

**WASTEWATER STREAM  
CHARACTERIZATION FOR  
TA-53-22, 39, 43, 408, 414, 422,  
432, 443, 449, 462, 463, 470, 473,  
482, 502, 514, 688, 689, 716, 744,  
754, 804, 805, 816, 839, 843, 1050  
and 1136**

**at  
Los Alamos National Laboratory**

**ENVIRONMENTAL STUDY**

**CHARACTERIZATION REPORT #36**

**Los Alamos**

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WASTEWATER STREAM  
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514, 688, 689, 716, 744, 754, 804, 805,  
816, 839, 843, 1050 and 1136

ENVIRONMENTAL STUDY

prepared for:  
THE LOS ALAMOS NATIONAL LABORATORY  
Los Alamos, New Mexico

under subcontract 9XG8-2874P-1

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## EXECUTIVE SUMMARY

Buildings TA-53-22, 39, 43, 408, 414, 422, 432, 443, 449, 462, 463, 470, 473, 482, 502, 514, 688, 689, 716, 744, 754, 804, 805, 816, 839, 843, 1050, and 1136 were visited to document all drain piping and building outfalls and to make permitting recommendations. Thirty-two pipes were found exiting the buildings, as follows:

1. from TA-53-22, one sanitary sewer connection, one water heater relief valve drain, one domestic water backflow preventer discharge and three fire protection drains,
2. from TA-53-39, one sanitary sewer connection, two water heater relief valve drains, three condensed water drains and one fire protection drain,
3. from TA-53-43, one sanitary sewer connection, one water heater relief valve drain and five condensed water drains,
4. from TA-53-408, one sanitary sewer connection, one water heater relief valve drain and one condensed water drain from an evaporative cooler,
5. from TA-53-422, one condensed water drain,
6. from TA-53-449, one condensed water drain,
7. from TA-53-470, one condensed water drain,
8. from TA-53-473, one condensed water drain,
9. from TA-53-482, one condensed water drain,
10. from TA-53-502, one mixed waste sewage connection to pumping station, one domestic water back flow preventer discharge and one water heater relief valve drain,
11. from TA-53-514, one condensed water drain.

Buildings TA-53-414, 432, 443, 462, 463, 688, 689, 716, 744, 754, 804, 805, 816, 839, 743, 1050 and 1136 do not have any water supplies or drains.

Recommendations for repiping area provided to allow outfall consolidation to minimize permit maintenance requirements and to bring the facility into compliance with the Laboratory's NPDES Permit. Floor drain plugging is recommended where the potential for discharge of pollutants exists.

A Waste Stream Database has been prepared, listing the waste water type and flow rate for each outfall.

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## 1.0 INTRODUCTION

During May, 1992, Mark E. Wendt of Santa Fe Engineering (SFE) toured buildings 22, 39, 43, 408, 414, 422, 432, 443, 449, 462, 463, 470, 473, 482, 502, 514, 688, 689, 716, 744, 754, 804, 805, 816, 839, 843, 1050 and 1136 in TA-53. The purpose of this study is to identify building drain piping, locate outfalls which discharge into the environment and to characterize the wastewater flows and sources existing at the time of the visit. This report will not reflect any subsequent changes in piping or operations. The Waste Stream Characterization Policy of September 10, 1992, was followed for this study. The following tasks were performed for this purpose:

- 1 Building drains and all piping exiting the building were identified and laid out in schematic form;
2. Wastewater sources were identified at each drain and the wastewater was characterized according to the flow rate and quality. The locations of outfalls and their potential sources of discharges were determined. Potential pollutants were also noted;
3. NPDES Permit application for discharges of clean water were not prepared since these discharges do not require permitting at this time and
4. potential problems were identified and recommendations were made for repiping, floor drain plugging and spill containment, where deemed appropriate.

The field investigation proceeded by verifying drain schematic drawings prepared by SFE for the appropriate buildings (Figures 1 through 12) from drawings provided by Los Alamos National

Laboratory (LANL) Facilities Engineering Division. The other buildings were visited to insure that no drains exist for the buildings. The following process was used to define drain piping and characterize the wastewater streams:

1. Laboratory engineering drawings were use to prepare the SFE drain piping schematic. The Solid Waste Stream Characterization conducted by IT Corporations was reviewed. The National Pollutant Discharge Elimination System Permit (NPDES), the 1990 NPDES Permit Application submitted by Los Alamos National Laboratory (LANL) in September, 1990, the latest Federal Facilities Compliance Agreement (FFCA) between the Department of Energy (DOE) and the Environmental Protection Agency (EPA) and the Administrative Order (AO) Docket Number V1-92-1306 issued by EPA to the University of California were used for reference;
2. A site visit was performed to verify the SFE drain schematics and to identify potential outfall pipes exiting the building. The visit entailed a room by room inspection of wastewater sources and drains. Interviews with site personnel were conducted to assist in wastewater characterization and
3. SFE verified drain piping by dye checking.

## 2.0 FIELD INVESTIGATION

The pipes exiting the building have been assigned an Outlet Piping Number. The four part number, sequentially, identifies the Technical Area where the pipe is located, the building from which the pipe discharges, the letters OPN to indicate that it is an outlet piping number and the unique number for the pipe. The piping exiting the building will be labeled for easy identification in the future.

Each drain has a unique identification number. Each number consists of three parts. The first part is the floor the drain is on. The second part has letters that indicate the drain type (abbreviations used are summarized in Table 13). The final part is a unique number for each drain. For example, the floor drain numbering on the first floor would start is 1FD1. The roof drains do not have the number identifying the floor such as RD1 for Roof Drain 1.

The function of each pipe exiting from buildings are listed in Appendix 1, Tables 1 through 11, with non-drain recommendations in Table 12 and an abbreviations list in Table 13. Appendix 2 contains the wastestream characterization database output, listing wastewater source, flow rates and periodicity information for each outfall drain. Completed EPA forms are in Appendix 3 for appropriate outfalls. Appendix 4 provides information about the dye study of building drains. Flow schematics of the drains from each building are attached in Appendix 5 as Figures 2 through 12. A Site Plan is included in Appendix 5 as Figure 1 illustrating the locations of buildings included in this report.

### **3.0 RECOMMENDATIONS FOR BUILDING WITH NO SOURCE OF WATER AND NO DRAINS.**

Buildings 53-414, 432, 443, 462, 463, 688, 689, 716, 744, 754, 804, 805, 816, 839, 843, 1050 and 1136 do not have drains or any source of water. No changes or permitting are recommended. No EPA forms were prepared.

### **4.0 RECOMMENDATIONS FOR BUILDING 53-22**

Table 1 is a list of the drains to the building outfalls and Figure 2 is a schematic of the piping. The table lists the drains that connect to the outfall pipe and includes recommendations for changes to the drain piping. The discussion below gives the reasoning for the recommendation.

#### **4.1 Outfall 53-22-OPN-1**

This outfall receives flow from two hand washing sinks, one floor drain and one water fountain and flows to the TA-53 sanitary sewage collection system. It is recommended that all drains be labeled "Sanitary Waste Only-No Chemicals. No permitting or piping changes are recommended. No EPA forms were prepared.

#### **4.2 Outfall 53-22-OPN-2**

This outfall discharges from a water heater pressure relief valve to daylight next to the building. This outfall should be covered by a Notice of Intent to Discharge (NOI). No piping changes are recommended. No EPA forms have been prepared.

#### **4.3 Outfall 53-22-OPN-3**

This outfall discharges domestic water from a backflow preventer valve to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

#### **4.4 Outfalls 53-22-OPN-4, 53-22-OPN-5 and 53-22-OPN-6**

These outfalls are fire water system drains which discharge to daylight next to the building. These outfalls should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

### **5.0 RECOMMENDATIONS FOR BUILDING 53-39**

Table 2 is a list of the drains to the building outfalls and Figure 3 is a schematic of the piping. The table lists the drains that connect to the outfall pipe and includes recommendations for changes to the drain piping. The discussion below gives the reasoning for the recommendation.

#### **5.1 Outfall 53-39-OPN-1**

This outfall is from sanitary facilities and flows into a sewer manhole which drains into TA-53 sanitary sewage collection system. No chemicals are drained into any of the drains or fixtures. It is recommended that all drains be labeled "Sanitary Waste Only-No Chemicals". No permitting or piping changes are recommended. No EPA forms were prepared.

5.2 Outfalls 53-39-OPN-2, 53-39-OPN-3 and 53-39-OPN-6

These outfalls drain condensed water from mechanical cooling units to daylight next to building. Each of these outfalls should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

5.3 Outfall 53-39-OPN-4

This outfall is a fire water system drain which discharges to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed

5.4 Outfalls 53-39-OPN-5 and 53-39-OPN-7

These outfalls discharge from water heater pressure relief valves to daylight next to building. These outfalls should each be covered by an NOI. No permitting is required for these outfalls and no EPA forms have been prepared.

