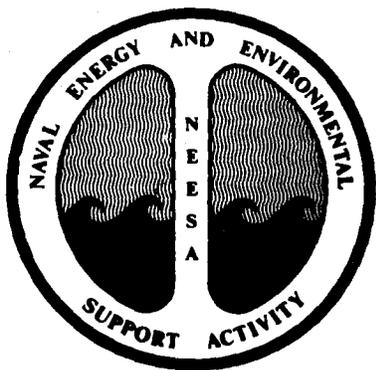


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NAS SAUFLEY FIELD
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PRELIMINARY ASSESSMENT REPORT NAVAL EDUCATION AND TRAINING PROGRAM
MANAGEMENT SUPPORT ACTIVITY (NETPMSA) NAS SAUFLEY FIELD FL
5/1/1992
NAVY ENERGY AND ENVIRONMENTAL SUPPORT ACTIVITY



**NAVAL ENERGY AND ENVIRONMENTAL
SUPPORT ACTIVITY**

Port Hueneme, California 93043-5014

PRELIMINARY ASSESSMENT
REPORT

NAVAL EDUCATIONAL AND TRAINING PROGRAM
MANAGEMENT SUPPORT ACTIVITY (NETPMSA)
SAUFLEY FIELD
ESCAMBIA COUNTY, FLORIDA

EPA IDENTIFICATION: FL170024473
NEESA 13-227
MAY 1992

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM				IDENTIFICATION			
				State: FL		CERCLIS Number: FL170024473	
				CERCLIS Discovery Date: 7/20/91			
1. General Site Information							
Name: NETPMSA SAUFLEY FIELD			Street Address: Code 100P				
City: PENSACOLA		State: FL	Zip Code: 32509-5000	County: ESCAMBIA	Co. Code: Cong. Dist:		
Latitude: 30° 20' 0.0"		Longitude: 87° 27' 50.0"		Approx. Area of Site: 866 acres	Status of Site: Active		
2. Owner/Operator Information							
Owner: NETPMSA SAUFLEY FIELD			Operator: Same				
Street Address: Code 100P			Street Address: Same				
City: PENSACOLA			City: Same				
State: FL	Zip Code: 32509-5000	Telephone: 904-452-1322	State: FL	Zip Code: Same	Telephone: Same		
Type of Ownership: Federal Agency DOD			How Initially Identified: RCRA/CERCLA Notification				

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM		IDENTIFICATION	
		State: FL	CERCLIS Number: FL170024473
		CERCLIS Discovery Date: 7/20/91	
3. Site Evaluator Information			
Name of Evaluator: SCOTT L. HORWITZ		Agency/Organization: NEESA	Date Prepared: 4/92
Street Address: CODE 112E3		City: PORT HUENEME	State: CA
Name of EPA or State Agency Contact: REGION IV		Telephone: 404-347-4727	
Street Address: 345 COURTLAND STREET NE		City: ATLANTA	State: GA
4. Site Disposition (for EPA use only)			
Emergency Response/Removal Assessment Recommendation: No Date: 1/92	CERCLIS Recommendation: Higher Priority SI Date: 1/92	Signature: Name: SCOTT L. HORWITZ Position: ENVIRONMENTAL ENGINEER	

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: FL	CERCLIS Number: FL170024473
	CERCLIS Discovery Date: 7/20/91	

5. General Site Characteristics

Predominant Land Uses Within 1 Mile of Site: Commercial Residential Forest/Fields	Site Setting: Suburban	Years of Operation: Beginning Year: 1940 Ending Year: 1991
Type of Site Operations: DOD RCRA Treatment, Storage, or Disposal Small Quantity Generator	Waste Generated: Onsite	
	Waste Deposition Authorized By: Present Owner	
	Waste Accessible to the Public No	
	Distance to Nearest Dwelling, School, or Workplace: 500 Feet	

6. Waste Characteristics Information

<table> <tr> <th>Source Type</th> <th>Quantity</th> <th>Tier</th> </tr> <tr> <td>Surface impoundment</td> <td>2.00e+05 lbs</td> <td>W</td> </tr> <tr> <td>Drums</td> <td>3.50e+01 drums</td> <td>V</td> </tr> <tr> <td>Pile</td> <td>6.00e+04 cu ft</td> <td>V</td> </tr> <tr> <td>Non-drum containers</td> <td>6.58e+04 gals</td> <td>V</td> </tr> </table>	Source Type	Quantity	Tier	Surface impoundment	2.00e+05 lbs	W	Drums	3.50e+01 drums	V	Pile	6.00e+04 cu ft	V	Non-drum containers	6.58e+04 gals	V	General Types of Waste: Metals Paints/Pigments Oily Waste
Source Type	Quantity	Tier														
Surface impoundment	2.00e+05 lbs	W														
Drums	3.50e+01 drums	V														
Pile	6.00e+04 cu ft	V														
Non-drum containers	6.58e+04 gals	V														
Tier Legend C = Constituent W = Wastestream V = Volume A = Area	Physical State of Waste as Deposited Solid Liquid															

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM		IDENTIFICATION	
		State: FL	CERCLIS Number: FL170024473
		CERCLIS Discovery Date: 7/20/91	
7. Ground Water Pathway			
Is Ground Water Used for Drinking Water Within 4 Miles: Yes	Is There a Suspected Release to Ground Water: Yes	List Secondary Target Population Served by Ground Water Withdrawn From:	
Type of Ground Water Wells Within 4 Miles: Municipal	Have Primary Target Drinking Water Wells Been Identified: Yes	0 - 1/4 Mile	0
	Primary Target Population: 862	>1/4 - 1/2 Mile	0
Depth to Shallowest Aquifer: 3 Feet	Nearest Designated Wellhead Protection Area: Underlies Site	>1/2 - 1 Mile	0
		>1 - 2 Miles	0
Karst Terrain/Aquifer Present: No		>2 - 3 Miles	0
		>3 - 4 Miles	0
		Total	0

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: FL	CERCLIS Number: FL170024473
	CERCLIS Discovery Date: 7/20/91	

8. Surface Water Pathway

Part 1 of 4

Type of Surface Water Draining Site and 15 Miles Downstream:	Shortest Overland Distance From Any Source to Surface Water: 5000 Feet 0.9 Miles
Is there a Suspected Release to Surface Water: Yes	Site is Located in: >10 yr - 100 yr floodplai

8. Surface Water Pathway

Part 2 of 4

Drinking Water Intakes Along the Surface Water Migration Path: No

Have Primary Target Drinking Water Intakes Been Identified: No

Secondary Target Drinking Water Intakes:
None

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: FL	CERCLIS Number: FL170024473
	CERCLIS Discovery Date: 7/20/91	
8. Surface Water Pathway		Part 3 of 4
Fisheries Located Along the Surface Water Migration Path: No Have Primary Target Fisheries Been Identified: No Secondary Target Fisheries: None		
8. Surface Water Pathway		Part 4 of 4
Wetlands Located Along the Surface Water Migration Path? (y/n) No Have Primary Target Wetlands Been Identified? (y/n) No Secondary Target Wetlands: None		
Other Sensitive Environments Along the Surface Water Migration Path: No Have Primary Target Sensitive Environments Been Identified: No Secondary Target Sensitive Environments: None		

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: FL	CERCLIS Number: FL170024473
	CERCLIS Discovery Date: 7/20/91	
9. Soil Exposure Pathway		
Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination: No	Number of Workers Onsite: None	
Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination: No		
10. Air Pathway		
Total Population on or Within: Onsite 0 0 - 1/4 Mile 0 >1/4 - 1/2 Mile 0 >1/2 - 1 Mile 0 >1 - 2 Miles 0 >2 - 3 Miles 0 >3 - 4 Miles 0 Total 0	Is There a Suspected Release to Air: No Wetlands Located Within 4 Miles of the Site: No Other Sensitive Environments Located Within 4 Miles of the Site: No	
Sensitive Environments Within 1/2 Mile of the Site: None		

PRELIMINARY ASSESSMENT
REPORT

Activity Name: NETPMSA Saufley Field

Address: Escambia County, Florida

UIC: N68322

EPA Region: 4

EPA Identification: FL170024473

Latitude: 30° 20' 00" N Longitude: 87° 27' 50" W

Preliminary Assessment Team Members

Scott Horwitz, Environmental Engineer

Joseph Vogel, P.E.

Mark Kram, Hydrogeologist

Prepared by:

Naval Energy and Environmental Support Activity
Port Hueneme, CA 93043

NEESA 13-227
February 1992

EXECUTIVE SUMMARY

A NEESA team visited NETPMSA Saufley Field from 9 to 19, July 1991 to collect information for the Preliminary Assessment (PA). The investigation showed four areas of environmental concern which are strongly recommended for a Site Inspection (SI).

Between Runways 9 and 13 is the location where 30 to 40 steel bottles containing nuclear wash down liquid, and old shop equipment were reportedly buried.

Saufley's fire department conducted practice burns north of Runways 9 and 13. The exact details of the fire fighting drills are unknown. It is assumed that fire fighting drills were conducted while the airfield was in operation.

The pistol range is situated on a large clay hill approximately 100 feet in length, 30 feet wide and 20 feet high. Large amounts of spent bullets are scattered about the area and lodged in the hill. Many of the bullets are lead with some having steel jackets, and others having copper jackets.

During aerial operations between 1942 and 1977; NAAS Saufley had 14 underground and two above ground storage tanks in operation. The aerial refueling system consisted of six 25,000 gallon (tanks 814A-F), and one 15,000 gallon (tank 814) underground storage tanks (UST). Tanks 814A-F and 814 contained aviation gasoline and jet fuel (JP-4) respectively. These tanks were connected by over two miles of 10" and 8" diameter steel fuel lines to 52 refueling pits located on the aircraft parking platform.

During the PA investigation two off base environmental sources were discovered that could potentially contaminate base property. These threats may not fall under the IR program but samples should be taken to protect the base's property.

Source 1. Eleven Mile Creek was cited in a 1965 report (Musgrove et. al., 1965) as a disposal site for industrial waste. The creek is topographically lower than the fire fighter training area, the pistol range, and the reported burial ground near Perimeter Road. There are no reports that the Navy disposed of any waste in Eleven Mile Creek, and only a small section of the creek is on Navy property.

Source 2. A county landfill is situated just east of the eastern fence line and north of the main gate. The landfill is an old clay pit which was excavated approximately 40 feet below ground level. Reportedly, no hazardous waste is disposed of in the landfill, but it is possible that small quantities of hazardous waste from residential sources could migrate to Navy property. The bottom of the clay pit is below the local groundwater table so the pit may disrupt local groundwater flow. Regional groundwater flow in the area is towards

the west. The landfill could be a potential threat to potable water wells located on Saufley.

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1.0 INTRODUCTION.

Being on the federal docket requires that NETPMSA Saufley Field have a PA conducted following the guidelines listed in CERCLA.

NEESA was requested to prepare the PA and the Hazard Ranking System (HRS) II Scoring by the Engineering Field Division in Southern Division. A NEESA team visited NETPMSA Saufley Field from 9 to 19 July 1991 to collect information for the report. All data presented here are current as of those dates.

The report is composed of physical, historical, and site specific information. Information for the report has been collected from state agencies, base personnel, and texts.

2.0 AUTHORITY AND SCOPE.

Section 211 of the Superfund Amendments and Reauthorization Act of 1986 (SARA 211) provides continued authority for the Department of Defense Environmental Restoration Program (DERP) and the Defense Environmental Restoration Account (DERA). The Navy Installation Restoration (IR) program is authorized by Chief of Naval Operations instruction (OPNAVINST) 5090.1 of Aug 1990. Naval Facilities Engineering Command (NAVFACENGCOM) manages the Navy program. NAVFACENGCOM tasked the Naval Energy and Environmental Support Activity (NEESA) to conduct a preliminary assessment (PA) for each Navy and Marine Corps facility listed on the Federal Facilities Hazardous Waste Compliance Docket as required by SARA 120.

PAs are conducted in accordance with the Guidance for Performing Preliminary Assessments Under CERCLA, U.S Environmental Protection Agency, September 1991; and recommendations are consistent with the National Contingency Plan.

The PA begins with investigation and review of available records at NEESA and the cognizant NAVFACENGCOM Engineering Field Division. After the record search, the PA team visits the activity to complete documentation of past and present operations and disposal practices. With the assistance of the activity point of contact, the team tours the activity and interviews long term employees. If a potential threat to human health or the environment is present, further action is recommended.

3.0 ACTIVITY DESCRIPTION

3.1 Activity Location. The Naval Educational and Training Program Management Support Activity (NETPMSA) Saufley Field, is located in northwest Florida. The base is between Highway 10 and Perdido Bay approximately five miles northwest of Pensacola (Figure 1). Saufley field consists of four airstrips, two of which are active. The base also has a small number of support buildings which are located south of the airfield (Figure 2). NETPMSA Saufley covers 866 acres of land, the majority of which is covered by the airstrips and wooded areas (Southern Division 1989).

3.2 Activity Mission and History. The U.S. Government purchased 866 acres of farmland in 1939 to develop the air field which was named after Richard C. Saufley, a pioneer in naval aviation. The Air Field opened in 1940 as Naval Auxiliary Air Station (NAAS) Saufley. NAAS Saufley was used to train U.S. and allied pilots during World War II and the Korean Conflict. In 1957, the mission at Saufley was changed to basic training for naval aviators. Figure 2 shows a general map of the base (Southern Division 1989).

