minimum tank spacing (shell-to-shell) is based on Table 2-7 of the Code which requires all tanks not over 150 ft in diameter to be spaced 1/6 th the sum of adjacent tank diameters but not less than 3 feet. The adjacent 8-foot diameter tanks are spaced 3 feet apart and the adjacent 10.5-foot diameter tanks are spaced 3.5 feet apart.

The distance requirements from property lines, rights-of-way, or nearest building or structure are based on Table 5-3.1.1 of the NFPA 30 Code. The distance varies depending on the capacity of the tank. For the 7,000 gallon tanks (HW 1-4) the minimum distance from a property line to the tank is 15 feet; the minimum distance from a public rights-of-way or nearest building is 5 feet. Likewise for the 25,000 gallon tanks (HW 7 & 8), the minimum distance from the property line is 20 feet and from the rights-of-way or nearest building is 5 feet. The minimum distances from the Oil/Water Separator (2,500 gal.) is the same as for Tanks HW 1-4. The minimum distance from the effluent sump (650 gal.) or the oil sump (325 gal.) are 5 feet and 5 feet, respectfully.

Each tank within the T,S,D Facility is located at least 5 feet from the edge of the secondary containment structure. Maintaining this distance ensures the minimum distance to either public rights-of-way or nearest building(s) will not be exceeded. All of the tanks are over 50 feet from the nearest property line which is well over the required distances.

11. Inspection Schedule

a. General Inspection Requirements

Industrial Water Services, Inc. (I.W.S.) general inspection requirements and frequency of inspections are based on the General Inspection Requirements stated in 40 CFR Part 265.15 and 264.15.

The purpose of the inspection plan is to monitor and observe the facility for malfunctions, deterioration, operator errors, and discharges which may cause or lead to a release of hazardous waste constituents to the environment or a threat to human health.

I.W.S. currently operates a RCRA Treatment, Storage and Disposal Facility under interim status. This portion of the I.W.S. facility is dedicated to managing TC benzene contaminated wastewater and it consists of tank systems, related structures and ancillary equipment. The areas are inspected on a routine inspection schedule and include the following:

- o Safety and Emergency Equipment
- o Facility Security
- o Operating, Monitoring and Structural Equipment
- o Tank Systems
- o Containers
- o Waste Off-loading

The proposed facility will also be inspected accordingly.

b. Types of Problems

Any operational deficiencies noted during the inspection will be documented on the appropriate inspection form. The inspection log forms are included at the end of this section. Any deficiency noted will be brought to the attention of the Plant Superintendent and/or the General Manager for corrective action. Any deficiency that could lead to a release of hazardous constituents, inhibit responding to an environmental emergency or lead to noncompliance with the regulations will be corrected immediately.

c. Frequency of Inspection

The inspections are conducted by the Regulatory Compliance Manager during the normal work week. On weekends the inspections are conducted by designated rack attendant personnel. All personnel involved in the operations and management of the hazardous waste management area are trained in conducting inspections and trained to report all deficiencies immediately to the Plant Superintendent.

d. Tank Inspection

The hazardous waste tank systems that are currently operating include Tank B and Tank 6 for storage and treatment of the DO18 TC benzene contaminated wastewater. These tanks are inspected in accordance with 40 CFR Part 265.195. The proposed facility tank systems will be inspected in accordance with 40 CFR 264.195. The proposed tank systems and the area immediately surrounding the tank systems will be inspected once each operating day for the following:

(1) The aboveground portions of the tank system will be visually inspected to detect corrosion, leaks or release of waste.

(2) Pipes, welded flanges, joints and connections will be visually inspected for leaks.

(3) The area immediately surrounding the externally accessible portion of the tank system including secondary containment structures will be inspected to detect erosion, leaks, drips, wet areas or signs of releases of hazardous waste. Any storm water which may accumulate within the secondary containment areas will be pumped via a sump to Tank HW 3 for treatment.

(4) Tank level indicators to monitor overfills.

Annually each tank will be inspected internally. The tank contents will be removed from the tank to allow the condition of the internal tank surfaces to be assessed. The inspection will address cracks, leaks, corrosion and erosion.

The tank will be examined by an independent, qualified, registered professional engineer.

e. Inspection Requirements after a Leak or Spill from a Tank System

A tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, will be removed from service immediately. The flow of wastes must be stopped and the system inspected to determine the cause of release.

If the release was from a tank system, the waste will be removed within 24 hours to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank system to be performed.

If the release was to the secondary containment area, all released materials will be removed within 24 hours to prevent harm to human health and the environment.

IWS will immediately conduct a visual inspection of any such release to prevent further migration of the leak or spill.

If the cause of the release was a spill that has not damaged the integrity of the system, the system may be returned to service as soon as the release waste is removed.

If the cause of the release was a leak from the primary tank system into the secondary containment system, the system will be repaired prior to returning the tank system to service.

Any release to the environment must be reported to the Regional Administrator in accordance with 40CFR264.196(d). IWS will notify the Department immediately and again in writing within 5 days when inspections reveal a problem requiring major repairs for the tank system.

IWS will hire a registered professional engineer to certify repairs to the tank system such as major structural modifications which involve changes from the approved and permitted design, although none are anticipated at this time. Replacement of worn out equipment or routine maintenance items which are not of a structural nature and are not needed to stop a major leak will not require certification. Engineer's certification will be required for repairs that are necessary for unforeseen equipment or materials failure due to stress, strain or incompatibility with the waste or system.

The certification of the repair by a registered professional engineer will be submitted to the Regional Administrator within seven days after returning the tank system to use.

f. Remedial Action

When an inspection indicates a deficiency or area of noncompliance, the situation will be fully assessed by the General Manager, the Plant Superintendent and the Regulatory Compliance Manager. Appropriate remedial measures will be determined and an established time frame will be determined to implement the measures.

For emergency situations, the contingency plan may be implemented. If the contingency plan is implemented, facility operations will not resume until all emergency equipment is fit for its intended use.

g. Inspection Log

The record of inspection is completed and maintained at the facility by the Regulatory Compliance Manager. The inspection log records are kept for a minimum of three years from the date of the inspection. The record includes the date and time of inspection, the name of the inspector, a notation of observations made, and the date and nature of any repairs, upgrades or remedial actions. The inspection plan and schedule will be reviewed periodically and updated to reflect any changes in the facility operations, equipment, permit conditions or changes to regulations.

**OFFLOADING AREA**

**DAILY INSPECTION LOG**

| EQUIPMENT | OBSERVATION | YES | NO |
|---|---|---|---|
| OFF-LOADING | SECONDARY CONTAINMENT FREE FROM LEAKS, SPILLS | | |
| SECONDARY CONTAINMENT STRUCTURE | FREE FROM EROSION, CORROSION, DAMAGE AND DETERIORATION | | |
| SUMPS | SUMPS ARE FREE FROM LIQUID ACCUMULATION, PROVIDE PROPER DRAINAGE | | |

| | | |
|---|---|---|
| ACTION REQUIRED: | ACTION TAKEN: | DATE: |
| INSPECTED BY: | DATE: | TIME: |

**TANK SYSTEM INSPECTION**

**DAILY INSPECTION LOG**

| EQUIPMENT | OBSERVATION | YES | NO |
|---|---|---|---|
| EXTERIOR | FREE FROM CORROSION, LEAKS OR RELEASE OF WASTE | | |
| PIPING, FLANGES, JOINTS, CONNECTIONS | LEAKING | | |
| SECONDARY CONTAINMENT | EVIDENCE OF EROSION, LEAKS, DRIPS, WET AREAS, SIGNS OF RELEASES | | |
| TANK LEVEL INDICATORS | OPERATIONAL | | |
| FREEBOARD LEVEL | ADEQUATE TO PREVENT OVERTOPPING BY WAVE OR WIND ACTION | | |

| | | |
|---|---|---|
| ACTION REQUIRED: | ACTION TAKEN: | DATE: |
| INSPECTED BY: | DATE: | TIME: |

**FACILITY SECURITY**

**WEEKLY INSPECTION LOG**

| EQUIPMENT | OBSERVATION | YES | NO |
|---|---|---|---|
| WARNING SIGNS | PROPERLY LOCATED, NOT DAMAGED, LEGIBLE | | |
| FENCE | FENCE SECURE, NOT DAMAGED | | |
| LIGHTING | NO DAMAGE TO LIGHT POSTS AND FIXTURES, LUMINESCENCE SUFFICIENT | | |
| SECURITY GUARD | ON DUTY 24 HOURS | | |

| | | |
|---|---|---|
| ACTION REQUIRED: | ACTION TAKEN: | DATE: |
| INSPECTED BY: | DATE: | TIME: |

**CONTAINER INSPECTION**

**WEEKLY INSPECTION LOG**

| EQUIPMENT | OBSERVATION | YES | NO |
|---|---|---|---|
| DRUM EXTERIOR | FREE FROM CORROSION, PITTING, DENTING OR BULGING | | |
| DRUM STORAGE | SECONDARY CONTAINMENT FREE FROM EVIDENCE OF SPILLS OR LEAKS | | |
| DRUM CONSTRUCTION | COMPATIBLE WITH THE WASTE STORED | | |
| DRUM LIDS | CLOSED | | |
| DRUMS - GENERAL MANAGEMENT | MUST NOT BE OPENED, HANDLED OR STORED THAT COULD CAUSE THE CONTAINER TO RUPTURE OR LEAK | | |
| DRUMS - 90-DAY STORAGE | DRUMS LIDS IN PLACE AND SECURE | | |
| DRUM LABELING | ACCUMULATION START DATE CLEARLY MARKED AND VISIBLE | | |
| DRUM LABELING | LABELED AND MARKED CLEARLY WITH THE WORDS "HAZARDOUS WASTE" | | |
| DRUMS - 90 DAY STORAGE | ADEQUATE AISLE SPACE PROVIDED | | |
| SATELLITE ACCUMULATION DRUMS | CLOSED, LABELED WITH THE WORDS "HAZARDOUS WASTE"; GOOD CONDITION; COMPATIBLE WITH MATERIAL STORED; MANAGED PROPERLY | | |
| DRUM LABEL | IS THE EPA WASTE CODE NUMBER, FACILITY NAME AND ADDRESS, PROPER SHIPPING NAME, AND UN NUMBER | | |