**6.0 RECOMMENDATIONS FOR BUILDING 53-43**

Table 3 is a list of the drains to the building outfalls and Figure 4 is a schematic of the piping. The table lists the drains that connect to the outfall pipe and includes recommendations for changes to the drain piping. The discussion below gives the reasoning for the recommendations.

6.1 Outfall 53-43-OPN-1

This outfall is from sanitary facilities and flows into a sewer manhole which drains into TA-53 sanitary sewage collection system. No chemicals are drained into any of the drains or fixtures. No permitting or piping changes are recommended. No EPA forms were prepared.

6.2 Outfalls 53-43 OPN-2, 53-43-OPN-4, 53-43-OPN-6 and 53-43-OPN-7

These outfalls drain condensed water from mechanical cooling units to daylight next to the building. These outfalls should each be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

6.3 Outfall 53-43-OPN-3

This outfall drains condensed water from an ice machine onto the ground in the building crawl space. This outfall should be covered by an NOI or piped to the sanitary sewer system. No EPA forms have been prepared for this outfall.

6.4 Outfall 53-43-OPN-5

This outfall discharges from a water heater pressure relief valve onto the ground in the building crawl space. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms have been prepared.

**7.0 RECOMMENDATIONS FOR BUILDING 53-408**

Table 4 is a list of the drains to the building outfalls and Figure 5 is a schematic of the piping. The table lists the drains that connect to the outfall pipe and includes recommendations for changes to the drain piping. The discussion below gives the reasoning for the recommendation.

7.1 Outfall 53-408-OPN-1

This outfall is from sanitary facilities and flows into a sewer manhole which drains into TA-53 sanitary sewage collection system. No chemicals are drained into any of the drains or

fixtures. No permitting or piping changes are recommended. No EPA forms were prepared.

### 7.2 Outfall 53-408-OPN-2

This outfall discharges from a water heater pressure relief valve to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms have been prepared.

### 7.3 Outfall 53-408-OPN-3

This outfall drains condensed water from an evaporative cooler to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

## 8.0 RECOMMENDATIONS FOR BUILDING 53-422

Table 5 is a list of the drains to the building outfall and Figure 6 is a schematic of the piping. The one building outfall discharges condensed water from a mechanical cooling unit to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

## 9.0 RECOMMENDATIONS FOR BUILDING 53-449

Table 6 is a list of the drains to the building outfall and Figure 7 is an schematic of the piping. The one building outfall discharges condensed water from a mechanical cooling unit to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

## **10.0 RECOMMENDATIONS FOR BUILDING 53-470**

Table 7 is a list of the drains to the building outfall and Figure 8 is a schematic of the piping. The one building outfall discharges condensed water from a mechanical cooling unit to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

## **11.0 RECOMMENDATIONS FOR BUILDING 53-473**

Table 8 is a list of the drains to the building outfall and Figure 9 is a schematic of the piping. The one building outfall discharges condensed water from a mechanical cooling unit to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

## **12.0 RECOMMENDATIONS FOR BUILDING 53-482**

Table 9 is a list of the drains to the building outfall and Figure 10 is a schematic of the piping. The one building outfall discharges condensed water from mechanical cooling unit to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

## **13.0 RECOMMENDATIONS FOR BUILDING 53-502**

Table 10 is a list of the drains to the building outfalls and Figure 11 is a schematic of the piping. The table lists the drains that connect to the outfall pipe and includes recommendations for changes to the drain piping. The discussion blow gives the reasoning for the recommendations.

### 13.1 Outfall 53-502-OPN-1

This outfall receives flow from one sink, one shower and one clothes washer and drains into a radioactive liquid waste (RLW) tank located below grade just to the west of this trailer which then discharges to the TA-53 RLW collection lagoon. This outfall could not be verified by dye testing because the sewage pump controls were in the process of being replaced and the pumps were not operating. It is recommended that this outfall be dye tested and verified by either the operating group or ENG-5 once the sewage pump controls are replaced. No EPA forms were completed for this outfall.

### 13.2 Outfall 53-502-OPN-2

This outfall discharges domestic water from a backflow preventer valve to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

### 13.3 Outfall 53-502-OPN-3

This outfall discharge from a water heater pressure relief valve to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

## 14.0 RECOMMENDATIONS FOR BUILDING 53-514

Table 11 is a list of the drains to the building outfall and Figure 12 is a schematic of the piping. The one building outfall discharges condensed water from a mechanical cooling unit to daylight next to the building. This outfall should be covered by an NOI. No piping changes are recommended. No EPA forms were completed.

## 15.0 CONCLUSION

This document provides the information to characterize buildings 22, 39, 43, 408, 414, 422, 432, 443, 449, 462, 463, 470, 473, 482, 502, 514, 688, 689, 716, 744, 754, 804, 805, 816, 839, 843, 1050 and 1136 of TA-53.

Permitting is not recommended for any of the following outfalls, as itemized below.

Areas that do not have any drains:

- |             |            |            |             |
|-------------|------------|------------|-------------|
| 1. 53-414   | 2. 53-432  | 3. 53-443  | 4. 53-462   |
| 5. 53-463   | 6. 53-688  | 7. 53-689  | 8. 53-716   |
| 9. 53-744   | 10. 53-754 | 11. 53-804 | 12. 53-805  |
| 13. 53-816  | 14. 53-839 | 15. 53-843 | 16. 53-1050 |
| 17. 53-1136 |            |            |             |

Areas that were not located and may have been salvaged:

1. 53-754

Discharges to TA-53 Sewage Treatment Plant:

- |                 |                |                |
|-----------------|----------------|----------------|
| 1. 53-22-OPN-1  | 2. 53-39-OPN-1 | 3. 53-43-OPN-1 |
| 4. 53-408-OPN-1 |                |                |

Discharges of radioactive wastewater to TA-53 Sewage Treatment Plant:

1. 53-502-OPN-1

Discharges from the fire water system:

- |                |                |                |
|----------------|----------------|----------------|
| 1. 53-22-OPN-4 | 2. 53-22-OPN-5 | 3. 53-22-OPN-6 |
| 4. 53-39-OPN-4 |                |                |

Discharges of condensed water:

- |     |              |     |              |     |              |
|-----|--------------|-----|--------------|-----|--------------|
| 1.  | 53-39-OPN-2  | 2.  | 53-39-OPN-3  | 3.  | 53-39-OPN-6  |
| 4.  | 53-43-OPN-2  | 5.  | 53-43-OPN-3  | 6.  | 53-43-OPN-4  |
| 7.  | 53-43-OPN-6  | 8.  | 53-43-OPN-7  | 9.  | 53-408-OPN-3 |
| 10. | 53-422-OPN-1 | 11. | 53-449-OPN-1 | 12. | 53-470-OPN-1 |
| 13. | 53-473-OPN-1 | 14. | 53-482-OPN-1 | 15. | 53-514-OPN-1 |

Discharges from hot water heaters:

- |    |             |    |              |    |              |
|----|-------------|----|--------------|----|--------------|
| 1. | 53-22-OPN-2 | 2. | 53-39-OPN-5  | 3. | 53-39-OPN-7  |
| 4. | 53-43-OPN-5 | 5. | 53-408-OPN-2 | 6. | 53-502-OPN-3 |

Discharges from backflow preventers:

- |    |             |    |              |
|----|-------------|----|--------------|
| 1. | 53-22-OPN-3 | 2. | 53-502-OPN-2 |
|----|-------------|----|--------------|

Recommended corrective actions are outlined in Tables 1 through 5 as well as in the above text. Correction action should be performed as soon as practicable to minimize the chance of unpermitted discharge of pollutants.