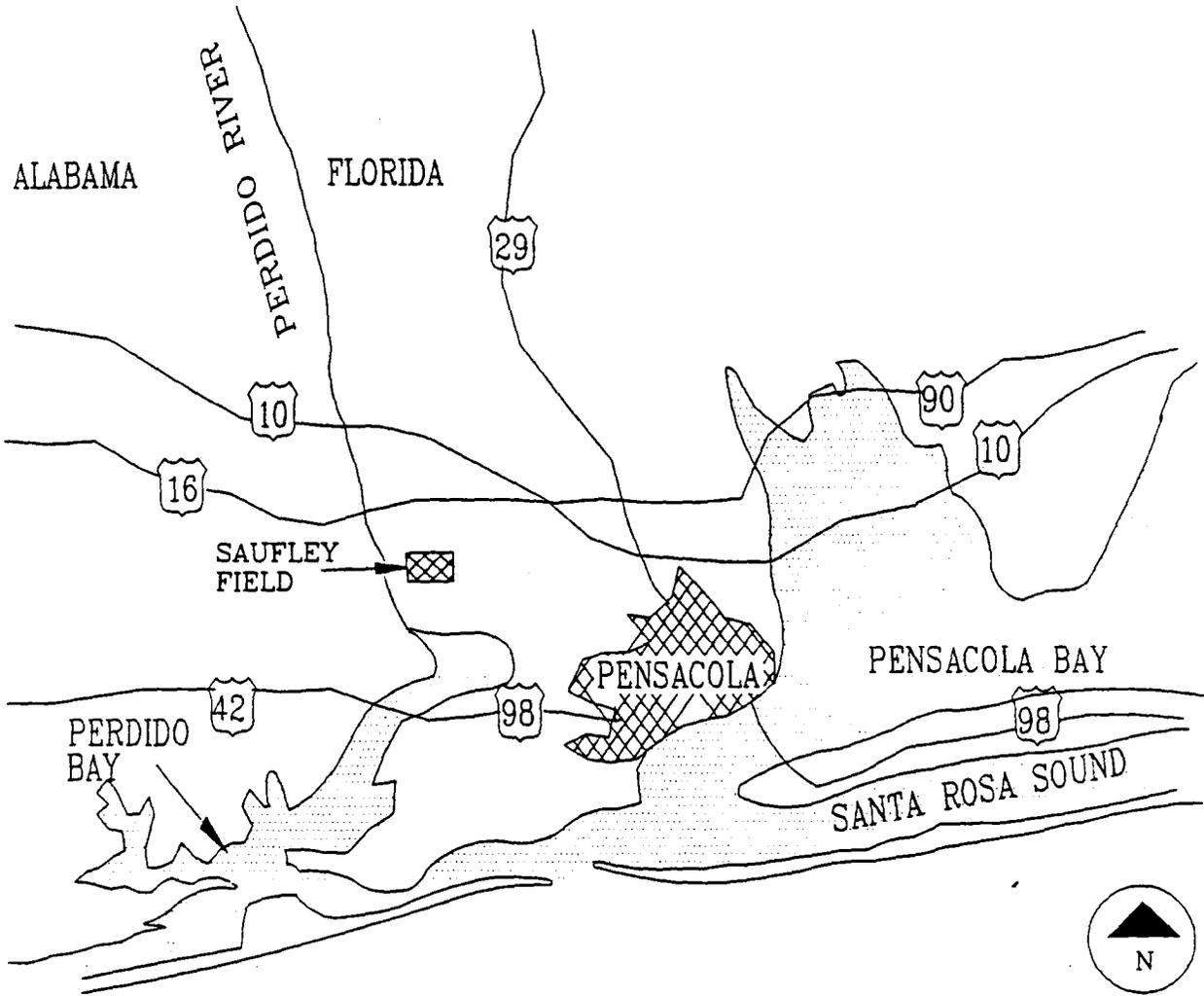
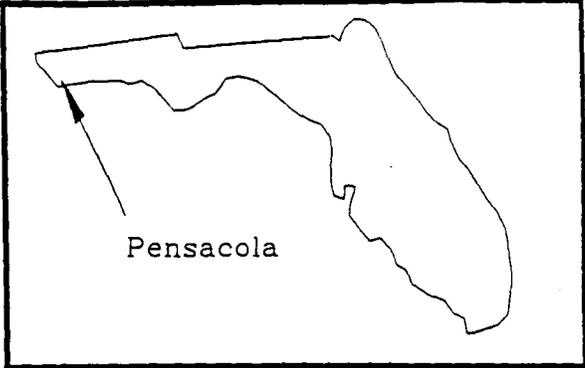
NAAS Saufley was redesignated as Naval Air Station (NAS) in 1968 and retained that status until 1976 when NAS Saufley was disestablished and placed in caretaker status. Between 1976 and 1979 Saufley Field was used as an Outlying Landing Field (OLF) for NAS Whiting Field. In 1979 Saufley was reactivated as NETPMSA Saufley Field (Southern Division 1989).

Saufley is now used primarily to train and educate Naval personnel and to house federal prisoners. The Department of Immigration (DOI) utilizes a hangar to house patrol aircraft. NAS Whiting Field pilots use two of the airstrips for touch and go landing exercises.

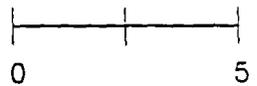
3.3 Surrounding Area. Escambia County is Florida's westernmost county and lies between the State of Alabama to the west and Santa Rosa County. The State of Alabama also forms the northern boundaries of both counties, and is approximately 50 miles north of their southern limits at the Gulf of Mexico shoreline. Pensacola is the county seat of Escambia County and is the largest city in both land area and population as well as the leading industrial center for western Florida.

Commercial and industrial development is concentrated in downtown Pensacola, but strip commercial developments and outlying centers, generally at major highway intersections or in neighborhood service clusters, provide a dispersed pattern of retail commercial land uses.

The immediate area surrounding Saufley is characterized by sparsely populated residential structures. Estimated population within five



Scale (MI)



GULF OF MEXICO

FIGURE 1
NETPMSA SAUFLEY FIELD
VICINITY MAP

Key:

-  HIGHWAY
-  WATER WAYS



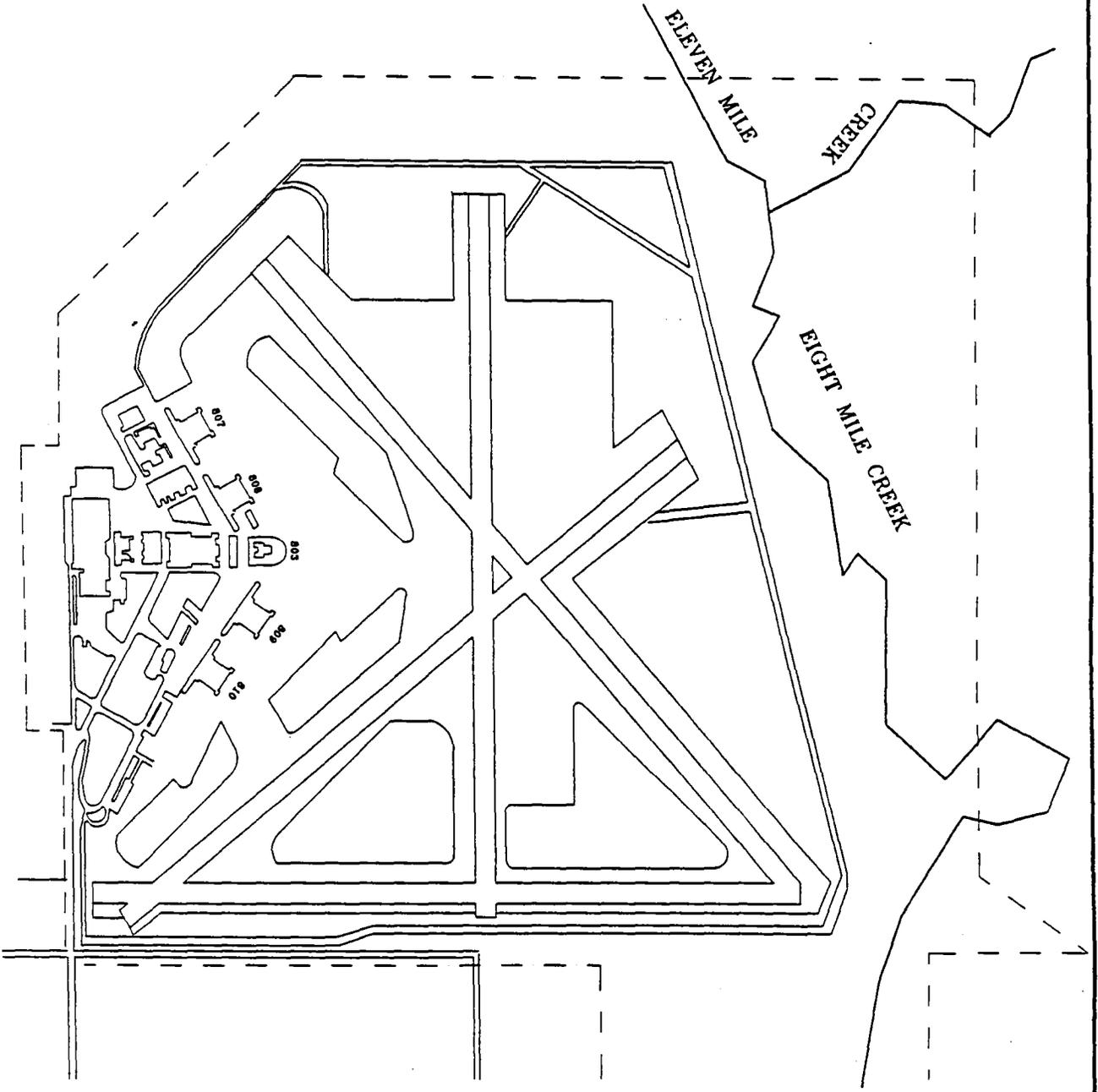
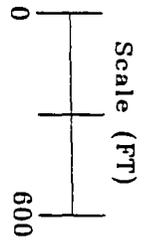
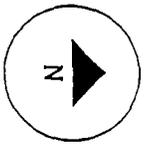


Figure 2
NETPMSA Saultley Field

Generalized Map of NETPMSA Saultley

----- Base Boundary



miles of Saufley is 60,970, with an average density of 776 persons per square mile (Planning Committee, 1980). Saufley Field itself possess approximately 2100 persons. Appendix 1 shows the breakdown of census tracks.

3.4 Climate. NETPMSA Saufley Field is located in a region of humid, subtropical climate with an average annual temperature of 68° F. The average temperature in winter is 54° F and the summer average is 81°F. Average annual precipitation totals 53 inches (Moore, 1987). The wettest month is September, which averages 8.8 inches, and the driest month is November, which averages 2.8 inches of rain. Heavy thunderstorms and flash floods are often a problem in the area when hurricanes and tropical storms enter the Gulf of Mexico (Southern Division 1989).

3.5 Vegetation and Wildlife. NETPMSA Saufley is covered by paved runways surrounded by mowed open grassy fields. The surrounding area is predominantly wooded and supports a wide variety of plant species typical to humid subtropical climates. Slash and longleaf pines are the most abundant species in the area. Along with the pines, trees such as oaks, willows, magnolias, hickories, and gums grow naturally in the area.

Several plant species listed as threatened or endangered by state or federal agencies have been observed in the area. These include Florida Department of Agriculture (FDA) listed endangered species such as the White-Top Pitcherplant, Large Leaved Jointweed, and Water Sundew. None of these species have been found at Saufley Field.

Table 1 lists Endangered and Threatened Species that may reside in the area.

3.6 Topography. NETPMSA Saufley Field resides in the Coastal Lowland topographic division of the Coastal Plain physiographic division of the United States. The Coastal Lowlands consist of relatively undissected nearly level plains lying less than 100 feet above sea level.

Topography of NETPMSA Saufley Field ranges in elevation from 80 to 85 feet along the eastern central portion of the property to less than 5 feet along the northwestern portion of the property (Figure 3). With a few exceptions to the northern boundary of the property, topography is level to gently sloping (less than 8% slope).

3.7 Hydrology. For most of the property, runoff is towards the southwest through a network of culverts that leads to Perdido Bay approximately one mile away. In the northern portion of the property, runoff is towards Eight Mile Creek and Eleven Mile Creek, which also drain towards Perdido Bay. Small ponds (less than 300 square meters in surface area) have been observed in pits located just east of Saufley Field property line.

