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NSA PANAMA CITY  
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REMEDIAL ACTION PLAN RAC INTERFACE MEETING 1 JANUARY 1996 PRESENTATION  
MATERIAL PACKET SITE 278 NSA PANAMA CITY FL  
1/1/1996  
ABB ENVIRONMENTAL SERVICES, INC

**REMEDIAL ACTION PLAN - RAC INTERFACE MEETING  
January 31, 1996**

**PRESENTATION MATERIAL PACKAGE**

**SITE 278  
COASTAL SYSTEMS STATION PANAMA CITY  
PANAMA CITY, FLORIDA**

**Unit Identification Code: N65928**

**Contract No. N62467-89-D-0317**

**Prepared by:**

**ABB Environmental Services, Inc.  
2590 Executive Center Circle, East  
Tallahassee, Florida 32301**

**Prepared for:**

**Department of the Navy, Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Drive  
North Charleston, South Carolina 29418**

**Nick Ugolini, Code 1843, Engineer-in-Charge**

**January 1996**

## **RAC INTERFACE MEETING**

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- 1. SITE DESCRIPTION**
  - 2. SITE HISTORY**
  - 3. CONTAMINANT ASSESSMENT SUMMARY**
  - 4. IRA RESULTS**
  - 5. REMEDIAL STRATEGY**
  - 6. REMEDIAL OPTIONS**
  - 7. RECOMMENDED REMEDIAL ACTION PLAN**
  - 8. IMPLEMENTATION SCHEDULE**
-

## **RAC INTERFACE MEETING**

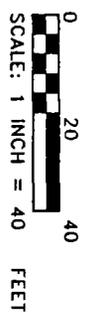
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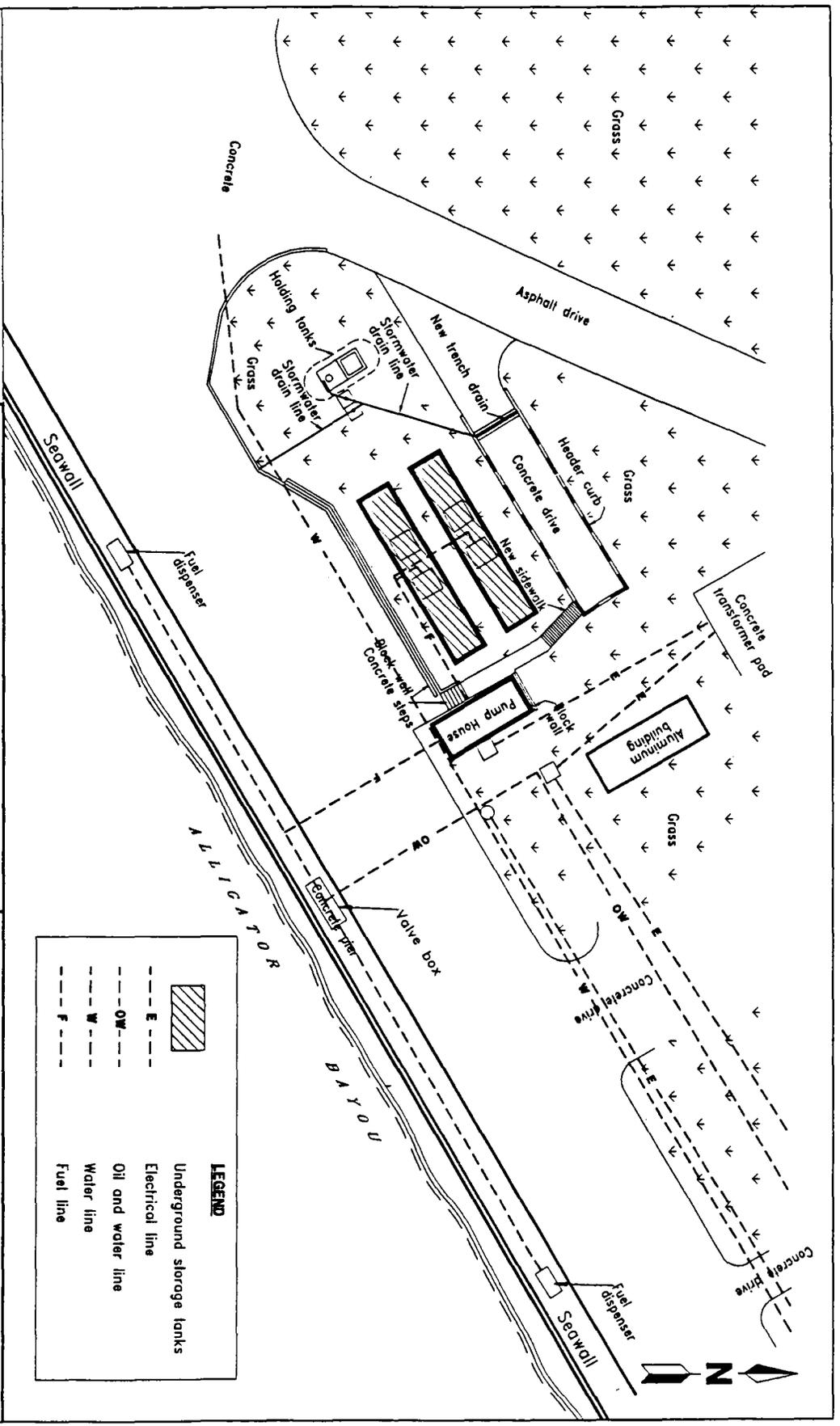


**FIGURE 2  
SITE PLAN**

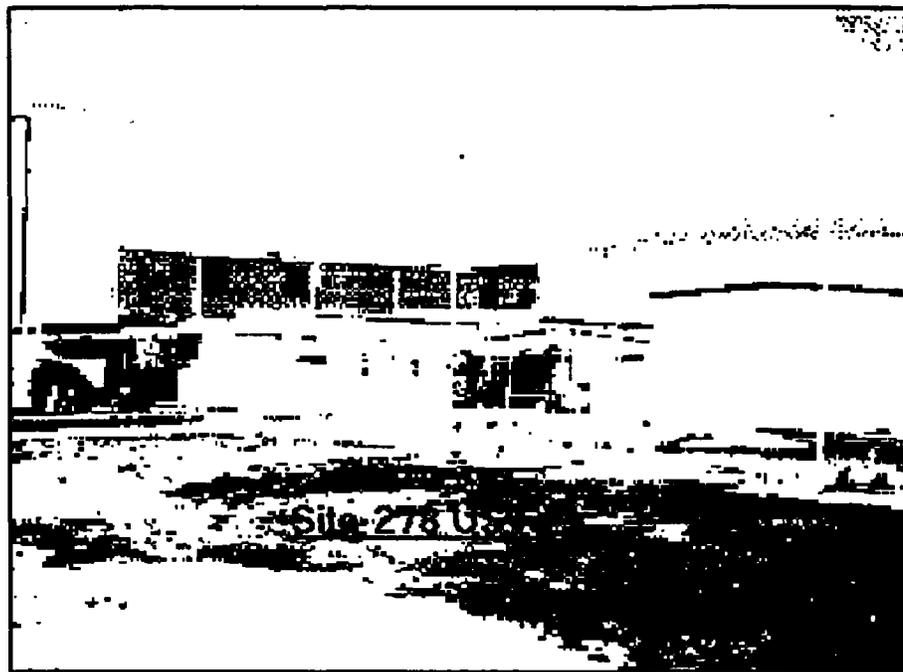


**REMEDIAL ACTION PLAN  
SITE 278  
COASTAL SYSTEMS STATION  
PANAMA CITY, FLORIDA**

LEGEND	
	Underground storage tanks
- - - E - - -	Electrical line
- - - OW - - -	Oil and water line
- - - W - - -	Water line
- - - F - - -	Fuel line