**CONTAINER INSPECTION**

**WEEKLY INSPECTION LOG**

**Continued**

| ACTION REQUIRED: | ACTION TAKEN: | DATE: |
|---|---|---|
| INSPECTED BY: | DATE: | TIME: |

**SAFETY AND EMERGENCY EQUIPMENT**

**MONTHLY INSPECTION LOG**

| EQUIPMENT | OBSERVATION | YES | NO |
|---|---|---|---|
| TELEPHONES | FUNCTIONAL | | |
| PAGING SYSTEM | FUNCTIONAL<br>AUDIBLE | | |
| FIRE ALARM | FUNCTIONAL<br>AUDIBLE | | |
| FIRST AID KITS | MISSING ITEMS | | |
| EMERGENCY SHOWERS | FUNCTIONING<br>ACCESSIBLE | | |
| EYE WASH STATIONS | FUNCTIONING<br>ACCESSIBLE | | |
| PROTECTIVE CLOTHING | ADEQUATE SUPPLY<br>CONDITION<br>SATISFACTORY<br>ACCESSIBLE | | |
| EYE PROTECTION | ADEQUATE SUPPLY<br>SATISFACTORY<br>CONDITION<br>ACCESSIBLE | | |
| RESPIRATORS/CARTRIDGES | OPERATIONAL<br>DETERIORATION<br>BUCKLES AND STRAPS<br>FUNCTIONING | | |
| DECONTAMINATION EQUIPMENT | ADEQUATE SUPPLY<br>ACCESSIBLE | | |
| SPILL CONTROL EQUIPMENT | ADEQUATE SUPPLY<br>DAMAGED<br>ACCESSIBLE | | |

**SAFETY AND EMERGENCY EQUIPMENT**

**MONTHLY INSPECTION LOG**

**Continued**

| EQUIPMENT | OBSERVATION | YES | NO |
|---|---|---|---|
| FIRE EXTINGUISHER NO. 1 | OPERATIONAL<br>IN PLACE | | |
| FIRE EXTINGUISHER NO. 2 | OPERATIONAL<br>IN PLACE | | |
| FIRE EXTINGUISHER NO. 3 | OPERATIONAL<br>IN PLACE | | |
| FIRE EXTINGUISHER NO. 4 | OPERATIONAL<br>IN PLACE | | |
| FIRE EXTINGUISHER NO. 5 | OPERATIONAL<br>IN PLACE | | |
| FIRE EXTINGUISHER NO. 6 | OPERATIONAL<br>IN PLACE | | |
| FIRE EXTINGUISHER NO. 7 | OPERATIONAL<br>IN PLACE | | |
| FIRE EXTINGUISHER NO. 8 | OPERATIONAL<br>IN PLACE | | |
| FIRE EXTINGUISHER NO. 9 | OPERATIONAL<br>IN PLACE | | |
| FIRE EXTINGUISHER NO. 10 | OPERATIONAL<br>IN PLACE | | |

| | | |
|---|---|---|
| ACTION REQUIRED: | ACTION TAKEN: | DATE: |
| INSPECTED BY: | DATE: | TIME: |

**VAPOR RECOVERY SYSTEM INSPECTION**

**DAILY INSPECTION LOG**

| EQUIPMENT | OBSERVATION | YES | NO |
|---|---|---|---|
| EXTERIOR | FREE FROM CORROSION, LEAKS OR RELEASE OF WASTE | | |
| PIPING, FLANGES, JOINTS, CONNECTIONS | FREE FROM LEAKS | | |
| INSTRUMENTS AND INDICATORS | OPERATIONAL | | |
| BENZENE SATURATION INDICATOR | DISCOLORATION | | |

| | | |
|---|---|---|
| ACTION REQUIRED: | ACTION TAKEN: | DATE: |
| INSPECTED BY: | DATE: | TIME: |

## 12. Closure and Post-Closure Plan

The information in this Section covers the closure of IWS' hazardous waste management facility. Included are the procedures for removal, decontamination and disposal of hazardous waste and the existing and proposed tank systems and equipment.

### a. Closure Plan

This closure plan outlines the procedures necessary for closure of IWS's hazardous waste units at the end of their intended operating life, leaving the facility in an uncontaminated condition suitable for other purposes by IWS or other parties. A post-closure plan is not required because this is not a land disposal facility; all wastes will be removed and hazardous waste units fully decontaminated at time of closure, precluding the need for post-closure care.

Should contaminated soils be discovered at the time of closure that cannot be removed, IWS will close the TSD facility as a landfill and will provide post-closure care pursuant to 40 CFR 264.197(b).

IWS will maintain a copy of an approved Closure Plan on-site until the certification of closure has been submitted to and accepted by the Regional Administrator. IWS will notify the Regional Administrator at least 45 days prior to the date final closure is expected to begin. Upon completion of closure, IWS will submit to the Regional Administrator a certification signed by both an officer of IWS and by an independent registered Professional Engineer stating that the facility has been closed in accordance with the specifications and procedures in the approved Closure Plan.

IWS will amend its Closure Plan whenever changes in operating plans or facility design affect the Plan, or whenever there is a change in the expected year of closure. Should IWS request a permit modification to authorize a change in operating plans or facility design, which affect the Plan, the company will request a modification of the Closure Plan at the same time. If a permit modification is not needed to authorize changes that might still affect the Plan, the request for modification of the Closure Plan will be made within 60 days after the change in plans or design occurs.

b. Closure Performance Standard

IWS wastewater treatment operations have been designed and are operated in a manner which minimizes the potential for contamination of the facility structure, equipment and surrounding property. The IWS system is comprised of a direct off-loading pumping facility, four storage tanks, feed piping and pumping, an oil/water separator, recovered hydrocarbon and treated effluent storage tanks and dual carbon filters.

The facility design, coupled with frequent inspection and facility maintenance will provide safe daily operation and minimize the clean-up and decontamination needed at closure.

Samples will be taken of the decontamination materials (i.e., flush materials) and analyzed to verify that no contamination remains after facility closure. All equipment used for decontamination will be decontaminated and/or disposed of properly. Buckets, brushes, clothing, tools and other contaminated equipment will be collected, placed in containers, labeled and decontaminated or disposed of in a permitted TSD Facility. All spent solutions and wash water will be collected for disposal at a permitted TSD Facility. Sludge and solids generated will also be collected and drummed for disposal at a permitted TSD Facility. Clothing and other disposable that are not completely decontaminated will be place in plastic bags pending disposition. Specific sampling and verification of the contamination will be performed as required by applicable Local, State and Federal standards.

It will be assumed that all surfaces in contact with DO18 waste water have been contaminated and must be decontaminated. The criteria for contamination and the effectiveness of decontamination will be estimated by the following methods:

Natural light - Discolorations, stains, visible dirt may indicate contamination or that contaminants have not been removed. These signs of possible contamination will be reduced to the extent possible.

Ultraviolet light - Polycyclic aromatic hydrocarbons fluoresce and can be visually detected when exposed to ultraviolet light. Since ultraviolet light can increase the risk of skin cancer and eye damage, a qualified OSHA trained health professional will assess the benefits and risks associated with ultraviolet light prior to its use to gauge contamination or decontamination effectiveness.

Wipe sampling - a swab will be wiped over surfaces potentially contaminated and analyzed in a certified laboratory for the presence of benzene. The equipment will be considered cleaned and decontaminated if it can be demonstrated that an analysis shows benzene at less than the detectable limit which was < 0.5 ug/L at the time of the permit application.

In the course of constructing the proposed hazardous waste portions of the IWS facility, IWS will test soils in the vicinity of the existing and proposed hazardous waste management portion of the facility. Soils will be tested for contamination in accordance with applicable State standards. IWS will remediate any soils shown to be contaminated as a result of the D018 waste treatment facility operations to levels in applicable State standards.

Contaminated soils will be sampled and analyzed using acceptable methods at the time of closure. In the event that contaminated soils cannot be removed at the time of closure, IWS will close the facility as a landfill pursuant to 40 CFR 264.197 (b).

This closure plan, has, nonetheless, been designed to: (1) eliminate the need for post-closure maintenance and care; (2) minimize or eliminate any threats to human health or the environment; (3) minimize or eliminate the potential for post-closure escape of hazardous waste or hazardous waste constituents to groundwater, surface waters or the atmosphere; and (4) comply with other applicable closure requirements for the tanks, secondary containment and ancillary equipment.

c. Partial and Final Closure Activities

It is unlikely that partial closure of the new IWS facility will be necessary. However, partial closure may be undertaken if one of the storage units is removed from service without replacement. In such event, the final closure procedures provided herein would be followed for only the tank being removed from service. IWS will request a permit modification for changes to the facility equipment, structures, or procedures related to the facility operation (including partial closure) which affect the plan and result in the need to revise the Closure Plan.

For final closure, IWS would most likely transfer all waste on-site to the oil/water separator for treatment, clean and decontaminate storage tanks for other uses, and flush all feed pipes free of hazardous constituents. The tank and feed pipe washwater would also be treated in the oil/water separator; however, the washwater from the oil/water separator will be transferred either to the tanker truck or put into drums for off-site disposal at an approved TSD facility. The storage and treatment tanks, secondary containment structure and process equipment will be tested as necessary to certify their uncontaminated condition. Detailed procedures for each of the closure activities are provided herein. Final closure will fully comply with the Closure Performance Standard as stated above.

Total time estimated for closure is less than 180 days.

d. Maximum Waste Inventory

The maximum inventory of wastes on-site at any time during the operating life of the facility will be only the D018 TC benzene contaminated wastewater stored in tanks or in process equipment and piping in the TSD Facility. Hazardous wastes in the tanks will be pumped and all piping will be flushed to the separator prior to beginning the decontamination procedures.

The maximum waste inventory is as follows:

| UNIT | DESCRIPTION | CAPACITY IN GALLONS |
|---|---|---|
| HW1 | Wastewater Tank | 7,000 |
| HW2 | Wastewater Tank | 7,000 |
| HW3 | Wastewater Tank | 7,000 |
| HW4 | Recovered Fuel | 7,000 |
| HW5 | Separator | 2,500 |
| HW6a | Effluent Sump | 650 |
| HW6b | Oil Sump | 325 |
| HW7 | Treated Water Holding | 25,000 |
| HW8 | Treated Water Holding | 25,000 |
| | SUBTOTAL | 81,475 |
| | Rinsate from Closure Cleaning | 10,000 |
| | TOTAL | 91,475 |

It is anticipated that IWS will be able to treat the on-site D018 wastewater through the Separator and discharge the treated effluent to the POTW. However, in the unlikely event that the facility must be closed by a third party and the existing treatment facilities cannot be used for closure, IWS will send the waste off-site to a permitted TSD facility for processing.

e. Inventory, Removal, Disposal or Decontamination of Equipment

Closure of the IWS treatment operations will be conducted in a manner which ensures removal of all waste and complete decontamination of the facility structures and equipment that were in contact with hazardous wastes. Rinsates from decontamination procedures will be tested to ensure no hazardous wastes or hazardous constituents remain in equipment. Wastes will be pumped to the oil/water separator or shipped off-site to another approved hazardous waste management facility as appropriate.

Closure procedures will be conducted by IWS personnel following comprehensive safety training to ensure employee safety during clean-up. All clean-up work will be supervised and performed using qualified IWS or other management personnel. As necessary, personnel may be equipped with solvent resistant overalls, head protection, pre-coated gloves, boots resistant to solvents and respirators with organic vapor filter cartridges that seal directly to the mask. Strict supervision will ensure that no open flames, hot surfaces, nor smoking are present in or around the work areas during clean-up and testing.