TABLE 1

Endangered and Threatened Species

Plants

Scientific Name	Common Name
<i>Drosera intermedia</i>	Water Sundew
<i>Epigaea repens</i>	Trailing Arbutus
<i>Hexastylis arifolia</i>	Heartleaf
<i>Kalmia latifolia</i>	Mountain Laurel
<i>Lilium iridollaej</i>	Panhandle Lilly
<i>Polygonella macrophylla</i>	Large-Leaved Jointweed
<i>Rhodoendron austrinum</i>	Orange Azalea
<i>Sarracenia leucophylla</i>	White-Top Pitcher Plant
<i>Sarracenia rubra</i>	Red-Flowered Pithcer Plant
<i>Stewartia malacodendron</i>	Silky Camellia

Endangered Fish

<i>Fundulus jenkinsi</i>	Saltmarsh Topninnow
--------------------------	---------------------

Amphibians and Reptiles

<i>Alligator mississippiensis</i>	American Alligator
<i>Drymarchon corias couperi</i>	Eastern Indigo Snake
<i>Gopherus polyphemus</i>	Gopher Tortoise
<i>Rana areolata aseopus</i>	Florida Gopher Frog
<i>Macroclemys temminki</i>	Alligator Snapping Turtle

Mammals

<i>Ursus americanus floridanus</i>	Florida Black Bear
------------------------------------	--------------------

Birds

<i>Dendroica dominica stoddardi</i>	Stoddard's Yellow-throated Warbler
<i>Egretta thula</i>	Snowy Egret
<i>Falco peregrinus tundrius</i>	Artic Peregrine
	Falcon
<i>Falco sparverius paulus</i>	Southeastern Kestrel

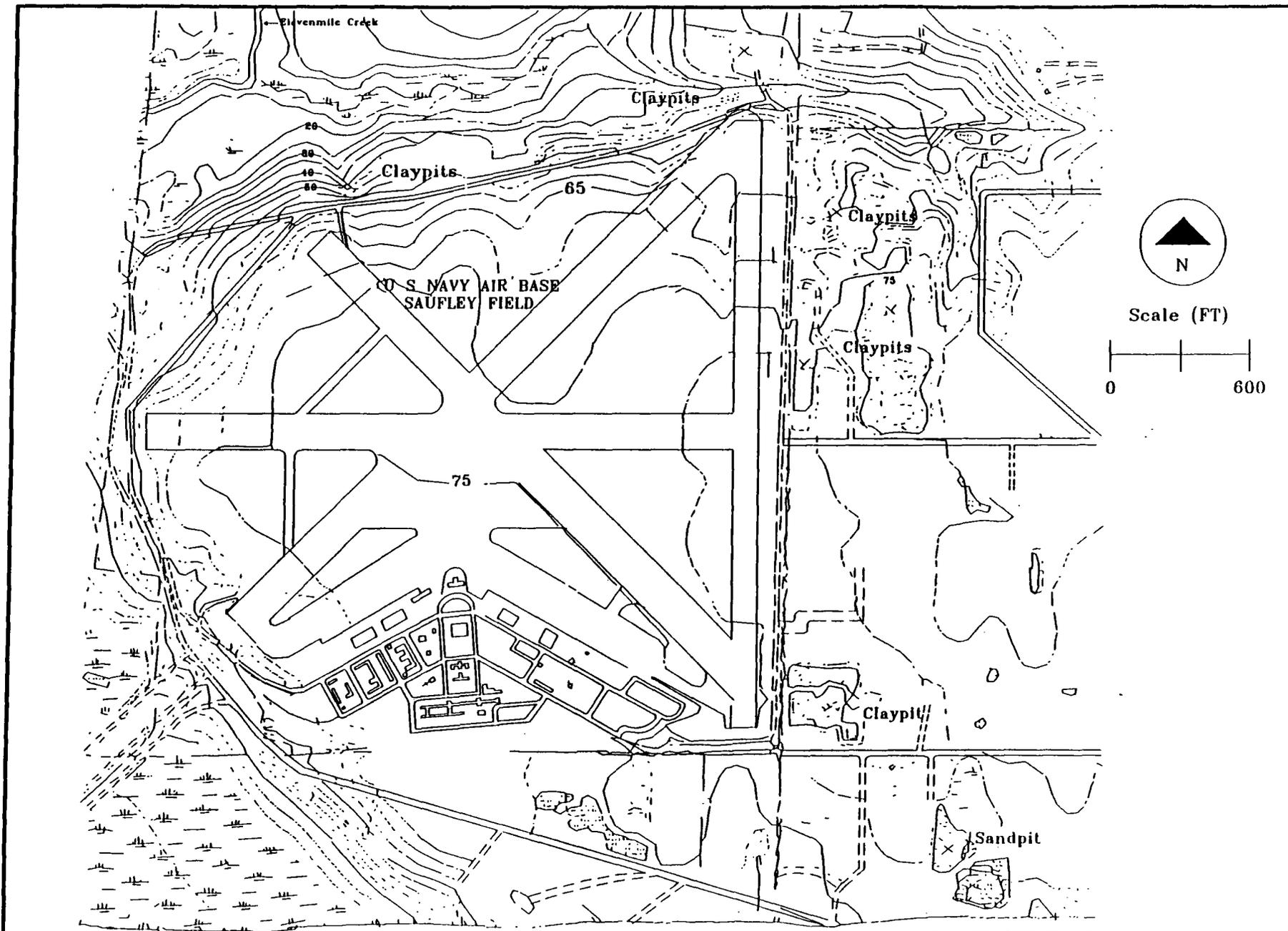


Figure 3
NETPMSA Saufley Field

Topographic Map
(Modified After U.S. Geological Survey)



The drainage basin of concern consists of a well-developed network of waterways which drains Escambia and Santa Rosa Counties (Figure 4). The Perdido River forms the Florida-Alabama border along the west margin of the Panhandle and flows southward into Perdido Bay. The Perdido River Basin consists of 925 square miles (236 in Escambia and Santa Rosa counties) (Musgrove et. al., 1965). Average flow from the basin is 1,120 million gallons per day (284 mgd from Escambia and Santa Rosa counties). Escambia River, the largest stream in the area, flows southward from Alabama on the north, dividing Escambia County from Santa Rosa County, and empties into Escambia Bay approximately 10 miles from NETPMSA Saufley Field. The Escambia River Basin consists of 4,233 square miles (410 in Escambia and Santa Rosa counties) of area (Musgrove et. al., 1965). Average flow from the basin is 4540 mgd (556 mgd from Escambia and Santa Rosa counties). Streams on the east side of the Escambia River (north of Molino) are relatively short with a random dendritic pattern. The streams on the west side (where Saufley Field is located) are many times longer and have fairly straight, parallel channels that trend southeastward, reminiscent of trellis drainage. Hundreds of small ponds dot Escambia and Santa Rosa counties. These ponds are apparently accumulations of rainwater held up by underlying clay or iron-cemented sandstone ("hardpan").

Approximate average annual runoff, in inches, from areas within Escambia and Santa Rosa counties is presented in Figure 5. Saufley Field is affected by two 100 - year flood plains which follow Eight Mile Creek and Eleven Mile Creek. The flood plains do not encroach upon the developed areas of the facility. These flood prone areas are illustrated in Figure 6 (Southern Division 1988). The flood plains do not encroach upon the developed areas of the facility.

The surface waters of Escambia and Santa Rosa counties are of excellent quality, except in the coastal reaches where tides bring salt water up the streams. The Escambia River coming out of Alabama brings water of higher mineral content (approximately 100 ppm). However, this mineralization is diluted somewhat by the lower minerals-content waters of the Florida tributaries (Musgrove et. al., 1965).

Only a small part of the surface water of the Escambia and Santa Rosa County areas are presently being used. Recreation, shipping, cooling, and waste disposal are the major uses at present (Musgrove et. al., 1965). These uses are nonconsumptive in that no water is permanently removed from the water body. Water used for cooling is removed from a stream and returned with only a slight rise in temperature. There are no known major consumptive uses within the area, and the full potential of the surface waters is far from being realized.

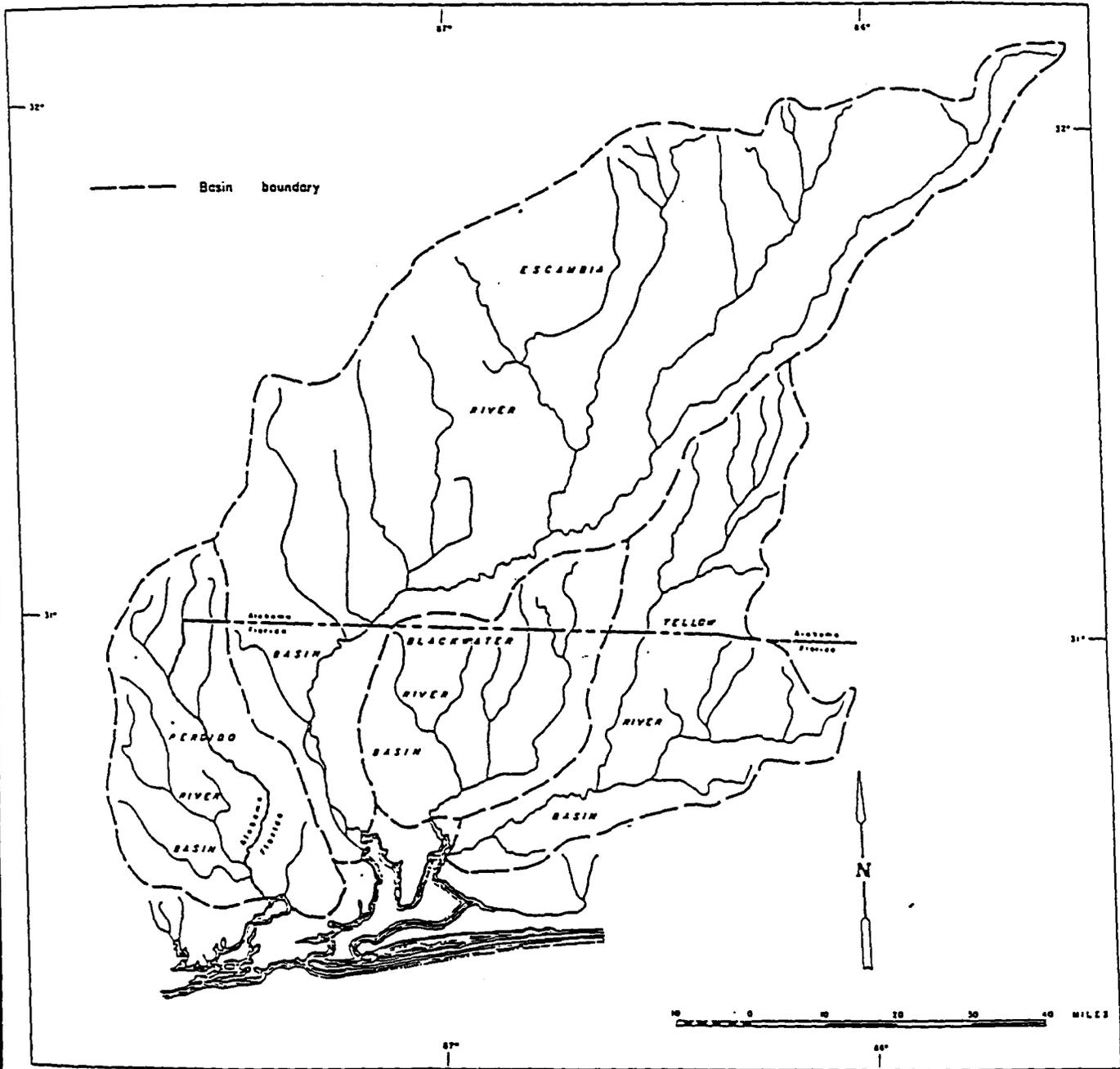


Figure 4
NETPMSA Saufley Field

Key: Basin Map of Perdido,
Escambia, Blackwater, and
Yellow Rivers (Modified After
Musgrove ET. AL., 1965).



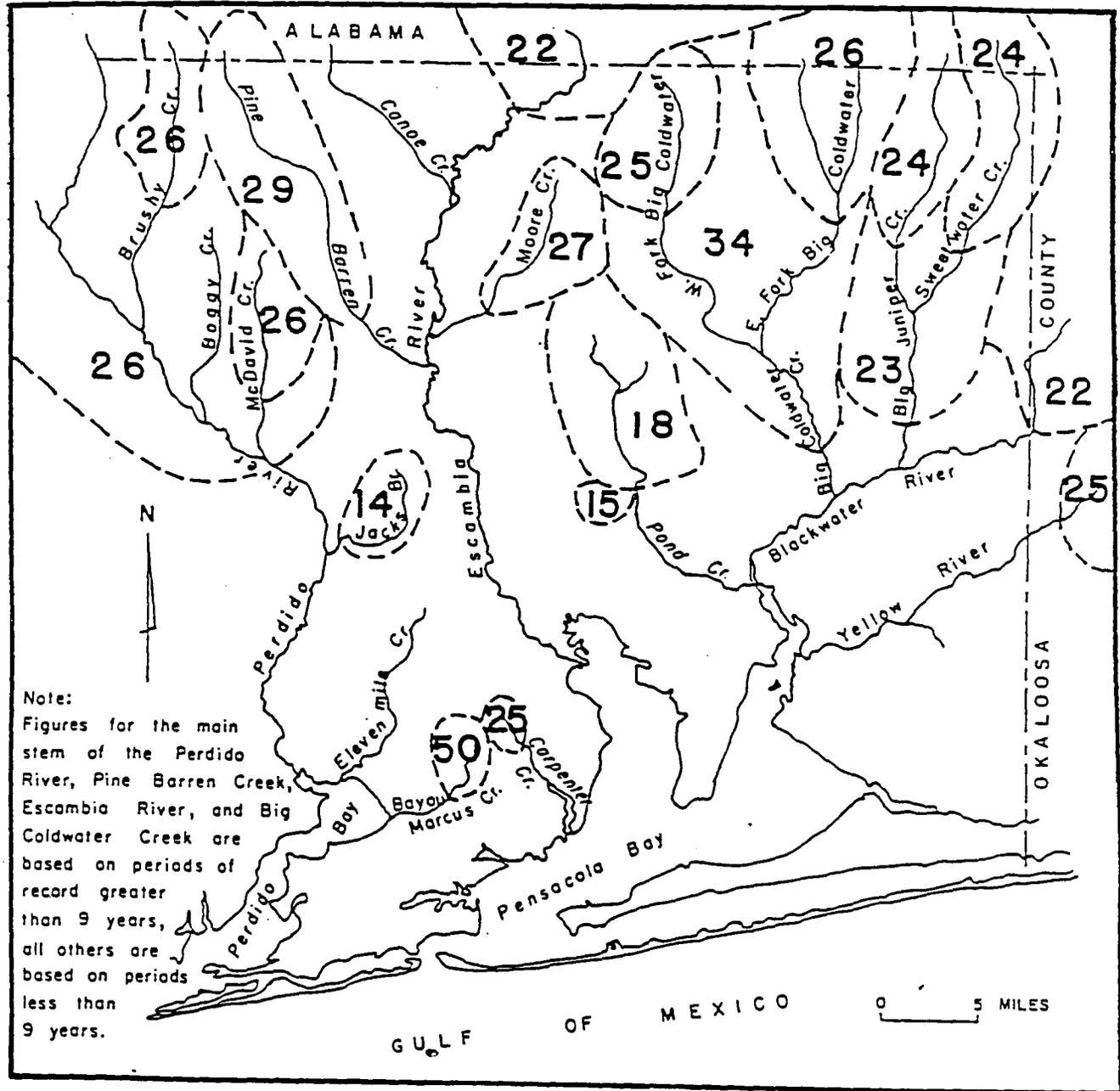


Figure 5
NETPMSA Saufley Field

Key: Approximate Average Annual Runoff (Inches) From Areas Within Escambia & Santa Rosa Counties (Modified After Musgrove 1965).