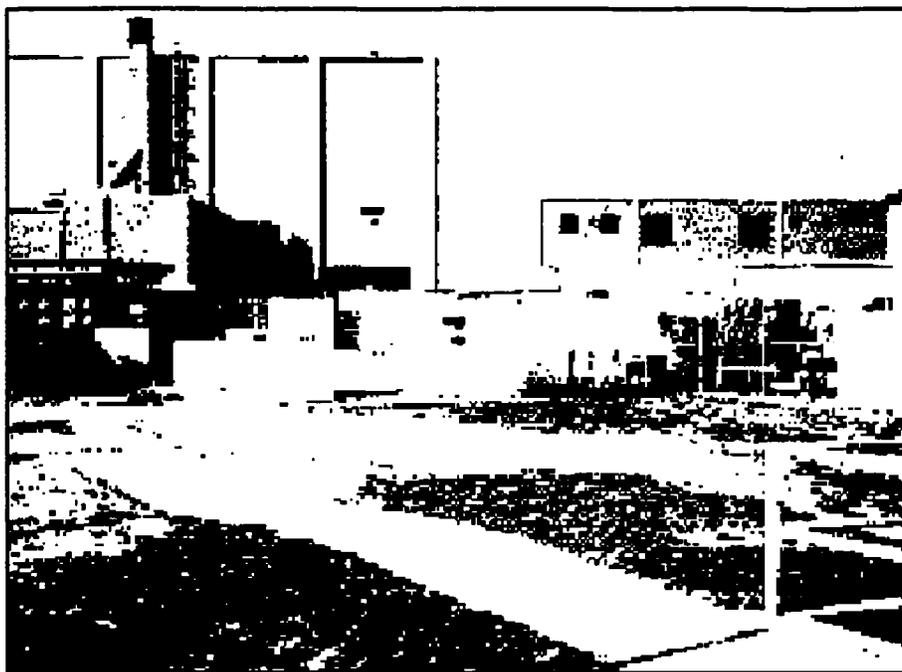


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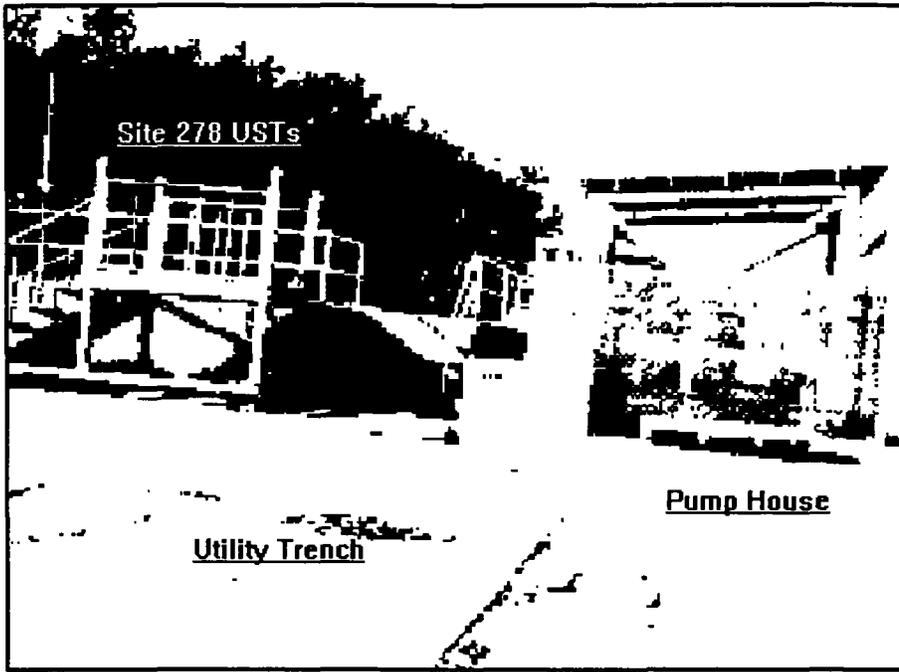
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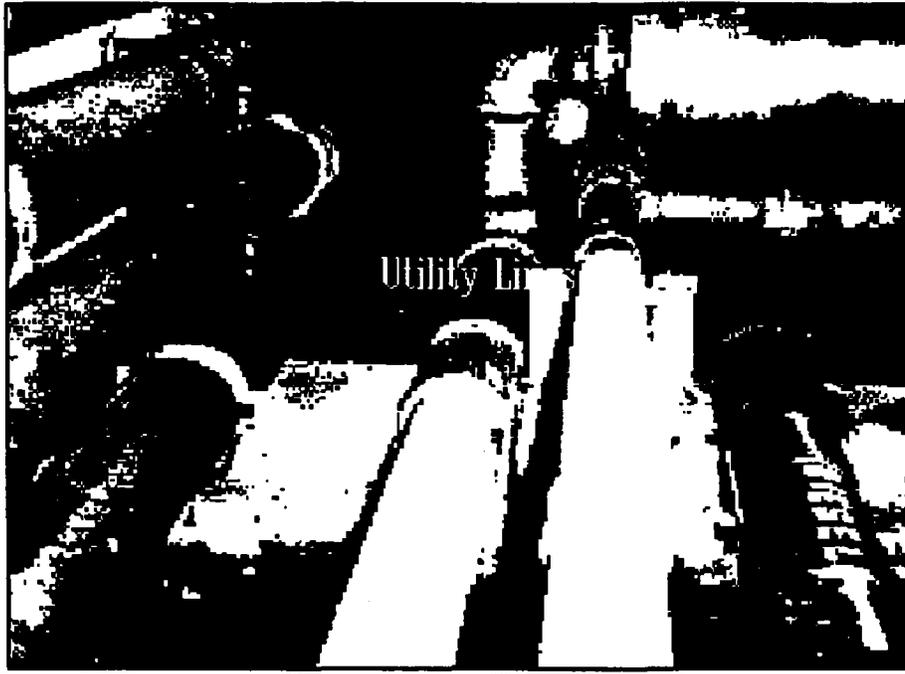
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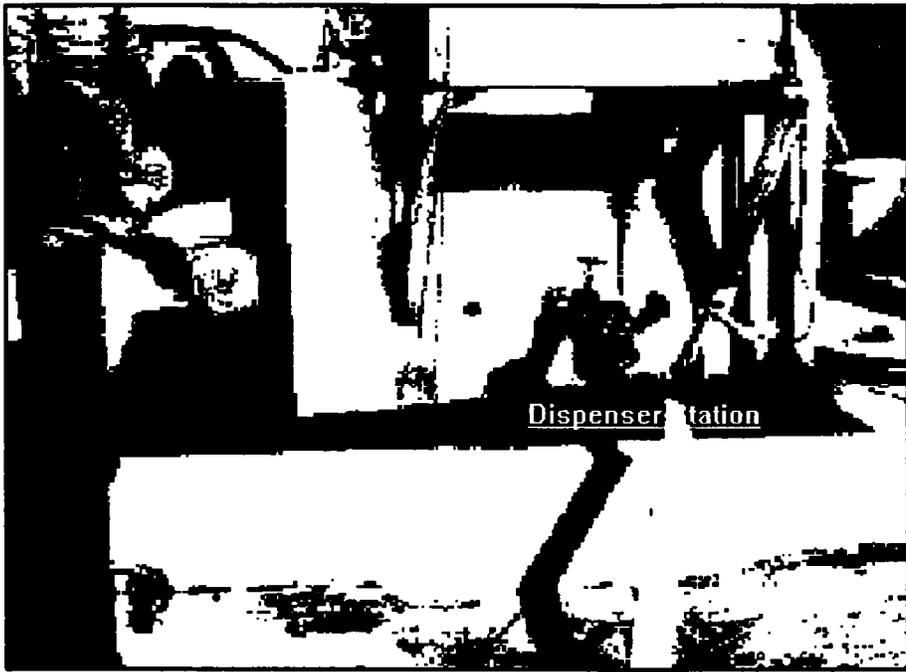
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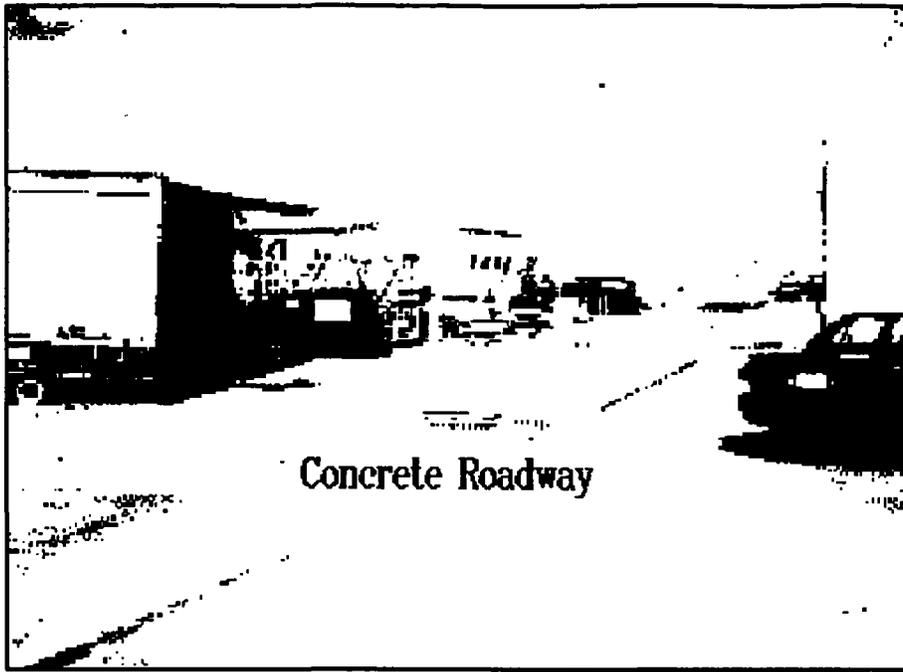
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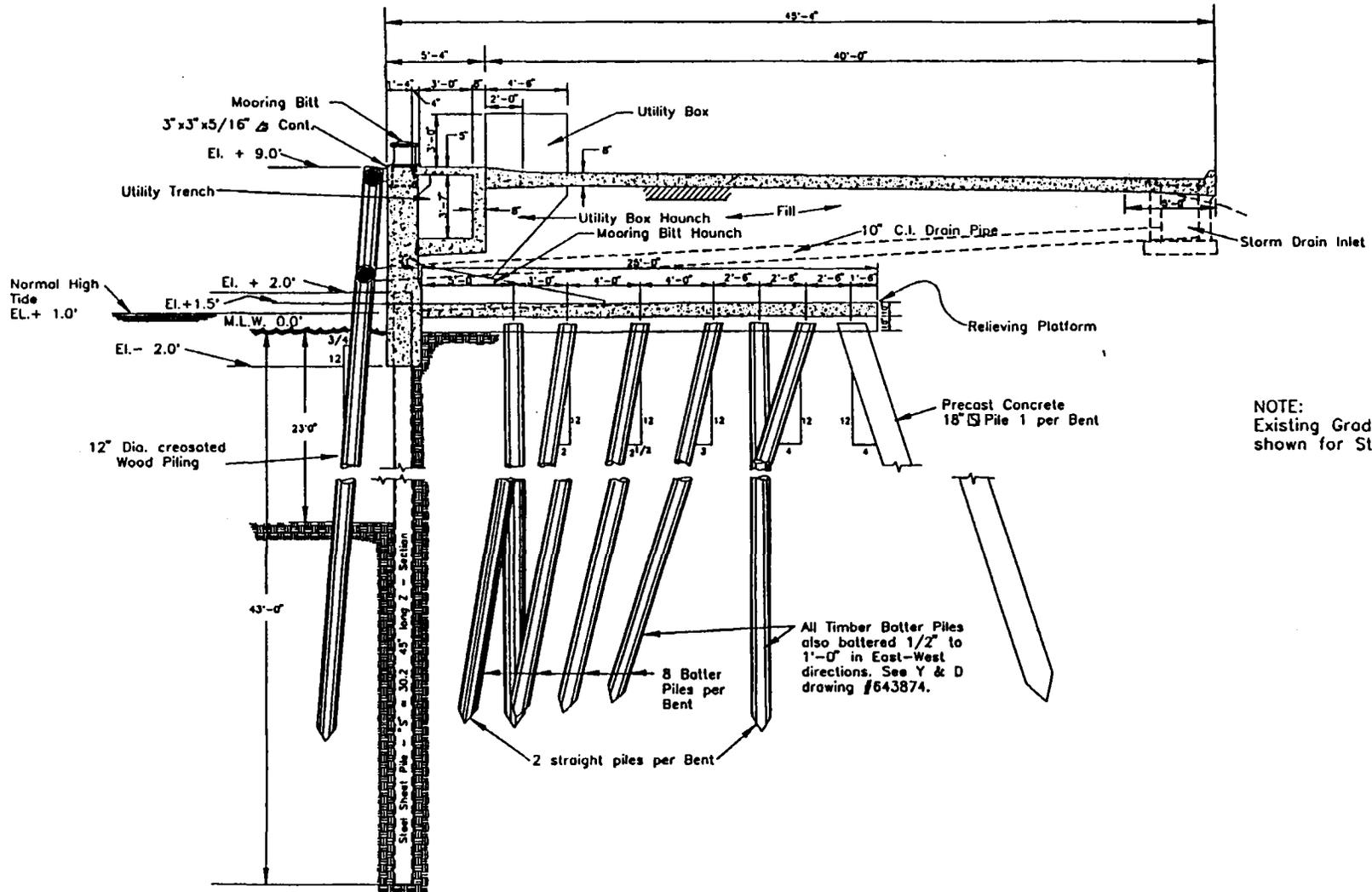
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# VERTICAL CROSS SECTION UNDER ROADWAY



NOTE:  
Existing Grade Elevation  
shown for Stations 0,1,2,3,4

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## **2. SITE HISTORY - *General***

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- . **1964 : Two 7,500-gallon USTs made of asphalt coated steel were installed**
  - . **1977 : Two additional 7,500-gallon USTs made of fiberglass were installed**
  - . **1989 : The four tanks were removed and stained soil observed under the tank pads was excavated and disposed off-site.**
  - . **1989 : Two 15,000-gallon, double walled steel tanks with resin coating and interstitial leak detection equipment were installed**
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## 2. SITE HISTORY - *Regulatory*

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- . **Nov. 1992 : Petroleum product measured 1.58 feet in thickness was found in monitoring well MW-5.**
  - . **Nov. 1992 : IRA for Removal of Free Product. (Chapter 62-770.300)**
  - . **Jul. 1993 : Contamination Assessment Report. (Chapter 62-770.600)**
  - . **Nov. 1993 : Contamination Assessment Report Addendum**
  - . **Mar. 1994 : Supplemental investigation to Complete CA**
  - . **Sep. 1995 : Approval of Contamination Assessment Report by FDEP.**
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### 3. CONTAMINATION ASSESSMENT SUMMARY

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#### EXTENT

**FREE PRODUCT:** Sporadic Occurance at MW-5 and MW-6. Thickness of observed product vary from 0 to 1.58 ft at MW-5, and from 0 to 0.78 ft at MW-6. Estimated volume ranges from 200 to 900 gallons.