Prior to leaving the site during the closure period, contaminated protective clothing will be collected and placed in approved containers to be disposed of at an approved hazardous waste disposal facility.

All process equipment in the TSD facility will be thoroughly pressure washed with warm water and detergent to remove any residues which may be hazardous. The final rinsates will be collected and analyzed for contamination. This process will be repeated until the equipment is decontaminated.

All equipment used for decontamination will be decontaminated and/or disposed of properly. Buckets, brushes, clothing, tools, and other contaminated equipment will be collected, placed in containers, labeled, and decontaminated or disposed of in a permitted TSD Facility. All spent solutions and wash water will be collected and drummed for disposal at a permitted TSD Facility. Clothing and other disposable that are not completely decontaminated will be placed in plastic bags pending disposition.

f. Closure of Tanks

The treatment and storage tanks proposed as part of this application are aboveground steel tanks with secondary containment. Secondary containment will consist of a concrete vault, with walls sized to contain 100% of the largest tank volume plus the 25-year, 24-hour maximum rainfall event. Before initiating closure procedures, all shipments of hazardous waste to IWS will be stopped. Closure procedures consist of treating the hazardous waste inventory, removing and disposing of any non-pumpable residual, and cleaning and decontaminating the tanks.

To demonstrate completion of decontamination, IWS will analyze final rinsates and wipe samples of equipment will be analyzed for benzene, TCLP metals, TOC, TOX and other organic constituents managed by IWS. These wastes will be analyzed to the limits set forth in applicable Local, State and Federal standards.

The following procedures will be implemented to affect closure of the tanks:

(1) Stop all additions of hazardous waste shipments from off-site to the storage tanks.

(2) Stored wastes will be fed to the oil/water separator. If the waste becomes unpumpable due to settling of solids, waste from other tanks will be added, the mixture agitated and pumped to the separator. Liquid material remaining below the outlet ports of the oil/water separator will be removed by a portable diaphragm pump and pumped to a tanker truck or into drums for off-site disposal at an approved TSD facility.

(3) Sludge will be removed from the bottom of the tanks and placed into 55-gallon drums. Should any sludge build-up occur that cannot be removed by procedure 2 above, the sludge would be physically removed from the tank.

(4) Tanks will be ventilated for several days before starting additional operations. All applicable safety procedures for confined space entry will be followed for personnel entering the tank.

(5) Tanks will be pressure washed with warm water and an industrial grade detergent. Afterwards, any material adhering to the inside tank walls will be removed by hand scrubbing. This waste material will be collected in drums for disposal in an approved TSD Facility. Following hand scrubbing and rinse, a final rinse sample will be collected and analyzed for contaminants. Each tank will be tested separately.

(6) After pressure washing, tanks will be entered, inspected, and certified free of hazards by a registered professional engineer.

(7) Following tank decontamination, secondary containment areas subject to incidental spills from containers and drips from agitator seals, pump seals, etc. will be cleaned. First, the walls and floor will be cleaned with brooms and fine mesh lightweight aggregate, then pressure washed with an industrial grade detergent. All cleaning residues will be collected for proper disposal.

(8) Containment structures will be thoroughly inspected for cracks or gaps. If free of defects, wipe samples will be analyzed to verify decontamination. Should a crack or gap be identified, concrete will be chipped to the bottom of the crack, or if necessary into the soil under the crack, for six inches either side of the crack. If the crack stops in the

concrete, wipe samples will be taken to verify decontamination. If the concrete is breached, soil will be excavated until samples of surrounding soils show no hazardous constituents above background.

Soils excavated with hazardous constituents at levels requiring disposal at a hazardous waste TSDF will be containerized and disposed of at such a facility. However, soils with hazardous constituents present below regulatory limits but may still require disposal may be disposed of in a non-hazardous waste landfill or other proper disposal facility.

(9) Following closure, IWS or current owner of the facility will evaluate the suitability of the equipment and structures for future service. All equipment will be thoroughly cleaned with detergent and wipe tested to determine the effectiveness of the decontamination procedures. Any items that cannot, for some unforeseen reason, be decontaminated will be disposed of in an approved TSD Facility.

g. Schedule For Closure

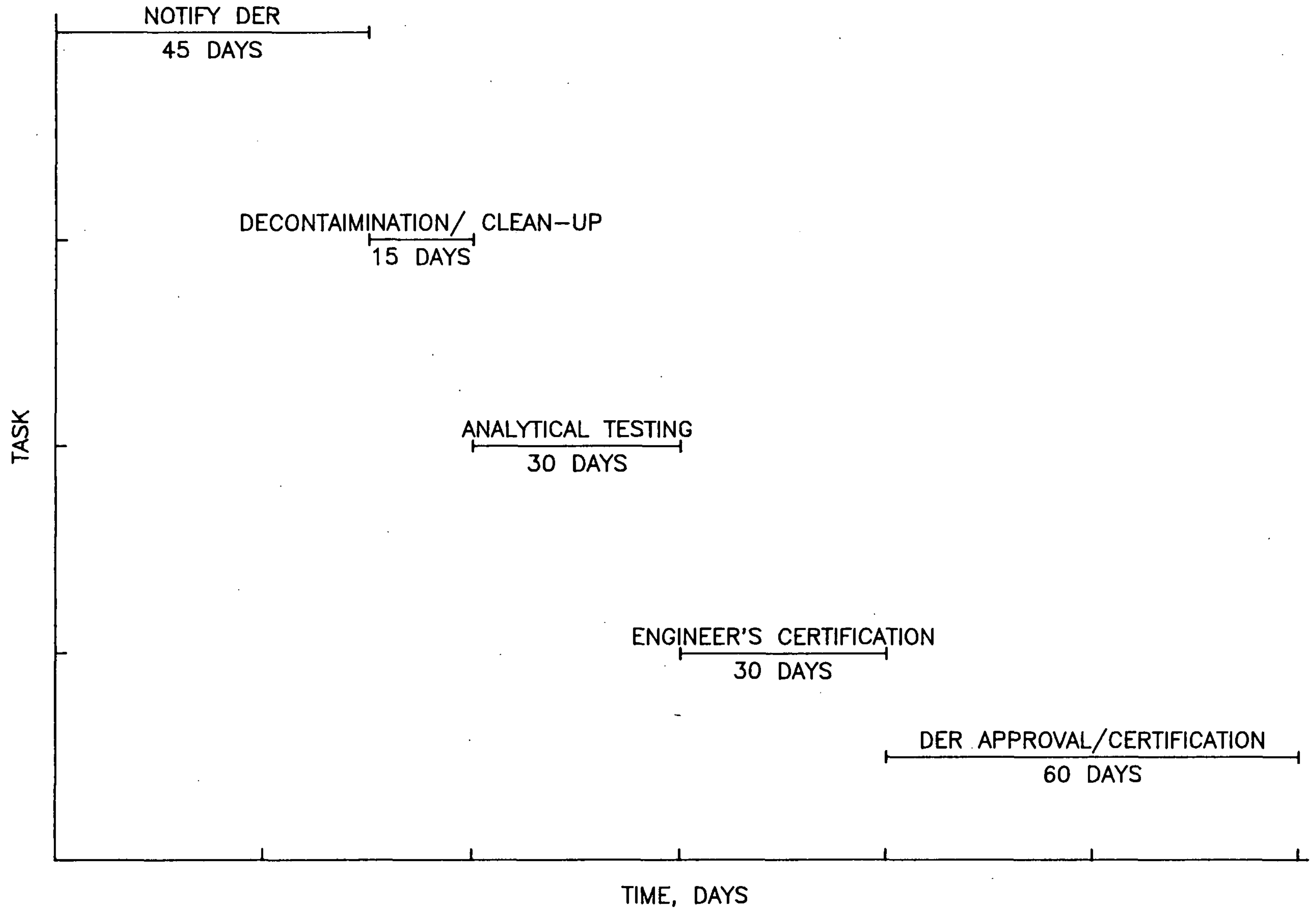
Closure of the IWS Facilities is not anticipated in the foreseeable future. However, for the purposes of this plan, the date of closure is 2032 (i.e., 40 years). The schedule to be followed for closure at that time is presented in Figure C-1.

h. Time Allowed for Closure

The estimated time of closure of the facility is 180 days from the date of final receipt of waste. The Regional Administrator will be notified 45 days prior to beginning final closure. When all closure activities are complete, final closure will be certified by a registered independent Professional Engineer in addition to an authorized representative of IWS.

i. Extensions For Closure Time

No extension for closure time is requested by IWS at this time.



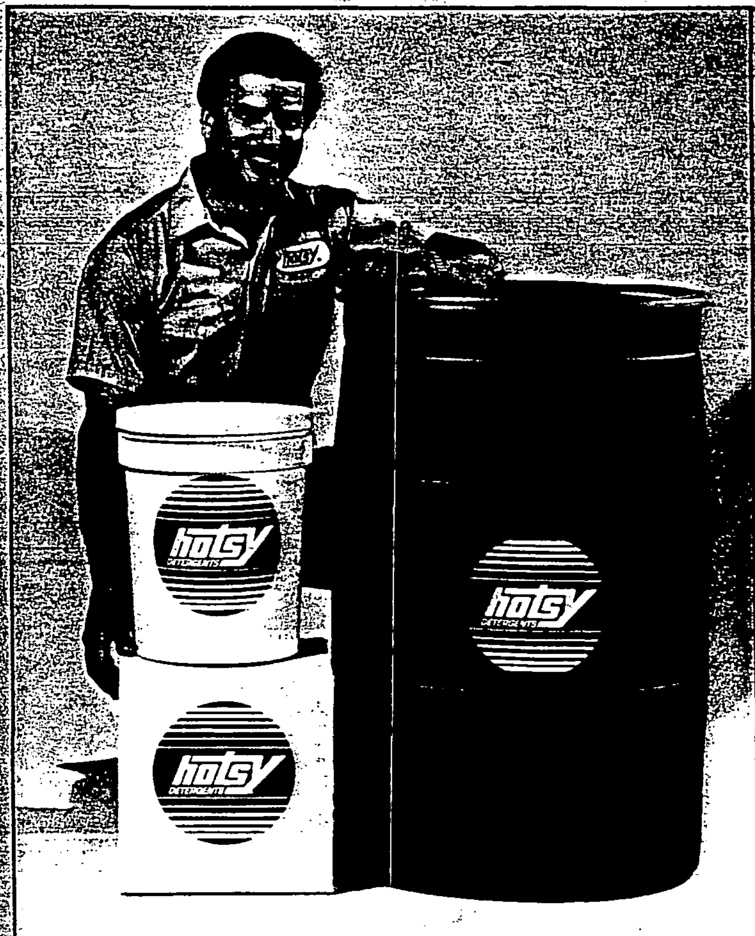

*MITTAUER/FITZPATRICK, INC.*
CONSULTING ENGINEERS
ORANGE PARK, FLORIDA (904) 276-5236

**INDUSTRIAL WATER SERVICES, INC.**
Hazardous Waste Management Facility
Closure Schedule
Jacksonville, Florida

FIGURE
C-1

UPDATED JANUARY 1993

# HOTSY BLUE THUNDER CLEANS ALL KINDS OF VEHICLES — IN HOT WATER OR COLD — AND MAKES FADED FINISHES SHINE AGAIN!




**Hotsy Blue Thunder** is a low-foaming, liquid detergent, specifically compounded for use in high-pressure washers and steam cleaners for cleaning or degreasing industrial, farm, mine, oil field, truck/auto, food and beverage equipment and work areas. Hotsy Blue Thunder is equally effective in hand applications as well.