TABLE 1: TA53-22 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-22-OPN-1 SAN SEWER	1SD1	DEVEL. & TESTING	N/A	LABEL	NO
	1SD2	DEVEL. & TESTING	N/A	LABEL	
	1WF1	DEVEL. & TESTING	N/A	LABEL	
53-22-OPN-2	N/A	WATER HTR. DRAIN	N/A	NOI	NO
53-22-OPN-3	N/A	DOM. BFP DRAIN	N/A	NOI	NO
53-22-OPN-4	N/A	FIRE LINE DRAIN	N/A	NOI	NO
53-22-OPN-5	N/A	FIRE LINE DRAIN	N/A	NOI	NO
53-22-OPN-6	N/A	FIRE LINE DRAIN	N/A	NOI	NO

TABLE 2: TA53-39 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-39-OPN-1 SAN SEWER	1CD1	CRYOGENIC LAB	102	LABEL	NO
	1CD2	CRYOGENIC LAB	102	LABEL	
	1ED1	CRYOGENIC LAB	102	REMOVED	
	1SD1	SHOP	103	LABEL	
	1SD2	SHOP	103	LABEL	
	1SD3	CRYOGENIC LAB	102	REMOVED	
	1SD4	TARGET LAB	101	LABEL	
	1SP1	CRYOGENIC LAB	102	LABEL	
	1TL1	RESTROOM	103A	LABEL	
	1WF1	SHOP	103	LABEL	
53-39-OPN-2	N/A	CONDENS. WATER	EXTER.	NOI	NO
53-39-OPN-3	N/A	CONDENS. WATER	EXTER.	NOI	NO
53-39-OPN-4	N/A	FIRE LINE DRAIN	103	NOI	NO
53-39-OPN-5	N/A	WATER HTR. DRAIN	103	NOI	NO
53-39-OPN-6	N/A	CONDENS. WATER	EXTER.	NOI	NO
53-39-OPN-7	N/A	WATER HTR. DRAIN	102	NOI	NO

TABLE 3: TA53-43 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-43-OPN-1 SAN SEWER	1LV1	RESTROOM	N/A	NO CHANGE	NO
	1LV2	RESTROOM	N/A	NO CHANGE	
	1LV3	RESTROOM	N/A	NO CHANGE	
	1TL1	RESTROOM	N/A	NO CHANGE	
	1TL2	RESTROOM	N/A	NO CHANGE	
	1TL3	RESTROOM	N/A	NO CHANGE	
	1UR1	RESTROOM	N/A	NO CHANGE	
	1WF1	CORRIDOR	N/A	NO CHANGE	
53-43-OPN-2	N/A	CONDENS. WATER	EXTER.	NOI	NO
53-43-OPN-3	1IM1	CONDENS. WATER	N/A	NOI	NO
53-43-OPN-4	N/A	CONDENS. WATER	EXTER.	NOI	NO
53-43-OPN-5	N/A	WATER HTR. DRAIN	N/A	NOI	NO
53-43-OPN-6	N/A	CONDENS. WATER	EXTER.	NOI	NO
53-43-OPN-7	N/A	CONDENS. WATER	EXTER.	NOI	NO

TABLE 4: TA53-408 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-408-OPN-1 SAN SEWER	1LV1	BATHROOM	N/A	NO CHANGE	NO
	1LV2	RESTROOM	N/A	NO CHANGE	
	1SD1	CORRIDOR	N/A	NO CHANGE	
	1SD2	JANITOR'S CLOSET	N/A	NO CHANGE	
	1SH1	BATHROOM	N/A	NO CHANGE	
	1TL1	RESTROOM	N/A	NO CHANGE	
	1WF1	CORRIDOR	N/A	NO CHANGE	
53-408-OPN-2	N/A	WATER HTR. DRAIN	N/A	NOI	NO
53-408-OPN-3	N/A	CONDENS. WATER	ROOF	NOI	NO

TABLE 5: TA53-422 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-422-OPN-1	N/A	CONDENS. WATER	EXTER.	NOI	NO

TABLE 6: TA53-449 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-449-OPN-1	N/A	CONDENS. WATER	EXTER.	NOI	NO

TABLE 7: TA53-470 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-470-OPN-1	N/A	CONDENS. WATER	EXTER.	NOI	NO

TABLE 8: TA53-473 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-473-OPN-1	N/A	CONDENS. WATER	EXTER.	NOI	NO

TABLE 9: TA53-482 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-482-OPN-1	N/A	CONDENS. WATER	EXTER.	NOI	NO

TABLE 10: TA53-502 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-502-OPN-1 RLW	1CW1	UTILITY ROOM	N/A	VERIFY	NO
	1SD1	UTILITY ROOM	N/A	VERIFY	
	1SH1	SHOWER ROOM	N/A	VERIFY	
53-502-OPN-2	N/A	WATER BFP DRAIN	N/A	NOI	NO
53-502-OPN-3	N/A	WATER HTR. DRAIN	N/A	NOI	NO

TABLE 11: TA53-514 DRAIN SUMMARY

OUTFALL NUMBER	ID NUMBER	ROOM ACTIVITY	ROOM NUMBER	STATUS OR RECOMMENDATIONS	EPA FORM PREPARED
53-514-OPN-1	N/A	CONDENS. WATER	N/A	NOI	NO

TABLE 12: NON-DRAIN RECOMMENDATIONS

TA #	BLDG. #	ROOM/AREA	RECOMMENDATION
36	ALL	ALL SINK DRAINS	POST "NO CHEM. DN THIS DRAIN" SIGN

**TABLE 13**  
**SUMMARY OF ABBREVIATION**

<b>ABBREVIATION</b>	<b>MEANING</b>
BFP	Backflow Preventer
CD	Cup Drain
CW	Cloth. Washing Machine
ED	Emergency Eye Wash
IM	Ice Machine
LV	Lavatory
SD	Sink
SH	Shower
SP	Sump Pump
TL	Toilet
UR	Urinal
WF	Water Fountain
WH	Water Heater

REPORT #

36

TA	BLDG	OUTLET PIPING NO	EPA OUTFALL #	DRAIN #	ROOM #	DESCRIPTION	ROOM	FLOW RATE	PERIODICITY	SEASONAL	SOURCE TYPES
53	22	53-22-OPN-1	09S/SWSC	1SD1	N/A	DEVELOPMENT AND TESTING			5 DAYS A WEEK	No	HAND WASHING
53	22	53-22-OPN-1	09S/SWSC	1SD2	N/A	DEVELOPMENT AND TESTING			5 DAYS A WEEK	No	HAND WASHING
53	22	53-22-OPN-1	09S/SWSC	1WF1	N/A	DEVELOPMENT AND TESTING			5 DAYS A WEEK	No	DRINKING WATER
53	22	53-22-OPN-2	DAYLIGHT	N/A	N/A	DEVELOPMENT AND TESTING			FLOW IS NIL	No	WATER HEATER RELIEF VALVE
53	22	53-22-OPN-3	DAYLIGHT	N/A	N/A	DEVELOPMENT AND TESTING			FLOW IS NIL	No	BACKFLOW PREVENTER DRAIN
53	22	53-22-OPN-4	DAYLIGHT	N/A	N/A	DEVELOPMENT AND TESTING			ANNUAL TESTING	No	FIRE LINE DRAIN
53	22	53-22-OPN-5	DAYLIGHT	N/A	N/A	DEVELOPMENT AND TESTING			ANNUAL TESTING	No	FIRE LINE DRAIN
53	22	53-22-OPN-6	DAYLIGHT	N/A	N/A	DEVELOPMENT AND TESTING			ANNUAL TESTING	No	FIRE LINE DRAIN
53	39	53-39-OPN-1	09S/SWSC	1CD1	102	CYROGENIC LAB			FLOW IS NIL	No	RINSE WATER
53	39	53-39-OPN-1	09S/SWSC	1CD2	102	CYROGENIC LAB			FLOW IS NIL	No	RINSE WATER
53	39	53-39-OPN-1	09S/SWSC	1ED1	102	CYROGENIC LAB			NONE	No	EMERGENCY EYE WASH (REMOV
53	39	53-39-OPN-1	09S/SWSC	1SD1	103	SHOP			5 DAYS A WEEK	No	HAND WASHING/WATER BFP DR
53	39	53-39-OPN-1	09S/SWSC	1SD2	103	SHOP			5 DAYS A WEEK	No	HAND WASHING
53	39	53-39-OPN-1	09S/SWSC	1SD3	102	CYROGENIC LAB			NONE	No	SINK DRAIN (REMOVED)
53	39	53-39-OPN-1	09S/SWSC	1SD4	101	TARGET LAB			5 DAYS A WEEK	No	HAND WASHING
53	39	53-39-OPN-1	09S/SWSC	1SP1	102	CRYOGENIC LAB			7 DAYS A WEEK	No	SANITARY WASTEWATER
53	39	53-39-OPN-1	09S/SWSC	1TL1	103A	RESTROOM			5 DAYS A WEEK	No	TOILET
53	39	53-39-OPN-1	09S/SWSC	1WF1	103	SHOP			5 DAYS A WEEK	No	WATER FOUNTAIN
53	39	53-39-OPN-2	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	No	EQUIP. CONDENSED WATER DR
53	39	53-39-OPN-3	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	No	EQUIP. CONDENSED WATER DR
53	39	53-39-OPN-4	DAYLIGHT	N/A	103	SHOP			ANNUAL TESTING	No	FIRE LINE DRAIN
53	39	53-39-OPN-5	DAYLIGHT	N/A	103	SHOP			FLOW IS NIL	No	WATER HEATER RELIEF VALVE
53	39	53-39-OPN-6	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	No	EQUIP. CONDENSED WATER DR
53	39	53-39-OPN-7	DAYLIGHT	N/A	102	CRYOGENIC LAB			FLOW IS NIL	No	WATER HEATER RELIEF VALVE
53	43	53-43-OPN-1	09S/SWSC	1LV1	N/A	RESTROOM			5 DAYS A WEEK	No	LAVATORY
53	43	53-43-OPN-1	09S/SWSC	1LV2	N/A	RESTROOM			5 DAYS A WEEK	No	LAVATORY
53	43	53-43-OPN-1	09S/SWSC	1LV3	N/A	RESTROOM			5 DAYS A WEEK	No	LAVATORY
53	43	53-43-OPN-1	09S/SWSC	1TL1	N/A	RESTROOM			5 DAYS A WEEK	No	TOILET
53	43	53-43-OPN-1	09S/SWSC	1TL2	N/A	RESTROOM			5 DAYS A WEEK	No	TOILET
53	43	53-43-OPN-1	09S/SWSC	1TL3	N/A	RESTROOM			5 DAYS A WEEK	No	TOILET
53	43	53-43-OPN-1	09S/SWSC	1UR1	N/A	CORRIDOR			5 DAYS A WEEK	No	WATER FOUNTAIN
53	43	53-43-OPN-1	09S/SWSC	1UR1	N/A	RESTROOM			5 DAYS A WEEK	No	URINAL
53	43	53-43-OPN-2	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	No	EQUIP. CONDENSED WATER DR