**UNSATURATED SOIL:**

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#### OVA READINGS

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ID	RANGE (OVA ppm) (ft. bls)	DEPTH (ft. bls.)	DEPTH TO WATER TABLE
SB4/MW4	1800 to >5000	4-8	6.6
SB6/MW5	1100 to >5000	6-10	6.8
SB7/MW6	> 5000	6-8	6.8

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With the exception of SB4, vertical extent of soil contamination is confined to the capillary fringe. Horizontal extent matches with the observed extent of free product.

**GROUNDWATER :**

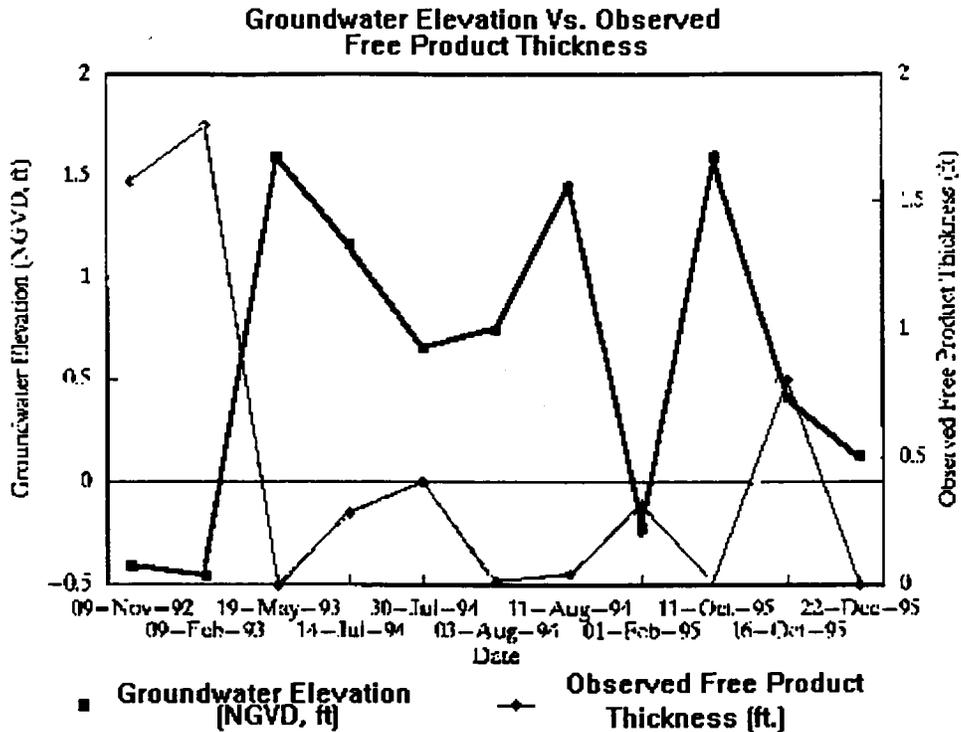
- Total naphthalenes concentration exceeds 100 ppb at MW-4, and MW-6. Maximum concentration of total naphthalenes is 350 ppb.
- TRPH concentration exceeds 5 ppm at MW-6. Maximum concentration of TRPH is 40 ppm
- Estimated volume of groundwater contaminated with total naphthalenes and TRPH is 32,000 gallons.

#### SUMMARY

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- . Thickness of free product observed at MW-5 varies with the position of piezometric surface.
- . in general observed free product thickness decreases with the rise of groundwater level and vice versa.
- . variation in the groundwater level due to diurnal tidal fluctuations, and seasonal recharge may lead to the uncertainty in the thickness of observed free product at MW-5.
- . Treatment technologies chosen for free product removal should account for these observations.

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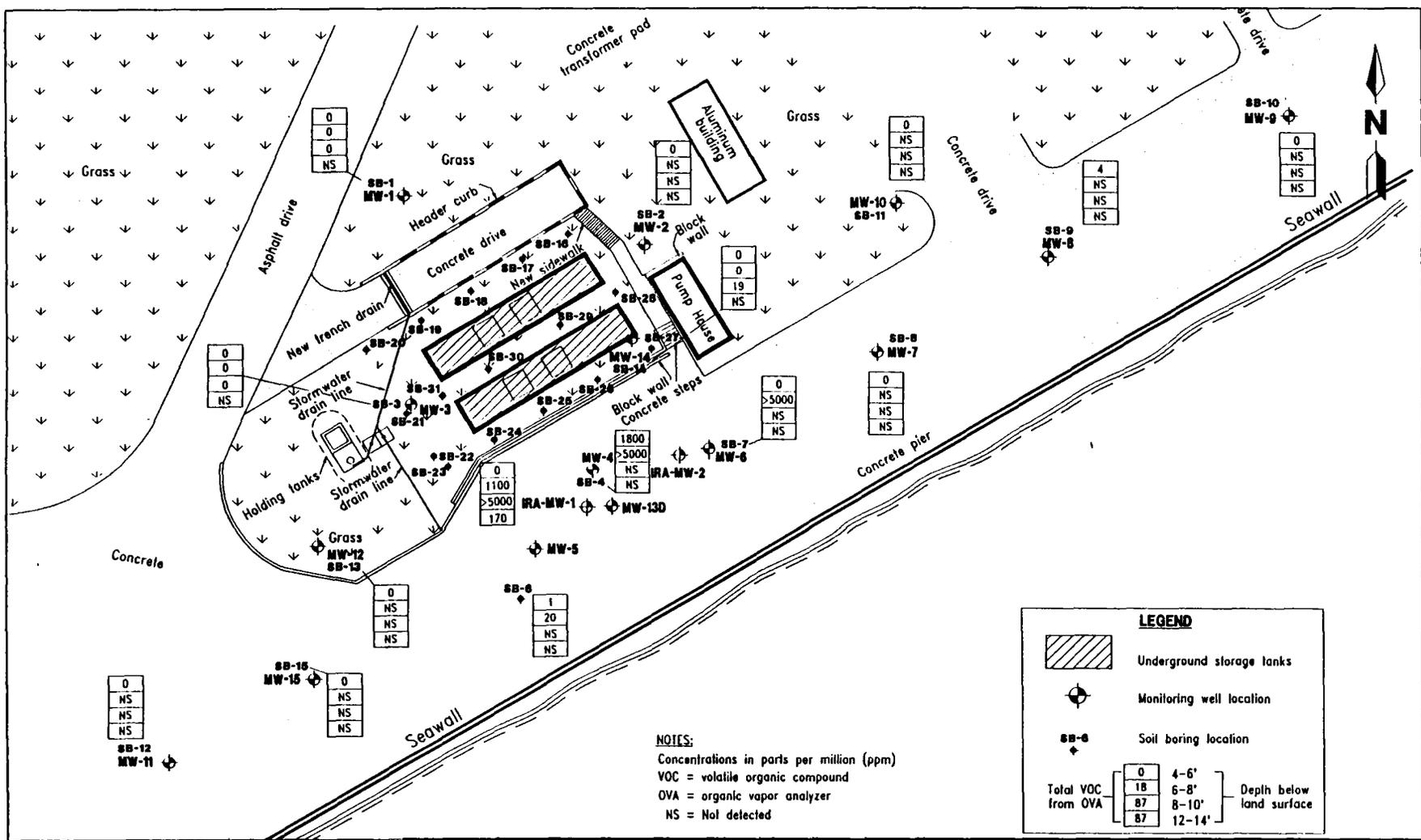
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**FIGURE 4**  
**SOIL CONTAMINATION DISTRIBUTION MAP**  
 SB-1 THROUGH SB-14, OCTOBER 1992,  
 SB-15, MAY 1993.