**Hotsy Blue Thunder** is a highly efficient detergent/degreaser yet, unlike other degreasers, contains no dangerous chlorinated solvents.

**Hotsy Blue Thunder** is fully biodegradable, safe to use in confined work places and has no unpleasant odor.

**Hotsy Blue Thunder** is formulated with Hotsy's exclusive Advanced Formula HCC Additives that help dissolve scale buildup in pressure washers and extend their lives.

**Hotsy Blue Thunder** is formulated with Hotsy's exclusive line of corrosion inhibitors that protect metal surfaces from one washing to the next.

**Hotsy Blue Thunder** is both U.S.D.A. and Canadian Agriculture Approved.

**Hotsy Blue Thunder** is a highly-concentrated, fast-acting detergent that accommodates dilution ratios as efficient as its cleaning ingredients . . . a little Hotsy Blue Thunder goes a long, long way.

**Hotsy Blue Thunder** is competitively priced . . . no one can deliver a better product at a better price than your Hotsy Man!

# hotsy® Blue Thunder

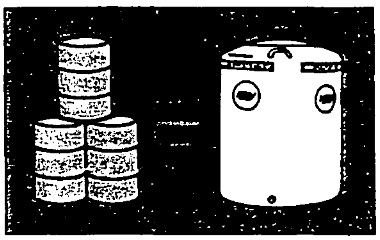
## Hotsy Blue Thunder Is Ideal For:

Businesses who need efficient cleaning, sometimes in both hot and cold water: farmers, ranchers, dairies, hog farrowers, slaughterers, packers. . . oil companies, exploration outfits, offshore platforms, oil-transport firms. . . truckers and auto dealers; RV, tractor/trailer, on- and off-the-road, and auto manufacturers. . . bottlers, food processors, packers, supermarkets, food haulers . . . in short, anyone and everyone who needs a low-foaming, effective, liquid cleaner designed to work best in pressure washers in hot and cold water!

## Hotsy Blue Thunder Is Particularly Effective For Cleaning:

The tough dirt that makes agriculture such a grimy business. . . animal waste, mud, grease. The grime of the petroleum and auto industries. . . slicks, dirt-collecting oils, clogged grease and stubborn stains. The smoke, oils, fats and odor-creating greases of the food and beverage industries. Wherever cleaning is toughest, that's where Hotsy Blue Thunder belongs!

## THE HOTSY BULKPAK PROGRAM BEATS THE PRICE OF DETERGENTS IN DRUMS . . . HANDS DOWN!



Ask your Hotsy Man how you can arrange to have your Hotsy Blue Thunder supplied on a regular, monthly schedule. . . pumped nto your own Hotsy BulkPak container that's plumbed directly to your pressure washer. . . convenient, dependable, clean and efficient. Plus, with the Hotsy BulkPak Program you save even more money with our low, bulk rates!

## DON'T FORGET YOUR HANDS!

Regardless of what Hotsy Detergent you select, industrial cleaning is no easy job and it's toughest on your hands, your employees' hands.

We've formulated our new **Hotsy For Working Hands** for people who work hard, play hard and need a hand soap that works hard too. Choose the size that suits you best: 16 ounces or 1 gallon and buy them by the case. Wherever and whenever working hands are being cleaned, that's where **Hotsy For Working Hands** belongs!

| SPECIFICATIONS | |
|---|---|
| Formulation | [illegible] |
| Active Ingredients | [illegible] |
| Biodegradability | [illegible] |
| Specific Gravity | [illegible] |
| pH at 5% Solution | [illegible] |
| $P_2O_5$ Phosphorus Pentoxide Levels | [illegible] |
| Foam Level | [illegible] |
| Alkalinity | [illegible] |
| Stability | [illegible] |
| Flash Point | [illegible] |
| Exclusive Hotsy Additives: Advanced Formula HCC | [illegible] |
| Corrosion Inhibitors | [illegible] |
| Product Approvals | [illegible] |
| Product Safety | [illegible] |
| Product Liability | [illegible] |
| Containers | [illegible] |
| Recommended Solutions | [illegible] |

Other cleaning problems? Ask about the rest of Hotsy's full line of biodegradable detergents and special products for industrial cleaning problems.

hotsy®

AUTHORIZED SALES, DETERGENT & SERVICE CENTER

THE HOTSY CORPORATION
Detergent Division
21 Inverness Way East, Englewood, Colorado 80112-5796
(303) 792-5200 • TWX 910/935-0792 • FAX 303/792-0547

884483 Printed in USA Effective 10/89.
Specifications and product descriptions subject to change without notice.

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# THE HOTSY CORPORATION
## DETERGENT DIVISION

2621 7th Avenue South
P. O. Box 154
Estherville, Iowa 51334
(712) 362-7737

September 14, 1992

Hotsy Blue Thunder is a fully biodegradable, liquid, alkaline detergent. All of the organic ingredients used in Blue Thunder are fully biodegradable in either a sewage treatment plant or in a septic tank system. These ingredients are broken down into simpler compounds by natural biological action. Complete biodegradation of the organic compounds in Blue Thunder will produce carbon dioxide and water.

Blue Thunder is a mildly alkaline detergent. It contains less than 5% by weight of sodium metasilicate which is also found in many consumer cleaning products. In normal cleaning applications, the Blue Thunder is diluted between 50 and 100 to one with water. After cleaning, the item being cleaned would be rinsed with as much water as was used in washing.

A material safety data sheet for the solution coming out of the nozzle would show no hazardous ingredients and would not be considered to be a hazardous solution.

During cleaning, the sodium metasilicate chemically reacts with certain kinds of soils and is chemically neutralized. It forms neutral salts and soaps. Depending upon the quantity and type of soil being cleaned, it is possible to chemically consume all of the sodium metasilicate. The salts and soaps formed during cleaning are not considered to be hazardous materials.

# THE HOTSY CORPORATION
## DETERGENT DIVISION

2621 7th Avenue South
P. O. Box 154
Estherville, Iowa 51334
(712) 362-7737



Hotsy Blue Thunder does not contain any ingredients that attack the ozone layer.

Hotsy Blue Thunder does not contain any ingredients that contribute to smog problems.

Hotsy Blue Thunder does not contain chlorinated solvents, heavy metals, phenolics, sodium hydroxide or potassium hydroxide.

Hotsy Blue Thunder is authorized by the United States Department of Agriculture for use in meat and poultry processing plants.

Hotsy Blue Thunder is certified as being Kosher approved.

Hotsy Blue Thunder, at a pH of less than 12.5, is not considered to be an EPA hazardous waste.

Mr. Barron, I hope the above information summarizes our telephone conversation. If you have any questions or need additional information, please do not hesitate to contact me.

Dean Lemberg

cc: Hotsy of Jacksonville

# MATERIAL SAFETY DATA SHEET

BLUE THUNDER
PRODUCT NAME

SECTION 1



Manufacturer's Name: THE HOTSY CORPORATION, DETERGENT DIVISION

Address: 2621 7TH AVENUE SOUTH — Phone Number: 712-362-7737

City, State & Zip: ESTHERVILLE, IOWA 51334

Emergency Telephone No.: Rocky Mountain Poison Control Center 303-623-5716

FOR CHEMICAL EMERGENCY: Spill, Leak, Fire, Exposure or Accident call CHEMTREC - DAY OR NIGHT 1-800-424-9300

Person Responsible for preparation: Dean F. Fernholz — Date Prepared: Effective May 27, 1992 Supercedes January 15, 1991

0 = Least 2 = Moderate 4 = Extreme
1 = Slight 3 = High
HEALTH 2 FLAMMABILITY 0 REACTIVITY 0

D.O.T. Shipping Classification: Cleaning Compound, Class 55

## SECTION 2 - HAZARDOUS INGREDIENTS/IDENTITY

| Hazardous Component | CAS NO. | OSHA PEL | ACGIH TLV | ORAL LD50 Rat | % |
|---|---|---|---|---|---|
| Sodium Metasilicate | 6834-92-0 | NE | NE | 800 mg/kg | 1-5% |

NA = Not applicable NE = None established

## SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

| | | | | | |
|---|---|---|---|---|---|
| Boiling Point | 212° F. | Specific Gravity | 1.03 | Vapor Pressure (mm Hg) | 23 |
| Vapor Density (Air=1) | 1.2 | Solubility in water | Soluble | Reactivity in water | None |
| pH 5% solution | 12.7 | Melting Point | 32° F. | | |

Appearance & Odor: Blue liquid, no appreciable odor

## SECTION 4 - FIRE & EXPLOSION DATA

Flash Point: NA — Method Used: NA

Flammable Limits in air % by volume: LEL Lower NA — UEL Upper NA

Auto-Ignition Temperature: NA — Extinguisher Media: Water, Foam, Dry Chemical, Carbon Dioxide

Special Fire Fighting Procedures: None

Unusual Fire & Explosion Hazards: None

## SECTION 5 - PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: Unstable ______ Stable XX — Conditions to avoid

Incompatability (Materials to avoid): Acids

Hazardous Decomposition Products: NA

Hazardous Polymerization: May Occur ______ Will not occur XX — Conditions to avoid

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, THE HOTSY CORPORATION, DETERGENT DIVISION, MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

BLUE THUNDER

SECTION 6 - HEALTH HAZARDS



Acute: Eye burns, skin irritation

Chronic: Eye burns, skin irritation

Signs & Symptoms of Exposure: Eye irritation, skin irritation

Medical Conditions Generally Aggravated by Exposure: NA

Chemical Listed as Carcinogen or Potential Carcinogen: NA

Nat'l Toxicology Program: NO

I.A.R.C. Monographs: NO

OSHA: NO

Emergency & First Aid Procedures: EYES: Flush with water, call a physician immediately. SKIN: Wash with water, call a physician if irritation persists. INTERNAL: Drink water, call a physician immediately.