REPORT #

36

TA	BLDG	OUTLET	EPA	DRAIN #	ROOM #	DESCRIPTION	ROOM	FLOW	PERIODICITY	SEASONAL	SOURCE TYPES
		PIPING NO	OUTFALL #								
53	43	53-43-OPN-3	DAYLIGHT	1IM1	N/A	CORRIDOR			FLOW IS NIL	No	ICE MACHINE DRAIN
53	43	53-43-OPN-4	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	No	EQUIP. CONDENSED WATER DR
53	43	53-43-OPN-5	DAYLIGHT	N/A	N/A	RESTROOM			FLOW IS NIL	No	WATER HEATER RELIEF VALVE
53	43	53-43-OPN-6	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	No	EQUIP. CONDENSED WATER DR
53	43	53-43-OPN-7	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	No	EQUIP. CONDENSED WATER DR
53	408	53-408-OPN-1	09S/SWSC	1LV1	N/A	BATHROOM			5 DAYS A WEEK	No	LAVATORY
53	408	53-408-OPN-1	09S/SWSC	1LV2	N/A	RESTROOM			5 DAYS A WEEK	No	LAVATORY
53	408	53-408-OPN-1	09S/SWSC	1SD1	N/A	CORRIDOR			5 DAYS A WEEK	No	COUNTERTOP SINK
53	408	53-408-OPN-1	09S/SWSC	1SD2	N/A	JANITOR'S CLOSET			5 DAYS A WEEK	No	SERVICE SINK
53	408	53-408-OPN-1	09S/SWSC	1SH1	N/A	BATHROOM			5 DAYS A WEEK	No	SHOWER
53	408	53-408-OPN-1	09S/SWSC	1TL1	N/A	RESTROOM			5 DAYS A WEEK	No	TOILET
53	408	53-408-OPN-1	09S/SWSC	1WF1	N/A	CORRIDOR			5 DAYS A WEEK	No	WATER FOUNTAIN
53	408	53-408-OPN-2	DAYLIGHT	N/A	N/A	RESTROOM			FLOW IS NIL	No	WATER HEATER RELIEF VALVE
53	408	53-408-OPN-3	DAYLIGHT	N/A	N/A	ROOF			FLOW IS NIL	Yes	CONDENSED WATER DRAIN
53	414	53-414	ND	N/A	N/A	TRAILER			NO FLOW	No	NONE
53	422	53-422	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	Yes	EQUIPMENT CONDENSED WATER
53	432	53-432	ND	N/A	N/A	TRAILER			NO FLOW	No	NONE
53	443	53-443	ND	N/A	N/A	TRAILER			NO FLOW	No	NONE
53	449	53-449-OPN-1	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	Yes	EQUIP. CONDENSED WATER DR
53	462	53-462	ND	N/A	N/A	TRAILER			NO FLOW	No	NONE
53	463	53-463	ND	N/A	N/A	TRAILER			NO FLOW	No	NONE
53	470	53-470-OPN-1	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	Yes	EQUIP. CONDENSED WATER DR
53	473	53-473-OPN-1	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	Yes	EQUIP. CONDENSED WATER DR
53	482	53-482-OPN-1	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	Yes	EQUIP. CONDENSED WATER DR
53	502	53-502-OPN-1	RLW TANK	1CW1	N/A	SEMI-TRAILER			5 DAYS A WEEK	No	CLOTHES WASHING MACHINE
53	502	53-502-OPN-1	RLW TANK	1SD1	N/A	SEMI-TRAILER			5 DAYS A WEEK	No	HAND WASHING
53	502	53-502-OPN-1	RLW TANK	1SH1	N/A	SEMI-TRAILER			5 DAYS A WEEK	No	SHOWER
53	502	53-502-OPN-2	DAYLIGHT	N/A	N/A	SEMI-TRAILER			FLOW IS NIL	No	DOMESTIC WATER BFP DRAIN
53	502	53-502-OPN-3	DAYLIGHT	N/A	N/A	SEMI-TRAILER			FLOW IS NIL	No	WATER HEATER RELIEF VALVE
53	514	53-514-OPN-1	DAYLIGHT	N/A	N/A	EXTERIOR			FLOW IS NIL	Yes	EQUIP. CONDENSED WATER DR
53	688	53-688	ND	N/A	N/A	TRANSPORTAINER			NO FLOW	No	NONE
53	689	53-689	ND	N/A	N/A	TRANSPORTAINER			NO FLOW	No	NONE
53	716	53-716	ND	N/A	N/A	TRANSPORTAINER			NO FLOW	No	NONE

REPORT #

36

TA	BLDG	OUTLET PIPING NO	EPA OUTFALL #	DRAIN #	ROOM #	DESCRIPTION	ROOM	RATE	FLOW	PERIODICITY	SEASONAL	SOURCE TYPES
53	744	53-744	ND	N/A	N/A	STORAGE SHED			NO FLOW		No	NONE
53	754	53-754	ND	N/A	N/A	TRANSPORTAINER			NO FLOW		No	NONE
53	804	53-804	ND	N/A	N/A	TRANSPORTAINER			NO FLOW		No	NONE
53	805	53-805	ND	N/A	N/A	TRANSPORTAINER			NO FLOW		No	NONE
53	816	53-816	ND	N/A	N/A	TRANSPORTAINER			NO FLOW		No	NONE
53	839	53-839	ND	N/A	N/A	TRANSPORTAINER			NO FLOW		No	NONE
53	843	53-843	ND	N/A	N/A	TRANSPORTAINER			NO FLOW		No	NONE
53	1050	53-1050	ND	N/A	N/A	TRANSPORTAINER			NO FLOW		No	NONE
53	1136	53-1136	ND	N/A	N/A	SEMI-TRAILER			NO FLOW		No	NONE