**REMEDIAL ACTION PLAN**  
**SITE 278**

**COASTAL SYSTEMS STATION**  
**PANAMA CITY, FLORIDA**

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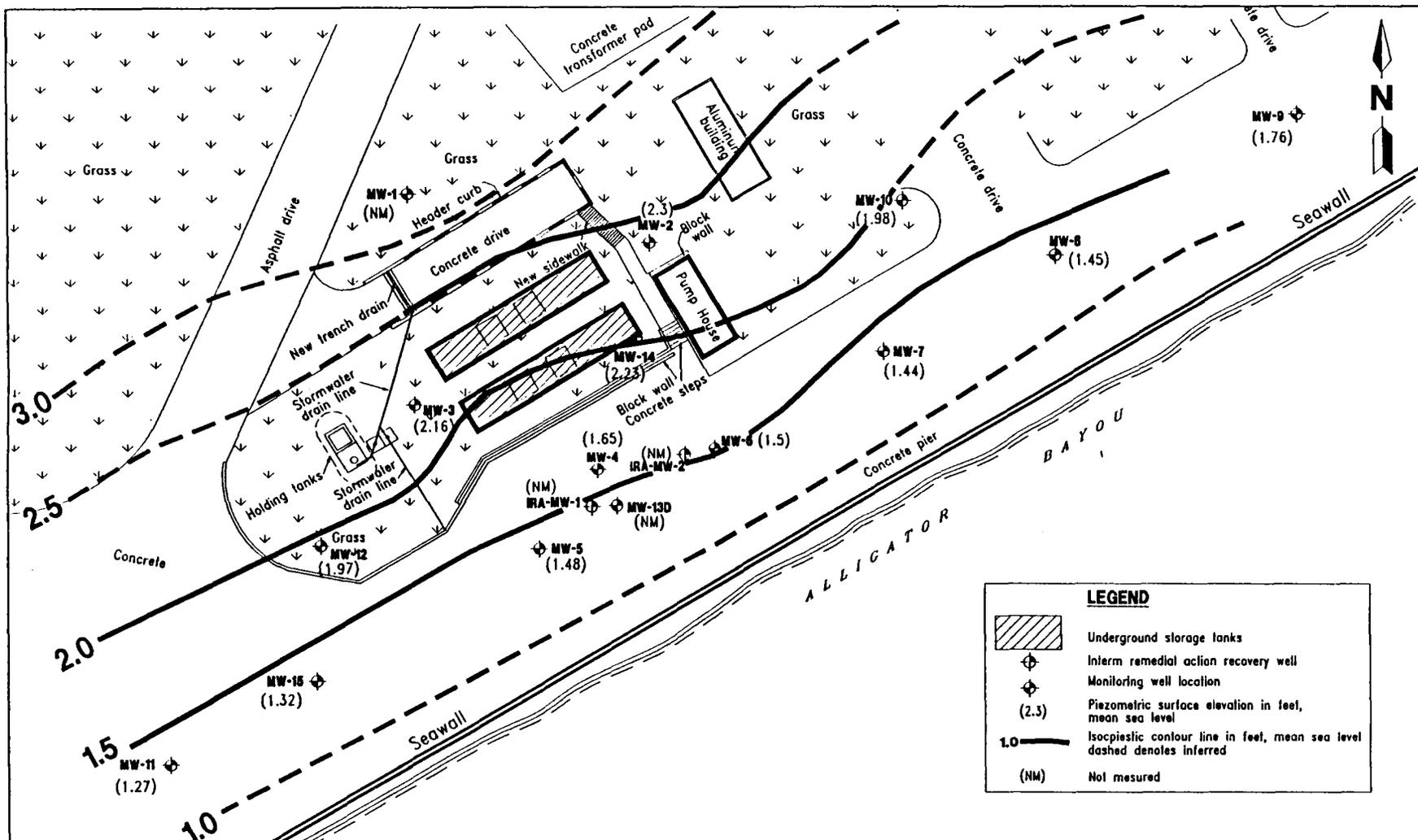
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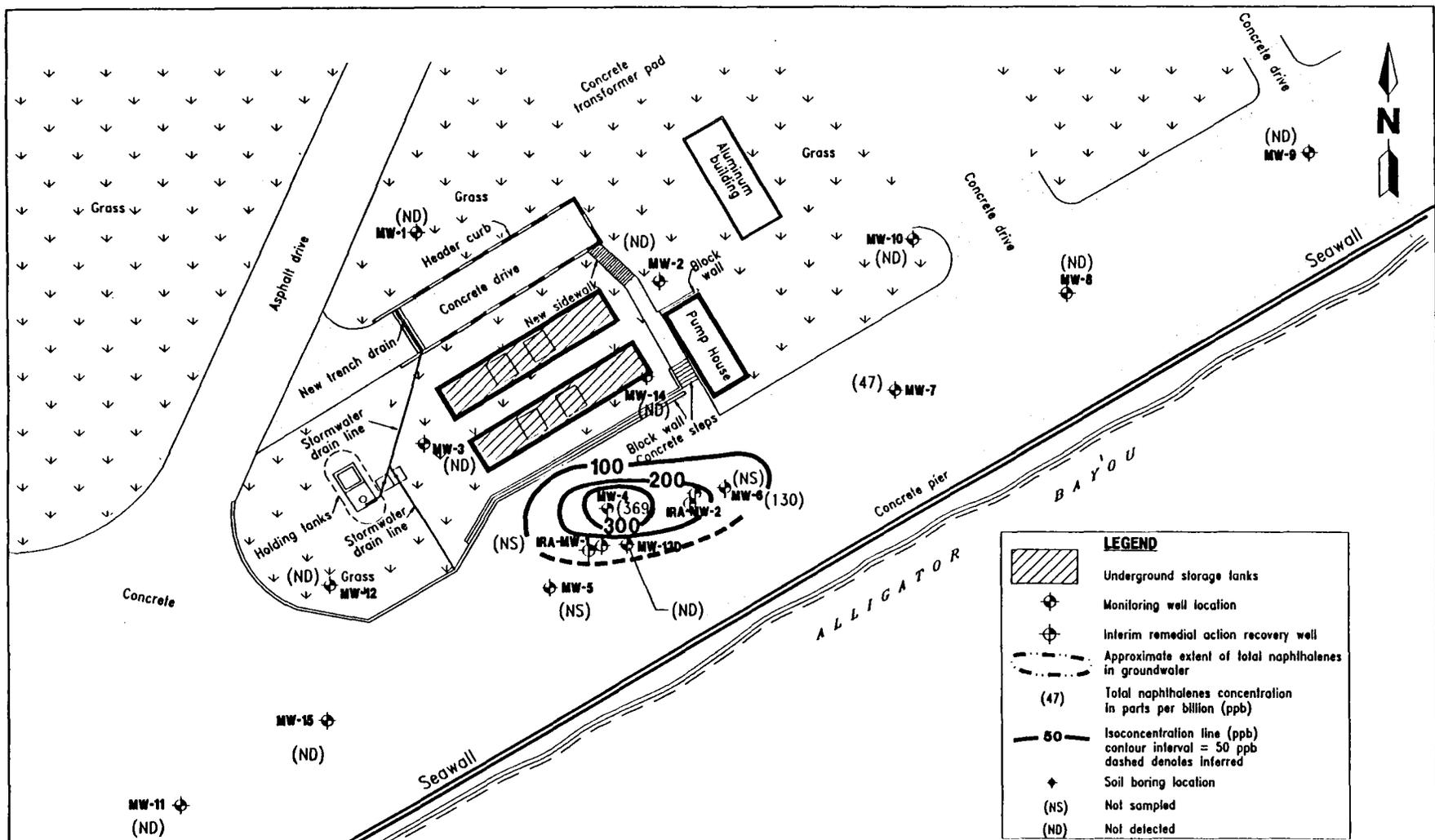
0 20 40  
SCALE: 1 INCH = 40 FEET