ROUTES OF ENTRY

1. Inhalation: NA
2. Eyes: Undiluted can cause eye irritation or burns
3. Skin: Undiluted can cause skin irritation
4. Ingestion: Undiluted can cause stomach irritation

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be taken in handling & storage: Store in a cool, dry area. Keep container closed when not in use. DO NOT FREEZE.

Other Precautions: None

Steps to be taken in case material is released or spilled: Shut off leak if this can be done without injury. Flush area with water. Large spills should be diked with earth; then pump to a salvage tank.

Waste Disposal Methods (Consult Federal, state & local regulations): In a manner in accordance with all federal, state and local pollution control regulations.

SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type): NA

Ventilation: NA

Local Exhaust: NA

Mechanical (General): NA

Special: NA

Other: NA

Protective Gloves: Rubber

Eye Protection: Safety glasses or goggles

Other Protective Clothing/Equipment: Waterproof suit and boots may be worn

Work/Hygenic Practices: Wash thoroughly after handling.

SECTION 9 - COMMUNITY RIGHT-TO-KNOW INGREDIENT LIST

| CHEMICAL NAME | CAS NO. |
|---|---|
| Water | 7732-18-5 |
| Sodium Tripoly Phosphate | 7758-29-4 |
| Sodium Metasilicate | 6834-92-0 |

13. Spill Response Plan and Removal of Unfit for Use Tank Systems

This section contains information for responding to leaks or spills regarding tank systems in accordance with 40 CFR Subpart J, 264.196.

A tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, will be removed from service immediately, and IWS, Inc. will immediately stop the flow of wastes into the tank system or secondary containment system and inspect the system to determine the cause of release.

IWS, Inc. will immediately conduct a visual inspection of the release to determine whether or not the spill is migrating to the environment. IWS, Inc. will prevent further migration of the leak or spills to surface water or soils, and remove and properly dispose of any visible contamination of the soil or surface water.

Any release to the environment, will be immediately reported to the Regional Administrator within 24 hours of detection unless the release was less than or equal quantity of one pound and immediately contained and cleaned up. Within 30 days of detection of a release to the environment, a report documenting the following information will be submitted to the Regional Administrator:

1. Likely route of migration of the release.

2. Characteristics of the surrounding soil.

3. Results of monitoring or sampling conducted in connection with the release.

4. Proximity to down gradient drinking water, surface water, and population areas.

5. Description of response actions taken or planned.

A release from a tank system to the secondary containment area will be removed within 24 hours to prevent further release of hazardous waste to human health and the environment and to allow inspection and repair of the tank system to be performed.

If the cause of the release was a spill that has not damaged the integrity of the system, the system will be returned to service as soon as the released waste is removed. The spill will be noted in the operating record.

If the cause of the release was a leak from the primary tank system or associated ancillary equipment into the secondary containment system, the system will be repaired prior to returning the tank system to service. The release and repair work conducted will be noted in the operating record.

The certification of the repair by a registered certified professional engineer will be submitted to the Regional Administrator within seven days after returning the tank system to use.

14. Closure and Post Closure Cost Estimates

A cost estimate has been prepared to reflect the costs for complete closure of the existing and proposed facilities. Post closure care will not be required. The costs are based on a third, independent company performing the closure activities. This company would be neither a parent or subsidiary of Industrial Water Services, Inc.

All wastes on-site at the time of closure will be removed and disposed of at an approved T,S,D Facility. The quantity of waste disposal is based on each tank in the facility being completely full at the time of closure plus wash water and rinsate.

The estimates include costs for sampling and analysis of rinsewaters, sludge, and wipe samples. Sampling and analysis of the soils is also included for the unlikely event of a breech of the secondary containment.

Assuming all waste must be disposed off-site at a permitted hazardous waste receiving facility, the closure cost estimate for the maximum waste inventory of 91,475 gallons for the proposed facility would be $27,442.50. A potential off site facility is Integrated Resource Recovery in Davie, Florida. Based on discussions and correspondence with Integrated Resource Recovery, their charge for accepting the waste is $0.15 per gallon. Transport of the waste from Jacksonville to Davie is estimated at $0.15 per gallon.

Drum disposal is anticipated for sludge and contaminated protective clothing and equipment.

Closure Cost Estimate
Industrial Water Systems. Inc.

M/F Project No. 9122-02-1
April 1993

| No. | Description | Quantity | Unit | Unit Cost | Amount |
|---|---|---|---|---|---|
| Closure of Existing Units | | | | | |
| 1 | Treatment and disposal of waste in tanks plus rinsate. | 80,000 | gal | $0.30 | $24,000.00 |
| 2 | Cleaning of all tanks. slab, and equipment. | | | | |
| | Labor | 160 | hrs | $25.00 | $4,000.00 |
| | Supervisor | 2 | wk | $1,000.00 | $2,000.00 |
| | Equipment & Supplies | 1 | LS | $2,000.00 | $2,000.00 |
| | Contractor's O&P | 25 | % | $8,000.00 | $2,000.00 |
| 3 | Analytical Work - TCLP analyses | 9 | ea | $1,400.00 | $12,600.00 |
| 4 | Solids disposal | 8 | drums | $250.00 | $2,000.00 |
| 5 | Administrative Costs | 40 | hrs | $40.00 | $1,600.00 |
| 6 | Engineer's certification | 16 | hrs | $75.00 | $1,200.00 |
| | SUBTOTAL | | | | $51,400.00 |
| 7 | Contingency @ 10% | | | | $5,140.00 |
| | TOTAL EXISTING TANKS | | | | $56,540.00 |
| Closure of Proposed TSD Facility | | | | | |
| 8 | Treatment and disposal of waste in tanks. | 91,475 | gal | $0.30 | $27,442.50 |
| 9 | Cleaning of all tanks, slab, and equipment. | | | | |
| | Labor | 160 | hrs | $25.00 | $4,000.00 |
| | Supervisor | 2 | wk | $1,000.00 | $2,000.00 |
| | Equipment & Supplies | 1 | LS | $2,000.00 | $2,000.00 |
| | Contractor's O&P | 25 | % | $8,000.00 | $2,000.00 |
| 10 | Analytical Work - TCLP analyses | 24 | ea | $1,400.00 | $33,600.00 |
| 11 | Solids disposal | 12 | drums | $250.00 | $3,000.00 |
| 12 | Administrative Costs | 40 | hrs | $40.00 | $1,600.00 |
| 13 | Engineer's certification | 16 | hrs | $75.00 | $1,200.00 |
| | SUBTOTAL | | | | $76,842.50 |
| 14 | Contingency @ 10% | | | | $7,684.25 |
| | TOTAL PROPOSED TANKS | | | | $84,526.75 |

# K. CLOSURE

## K. CLOSURE

### 1. Closure Information

The information in this Section concerns the closure of Industrial Water Services (IWS) hazardous waste management facility. Included are the procedures for removal, decontamination and disposal of hazardous waste tank systems and equipment.

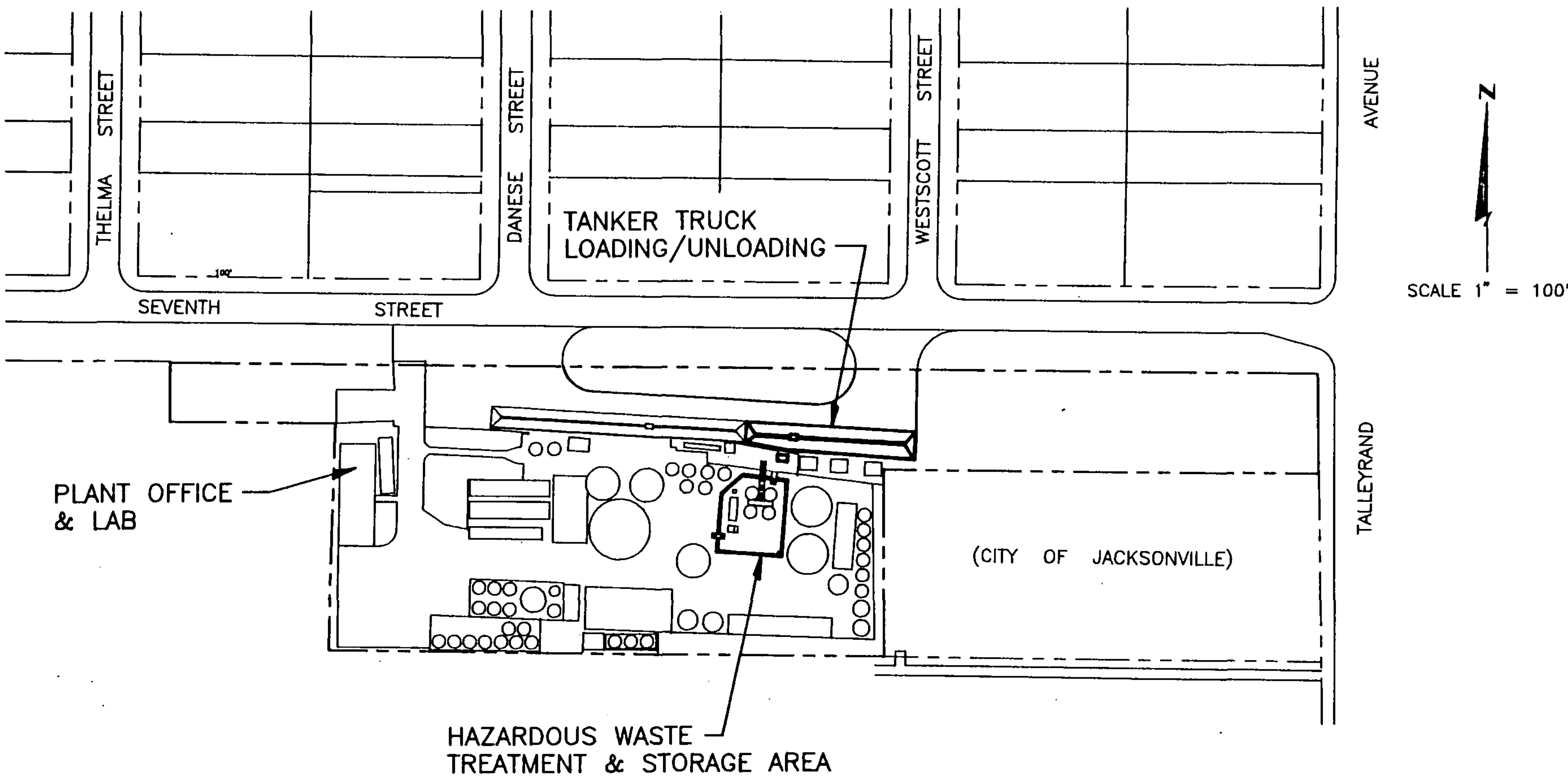
IWS will maintain a copy of an approved Closure Plan on-site until the certification of closure has been submitted to and accepted by the Regional Administrator. IWS will notify the Regional Administrator at least 45 days prior to the date final closure is expected to begin. Upon completion of closure, IWS will submit to the Regional Administrator a certification - signed by both an officer of IWS and by an independent registered Professional Engineer -- that the facility has been closed in accordance with the specifications and procedures in the approved Closure Plan.