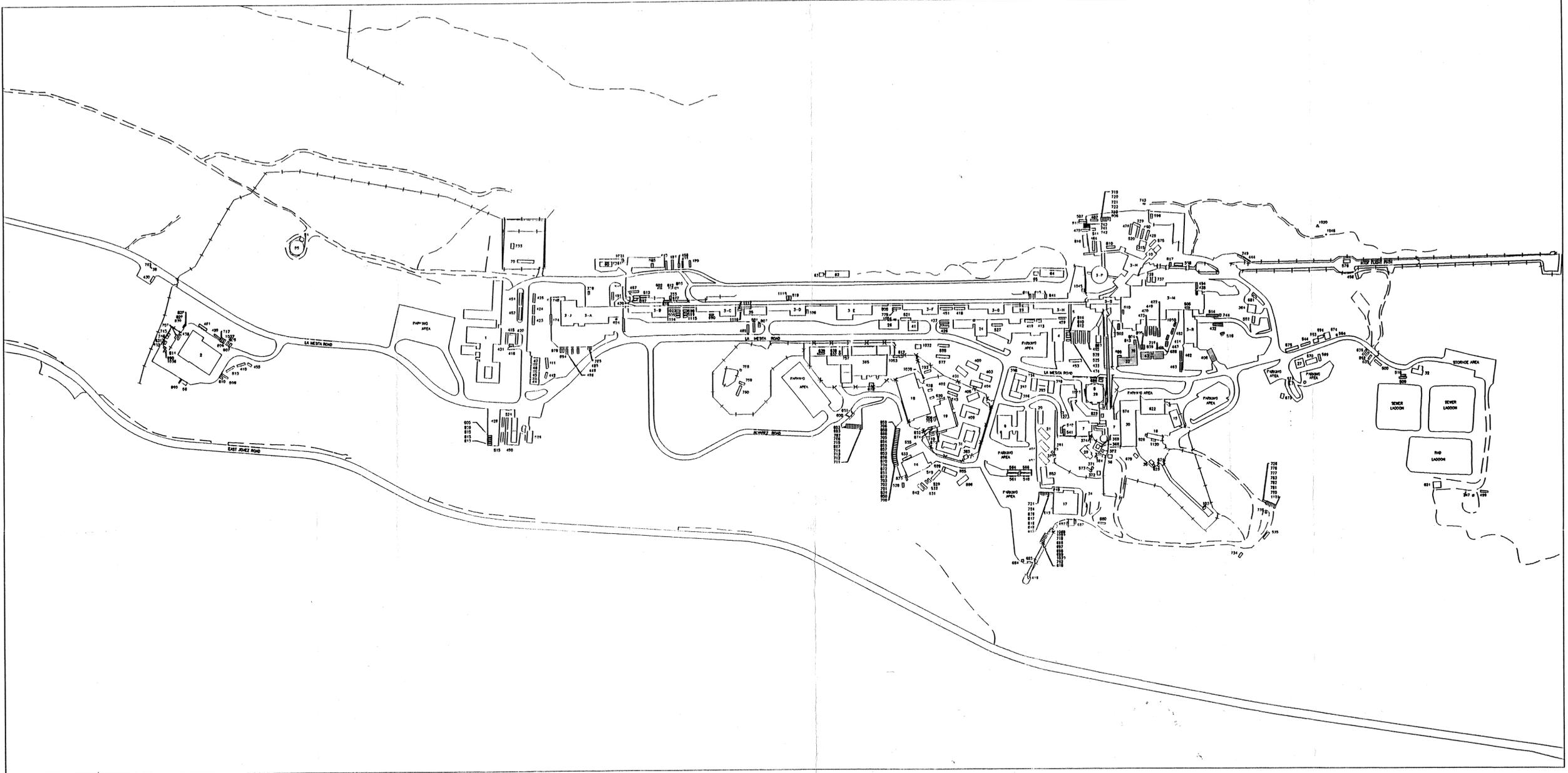
**NO EPA FORMS WERE PREPARED.**

## DYE STUDY INFORMATION

BUILDING NUMBER	DRAIN NUMBER	DID DYE REACH EXPECT DESTINATION?	COMMENTS
53-22	1SD2	YES	SANITARY SEWER
53-39	1SD1	YES	SANITARY SEWER
53-39	1SP1	YES	SANITARY SEWER
53-39	1SD4	YES	SANITARY SEWER
53-43	1LV3	YES	SANITARY SEWER
53-408	1LV1	YES	SANITARY SEWER

492182.

500161.



1773063.

1773063.

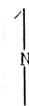
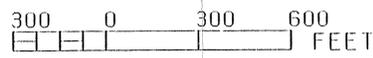
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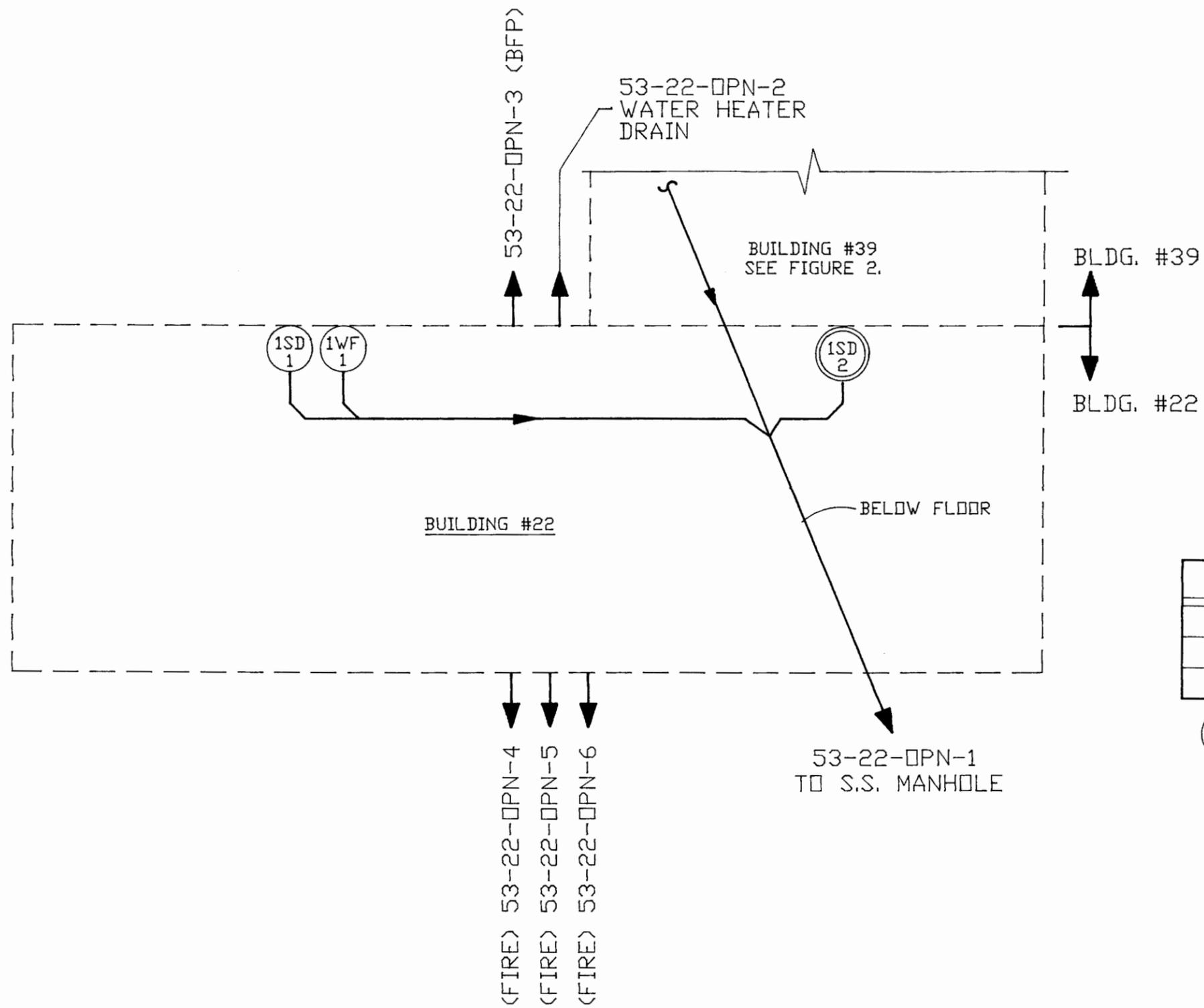
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SCALE 1: 3600.



15200

SANTA FE ENGINEERING, LTD.			
TA-53 SITE PLAN		DRAWN M.E.W.	DESIGN M.E.W.
		CHECKED P.E.B.	DATE 5-22-52
SUBMITTED	RECOMMENDED	APPROVED	
Los Alamos Los Alamos National Laboratory Los Alamos, New Mexico 87545			SHEET 1 OF 1
CLASSIFICATION	REVIEWER	DATE	REV.
REQUESTING DIVISION EM-8	LAB JOB NO. 11056-36	DRAWING NO. FIGURE 1	