FIGURE 11  
PIEZOMETRIC SURFACE MAP  
OCTOBER 11, 1995



REMEDIAL ACTION PLAN  
SITE 278

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PANAMA CITY, FLORIDA



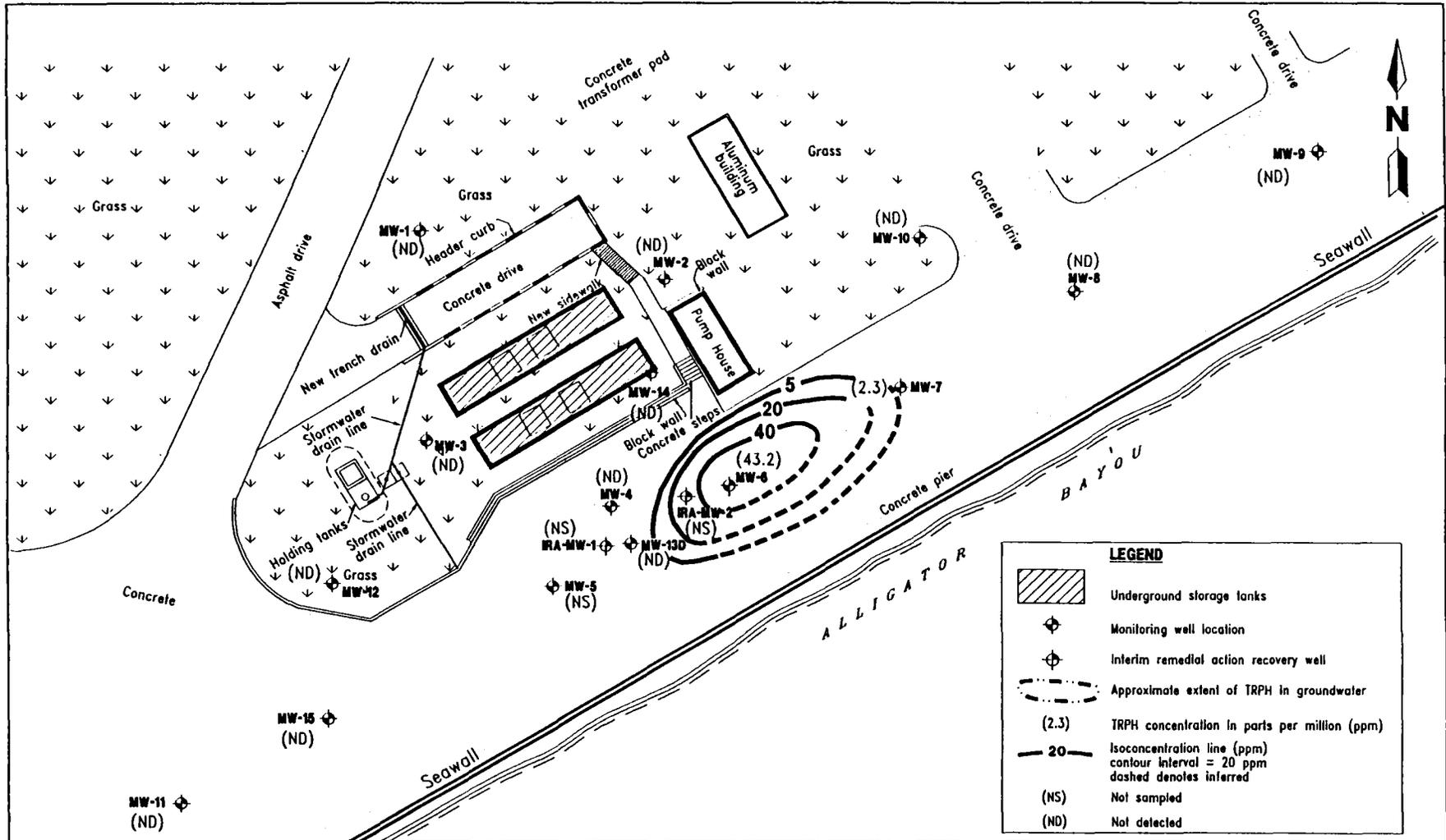
0 20 40  
SCALE: 1 INCH = 40 FEET

**FIGURE 5**  
**GROUNDWATER ISOCONCENTRATION MAP OF**  
**TOTAL NAPHTHALENES, FEBRUARY 1995**



**REMEDIAL ACTION PLAN**  
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**PANAMA CITY, FLORIDA**



0 20 40  
 SCALE: 1 INCH = 40 FEET

**FIGURE 6**  
**GROUNDWATER ISOCONCENTRATION MAP OF**  
**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS**  
**(TRPH), FEBRUARY 1995**