IWS will amend its Closure Plan whenever changes in operating plans or facility design affect the Plan, or whenever there is a change in the expected year of closure. Should IWS request a permit modification to authorize a change in operating plans or facility design, which affect the Plan, the company will request a modification of the Closure Plan at the same time. If a permit modification is not needed to authorize changes that might still affect the Plan, the request for modification of the Closure Plan will be made within 60 days after the change in plans or design occurs.

#### a. Closure of Hazardous Waste Units

This closure plan has been written to outline the procedures necessary to completely close IWS hazardous waste units operations at the end of their intended operating life, leaving the facility in an uncontaminated condition suitable for other purposes by IWS or other parties.

Industrial Water Services, Inc. operates an industrial wastewater pre-treatment facility in Jacksonville, Florida. (See Figure K-1 for schematic plant layout.) A portion of the IWS plant operates under interim status as a RCRA Part A facility. This portion of the plant will be closed when the permanent RCRA Part B portion of the plant is completed or, if the facility elects to cease hazardous waste operations. In either case, closure of the existing Part A portion of the facility would take place no later than the end of 1993.




*MITTAUER/FITZPATRICK, INC.*

CONSULTING ENGINEERS

ORANGE PARK, FLORIDA (904) 276-5236

**INDUSTRIAL WATER SERVICES, INC.**

Hazardous Waste Management Facility

Facility Site Plan

Jacksonville, Florida

JOSEPH A. MITTAUER
CERTIFICATE
No. 23111
STATE OF FLORIDA
REGISTERED ENGINEER

APR 3 0 1993

FIGURE

K-1

SEPTEMBER 1992

Approximately 75% of the wastewater processed through the IWS plant is non-hazardous. The remaining 25% is TC benzene hazardous wastewater (D018). This D018 waste is generated from petroleum bulk terminal facilities, retail filling station underground storage tanks, and environmental remediation or spill response activities. The waste is typically wastewater lightly contaminated (approximately 1%) with hydrocarbons, primarily gasoline. The benzene levels in the wastewater range from .5mg/l to about 40 mg/l depending on the amount of free product present. The waste is typically water from fuel storage tank condensation or leaks, stormwater from fuel loading areas, and other sources, with very low solids present.

Treatment of the D018 waste includes unloading directly to the parallel plate separator, processing through the separator, routing the separated hydrocarbons to a storage tank, and storing the treated water in Tank #6 where it is held for discharge. The hydrocarbons recovered through separation are recycled for energy recovery. In the event that loads cannot be routed directly to the separator, TC wastewater may be stored in one or more of the cone bottom tanks.

The existing hazardous waste management portion of the IWS plant consists of one, 6,000-gallon, cone bottom tanks, and a corrugated parallel plate separator. All tanks and equipment are located in a fully contained area consisting of a concrete slab with concrete filled block walls.

b. Facility Closure and Operations

(1) Upon completion and start-up of the permanent hazardous waster treatment portion of the IWS facility or election to cease hazardous waste operations, the Florida Department of Environmental Regulation (FDER) will be notified 45 days prior to the implementation of the closure plan for the existing facility. Closure activities will be completed within 90 days after receiving the last volume of hazardous waste in the existing facility.

(2) Prior to closure, all waste material remaining in the tanks, pumps, lines, and sumps will be processed on site either through the proposed facility or through the existing portion. The maximum volume of D018 wastewater in the existing tanks would be 97,000 gallons. Treated wastewater is discharged to the sanitary sewer under the IWS industrial user permit issued prior by the City of Jacksonville. Recovered hydrocarbons will be

recycled for energy recovery.

(3) The exterior of the cone or shell bottom tanks, separator, and connecting lines, valves, and pumps will be decontaminated by pressure washing using an industrial grade cleaning agent as required. The rinsate will be pumped from the collection sump to one or more of the cone bottom tanks for processing and discharge.

(4) The interior of the cone bottom tanks and separator will be thoroughly cleaned using an industrial grade cleaning agent as required. The cleaning solution will be pumped through lines, valves, and pumps to the holding tank for further processing and discharge to the POTW.

(5) The holding tank will be thoroughly decontaminated by pressure washing using an industrial grade cleaning agent as required. The rinsate will be processed as required and discharged.

(6) Any solids accumulated during the above procedures will be drummed, analyzed for TC constituents, and disposed of off-site to an appropriately permitted landfill disposal facility. The estimated greatest volume of solids which could accumulate through the above described procedures would be four or fewer drums.

(7) The concrete slab will be pressure washed in the vicinity of all hazardous waste portions of the facility. The rinsate will be pumped from the collection sump into one or more of the cone bottom tanks for processing and discharge.

(8) The concrete slab, cone bottom tanks, separator, holding tank and connecting lines, valves and pumps will be wipe tested to ensure that all hazardous waste of hazardous waste residues have been eliminated. The wipe test will be analyzed for the TCLP constituents. If the results of the wipe test indicate that further decontamination is required, the above procedures will be repeated as necessary.

(9) Upon completion of closure, IWS will submit to DER within 60 days a certification by an independent professional engineer, registered in the State of Florida, certifying that the hazardous waste portion of the facility has been closed in accordance with the provisions of the approved closure plan. After certification, the closed

hazardous waste portion of the facility will be placed in service for processing non-hazardous waste.

c. Maximum Waste Inventory

The maximum inventory of wastes on-site at any time during the operating life of the facility will be only the D018 TC benzene contaminated wastewater stored in tanks or in feed lines leading to the oil/water separator.

d. Removal of Wastes and Containment Systems

At the time of closure, no waste is anticipated to be on-site that will not be treated in the separator. To assure that no wastes remain at the facility, hazardous wastes in the tanks will be pumped and all piping will be flushed.

e. Schedule for Closure

The following schedule represents an estimate for closure of the existing and proposed RCRA treatment and storage facilities. The start date for each schedule will depend upon approvals and authorization by the regulatory agency monitoring IWS operations. The various tasks outlined run consecutively.

Process tank contents; decontaminate tanks, lines, pumps, valves and concrete slab........................15 days

Testing and analysis ..........................30 days

Closure Certification and Report to DER .......30 days

Total . . . . . . . 75 days

2. Post Closure Plan

A post-closure plan is not required because this is not a land disposal facility; all wastes will be removed and hazardous waste units fully decontaminated at time of closure, precluding the need for post-closure care.

3. Closure Plans Previously Submitted

A Closure Plan for the existing hazardous waste units currently operating under interim status was submitted to the Environmental Protection Agency in February 1992.

Closure Cost Estimate
Industrial Water Systems, Inc.

M/F Project No. 9122-02-1
April 1993

| No. | Description | Quantity | Unit | Unit Cost | Amount |
|---|---|---|---|---|---|
| Closure of Existing Units | | | | | |
| 1 | Treatment and disposal of waste in tanks plus rinsate. | 80,000 | gal | $0.30 | $24,000.00 |
| 2 | Cleaning of all tanks, slab, and equipment. | | | | |
| | Labor | 160 | hrs | $25.00 | $4,000.00 |
| | Supervisor | 2 | wk | $1,000.00 | $2,000.00 |
| | Equipment & Supplies | 1 | LS | $2,000.00 | $2,000.00 |
| | Contractor's O&P | 25 | % | $8,000.00 | $2,000.00 |
| 3 | Analytical Work - TCLP analyses | 9 | ea | $1,400.00 | $12,600.00 |
| 4 | Solids disposal | 8 | drums | $250.00 | $2,000.00 |
| 5 | Administrative Costs | 40 | hrs | $40.00 | $1,600.00 |
| 6 | Engineer's certification | 16 | hrs | $75.00 | $1,200.00 |
| | SUBTOTAL | | | | $51,400.00 |
| 7 | Contingency @ 10% | | | | $5,140.00 |
| | TOTAL EXISTING TANKS | | | | $56,540.00 |
| Closure of Proposed TSD Facility | | | | | |
| 8 | Treatment and disposal of waste in tanks. | 91,475 | gal | $0.30 | $27,442.50 |
| 9 | Cleaning of all tanks, slab, and equipment. | | | | |
| | Labor | 160 | hrs | $25.00 | $4,000.00 |
| | Supervisor | 2 | wk | $1,000.00 | $2,000.00 |
| | Equipment & Supplies | 1 | LS | $2,000.00 | $2,000.00 |
| | Contractor's O&P | 25 | % | $8,000.00 | $2,000.00 |
| 10 | Analytical Work - TCLP analyses | 24 | ea | $1,400.00 | $33,600.00 |
| 11 | Solids disposal | 12 | drums | $250.00 | $3,000.00 |
| 12 | Administrative Costs | 40 | hrs | $40.00 | $1,600.00 |
| 13 | Engineer's certification | 16 | hrs | $75.00 | $1,200.00 |
| | SUBTOTAL | | | | $76,842.50 |
| 14 | Contingency @ 10% | | | | $7,684.25 |
| | TOTAL PROPOSED TANKS | | | | $84,526.75 |

# P. INFORMATION REGARDING POTENTIAL RELEASES

## P. Information Regarding Potential Releases From Solid Waste Management Units

Facility name: Industrial Water Services, Inc.

EPA I.D. Number: FLD 981 928 484

Location: City Jacksonville

State Florida

1. Are there any of the following solid waste management units (existing or closed) at your facility?
**NOTE: DO NOT INCLUDE HAZARDOUS WASTES UNITS CURRENTLY SHOWN IN YOUR PART B APPLICATION**

| | YES | NO |
|---|---|---|
| ■ Landfill | | |
| ■ Surface impoundment | | |
| ■ Land farm | | |
| ■ Waste pile | | |
| ■ Incinerator | | |
| ■ Storage tank | X | |
| ■ Container storage area | | |
| ■ Injection wells | | |
| ■ Wastewater treatment units | X | |
| ■ Transfer stations | | |
| ■ Waste recycling operations | | |
| ■ Land treatment facility | | |

2. If there are "Yes" answers to any of the items in 1. above, please provide a description of the wastes that were stored, treated or disposed of in each unit. In particular please focus on whether or not the wastes would be considered as hazardous wastes or hazardous constituents under RCRA. Also include any available data on quantities or volumes of wastes disposed of and the dates of disposal. Please also provide a description of each unit and include capacity, dimensions, and location at facility. Provide a site plan if available.

Industrial Water Services, Inc. receives and treats used oil and water contaminated motor and fuel oils. Storage tanks include receiving tanks, treatment tanks, treated water and treated motor and fuel oil tanks. The only hazardous substance received, as defined under RCRA, is TC Benzene contaminated wastewater. A description of the storage tanks and their location is included in Section Q of this application.