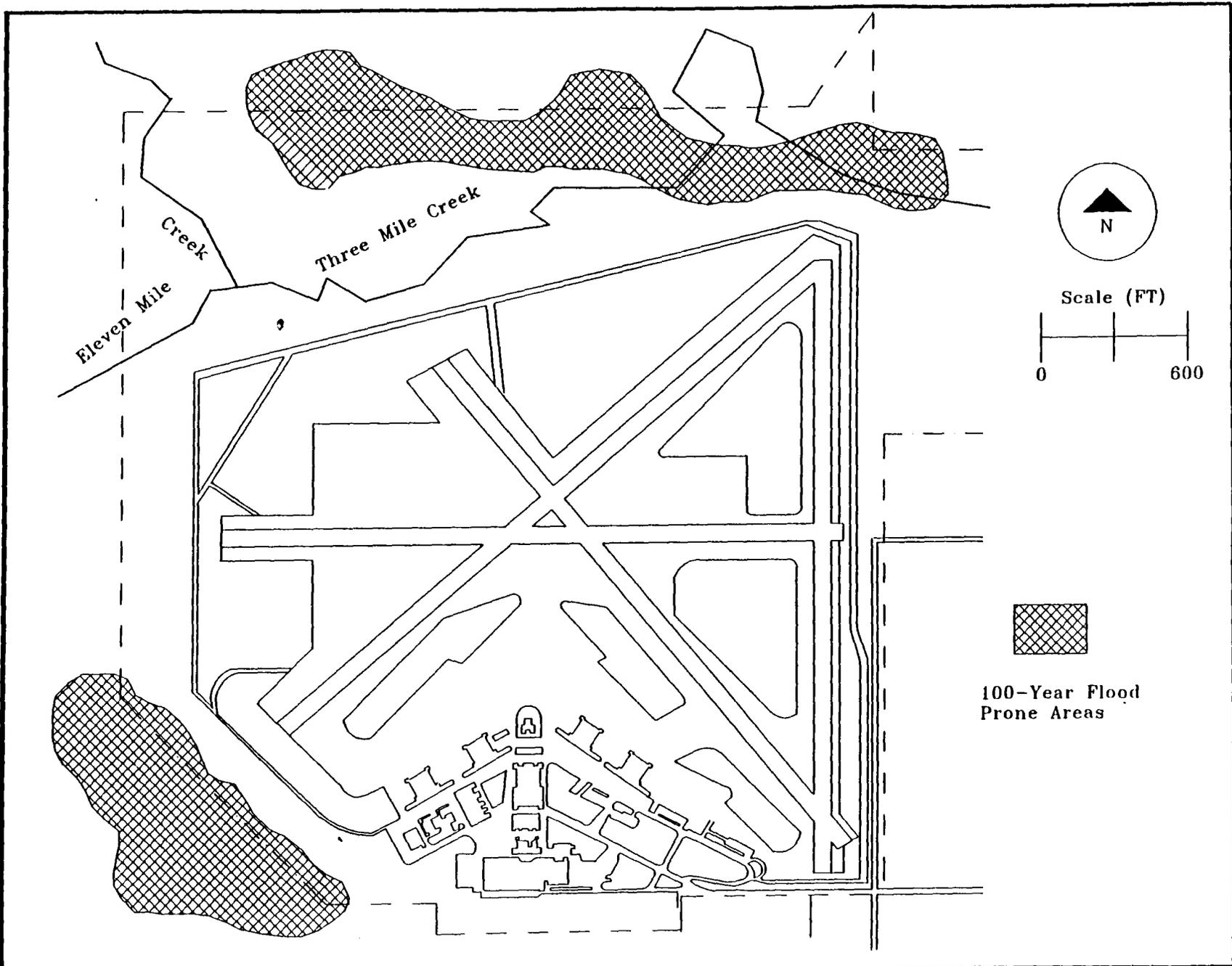


Figure 6
NETPMSA Sausley Field

Flood Prone Areas
(Modified After Southern Division 1988)



Most uses of surface water are within the southern half of the area. Principal among these are recreation and shipping. Eleven Mile Creek (which straddles the northwest corner of Saufley Field) has been used for disposal of industrial wastes (Musgrove et. al., 1965). No known drinking water uses of surface waters have been identified.

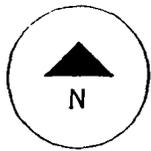
3.8 Soils. The majority of the following soil information was obtained from the 1960 U.S. Department of Agriculture soil survey of Escambia County, Florida. Figure 7 displays the soil configuration map as of 1960. Surface sediments in the Saufley Field area are classified with the Eustis; Fresh Water Swamp; Klej; Lakeland; Mixed Alluvial Land; Myatt; Norfolk; Pits, Dumps and Made Land; Plummer; Red Bay; and Rutlege associations.

Eustis loamy fine sand, level phase (Ea) has a 0 to 2 percent slope. This soil has a dark-brown to dark grayish-brown surface soil that grades to reddish-yellow loamy fine sand in the subsoil. Drainage is classified as somewhat excessive. The surface soil varies from 3 to 6 inches in thickness. Below a depth of 42 inches, and generally within a depth of 72 inches, the soil is underlain by materials of finer texture. The profile description is as follows:

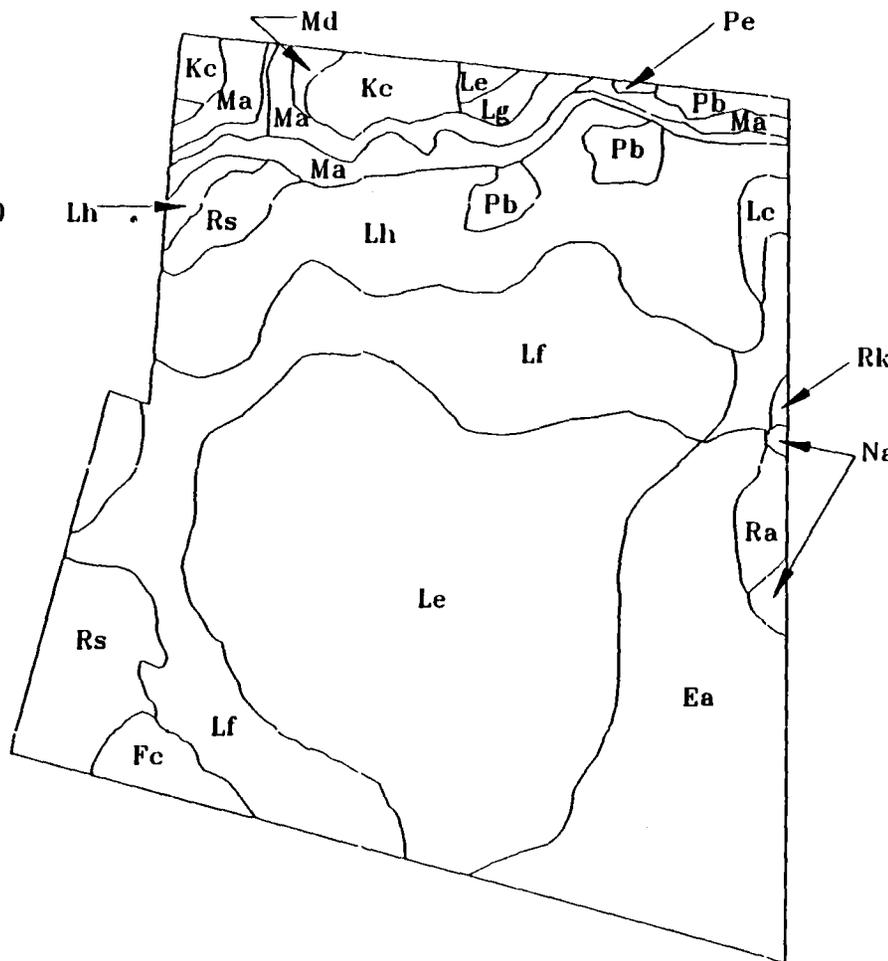
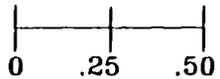
- 0 to 4 inches - dark grayish-brown loamy fine sand; very friable; contains small amounts of organic matter; permeability of 10+ inches per hour; pH of 5.0 to 6.0.
- 4 to 12 inches - yellowish-brown loamy fine sand; very friable; permeability of 10+ inches per hour; pH of 5.0 to 6.0.
- 12 to 42 inches plus - reddish-yellow loamy fine sand; very friable; permeability of 10+ inches per hour; pH of 5.0 to 6.0.

Fresh water swamp (Fc) has a 0 to 1 percent slope and consists of naturally wooded areas, all of which are covered with water or are saturated throughout the year. The areas contain a mixture of soils and soil materials that vary in color, texture, composition, and thickness of layers. The soil material consists of stratified deposits recently washed from adjacent uplands and so intricately mixed that separation is not feasible. In many places, organic matter of varying thickness accumulates in the surface soil. Drainage is classified as very poor.

Klej loamy sand, level phase (Kc) has a 0 to 2 percent slope. The surface soil varies from dark gray to black in color and from 3 to 6 inches in thickness. Drainage is classified as somewhat poor. The subsoil layers range from brownish-yellow to yellow-brown loamy sands and contain various amounts of yellowish-red, strong brown, and yellow mottling. The profile description is as follows:



Scale (Mi)



- Ea-Eustis Loamy Sand, Level Phase
- Fc-Fresh Water Swamp
- Kc-Klej Loamy Sand, Level Phase
- Lc-Lakeland Loamy Fine Sand, Gently Sloping Phase
- Le-Lakeland Loamy Sand, Level Phase
- Lf-Lakeland Loamy Sand, Very Gently Sloping Phase
- Lg-Lakeland Loamy Sand, Gently Sloping Phase
- Lh-Lakeland Loamy Sand, Sloping Phase
- Ma-Mixed Alluvial Land, Poorly Drained
- Md-Myatt Very Fine Sandy Loam, Level Phase
- Na-Norfolk Fine Sandy Loam, Level Phase
- Pb-Pits, Dumps and Made Land
- PE-Plummer Loamy Sand, Very Gently Sloping Phase
- Ra-Red Bay Fine Sandy Loam, Level Phase
- Rs-Rutlege Sand

Figure 7
NETSPMSA Saufley Field

Soil Map
(Modified After U.S.D.A, 1960)



- 0 to 4 inches - very dark gray loamy sand; very friable; weak fine crumb structure; permeability of 5 to 10 inches per hour; pH of 4.5 to 5.5.
- 4 to 12 inches - dark grayish-brown loamy sand; very friable; weak crumb structure; permeability of 5 to 10 inches per hour; pH of 4.5 to 5.5.
- 12 to 28 inches - pale-yellow loamy sand faintly mottled with a few medium areas of olive yellow, brownish-yellow, and white; very friable; weak fine crumb structure; permeability of 10+ inches per hour; pH of 4.5 to 5.0.

Lakeland loamy fine sand, gently sloping phase (Lc) has a 5 to 8 percent slope. This soil has a grayish-brown surface soil that merges with the brownish-yellow loamy fine sand of the subsoil. Drainage is classified as somewhat excessive. The surface soil varies from dark grayish brown to brown in color and from 2 to 5 inches in thickness. This soil is underlain by materials of finer texture below 42 inches and, in most places, within 72 inches. The profile description is as follows:

- 0 to 4 inches - dark grayish-brown loamy fine sand; very friable; weak fine crumb structure; contains small amounts of organic matter; permeability of 10+ inches per hour; pH of 5.0 to 6.0.
- 4 to 16 inches - yellowish-brown loamy fine sand; very friable; weak fine crumb structure; permeability of 10+ inches per hour; pH of 5.0 to 6.0.
- 16 to 42 inches - brownish-yellow loamy fine sand; very friable; weak fine crumb structure; permeability of 10+ inches per hour; pH of 5.0.

Lakeland loamy sand, level phase (Le) has a 0 to 2 percent slope. This soil differs from the Lakeland loamy fine sand, gently sloping phase, primarily because it contains a greater amount of medium and coarse sand grains throughout the profile. Drainage is classified as somewhat excessive. The surface soil varies from dark grayish brown to brown in color and from 2 to 5 inches in thickness. The second layer may be yellowish-brown or brownish-yellow, and the rest of the profile is brownish-yellow. This soil contains materials of finer texture at depths between 42 and 73 inches.