**REMEDIAL ACTION PLAN**  
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**PANAMA CITY, FLORIDA**

### 3. CONTAMINATION ASSESSMENT SUMMARY

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**UNSATURATED SOIL:**

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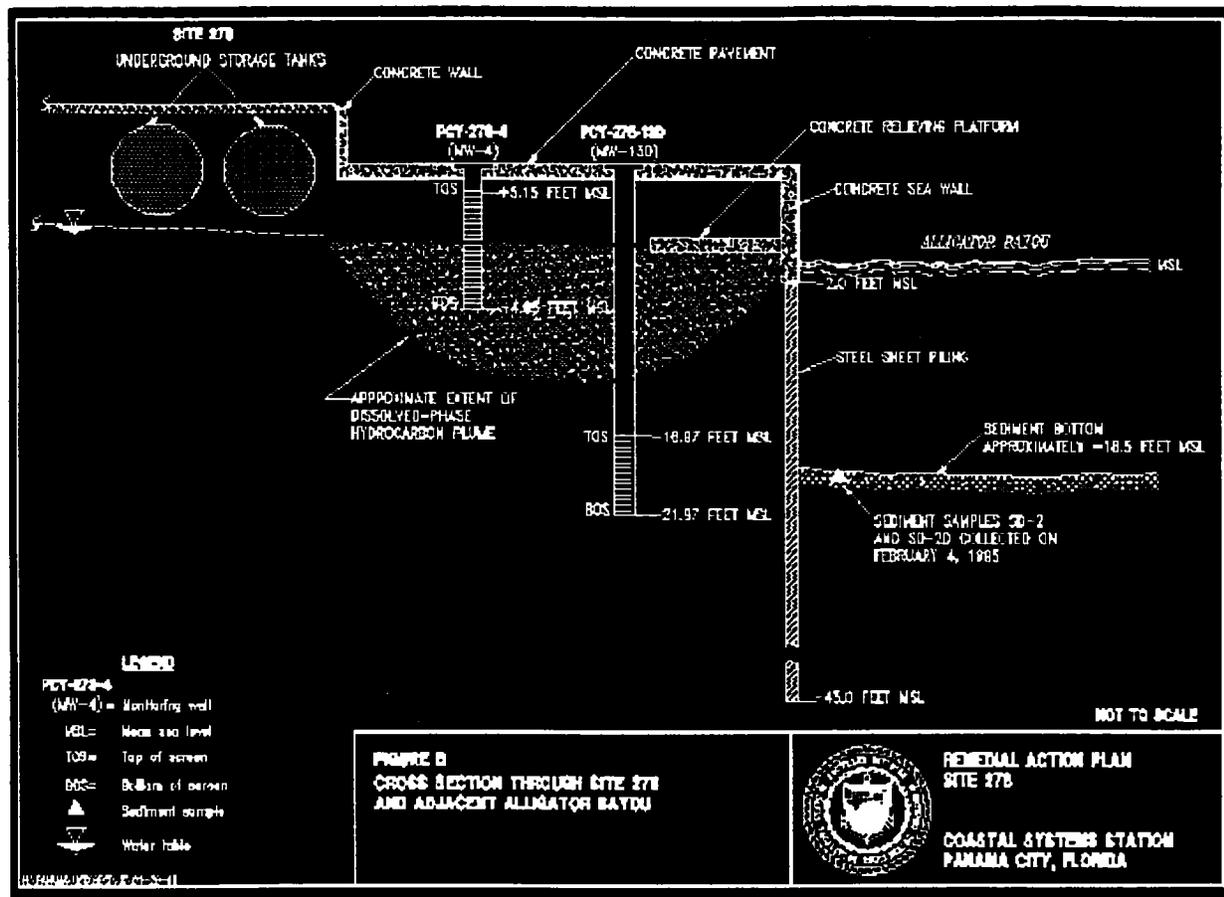
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### SUMMARY

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- . Sporadic Occurrence of free product at MW-5, and MW-6.
  - . Soil contamination in the capillary fringe at MW-4, MW-5 and MW-6.
  - . Groundwater contamination at MW-4, MW-5, and MW-6 due to *total naphthalenes and TRPH*.
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### 3. CONTAMINATION ASSESSMENT SUMMARY

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#### EXPOSURE PATHWAYS

*. DIRECT INGESTION:* There are no potable wells with in the 0.25 mile radius.

*. MIGRATION TO ADJACENT ALLIGATOR BAYOU :* Bulk head constructed of steel "Z-type" sheet pile sections and concrete sea wall extending to a total depth of 49 ft bls. Surface water and sediment samples collected from Alligator Bayou indicated presence of contaminatnts similar to those found at other areas of the bayou.

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## **4. IRA RESULTS**

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**An IRA has been implemented (Ch. 62-770.300) to remove the free product since November 1992. A total of 18 gallons was removed between November, 1992 and October, 1995.**

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## 5. REMEDIAL STRATEGY

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- . **A remedial system chosen for Site 278 should be designed to address the area of free product, the associated soil and groundwater contamination.**
  - . **Contamination associated with the soil is primarily confined within the capillary fringe and is due to the presence of free product. Therefore any remedial technologies chosen for free product removal and groundwater cleanup should also address the contamination associated with the soil. However, a separate technology for soil is not warranted for this site.**
  - . **Site-specific limitations: Presence of the road way, bulkhead, and the 20 inch thick, 25 ft wide concrete relieving platform.**
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## 6. REMEDIAL OPTIONS

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COMPONENT	TECHNOLOGY	RATIONALE
FREE PRODUCT REMOVAL	* Manual Bailing	Free product available for recovery is dependent on the natural hydraulic gradient
	* Absorbant Socks	Same as above
	* VEE	<u>Hydraulic gradient of free product can be improved.</u>
GROUNDWATER EXTRACTION	* Recovery Wells	Requires removal of free product before groundwater table may be depressed.
	* Recovery Trenches	Same as above.
	* VEE	Potential for simultaneous extraction of free product, and gr.wr. Existing monitoring well may be used as a recovery well.
TREATMENT	* Air stripping, UV/Ox, and GAC	Use of these technologies requires installing capital intensive systems. Groundwater contamination is limited to total naphthalenes, and TRPH.
	* Oily Waste Collection and Treatment System	Groundwater and free product can be extracted simultaneously. Mixed fluids may be treated at the oily waste collection and treatment system.

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\* VEE

**Vacuum Enhanced Extraction**

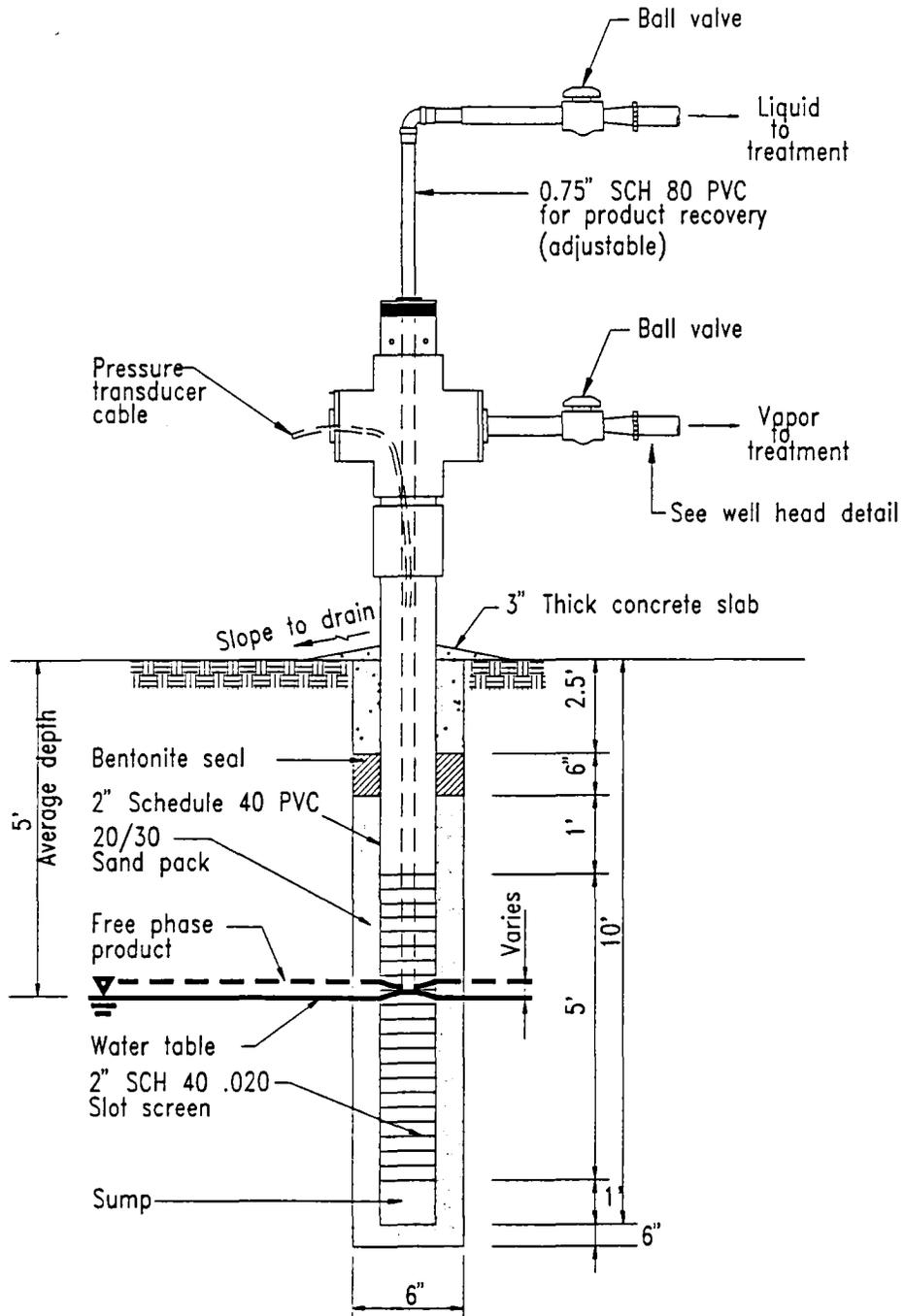
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## **Vacuum Enhanced Extraction**