**NOTE: HAZARDOUS WASTES ARE THOSE IDENTIFIED IN 40 CFR PART 261. HAZARDOUS CONSTITUENTS ARE THOSE LISTED IN APPENDIX VIII OF 40 CFR PART 261.**

3. For the units noted in 1. above **and also those hazardous waste units in your Part B application,** please describe for each unit any data available on any prior or current releases of hazardous wastes or constituents to the environment that may have occurred in the past or still be occurring.

Please provide the following information:

a. Date of release
b. Type of waste released
c. Quantity or volume of waste released
d. Describe nature of release (i.e., spill, overflow, ruptured pipe or tank, etc.)

Not Applicable

4. In regard to the prior releases described in 3. above, please provide (for each unit) any analytical data that may be available which would describe the nature and extent of environmental contamination that exists as a result of such releases. Please focus on concentrations of hazardous wastes or constituents present in contaminated soil or ground water.

Not Applicable

## Signature and Certification

The following certification must be included with the submittal of this information. The certification must be signed by a principal executive officer of at least the level of Vice President or by a duly authorized representative of that person.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments. Based on my inquiry of those individuals immediately responsible for obtaining the information, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. Thomas Dudley
Signature

A. Thomas Dudley, President
Name and Title (typed)

Industrial Water Services, Inc.
Facility Name

Date: 4/28/93 Telephone: (904) 354-0372

# Q. INFORMATION FOR SOLID WASTE UNITS

## Q. INFORMATION REQUIRED FOR SOLID WASTE MANAGEMENT UNITS

### 1. General Information

Industrial Water Services, Inc. (IWS) is an industrial wastewater treatment facility that treats oily wastewater. The treated oils are sold primarily as boiler fuel oil to various industries in the area. IWS holds an industrial discharge permit from the City of Jacksonville that allows IWS to discharge treated effluent to the Buckman Street Sewage Treatment Plant. IWS has been operating in this capacity since 1986.

The solid waste management units consist of storage and treatment tanks which are described herein. The general type of tank, estimated dimensions and general structural description are provided in Table Q-1. Historically, fuel and petroleum storage operations have been on-going at the site since the early to mid 1950's when the property was owned by Seaboard Coastline Railroad and operated by American Mineral Spirits. At that time, Tank Nos. 5 and 7 were used to store mineral spirits and diesel fuel was stored in tanks 3 and 4. American Mineral Spirits abandoned the property in 1960.

The property was purchased again in the mid 1960's by Coppedge and was used for diesel fuel storage. In the early 1970's, Radiant Oil Company purchased the property and installed Tank Nos. 1, 2, and 6 to provide additional diesel fuel storage. Radiant Oil Company sold the property to Mid-Florida Gas Company in 1978 but no activity occurred on the site from 1978 to 1984.

In March 1984, the property was purchased by Sun Coast Fuels, owned and operated by the current property owner, A. Thomas Dudley. Sun Coast Fuels also operated as a diesel storage facility until in 1986 when the facility was converted to an industrial water treatment facility.

### 2. Description of Solid Waste Management Units

Current on-site structures include 26 storage tanks and 14 treatment tanks. Figure A-1 shows each tank location of all tanks currently in operation except for Tank 7 which will be removed to allow construction of the new hazardous waste treatment and storage facility. The function of all of tanks currently in operation is included in Table Q-1.

### 3. Information Pertaining to Releases

Information available to IWS regarding release of hazardous waste or constituents from the identified solid waste management units was provided to A.T. Kearney, Inc. in the course of the RCRA Facility Assessment (RFA) conducted on behalf of the U.S. EPA, Region IV. The RFA is currently under review by the EPA in Atlanta. The EPA's review is expected to be complete in late September of 1992. A list of documents submitted is given below:

a. <u>Site Screening Report - Suncoast Fuels in Jacksonville, Florida; Site #J45</u> by U.S. Environmental Protection Agency. ESD Project #86E-184, Author: Hugh C. Vick. December 1985.

b. <u>Environmental Assessment with Groundwater Investigations for Industrial Water Services, Inc. Jacksonville, Florida</u> by Total Environmental Activity Management, Inc. (T.E.A.M.) Project No. 1006, April 1, 1991.

c. <u>Analytical Report</u> by First Coast Environmental Laboratory, Inc. FEEL Lab # 9203-161, April 24, 1992.

4. <u>Sampling and Analysis Data</u>

No sampling or analysis of soil or groundwater has been conducted at the request of the Agency to complete the RFA conducted by A.T. Kearney. Any analytical data available for each of the potential tanks is identified in the section with the studies and reports enumerated above.

TABLE Q-1
INDUSTRIAL WATER SERVICES, INC.
JACKSONVILLE, FLORIDA

| No. | NAME | CAPACITY (Gallons) | HEIGHT (Feet) | DIAMETER (Feet) | FUNCTION |
|---|---|---|---|---|---|
| | | - - - T A N K | | D A T A - - - | |
| RECEIVING TANKS | | | | | |
| 1 | Receiving | 27,500 | 12.25 | 22 | Storage |
| 2 | Receiving | 27,500 | 12.25 | 22 | Storage |
| 3A | Oily Water | 15,000 | 10.5 | 18 | Storage |
| 3B | Oily Water | 15,000 | 10.5 | 18 | Storage |
| 4A | Oily Water | 10,000 | 10.5 | 14 | Storage |
| 5 | Oily Water | 210,000 | 29.25 | 39 | Treatment/Storage |
| 8 | Slop | 10,933 | 8 | 17 | Storage |
| A | Segregated | 5,500 | 14 | 9 | Storage |
| B | Segregated | 5,500 | 14 | 9 | Storage |
| C | Segregated | 6,000 | 15 | 9 | Storage |
| D | Segregated | 6,000 | 15 | 9 | Storage |
| E | Segregated | 6,000 | 15 | 9 | Storage |
| F | Segregated | 6,000 | 15 | 9 | Storage |
| EDT | Segregated | 5,000 | 13 | 9 | Storage |
| WDT | Segregated | 5,000 | 13 | 9 | Storage |
| E40 | DAF Skim | 8,000 | 20 | 9 | Storage |
| M41 | DAF Skim | 10,000 | 28 | 9 | Storage |
| W42 | DAF Skim | 10,000 | 28 | 9 | Storage |
| FRAC 1 | Segregated | 20,000 | 10.5 | N/A | Storage |
| TREATED WATER STORAGE TANKS | | | | | |
| 6 | Tank Btms | 60,000 | 25 | 23 | Storage |
| 7a | Treated | 80,000 | 18 | 24 | Storage |
| 7b | Treated | 80,000 | 18 | 24 | Storage |
| 9 | Treated | 40,000 | 33 | 8 | Storage |
| 30 | Treated | 10,000 | 25 | 9 | Storage |
| 31 | Treated | 12,000 | 28 | 10 | Storage |
| 32 | Treated | 12,000 | 28 | 10 | Storage |
| 33 | Treated | 8,000 | 22 | 9 | Storage |
| 34 | Treated | 12,000 | 28 | 10 | Storage |
| 35 | Treated | 8,000 | 28 | 8 | Storage |
| 36 | Treated | 20,000 | 32 | 12 | Storage |
| 37 | Treated | 20,000 | 32 | 12 | Storage |
| TREATED OIL STORAGE TANKS | | | | | |
| 4B | Low Flash | 20,000 | 10.5 | 20 | Storage |
| 10 | Oil | 6,000 | 15 | 9 | Storage |
| 11 | Oil | 6,000 | 15 | 9 | Storage |
| 12 | Oil | 8,000 | 20 | 9 | Storage |
| 13 | Oil | 6,000 | 15 | 9 | Storage |
| 14 | Oil | 8,000 | 20 | 9 | Storage |
| 16 | Oil | 16,000 | 20 | 13 | Treatment/Storage |
| 17 | Oil | 8,000 | 20 | 9 | Storage |
| 18 | Oil | 8,000 | 20 | 9 | Storage |
| 19 | Oil | 8,000 | 20 | 9 | Storage |
| 20 | Oil | 8,000 | 20 | 9 | Storage |
| 21 | Oil | 8,000 | 20 | 9 | Storage |
| 22 | Oil | 8,000 | 20 | 9 | Storage |
| 23 | Oil | 10,000 | 25 | 9 | Storage |
| 24 | Oil | 16,000 | 40 | 9 | Storage |
| 25 | Oil | 16,000 | 40 | 9 | Storage |
| 26 | Oil | 16,000 | 40 | 9 | Storage |
| 27 | Oil | 8,000 | 20 | 9 | Storage |

TABLE Q-1 (Cont.)
INDUSTRIAL WATER SERVICES, INC.
JACKSONVILLE, FLORIDA

| | | | | |
|---|---|---|---|---|
| TREATMENT TANKS | | | | |
| 38 | DAF Agit. | 10000 | N/A | N/A Treatment |
| 39 | DAF Agit. | 10000 | N/A | N/A Treatment |
| 44 | Oil/Water Sep. | 20000 | N/A | N/A Treatment |
| 45 | DAF Unit | 34000 | N/A | N/A Treatment |
| 46 | Centrifuge | N/A | N/A | N/A Treatment |
| HW5 | Oil/Water Sep. | 2500 | N/A | N/A Treatment |
| 48 | Sludge Dryer | N/A | N/A | N/A Treatment |
| 49 | Sep. HC | N/A | N/A | N/A Treatment |
| 50 | Acid | N/A | N/A | N/A Treatment |
| HW1 | Wastewater | 7000 | 20 | 8 Treatment/Storage |
| HW2 | Wastewater | 7000 | 20 | 8 Treatment/Storage |
| HW3 | Wastewater | 7000 | 20 | 8 Treatment/Storage |
| HW4 | Fuel Oil | 7000 | 20 | 8 Treatment/Storage |
| HW6a | Effluent Sump | 650 | N/A | N/A Treatment |
| HW6b | Oil Sump | 325 | N/A | N/A Treatment |
| | | =========== | | |

| | |
|---|---|
| Summary of Storage Tanks | |
| Raw Water: | 429,933 |
| Fin Water: | 362,000 |
| Oil: | 191,000 |
| | =========== |
| Total Storage Cap.: | 982,933 |
| Total Tank Capacity: | 1,060,408 |

# R. PROCESS VENTS

R. PROCESS VENTS

1. Closed Vent System

The current maximum, total organic emission rates for process vents will not be exceeded by the proposed facility. The rates, as stated in 40 CFR Part 264.1032, require facilities to reduce emissions to below 3.0 lb./hr. and 3.1 tons/yr. The proposed facility will not exceed these minimum standards and, therefore, a closed vent system with associated control device should not be required.

2. Documentation of Compliance

a. Process Vent Identification

The vents which are subject to the provisions of 40 CFR Part 264 Subpart AA include the vents associated with the storage tanks, oil/water separator, the effluent sump, and the oil sump. These vents are shown on Figure C-1. The storage tank vents have been designated as process vents due to the fact that minor oil water separation occurs during prolonged holding periods. The contaminated gasoline storage tank (HW-4) is also used for further gravity separation of the oily waste from the oil sump (HW-6b).