Lakeland loamy sand, very gently sloping phase (Lf) has a 2 to 5 percent slope. The profile of this soil is similar to that of Lakeland loamy sand, level phase. Runoff is more rapid because of the slightly stronger slopes. Drainage is classified as somewhat excessive. Some areas are affected by sheet erosion and gully erosion.

Lakeland loamy sand, gently sloping phase (Lg) has a 5 to 8 percent slope. This soil has a profile similar to that of Lakeland loamy sand, level phase, but has stronger slopes. It is well drained to

somewhat excessively drained and has rapid external and internal drainage. It contains little organic matter or plant nutrients. Some areas are affected by sheet erosion and gully erosion.

Lakeland loamy sand, sloping phase (Lh) has a 8 to 12 percent slope. This soil has a profile similar to that of Lakeland loamy sand, level phase, but slopes are stronger. The grayish-brown surface soil grades to the brownish-yellow loamy sand of the subsoil. The soil is well drained to somewhat excessively drained. Rapid runoff during heavy rain causes various degrees of erosion in areas sparsely covered with vegetation.

Mixed alluvial land, poorly drained (Ma) has a 0 to 2 percent slope. This unit represents a mixture of dissimilar materials that border the streams on the property. This land is a result of soil material accumulation rather than soil development. The materials vary so greatly in color, texture, and consistence that any attempt to map the soils separately would be impracticable. This land is subject to frequent overflow. In many places it lies only a few inches above the water level of adjacent streams. The characteristics of this miscellaneous land type change from time to time as new material is deposited or removed with each overflow. Texture of this land varies greatly, depending on the source of the material and the condition of the stream when the material was deposited. Locally, texture varies from silt loam to sand. The color ranges from gray to black corresponding to the amount of organic matter present. Internal drainage is variable; surface runoff very slow.

Myatt very fine sandy loam, level phase (Md) has a 0 to 2 percent slope. The surface soil varies from dark gray to light brownish-gray in color and from 3 to 5 inches in thickness. Drainage is classified as poor. The subsoil is friable fine sandy clay loam that ranges from light gray to light grayish-brown and in which brownish-yellow mottles are common. From place to place the soil varies in texture, but all areas contain noticeable amounts of fine sand. The profile description is as follows:

- 0 to 4 inches - light brownish-gray, very fine sandy loam; friable; weak fine crumb structure; permeability is 5 to 10 inches of water per hour; pH is 4.5 to 5.5.
- 4 to 14 inches - light-gray very fine sandy loam with a few fine brownish-yellow mottles; friable; weak medium crumb structure; permeability is 5 to 10 inches of water per hour; pH is 4.5 to 5.5.
- 14 to 36 inches - light brownish-gray fine sandy clay loam with common, medium, distinct, brownish-yellow mottles; friable; moderate fine subangular blocky structure; permeability is 0.2 to 0.8 inches of water per hour; pH is 4.5 to 5.0.
- 36 to 42 inches - light grayish-brown, brownish-yellow, reddish-yellow, and strong-brown fine sandy clay loam; mottled; friable; moderate medium subangular blocky structure;

permeability is 0.2 to 0.8 inches of water per hour; pH is 4.5 to 5.0.

Norfolk fine sandy loam, level phase (Na) has a 0 to 2 percent slope. The surface soil varies from very dark gray to grayish-brown in color and from 4 to 7 inches in thickness. Drainage is classified as good. The subsoil, ranging from yellow to brownish-yellow, is a friable fine sandy clay loam, and in most areas it has faint mottlings in the lower part. The profile description is as follows:

- 0 to 5 inches - grayish-brown fine sandy loam; friable; weak fine crumb structure; permeability of 2.5 to 5 inches of water per hour; pH is 5.0 to 5.5.
- 5 to 12 inches - yellowish-brown fine sandy loam; friable; weak fine crumb structure; permeability of 2.5 to 5 inches of water per hour; pH of 5.0 to 5.5.
- 12 to 18 inches - brownish-yellow fine sandy clay loam; friable; weak medium subangular blocky structure; permeability of 5 to 10 inches of water per hour; pH of 4.5 to 5.0.
- 18 to 32 inches - brownish-yellow fine sandy clay loam; friable; moderate medium subangular blocky structure; permeability of 5 to 10 inches of water per hour; pH of 4.5 to 5.0.
- 32 to 42 inches - brownish-yellow fine sandy clay loam with common, medium, faint mottles of reddish yellow in the lower part; friable; moderate medium subangular blocky structure; permeability of 5 to 10 inches of water per hour; pH of 4.5 to 5.0.

Pits, Dumps and Made Land (Pb) consists mostly of open excavations from which gravel has been removed, uneven areas of sand, waste materials that remain after the gravel is mined, and areas that man has filled in with several feet of materials. Slopes are variable.

Plummer loamy sand, very gently sloping phase (Pe) has a 2 to 5 percent slope. The surface soil varies from gray to very dark gray in color and from 4 to 7 inches in thickness. Drainage is classified as poor. The subsoil, ranging from a light gray to grayish-brown, is a loamy sand that, in many places, contains strong-brown and brownish-yellow mottles. Variations are common. The texture of the surface soil generally ranges from loamy fine sand to loamy sand, but in places is a light sandy loam. In some places materials of fine texture occur at shallow depths. The profile description is as follows:

- 0 to 4 inches - dark-gray loamy sand; very friable; weak fine crumb structure; permeability of 10+ inches of water per hour; pH of 4.5 to 5.5.
- 4 to 24 inches - gray loamy sand mottled with strong brown and light gray; very friable; weak fine crumb structure; permeability of 5 to 10 inches of water per hour; pH of 4.5 to 5.5.
- 24 to 42 inches - light-gray loamy sand mottled with strong

brown; very friable; weak fine crumb structure; permeability of 5 to 10 inches of water per hour; pH of 4.5 to 5.5.

Red Bay fine sandy loam, level phase (Ra) has a 0 to 2 percent slope. These soils are low in organic content. The surface soil varies from dark grayish-brown to dark reddish-brown in color and from 4 to 8 inches in thickness. Drainage is classified as good. The fine sandy clay loam subsoil ranges from red to yellowish red. The profile description is as follows:

- 0 to 6 inches - dark reddish-brown fine sandy loam; friable; weak fine crumb structure; permeability of 5 to 10 inches of water per hour; pH of 4.5 to 5.5.
- 6 to 12 inches - yellowish-red fine sandy loam; friable; weak fine crumb structure; permeability of 5 to 10 inches of water per hour; pH of 4.5 to 5.5.
- 12 to 24 inches - red fine sandy clay loam; friable; fine subangular blocky structure; permeability of 5 to 10 inches of water per hour; pH of 4.5 to 5.5.
- 24 to 42 inches - red fine sandy clay loam; firm; medium subangular blocky structure; permeability of 5 to 10 inches of water per hour; pH of 4.5 to 5.5.

Rutlege Sand (Rs) has a 0 to 2 percent slope. These soils formed under poor drainage from thick beds of acidic sandy materials. The surface soil contains copious amounts of organic material. The surface soil is black and varies from 10 to 14 inches in thickness. Drainage is classified as poor. The subsurface horizons range from gray to dark gray. These soils are common in areas of shallow water table and it is generally normal for water to stand on the surface for long periods during rainy seasons. The profile description is as follows:

- 0 to 12 inches - black sand; very friable; weak fine crumb structure; permeability of 5 to 10 inches of water per hour; pH of 4.5 to 5.5.
- 12 to 32 inches - dark-gray sand; very friable; weak fine crumb structure; permeability of 10+ inches of water per hour; pH of 4.5 to 5.5.
- 32 to 42 inches - light brownish-gray sand; loose and single grained; permeability of 10+ inches of water per hour; pH of 4.4 to 5.5.

3.9 Hydrogeology. NETPMSA Saufley Field resides along the western edge of the Florida Panhandle within the Coastal Plain Province. The Coastal Plain, a major physiographic division of the United States, extends eastward from Texas and northward as far as New York. It consists of Cretaceous to recent age beds of sand, silt, limestone and clay that dip gently seaward. Most of these sediments were deposited during higher stands of the sea as the Mississippi River system transported eroded debris southward. The Gulf Coast region of the United States is the landward side of the most active geosyncline

in North America. The formations which make up the landward side of the geosyncline are all wedge-shaped, thickening rapidly from the outcrop gulfward to the south.

More precisely, Saufley Field resides within the Coastal Lowlands topographic subdivision of the Coastal Plain which consists of relatively undissected, nearly level plains lying less than 100 feet above sea level (Marsh, 1966). It is situated along the north flank of the Mississippi Embayment, which accounts for the characteristic southwestward dip of Cretaceous and younger strata (Figure 8, Figure 9, Figure 10, and Figure 11).

Figure 12 describes the geologic sequence by a representative log of an oil test well near Pensacola. For the region of study, a thick sequence of sand, gravel, and clay extends from the surface to as much as 1,000 feet deep. Nearly all wells in this area tap permeable sediments within this sequence, collectively referred to as the Sand and Gravel Aquifer (Musgrove et. al., 1965). In the northern half of Escambia County, the Sand and Gravel Aquifer lies on the upper limestone of the Floridan Aquifer, but in the southern part (where Saufley Field resides), the two aquifers are separated by a thick clay unit of Miocene age, which serves to confine the water that is present in the upper limestone of the Floridan Aquifer (Figure 13). An extensive clay bed, the Bucatunna Clay Member of the Byram Formation, underlies the upper limestone of the Floridan Aquifer and forms an aquiclude throughout the area. The lower limestone of the Floridan Aquifer underlies the Bucatunna and rests upon relatively impermeable clay and shale. Within the area, no fresh-water aquifers occur below the lower limestone of the Floridan Aquifer.

Since more than 99 percent of ground water utilized for drinking and industrial purposes in the region is obtained from the Sand and Gravel Aquifer and it is separated from the Floridan Aquifer by a relatively impermeable clay, most of the remaining discussion will focus on the characteristics of this important reservoir. For a detailed discussion of Floridan Aquifer characteristics, see Musgrove et. al., 1965.

Parts of the Sand and Gravel Aquifer have a rather high average porosity and permeability and are thus excellent reservoirs for ground water. The aquifer primarily consists of relatively insoluble quartz grains which accounts for the low mineral content and softness of this water. The ground water conditions are complicated by great lithologic variability due to facies changes during deposition. Ground water is under artesian pressure where lenses and layers of clay, sandy clay, or hardpan overlie a saturated permeable bed. Ground water is under non-artesian conditions where such clays or hardpan are absent or where the porous media is not completely saturated. It is not uncommon for a well to tap both artesian and

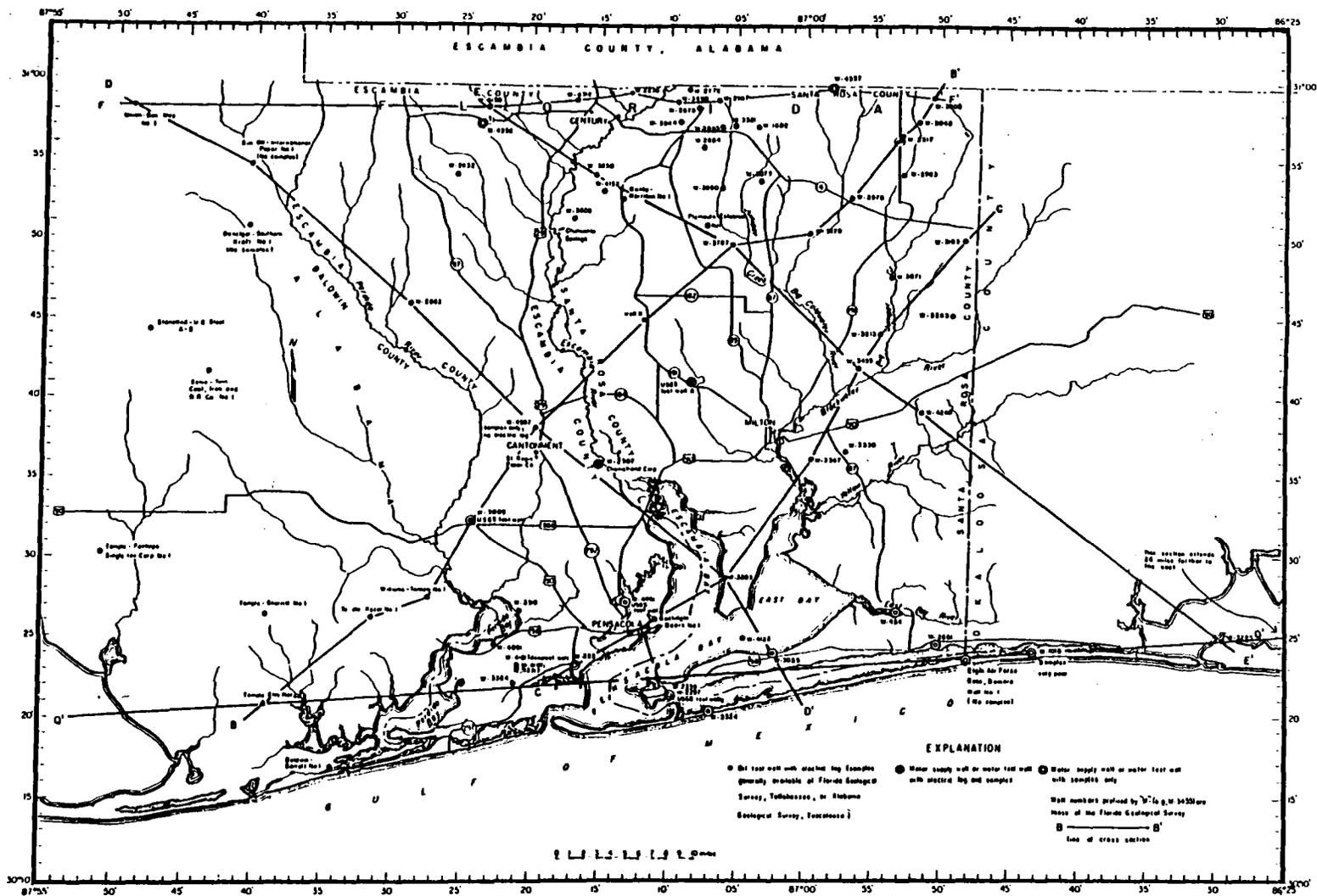


Figure 8
NETPMSA Saufley Field

Key: Map of Westernmost Florida & Southwestern Alabama Showing Locations of Cross Sections & Wells Used in This Report (Modified After Marsh, 1966).