**BUILDING 53-22 PLAN**  
NOT TO SCALE

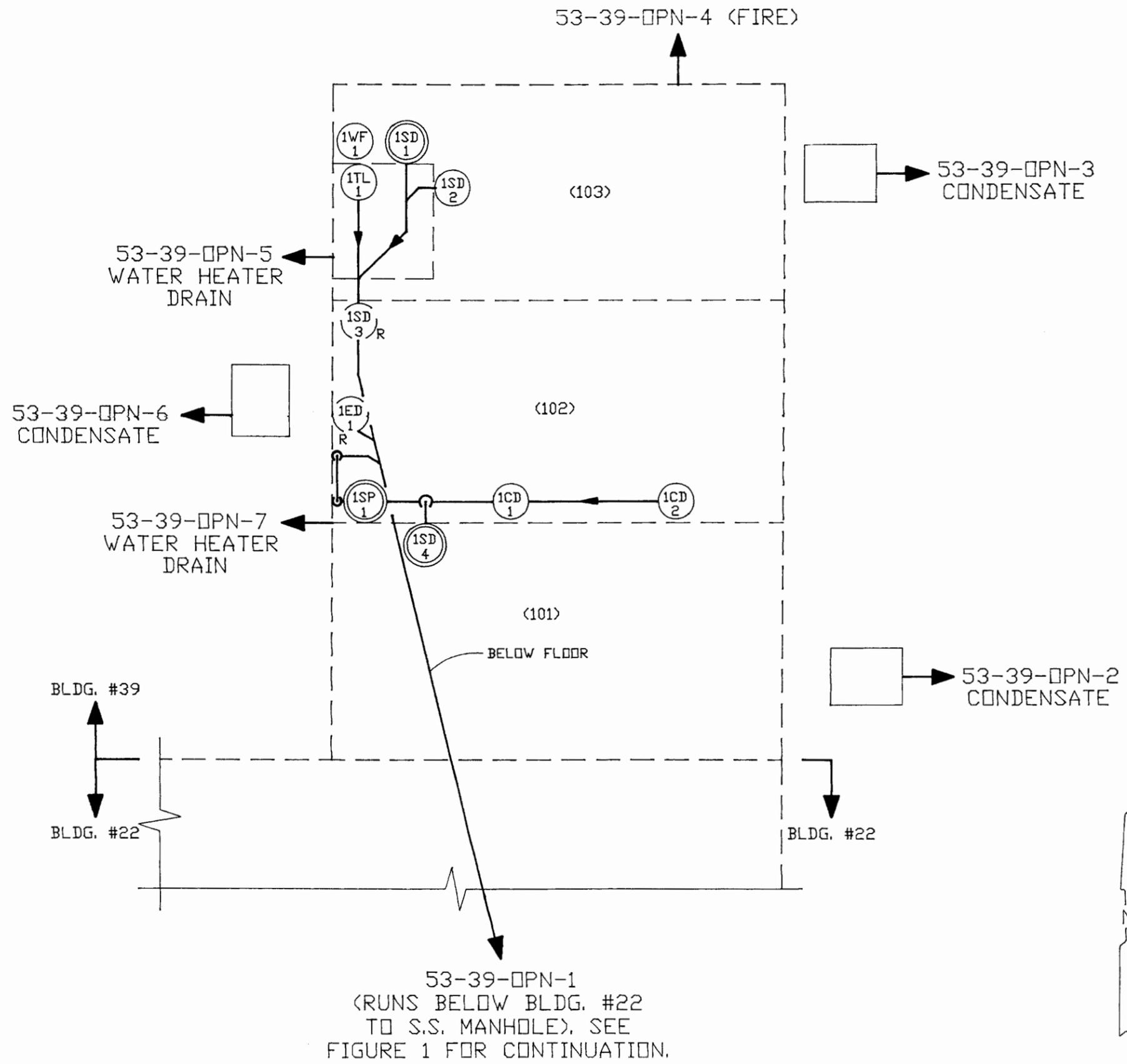
SYMBOL LEGEND	
SD	SINK DRAIN
WF	WATER FOUNTAIN

○ DYE TESTED DRAIN

NOTE:

1. THIS DRAIN SCHEMATIC WAS DERIVED FROM L.A.N.L. DRAWINGS C-51236 AND SITE VISIT.

SANTA FE ENGINEERING, LTD.			
<b>TA53-22 DRAIN SCHEMATIC</b>		DRAWN	M.E.W.
		DESIGN	M.E.W.
		CHECKED	P.E.B.
		DATE	5-22-92
SUBMITTED	RECOMMENDED	APPROVED	
<b>Los Alamos</b> Los Alamos National Laboratory Los Alamos, New Mexico 87545		SHEET	1 OF 1
CLASSIFICATION	REVIEWER	DATE	
REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.	REV.
REQUESTING GROUP	11056-36	FIGURE 2	



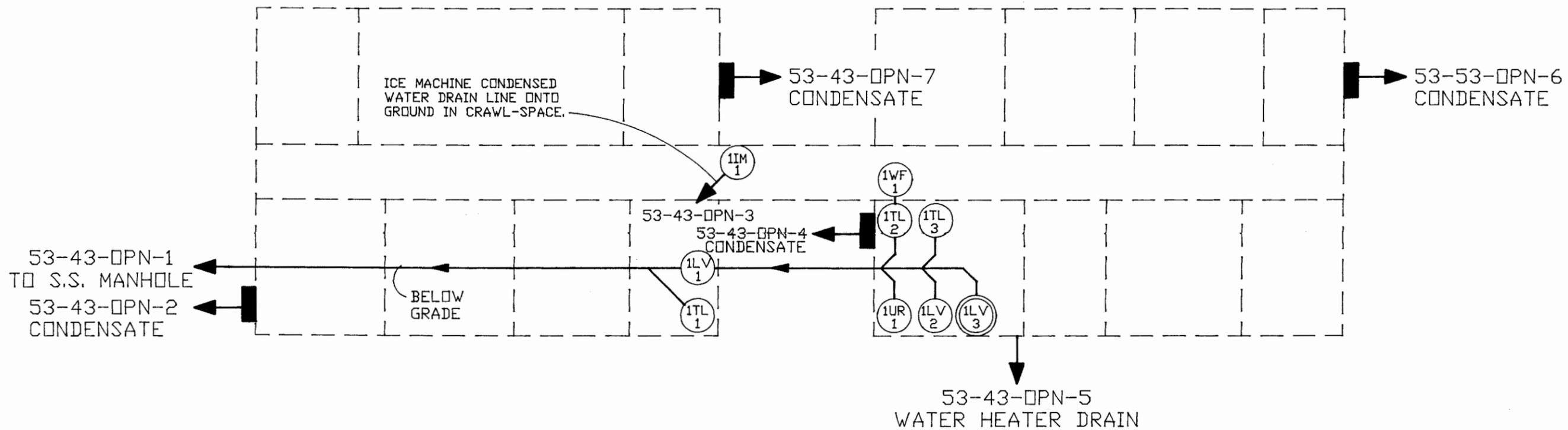
53-39-OPN-1  
 (RUNS BELOW BLDG. #22  
 TO S.S. MANHOLE). SEE  
 FIGURE 1 FOR CONTINUATION.

SYMBOL LEGEND	
CD	CUP DRAIN
ED	EYE WASH DRAIN
SD	SINK DRAIN
SP	SUMP PUMP
TL	TOILET
WF	WATER FOUNTAIN
SP	SUMP PUMP

- DYE TESTED DRAIN
- <sub>R</sub> DRAIN HAS BEEN REMOVED

NOTE:  
 1. THIS DRAIN SCHEMATIC WAS DERIVED FROM L.A.N.L. DRAWINGS C-51082, C-51269, AND SITE VISIT.

SANTA FE ENGINEERING, LTD.			
<b>TA53-39</b> <b>DRAIN SCHEMATIC</b>		DRAWN	M.E.W.
		DESIGN	M.E.W.
		CHECKED	P.E.B.
		DATE	5-22-92
SUBMITTED	RECOMMENDED	APPROVED	
<b>Los Alamos</b> Los Alamos National Laboratory Los Alamos, New Mexico 87545		SHEET	1 OF 1
CLASSIFICATION	REVIEWER	DATE	
REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.	REV.
REQUESTING GROUP	11056-36	FIGURE 3	