Two types of VOC emissions are anticipated to occur in the operation of the tank systems as follows:

(i) Fixed Roof Breathing Losses - These losses occur when oil or gasoline contaminated wastewater is allowed gravity separate in the storage tanks. For the purposes of this report, it is assumed that the emissions of VOCs from floating gasoline or fuel oil in contaminated water will be similar to that of pure gasoline.

(ii) Fixed Roof Working Losses - These losses occur when contaminated wastewater or gasoline is pumped into a tank. The resulting air displacement contains VOC emissions. For Tanks HW-1 through HW-3, it is assumed that the VOCs inside the tank are negligible when the tank is empty and that only 1 percent by volume of the incoming wastewater is gasoline. For Tank HW-4, it is assumed that the entire tank is waste fuel oil or gasoline.

The annual throughput of benzene contaminated wastewater is six million gallons and the estimated annual operating hours of each process unit is 667 hours. The estimated emission rates for the process vents under normal operating conditions is summarized in Table R-1.

Table R-1

Summary of Process Vent Emission Rates

| Unit | VOC (lb/hr) | Emission Rates (ton/yr) |
|---|---|---|
| Storage Tanks HW1-3 | 0.12 | 0.40 |
| Storage Tanks HW4 | 0.43 | 0.71 |
| Oil/Water Separator | 0.13 | 0.06 |
| Effluent Sump | 2.15 | 0.90 |
| Oil Sump | 0.54 | 0.23 |
| TOTAL | 0.72 | 1.40 |

b. <u>Supporting Data</u>

The maximum hourly VOC emissions will occur during tanker truck off-loading to a storage tank while the oil/water separator is in operation and the oil sump is pumping to the contaminated gasoline storage tank.

The maximum hourly VOC emission shown in Table R-Z of 2.36 lb/hr is for the worst case scenario with each of the four storage tanks being filled simultaneously, the oil/water separator in operation and both the oil and effluent sumps being filled during the maximum process time. This hypothetical scenario would produce the maximum fixed roof working losses. As the facilities are currently designed, this scenario could not occur because of pumping limitations.

Process vent emission rate calculations are shown in Table R-2. Sources for rate calculations are listed below:

(1) "Compilation of Air Pollution Emission Factors," USEPA
(2) "Chemical Engineer's Handbook," Perry
(3) "Flammable and Combustible Liquids Code," <u>NFPA 30</u>

TABLE R-2
EMISSION CALCULATIONS

Industrial Water Services, Inc.
Part II Hazardous Waste Permit Application
M/F Project No. 9122-02-1

Storage and Process Tank Emissions

General Formula: Total Losses, L = Fixed Roof Breathing Losses, Lb +
Fixed Roof Working Losses, Lw

Fixed Roof Breathing Losses, Lb:

$$Lb = 2.26 \times 10^{-2}\ Mv(P/(Pa-P))^{0.68}\ D^{1.73}\ H^{0.51}\ T^{0.50}\ FpCN$$

Where,

Lb = (lbs/yr)
Mv = molecular wt of vapor (lbs/lb mole)
Pa = atmospheric pressure (psia)
P = true vapor pressure at bulk liquid conditions (psia)
D = tank diameter (ft)
H = average vapor space height (ft)
T = average ambient diurnal temperature change (deg F)
Fp = paint factor (dimensionless)
C = adjustment for small diameter tanks (dimensionless)
N = number of tanks

Fixed Roof Working Losses, Lw:

$$Lw = 2.4 \times 10^{-5}\ MvVpPVFKnN$$

Where,

Lw = (lbs/yr)
Mv = molecular wt of vapor (lbs/lb mole)
Vp = percentage by volume of volatile compound in liquid (%)
P = true vapor pressure at bulk liquid conditions (psia)
V = tank capacity (gals)
F = number of turnovers per year (dimensionless)
Kn = turnover factor (dimensionless)
N = number of tanks

Determination of Equation Parameters

Molecular wt of vapor (lbs/lb mole):
Gasoline, Mv = 96 lbs/lb mole
Percentage by Volume of volatile compounds in bulk liquid (%)
In-coming waste, Vp = 1.00%
Oil Sump discharge, Vp = 100.00%
Atmospheric pressure (psia)
Pa = 14.7 psia
True vapor pressure at bulk liquid conditions (psia)
Assume 90 deg F which exceeds the mean average temp of 68 deg F
P = 2.544 psia (simulates Benzene and similiar to hexane)

Tank diameter (ft)

| | | |
|---|---|---|
| Storage Tanks, D = | 8 | ft |
| O/W Separator, D = | 9.0 | ft |
| Oil Sump, D = | 3.2 | ft |
| Effluent Sump, D = | 4.5 | ft |

Average vapor space height (ft)

| | | |
|---|---|---|
| Storage Tanks, H = | 9.5 | ft |
| O/W Separator, H = | 1 | ft |
| Oil Sump, H = | 3 | ft |
| Effluent Sump, H = | 3 | ft |

Average ambient diurnal temperature change (deg F)

T = 21.5 Deg F (National Climatic Data Service)

Paint factor (dimensionless) Color: light grey

Fp = 1.33 (Source: EPA)

Adjustment for small diameter tanks (dimensionless)

| | |
|---|---|
| Storage Tanks, C = | 0.44 |
| O/W Separator, C = | 0.47 |
| Oil Sump, C = | 0.17 |
| Effluent Sump, C = | 0.22 |

N = number of tanks

| | |
|---|---|
| Storage Tanks, N = | 4 |
| O/W Separator, N = | 1 |
| Oil Sump, N = | 1 |
| Effluent Sump, N = | 1 |

Tank capacity (gals)

| | | |
|---|---|---|
| Storage Tanks, V = | 7000 | gal |
| O/W Separator, V = | 2600 | gal |
| Oil Sump, V = | 325 | gal |
| Effluent Sump, V = | 650 | gal |

Number of turnovers per year (dimensionless) (Based on 15,000 gpd process flow)

| | |
|---|---|
| Storage Tanks HW1-3, F = | 286 |
| Storage Tanks HW4, F = | 29 |
| O/W Separator, F = | 1 |
| Oil Sump, F = | 166 |
| Effluent Sump, F = | 2352 |

Turnover factor (dimensionless)

| | |
|---|---|
| Storage Tanks HW1-3, Kn= | 0.3 |
| Storage Tanks HW4, Kn= | 1 |
| O/W Separator, Kn= | 1 |
| Oil Sump, Kn = | 0.35 |
| Effluent Sump, Kn= | 0.2 |

Note: High turnover rate in effluent sump and 85 to 90% removal of volatile compounds in oil/water separator should minimize fixed roof breathing and working losses.

Computation of Fixed Roof Breathing and Working Losses

| Tank | Breathing Losses Lb (lb/yr) | Breathing Losses Lb (lb/day) | Working Losses Lw (lb/yr) | Working Losses Lw (lb/day) | Total Losses L (lb/yr) | Total Losses L (lb/day) |
|---|---|---|---|---|---|---|
| Storage Tanks HW1-3 | 702 | 1.92 | 106 | 0.29 | 807 | 2.21 |
| Storage Tank HW4 | 234 | 0.64 | 1185 | 3.25 | 1419 | 3.89 |
| O/W Separator | 97 | 0.27 | 15 | 0.04 | 113 | 0.31 |
| Oil Sump | 10 | 0.03 | 443 | 1.21 | 453 | 1.24 |
| Effluent Sump | 0 | 0.00 | 2 | 0.00 | 2 | 0.00 |
| Total | 1043 | 2.86 | 1751 | 4.80 | 2794 | 7.65 |

Annual VOC Emission Rate = (L/2000 lb/ton) = 1.40 ton/yr
Hourly VOC Emission Rate = (Lb/24 +Lw/8) = 0.72 lbs/hr

Maximum Process Time = (500,000 gal/mo)x(1 mo/4.333 wk) x
(1 wk/6 day)x(1 hr/60 min)/(150 gpm) = 2.14 hrs

Max VOC Emission Rate = (Lb/24 +Lw/Tmax) = 2.36 lbs/hr

# S. REQUIREMENTS FOR EQUIPMENT

## S. Requirements for Equipment

### 1. Equipment Identification

The IWS equipment subject to the 40 CFR Part 264 Subpart BB regulations include the transfer pumps, sump pumps, basket strainers, and associated valves. A summary of the equipment is provided in Table S-1 and includes the following:

a. Equipment identification number (unit designation is not required because there is only one facility).

b. Type of equipment.

c. Percent by weight of organics in waste stream.

d. Hazardous waste state (e.g. gas/vapor or liquid).

e. Method of compliance with Subpart BB standards.

The proposed location for the equipment is shown on the plot plan on Figure C-1 and designated on the Piping and Instrumentation Diagram (Figure C-2).

### 2. Closed Vent System

The total fugitive emissions from process equipment will not exceed the minimum total organic emission rates as set forth in 264.1032. Estimated emission rates are based on S.O.C.M.I. factors as shown in Table S-2.

Table S-2
Fugitive Emissions from Pumps, Valves, and Flanges

| Item | No. of Items | SOCMI Factor (lb/item/hr) | VOC Emission Rate (lb/hr) |
|---|---|---|---|
| Valves | 25 | 0.0065 | 0.163 |
| Flanges | 50 | 0.0050 | 0.250 |
| Pumps | 5 | 0.0873 | 0.437 |
| Total | | | 0.850 |

Table S-1
Industrial Water Services, Inc.
Hazardous Waste Management Facility
Equipment Identification List

| Equipment No. | Type | % by WT | State | Method of Compliance |
|---|---|---|---|---|
| Pump No.1 | Transfer Pump | 1 to 22 | liquid | Weekly inspection |
| BS-1 | Basket Strainer | 1 to 22 | liquid | Weekly inspection |
| BS-2 | Basket Strainer | 1 to 22 | liquid | Weekly inspection |
| Pump No.2 | Transfer Pump | 1 to 22 | liquid | Weekly inspection |
| Pump No.3 | Sump Pump | 1 to 22 | liquid | Weekly inspection |
| Pump No.4 | Sump Pump | 1 to 22 | liquid | Weekly inspection |
| Pump No.5 | Sump Pump | 1 to 22 | liquid | Weekly inspection |
| V-1 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-2 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-3 | Ball Valve | 1 to 22 | liquid | Weekly inspection |
| V-4 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-5 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-6 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-7 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-8 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-9 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-10 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-11 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-12 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-13 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-14 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-15 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-16 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-17 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-18 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-19 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-20 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-21 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-22 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-23 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-24 | Gate Valve | 1 to 22 | liquid | Weekly inspection |
| V-25 | Gate Valve | 1 to 22 | liquid | Weekly inspection |