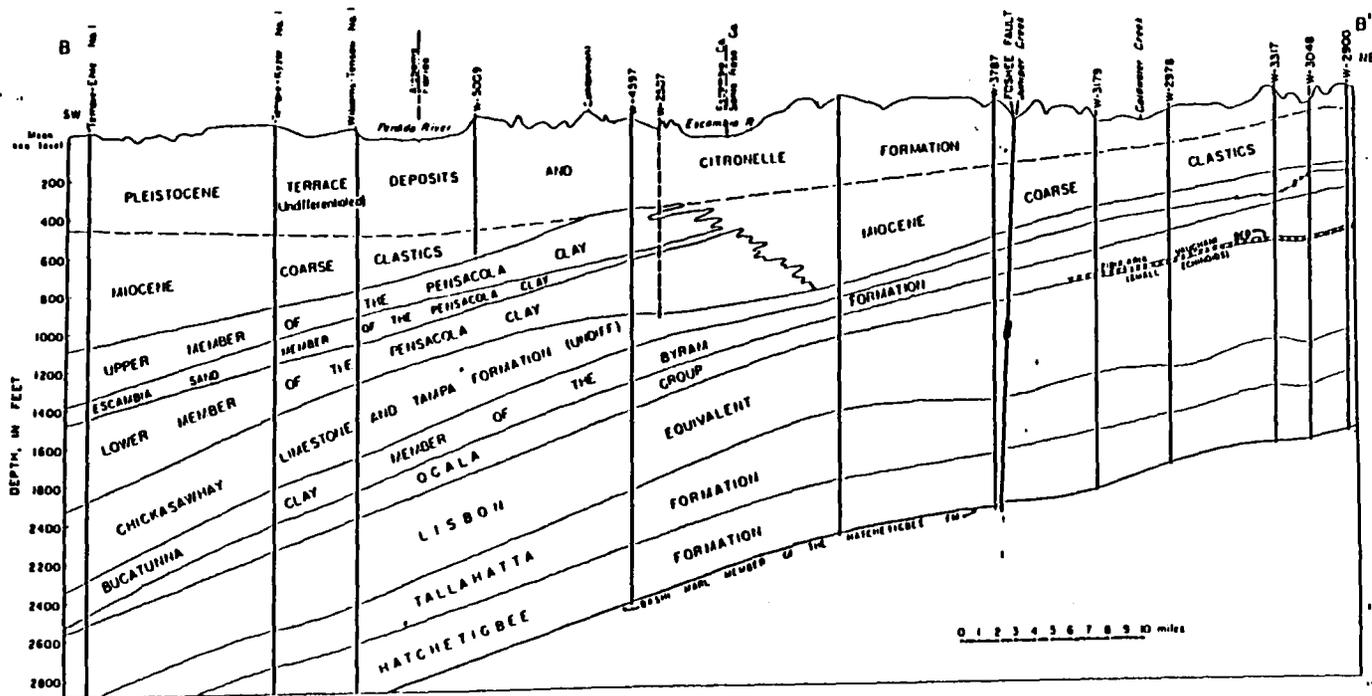
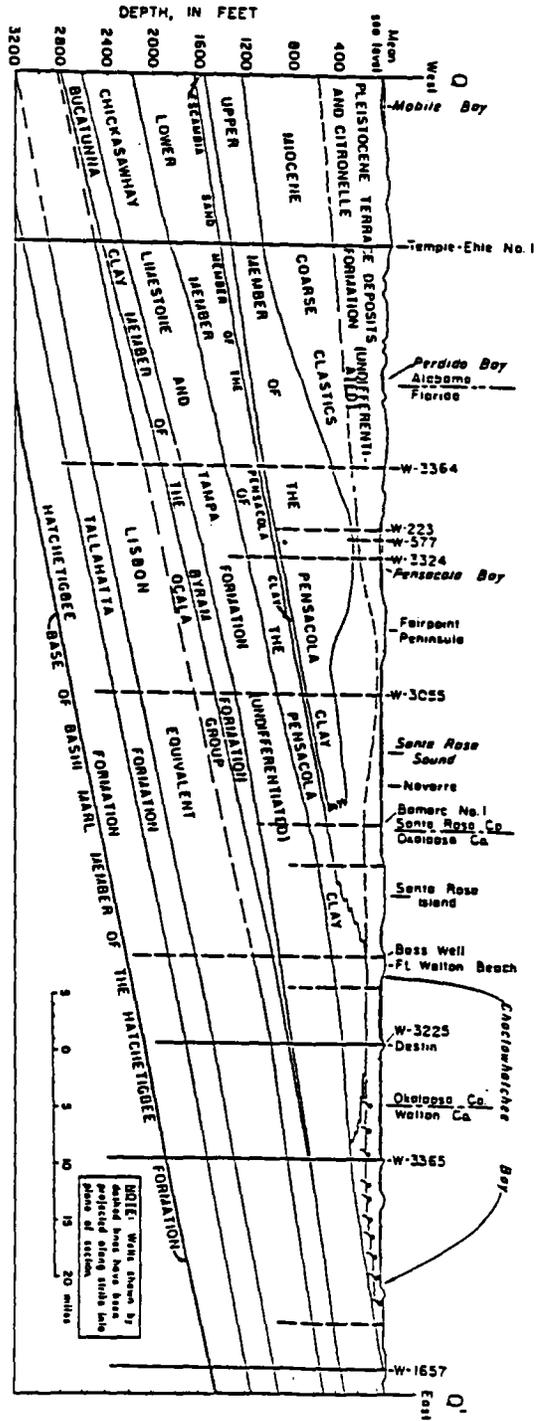


Figure 9
NETPMSA Saufley Field

Key: Geologic Cross Section B-B' Across Escambia and Santa Rosa Counties (Modified After Marsh 1966). Section Parallels the Regional Dip.



Figure 10
NETPMSA Saufley Field



Key: Geologic Section Q-Q' From mobile Bay to the Choctawhatchee River (115 Miles) Showing Formations Along the Gulf Coast of Western Florida (Modified After Marsh, 1966).



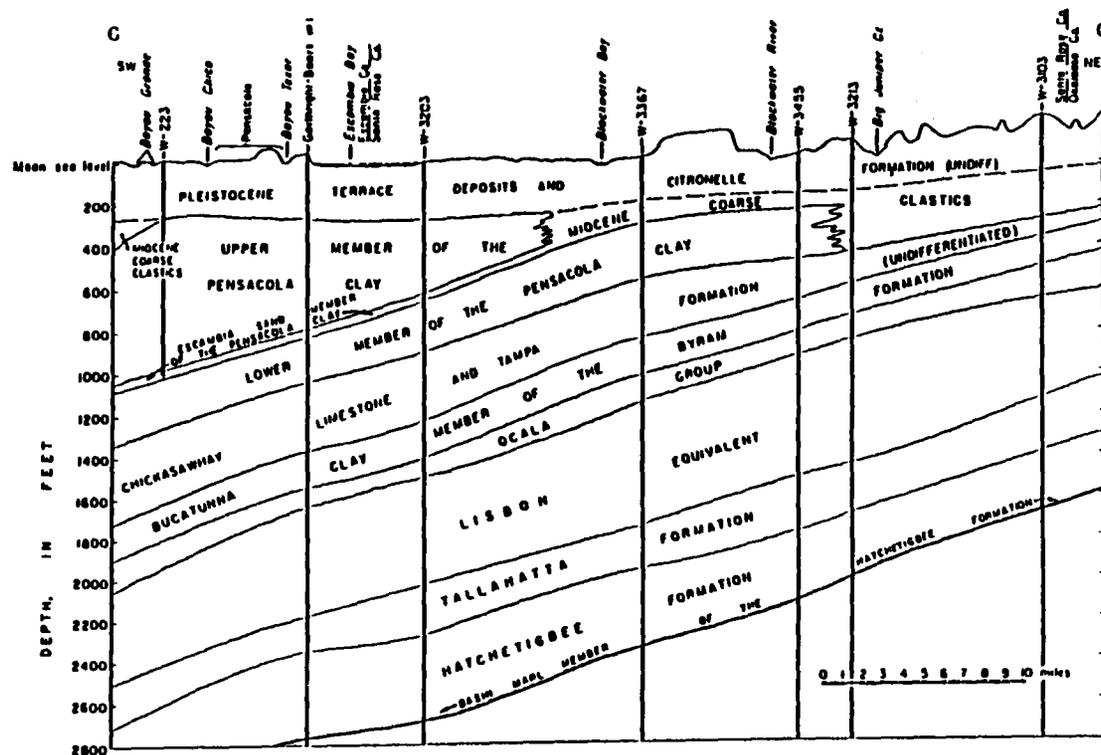
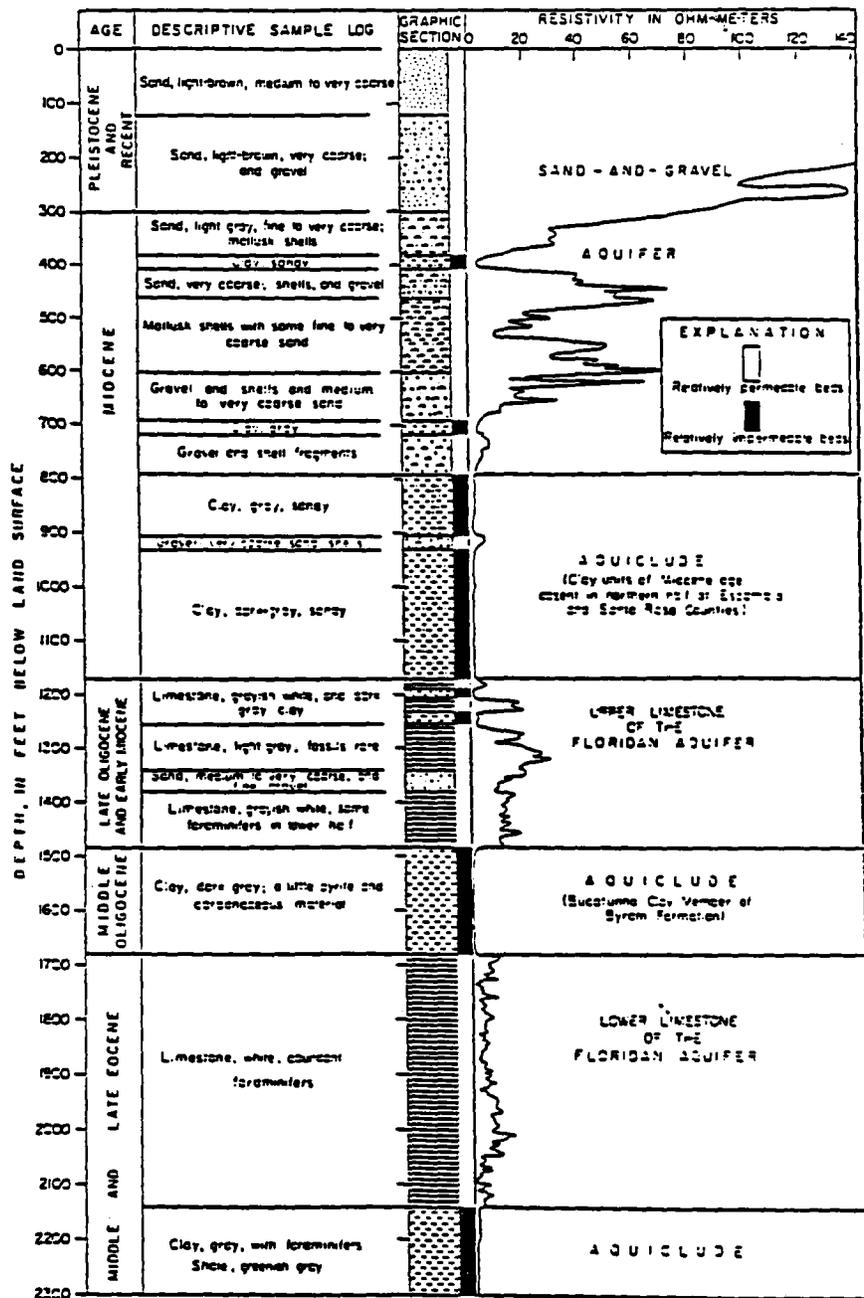


Figure 11
NETPMSA Saufley Field

Key: Geologic Section C-C' Across Escambia and Santa Rosa Counties (Modified After Marsh, 1966). Section is Parallel to Regional Dip.