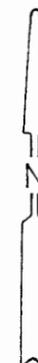


SYMBOL LEGEND	
IM	ICE MACHINE
LV	LAVATORY
TL	TOILET
UR	URINAL
WF	WATER FOUNTAIN

○ DYE TESTED DRAIN

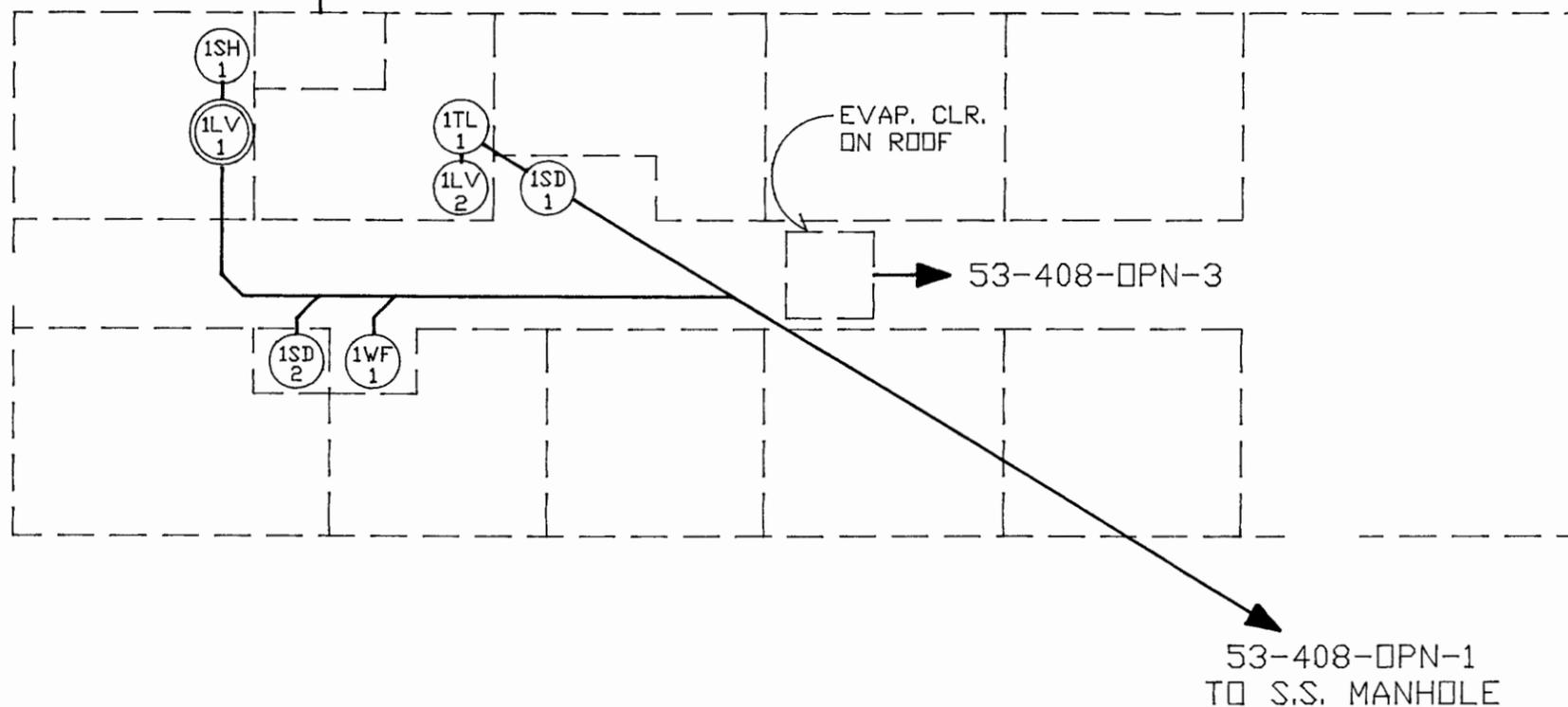
NOTE:

1. THIS DRAIN SCHEMATIC WAS DERIVED FROM L.A.N.L. DRAWINGS C-51026 AND SITE VISIT.



SANTA FE ENGINEERING, LTD.			
<b>TA53-43</b> <b>DRAIN SCHEMATIC</b>		DRAWN	M.E.W.
		DESIGN	M.E.W.
		CHECKED	P.E.B.
		DATE	5-22-92
SUBMITTED	RECOMMENDED	APPROVED	
<b>Los Alamos</b>		Los Alamos National Laboratory Los Alamos, New Mexico 87545	SHEET 1 OF 1
CLASSIFICATION	REVIEWER	DATE	
REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.	REV.
REQUESTING GROUP EM-8	11056-36	FIGURE 4	

53-408-OPN-2  
WATER HEATER DRAIN

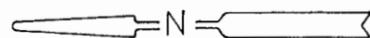


SYMBOL LEGEND	
LV	LAVATORY
SD	SINK DRAIN
SH	SHOWER
TL	TOILET
WF	WATER FOUNTAIN

○ DYE TESTED DRAIN

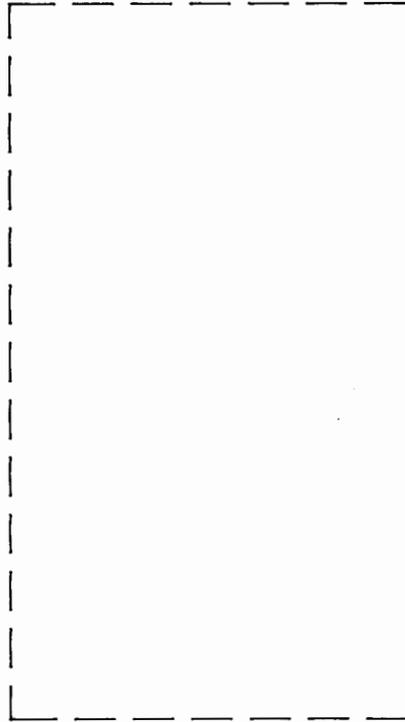
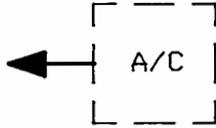
NOTE:

1. THIS DRAIN SCHEMATIC WAS DERIVED FROM SITE VISIT.



SANTA FE ENGINEERING, LTD.			
<b>TA53-408 DRAIN SCHEMATIC</b>	DRAWN	M.E.W.	
	DESIGN	M.E.W.	
	CHECKED	P.E.B.	
	DATE	5-22-92	
SUBMITTED	RECOMMENDED	APPROVED	
<b>Los Alamos</b> Los Alamos National Laboratory Los Alamos, New Mexico 87545		SHEET	1 OF 1
CLASSIFICATION	REVIEWER	DATE	
REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.	
REQUESTING GROUP	11056-36	FIGURE 5	
EM-8		REV.	

53-482-OPN-1  
CONDENSATE



### SYMBOL LEGEND

A/C	AIR CONDITIONER UNIT

**NOTE:**

THIS DRAIN SCHEMATIC WAS DERIVED FROM A SITE VISIT.

### SANTA FE ENGINEERING, LTD.

## TA53-422 DRAIN SCHEMATIC

DRAWN	M.E.W.
DESIGN	M.E.W.
CHECKED	P.E.B.
DATE	5-22-92

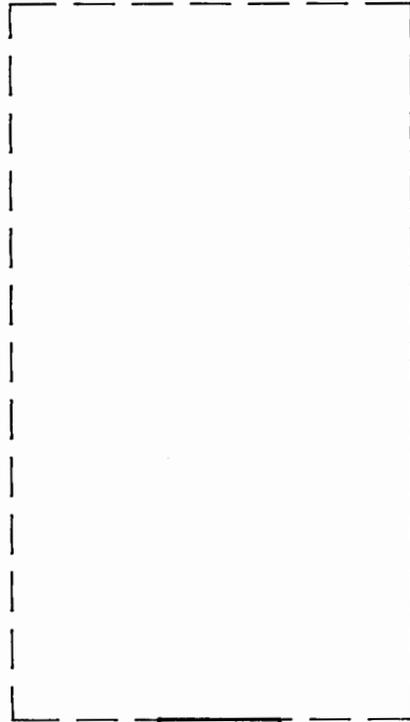
SUBMITTED      RECOMMENDED      APPROVED

**Los Alamos**

Los Alamos National Laboratory  
Los Alamos, New Mexico 87545

SHEET 1 OF 1

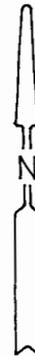
CLASSIFICATION	REVIEWER	DATE
REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.
REQUESTING GROUP	11056-36	FIGURE 6
EM-8		
		REV.



A/C



53-449-OPN-1  
CONDENSATE



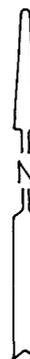
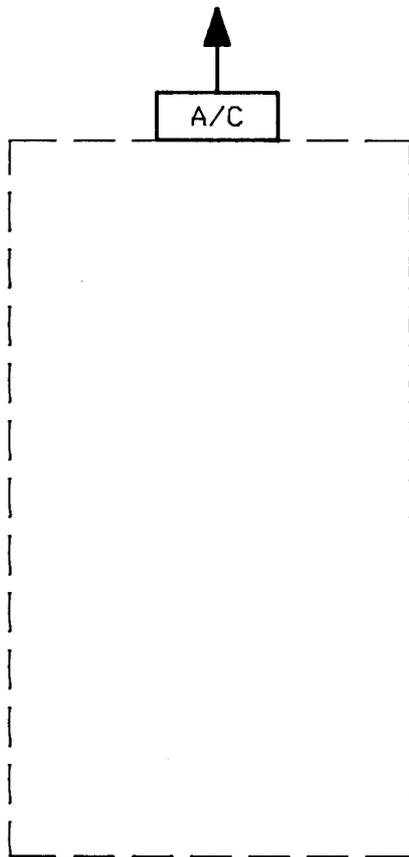
SYMBOL LEGEND	
A/C	AIR CONDITIONER UNIT

**NOTE:**

THIS DRAIN SCHEMATIC WAS DERIVED FROM A SITE VISIT.