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- . VEE results in simultaneous extraction of air, free product, and groundwater.**
  - . Free product and groundwater are extracted using a draw-tube that floats at the oil/water interface.**
  - . A vacuum is initially applied to the draw-tube to begin removal of free product and groundwater. The draw-tube and the well casing are manifolded to the same vacuum source. High vacuum is applied to the draw-tube in order to lift water and free product, thus lowering the water table in the local area within the well casing. Lower vacuum is applied to the well to clean up the unsaturated soils by SVE.**
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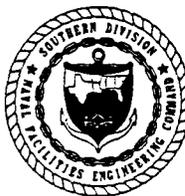
VEE Well Head



**VACUUM ENHANCED EXTRACTION WELL DETAIL**

NOT TO SCALE

**FIGURE 12  
VACUUM ENHANCED EXTRACTION WELL DETAIL**



**REMEDIAL ACTION PLAN  
SITE 278**

**COASTAL SYSTEMS STATION  
PANAMA CITY, FLORIDA**

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## **RAC INTERFACE MEETING**

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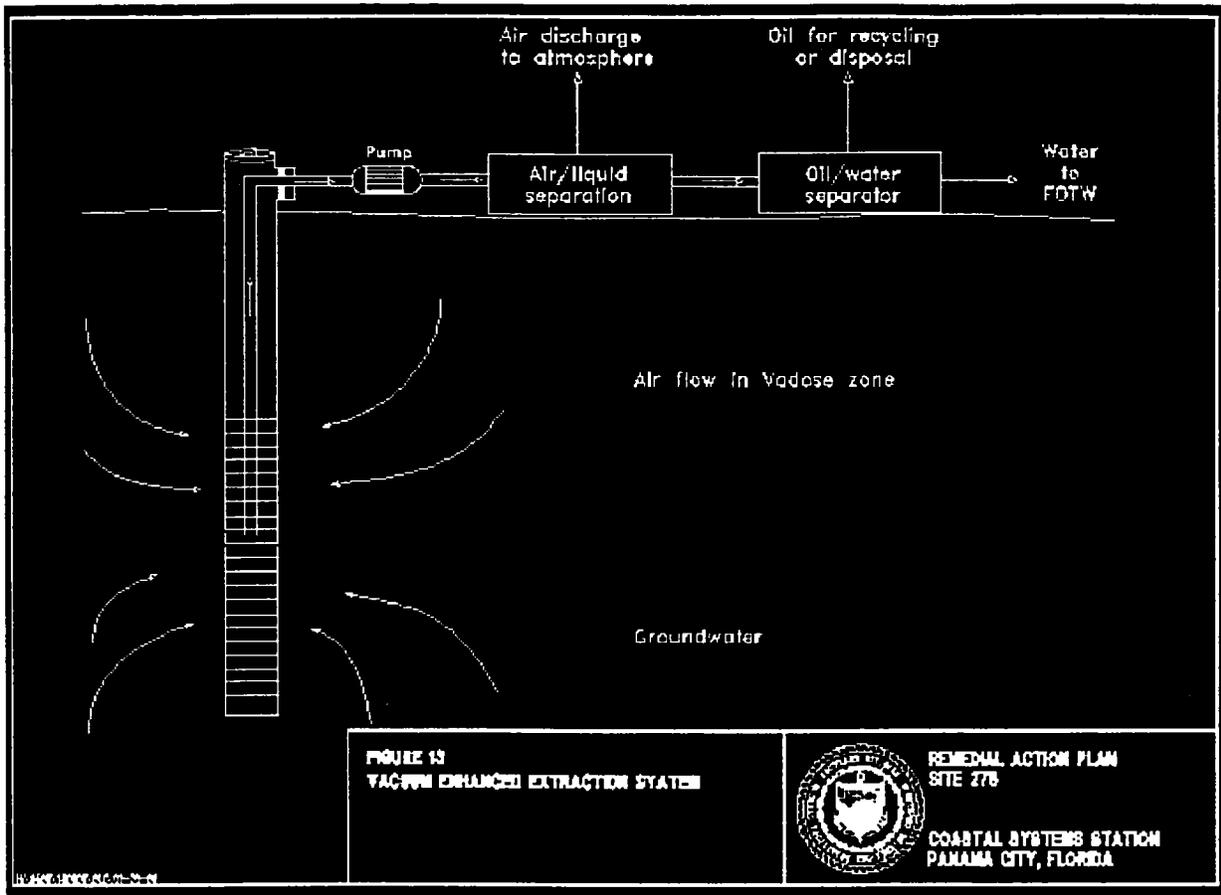
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## **RECOMMENDED REMEDIAL ACTION PLAN**

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- . **Continue Free Product Removal via Manual Bailing**
  - . **Accelerate the Free Product Removal via VEE**
  - . **Simultaneous Extraction of Contaminated Groundwater**
  - . **Treat total fluids in the oily waste collection and treatment system located at the base.**
  - . **Monitoring Plan for free product and groundwater**
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TREATMENT SYSTEM



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## IMPLEMENTATION SCHEDULE

**Groundwater**

- . Volume of contaminated groundwater = 32,000 gallons
- . Flow Rate per well = 1 gpm
- . Volume per well per trip (8 hr.) = 480 gallons
- . Number of trips to extract 32,000 gallons = 67 trips
- . Assuming 4 trips per months total time of extraction = 17 months.

**Free Product**

- . Composition of product to water by volume = 1/30
- . Volume of free product = 200 to 900 gallons
- . Time to remove 900 gallons of free product =  $900 \times 30 / 480 = 56.3$  trips

**Sampling and Analyses Plan**

- . Source Area Monitoring Wells : MW-4, MW-5, and MW6
- . Perimeter Area monitoring Wells: MW-3, MW-7, MW-13, MW-14, and MW-15.
- . Full Suite S&A for the source area and perimeter area monitoring wells once at the beginning and once at the end of cleanup process.
- . Sampling and analyses of source area monitoring wells for TRPH and total naphthalenes quarterly for the first year and annually for two years.