EXPLANATION

Relatively permeable beds

Relatively impermeable beds

Figure 12
NETPMSA Saufley Field

Key: Representative Geologic Sequence Based on Log of Oil Test Well Located Near Pensacola (Modified After Marsh, 1966).



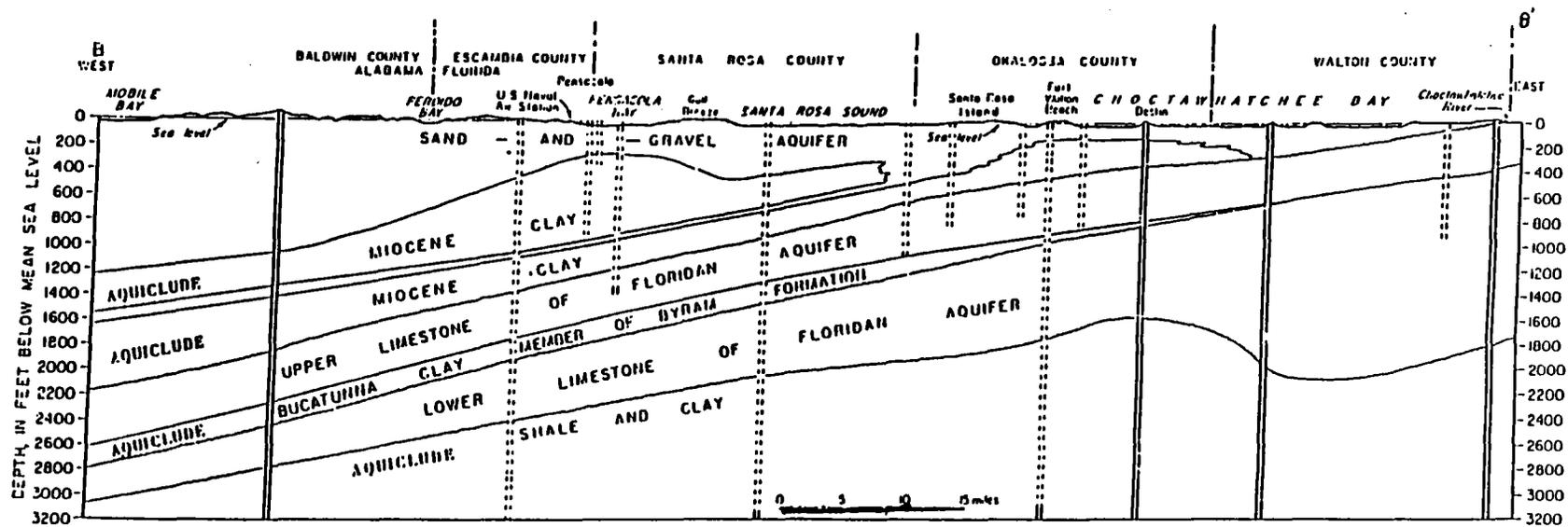


Figure 13
NETPMSA Sausley Field

Key: Geologic Section Across Escambia and Santa Rosa Counties Showing Aquifers & Aquicludes Along Section B-B' in figure B (Modified After Musgrove ET. AL., 1965).



non-artesian sources. Ground water in the Sand and Gravel Aquifer is derived almost entirely from rain falling in the area. Recharge is greatest where land is relatively flat. The aquifer is discharged by pumping, evapotranspiration, and seepage into streams, swamps, bays and the Gulf of Mexico (Trapp, 1972).

The gradient along the piezometric surface in the shallow beds of the Sand and Gravel Aquifer generally indicates movement of ground water toward nearby streams. The seepage of this ground water supplies more than half of the entire flow of the smaller streams in Escambia and neighboring Santa Rosa counties. Average velocity of ground water was previously computed to be approximately 100 feet per year in the Pensacola area (Musgrove et. al., 1965). The water table tends to be highest under the broad, relatively level lands that are at a higher elevation than the surrounding lands.

The artesian pressure head of water in the lower permeable beds of the Sand and Gravel Aquifer does not conform to the topography of the land as much as the water table. The artesian pressure head of water from the lower beds indicates a general movement of water to the south (Musgrove et. al., 1965). The head of water in the northern part of Escambia and Santa Rosa counties is usually more than 100 feet above sea level and at some places exceeds 150 feet. In the central part of the counties, the artesian pressure head is about 30 to 80 feet above sea level except near the large rivers. Upward leakage of ground water probably occurs which lowers the pressure head of the ground water. The artesian pressure head of water under the lands adjacent to the bays (i.e., Saufley Field) is usually less than 20 feet above sea level and often less than 10 feet above sea level.

Pumping tests on nearby wells screened within the Sand and Gravel Aquifer indicate specific capacity values that range from 30 to 80 gallons per minute per foot of drawdown (Musgrove et. al. 1965). Aquifer tests performed on wells penetrating the Sand and Gravel Aquifer owned by the City of Pensacola, the U.S. Navy (at Corry Field), and Newport Industries indicate transmissivities ranging from 58,800 to 94,000 gallons per day per foot. Jacob and Cooper (1940) calculated the "apparent coefficient of storage" to be 0.32 in the upper sands of the Pensacola area. Velocities and the coefficients of transmissivity and storage may vary considerably from place to place. Therefore, drawdowns at one place cannot be predicted on the basis of data collected elsewhere. Using an average transmissivity of 75,000 gpd/ft, a thickness of 120 feet of water-bearing material, a porosity of 0.30, and the natural hydraulic gradient, Jacob and Cooper estimated the ground water velocity at Corry Station (approximately 10 miles from Saufley) to be 77 feet per year (Oak Ridge National Laboratory, 1989). This value does not consider higher hydraulic gradients induced by pumping.

With few exceptions, the sum of the mineral constituents in the ground water of the Sand and Gravel Aquifer is very low, ranging from

12 to 36 ppm (Barraclough and Marsh, 1962). Water in this aquifer is exceptionally soft, generally containing 4 to 30 ppm of calcium and magnesium carbonates. The fluoride content of this water is usually less than 0.2 ppm. Iron content of water from this aquifer ranges from 0.06 to 4.9 ppm, although it is generally less than 0.25 ppm. Copious amounts of carbon dioxide render much of the water acidic. Some even contains hydrogen sulfide in solution. Carbon dioxide measurements in waters beneath NAS Pensacola have been as high as 100 mg/l (Trapp, 1972). However, elsewhere in the area, carbon dioxide concentrations are generally less than 30 mg/l. In Saufley Field ground water reserves, chloride is the major anion and is generally accompanied by a predominant sodium cation (Musgrove etc. al., 1965).

As of 1965, military operations used approximately 7 million gallons of ground water per day (mgd) in Escambia and Santa Rosa counties. NAS Pensacola had been using 5 mgd from 8 wells (200 to 250 feet deep) located at Corry Field. NAS Pensacola has 4 other wells on a standby basis. Saufley Field, Ellyson Field, Bronson Field, and Eglin Field used a total of 1 mgd.

Saufley Field presently has two active wells (#3 and #4) and one well used on a part time basis. Except for local pumping activities, ground water flow beneath Saufley Field is towards Perdido Bay in a southwest direction.

Specific aquifer parameters for Saufley Field had not been provided to the investigators by the time this report was generated. However, permeability tests and aquifer tests were performed at the Pioneer Sand site, 400 yards to the east of Saufley Field. Pioneer Sand core permeability tests based on grain size distribution measurements for a sample retrieved 80 to 82 feet below land surface indicate an average permeability of 3×10^{-7} cm/sec (FDER, 1985). Slug injection tests performed on the two production zones in question (one shallow and one deep) indicate transmissivities of 12,075 gpd/ft for the shallow zone (0 to 80 feet deep) and 3,570 gpd/ft for the deeper zone (greater than 85 feet deep). Calculations using Darcy's equation suggest that the velocity in the shallow producing zone is 1.69 ft/day to the south and 0.42 ft/day towards the west in the deeper producing zone.

Two distinct hydrogeologic units limit the leakage between the shallow and deep aquifer units (FDER, 1985). The first unit, immediately underlying the shallow aquifer, is described as a fine to medium grained clayey sand grading downward to a fine sandy clay ranging in thickness from 14 to 20 feet across the Pioneer Sand site. Immediately underlying this unit is a stiff plastic kaolinitic clay ranging in thickness from nearly non-existent to 8 feet. Permeability coefficients from laboratory triaxial tests of the lower clay unit (approximately 80 to 85 feet in depth) indicate flow rates to be in the order of 3.5×10^{-7} cm/sec. Some recharge appears to be taking place to the lower aquifer in the southeast corner of the Pioneer Sand site.

4.0 FINDINGS.

4.1 General Findings. A NEESA team visited NETPMSA Saufley Field from 9 to 19 July 1991 to collect information for the Preliminary Assessment (PA). All data presented here are current as of those dates.

A PA was conducted to determine whether there are any sources of potential contamination present at NETPMSA Saufley. During the PA site survey no confirmed sources of contamination were discovered. However several potential areas were identified.

4.2 Previous Hazardous Waste Generation, Storage, and Disposal.

Between 1942 and 1976 numerous types of solvents, oils, and fuels were used at Saufley to support air operations. By volume, more high octane aviation gasoline was used more than any other hazardous material. Used solvent and waste oils were the majority of hazardous wastes generated. Toluene, Carbon Tetrachloride, and Trichloroethane were just a few of the solvents used by maintenance personnel.

Pesticides and herbicides were used at numerous locations around the base. The amounts and types of pesticides and herbicides used are unknown.

Training aircraft required oil changes every 40 hours of flying time. Waste oils were placed in tanks 807B and 810B. The tanks were 2000 gallon waste oil tanks located at Hangar 807 and 810. The usage rates of fuels, oils, and solvents at Saufley are unknown. It is possible that waste solvents were also put in these tanks. When the tanks were full, waste oils were pumped out and transported off base or burned by the base fire department at the fire fighting training pit.

4.2.1 Fire Fighter Training Area. Saufley's fire department conducted practice burns north of the runways. The exact details of the fire fighting drills are unknown. It is assumed that fire fighting drills were conducted while the airfield was in operation. Most Naval fire departments conduct fire fighter training exercises once a month and burn between 300 and 1000 gallons of flammable liquids per exercise. The last exercise in the area was conducted approximately 15 years ago. Figure 14 shows the approximate location of the area.

4.3 Underground Storage Tanks.

4.3.1 Previous Underground Storage Tanks. During aerial operations between 1942 and 1977; NAAS Saufley had 14 underground and two above ground storage tanks in operation. The aerial refueling system consisted of six 25,000 gallon (tanks 814A-F), and one 15,000 gallon (tank 814) underground storage tank (UST). Tanks 814A-F, and 814 contained aviation gasoline and jet fuel (JP-4) respectively. These tanks

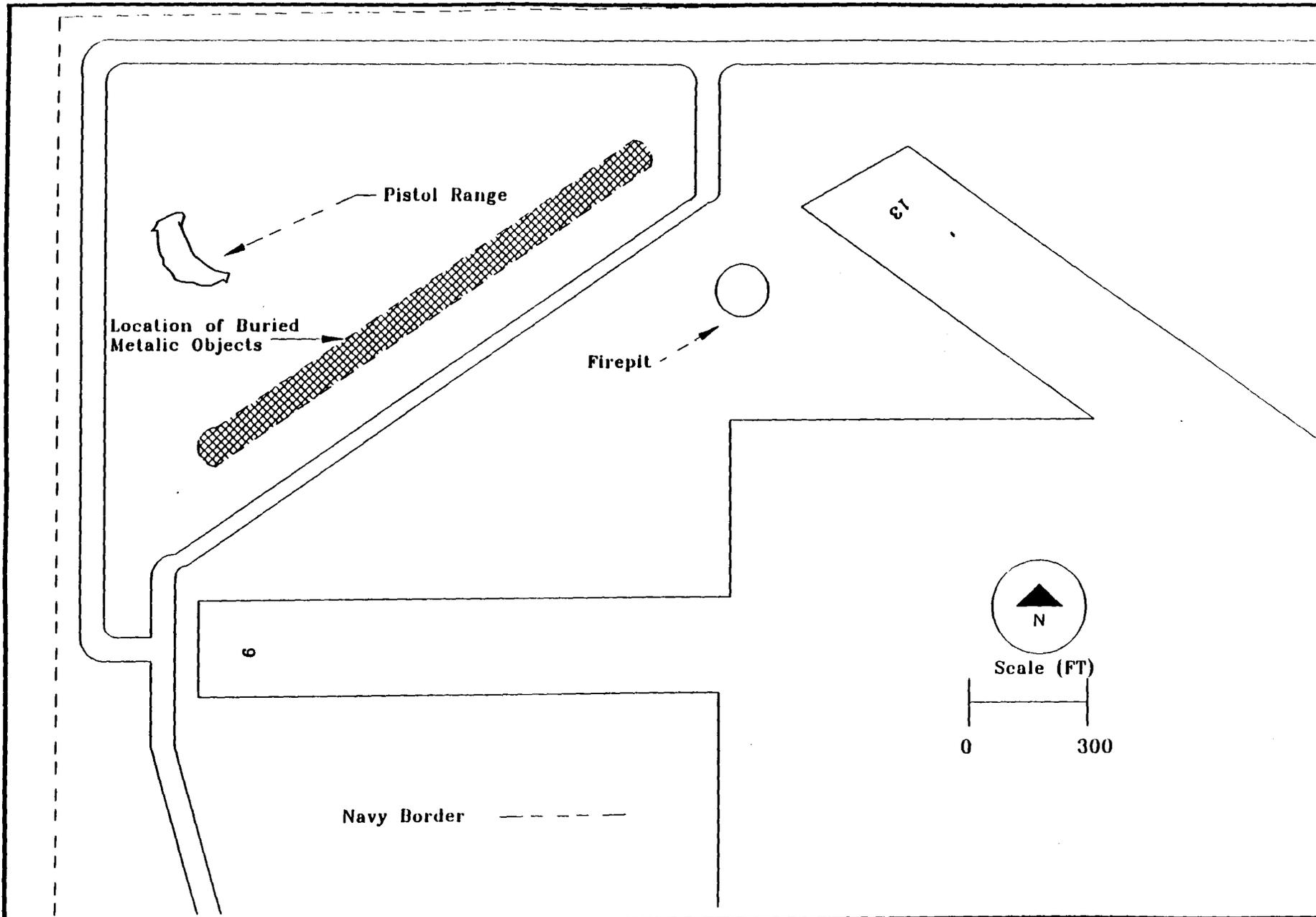


Figure 14
NETPMSA Saufley Field

Fire Fighter Training Area
Buried Metallic Objects &
Pistol Range



were connected by over two miles of 10" and 8" diameter steel fuel lines to 52 refueling pits located on the aircraft parking platform.