<b>SANTA FE ENGINEERING, LTD.</b>			
<b>TA53-449 DRAIN SCHEMATIC</b>		DRAWN	M.E.W.
		DESIGN	M.E.W.
		CHECKED	P.E.B.
		DATE	5-22-92
SUBMITTED		RECOMMENDED	APPROVED
<b>Los Alamos</b>		Los Alamos National Laboratory Los Alamos, New Mexico 87545	
CLASSIFICATION		REVIEWER	DATE
REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.	REV.
REQUESTING GROUP EM-8	11056-36	FIGURE 7	
		SHEET	1 OF 1

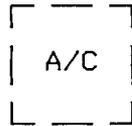
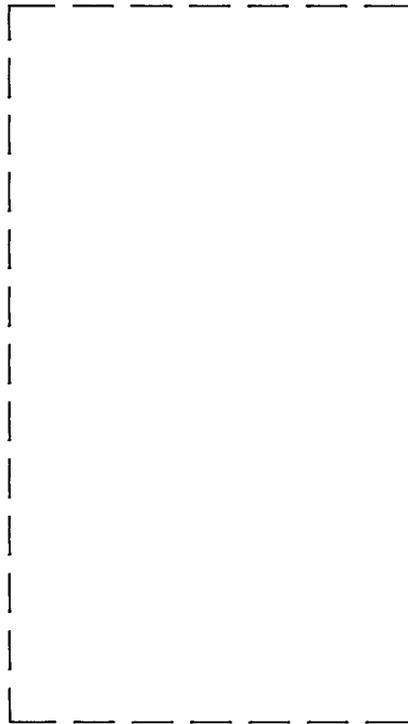
53-449-OPN-1  
CONDENSATE



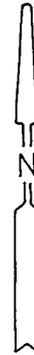
SYMBOL LEGEND	
A/C	AIR CONDITIONER UNIT

NOTE:  
THIS DRAIN SCHEMATIC WAS DERIVED  
FROM A SITE VISIT.

SANTA FE ENGINEERING, LTD.			
<b>TA53-470 DRAIN SCHEMATIC</b>		DRAWN	M.E.W.
		DESIGN	M.E.W.
		CHECKED	P.E.B.
		DATE	5-22-92
SUBMITTED	RECOMMENDED	APPROVED	
<b>Los Alamos</b> Los Alamos National Laboratory Los Alamos, New Mexico 87545		SHEET	1 OF 1
CLASSIFICATION	REVIEWER	DATE	
REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.	REV.
REQUESTING GROUP EM-8	11056-36	FIGURE 8	



53-473-DPN-1  
CONDENSATE



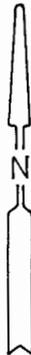
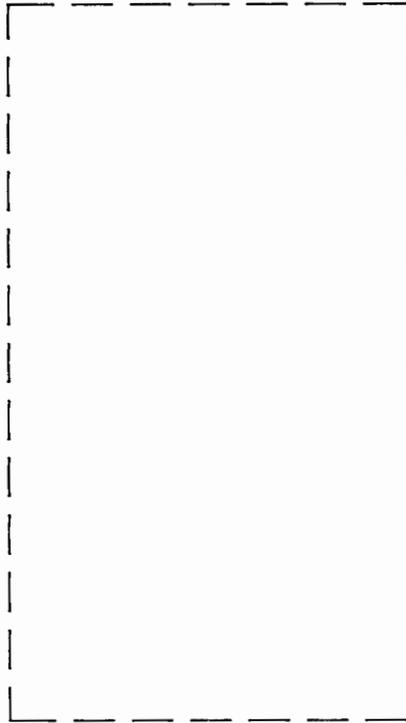
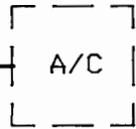
SYMBOL LEGEND	
A/C	AIR CONDITIONER UNIT

**NOTE:**

THIS DRAIN SCHEMATIC WAS DERIVED  
FROM A SITE VISIT.

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CLASSIFICATION		REVIEWER	DATE	
REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.	REV.	
REQUESTING GROUP EM-8	11056-36	FIGURE 9		
SHEET		1 OF 1		

53-482-DPN-1  
CONDENSATE

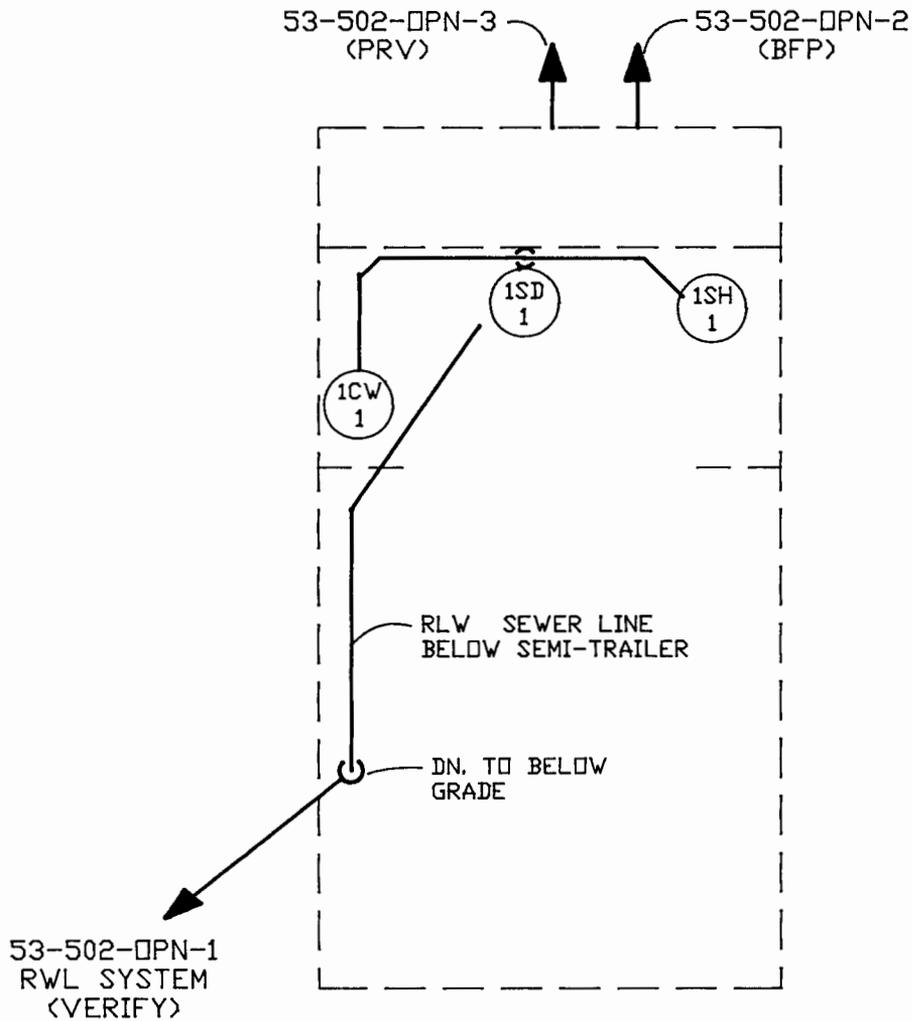


SYMBOL LEGEND	
A/C	AIR CONDITIONER UNIT

**NOTE:**

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REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.	REV.	
REQUESTING GROUP EM-8	11056-36	<b>FIGURE 10</b>		



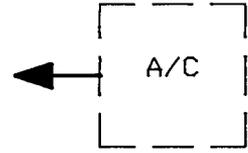
**NOTE:**

THIS DRAIN SCHEMATIC WAS DERIVED FROM A SITE VISIT.

SYMBOL LEGEND	
BFP	BACKFLOW PREVENTER
CW	CLOTHES WASHER
PRV	PRESSURE RELIEF VALVE
SD	SINK DRAIN
SH	SHOWER

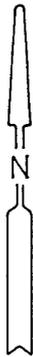
<b>SANTA FE ENGINEERING, LTD.</b>			
<b>TA53-502 DRAIN SCHEMATIC</b>		DRAWN	M.E.W.
		DESIGN	M.E.W.
		CHECKED	P.E.B.
		DATE	5-22-92
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CLASSIFICATION	REVIEWER	DATE	SHEET 1 OF 1
REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.	REV.
REQUESTING GROUP EM-8	11056-36	<b>FIGURE 11</b>	

53-514-OPN-1  
CONDENSATE



SYMBOL LEGEND	
A/C	AIR CONDITIONER UNIT

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<b>Los Alamos</b> Los Alamos National Laboratory Los Alamos, New Mexico 87545		SHEET	1 OF 1
CLASSIFICATION	REVIEWER	DATE	
REQUESTING DIVISION	LAB JOB NO.	DRAWING NO.	REV.
REQUESTING GROUP EM-8	11056-36	FIGURE 12	