In late 1950, lightning ignited a row of refueling pits in front of Hangars 807 and 808. The resulting fire and explosion from the lightning reportedly caused minor damage to the refueling pits that were involved in the episode. It is not known whether any damage was done to the fuel lines connecting the pits.

The refueling pits were removed in early 1980. It is not known whether the underground piping associated with the fuel pits was removed as well.

In addition to the aircraft refueling system, the base utilized a number of UST. Most of the tanks were removed in late 1980. Visible contamination was removed by the contractor. Table 2 lists the size and contents of the storage tanks that have been removed.

Table 2
Tanks that have been removed at NETPMSA Saufley

Tank Number	Size Gallons	Contents
807-B	2000	Used Oil
807-C	1000	Kerosene
807-D	1000	Gasoline
819-B	2000	Used Oil
819-C	1000	Kerosene
819-D	1000	Gasoline
814	15000	Jet Fuel
814-A	25000	Aviation Gasoline
814-B	25000	Aviation Gasoline
814-C	25000	Aviation Gasoline
814-D	25000	Aviation Gasoline
814-E	25000	Aviation Gasoline
814-F	25000	Aviation Gasoline
828-A	10000	Gasoline
828-B	10000	Gasoline

OLF Saufley General Development Map
Southern Division

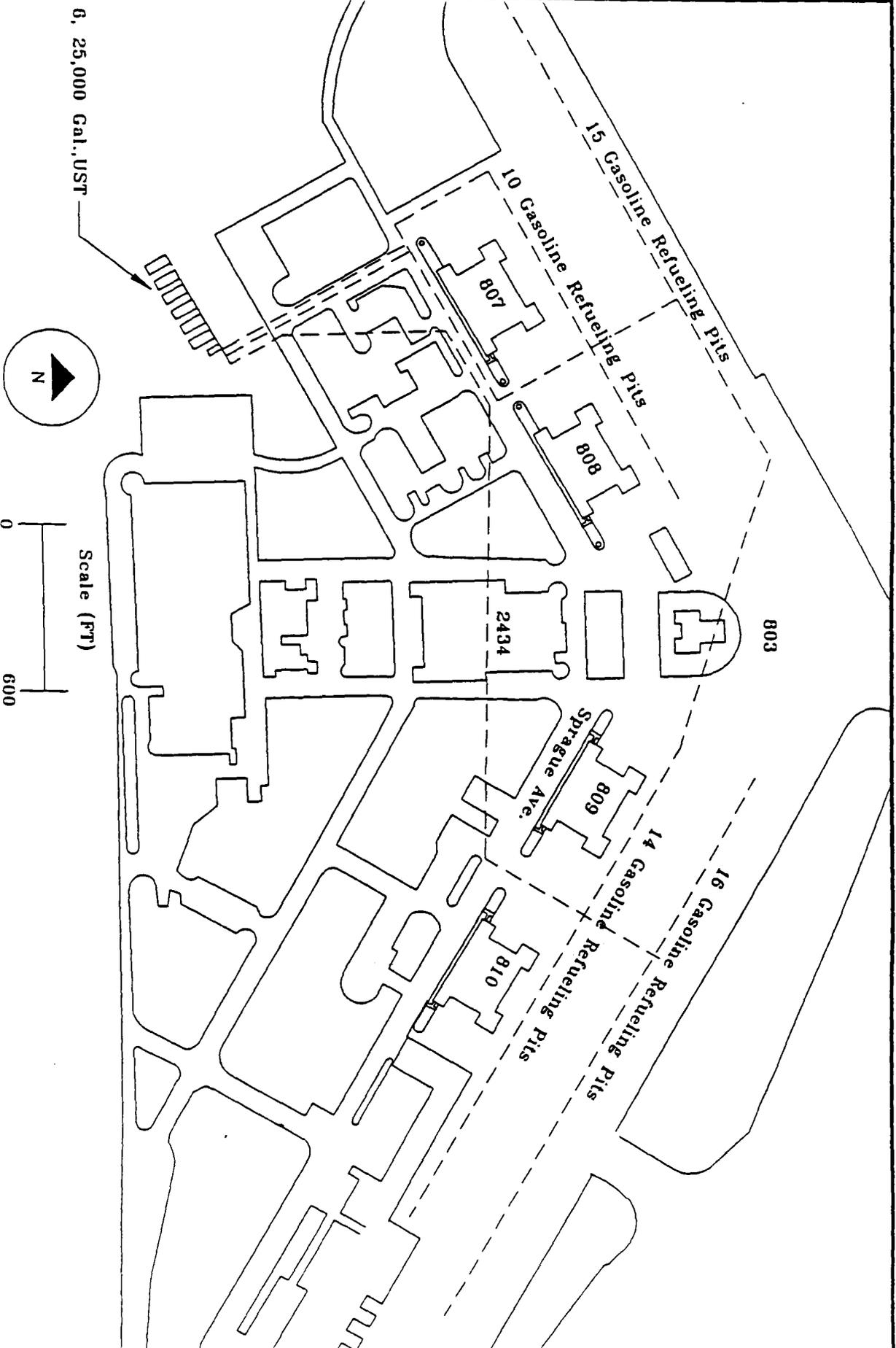


Figure 15
NEPPMSA Saultley Field

Gasoline Refueling Lines
Gasoline Refueling Lines



4.3.2 Current Underground Storage Tanks. Presently there are eight active fuel tanks located at NETPMSA Saufley. Five of the tanks are underground fuel tanks and three are above ground fuel tanks. Three underground fuel tanks and one waste oil steel UST are located at Building 2439, the Navy exchange gas station. One unleaded fuel tank is located at Building 2419, the government vehicle gas station.

Two abandoned underground tanks are located adjacent to the runways. There is no information available as to when these tanks were used and what they were used for.

The Department of Immigration operates a new above ground aviation gasoline tank located west of Hanger 807. Two large aboveground heating oil tanks are located behind the power plant, Building 804. All three above ground tanks have secondary containment walls.

4.4 Solid Waste Disposal. Personnel who worked at Saufley between 1942 and 1976 reported that all wastes, both hazardous and nonhazardous, generated by Saufley were disposed of at one of the local private landfills. There are three active landfills within one mile of the base.

Pioneer Sands, a superfund site which was a county landfill, is located approximately 400 yards from the base towards the east. Reportedly wastes from Saufley and other nearby Naval facilities were disposed of at Pioneer Sands. Consequently, Saufley was named as a Potentially Responsible Party (PRP) at Pioneer Sands. At present, the site has gone through the final stages of clean-up operations.

4.4.1 Burial of Metallic Objects. In early 1960, it was reported that 30 to 40 steel bottles containing nuclear wash down liquid were buried near the pistol range. The bottles were reportedly buried in a trench nine feet in depth and 60 feet in length. Also in this area there are reports that shop equipment may have been buried in late 1960 when the base was planned to be closed. Figure 14 shows the approximate location of the area.

In 1990, environmental personnel from NAS Pensacola surveyed the area with a magnetometer. The personnel were unable to locate any metallic objects. However, the scope and extent of their survey is unknown.

5.0 AREA SPECIFIC INFORMATION

5.1 Area 1, Burial of Metallic Objects

Northwest of Perimeter Road, between Runways 9 and 13, is the location where 30 to 40 steel bottles containing nuclear wash down liquid and old shop equipment were reportedly buried. Air photos from 1967 showed trees lining the southeast side of the road, so if materials were buried they would likely have been buried on the northwest side of the road, due to the fact that a bull dozer would not have been able to excavate without clearing the trees. Figure 14 shows the approximate location of the area.

The steel bottles were reportedly buried at an approximate depth of nine feet and in a trench about 60 feet in length. No information is known pertaining to the depth or amounts of shop equipment reportedly buried.

5.1.1 Potential Migration Pathways.

Surface Water Migration Pathways. Eight and Eleven Mile Creeks are located north of the facility, while Perdido Bay is located approximately 1000 yards to the west. Suspected hazardous wastes are buried below the surface, thus contamination via surface run-off would be unlikely.

Air Migration Pathway. Suspected hazardous wastes are located below the surface. It is not thought to pose a threat to the atmosphere.

Ground Water Migration Pathway. The suspected hazardous wastes located near Perimeter Road could possibly contain low levels of radioactive materials and petroleum waste products. If the hazardous materials escaped from the containment bottles then they could pose a threat to the local ground water.

5.1.2 Recommendations. Radiological Affairs Support Office (RASO) should be contacted to investigate the possible presence of radiological wastes. A geophysical survey should be conducted in the area to determine if and where metallic items may have been buried.

5.2 Area 2, Fire Fighter Training Area. The Fire Fighter Training area is located about 400 feet southwest of Runway 13. The fire fighter training area is a 60 foot diameter concrete pad surrounded by soil. The concrete pad and surrounding soil is charred. Figure 14 shows the approximate location of the area.

The exact details of the fire fighting drills are unknown. A typical burn by the Naval Crash Crew consisted of burning between 300 and 1000 gallons of flammable liquids per exercise. Burn exercises were typically conducted about once a month. The majority of flammable

liquids burned in the pit were likely waste aviation gasolines, but other flammable liquids such as kerosene, chlorinated solvents, diesel, hydraulic fluid, and automobile gas may have been burned. Some hydraulic fluids prior to 1972 contained PCBs, so there may have been some PCBs burned at the pad. A typical fire consisted of covering the pad with flammable material and igniting it. The fire would be put out, reignited, and put out again. The soil in the area consists of Lakeland Loamy Sand, which is very permeable. Thus, while most of the flammable liquids would have been burned off, some may have leached into the soil.

The fire pad is flat, but the surrounding area drains to the north, so potential surface migration from the area would be in that direction. Charred soil is visible adjacent to the burn pad. Run-off from this area eventually drains to Eleven Mile Creek.

5.2.1 Potential Migration Pathways.

Surface Water Migration Pathway. Eight and Eleven Mile Creeks are located north of the facility while Perdido Bay is located approximately 3000 feet to the west. Surface run-off from the Fire Fighter Training Area could drain into the creeks.

Air Migration Pathway. Compounds that could potentially affect air quality would have been ignited during the practice burns. Burns have not been conducted in over 15 years, so at this date it is unlikely that the area poses a threat to local air quality.

Ground Water Migration Pathway. There are no known potable water wells down gradient from the Fire Fighter Training Area. Potential contaminants could contaminate underlying ground water. Ground water is believed to discharge into Perdido Bay. The potential for vertical migration to ground water and to surface discharge zones does exist.

5.2.2 Recommendations. Three soil borings should be taken around and in the middle of the fire pit. Soil should be sampled at the surface and taken down to the water table. The capillary fringe should also be sampled. Soils should be analyzed for metals, semi-volatiles, and PCBs. If contamination is found, complete the borings and install monitoring wells to determine ground water velocity and gradient.

5.3 AREA 3, Pistol Range. The pistol range is a clay hill about 100 feet in length, 30 feet wide, and 20 feet high. Large amounts of spent bullets are scattered about the pistol range and lodged in it. Many of the bullets are lead, some are lead with steel jackets, and others have copper jackets. The pistol range and all nearby soil is clay or clay and silt intermixed. It is not known whether the metals are leaching from the area. Figure 14 shows the approximate location of the area.

The pistol range is at an elevation of about 40 feet above sea level. Run-off from the pistol range would flow north into Eleven Mile Creek, located approximately 1000 feet to the north.

5.3.3 Potential Migration Pathways.

Surface Water Migration Pathways. Surface water run-off from the Pistol Range drains north towards Eleven Mile Creek. Heavy metals tend to bind to clay particles in sediments and are generally not very mobile. Erosion of top soil from the Pistol Range may allow small amounts of heavy metals to reach Eleven Mile Creek.

Air Migration Pathways. The pistol range is not believed to pose a threat to local air quality.

Ground Water Migration Pathways. Underlying ground water may discharge into the creeks north of the base and/or into Perdido Bay. There are no known potable water wells down gradient from the Pistol Range. Metals from the Range are not expected to migrate. Thus, the Pistol Range is not believed to be a threat to local ground water.

5.3 Recommendations. It is recommended that soil samples be gathered at six separate locations and analyzed for metals. Three samples could be taken at each location; one at the surface, one at two feet, and the third at five feet in depth.

The Naval Civil Engineering Laboratory (NCEL) at Port Hueneme, CA is developing a system to recycle and recover metals found at target ranges. Even if no contamination is found migrating from the Pistol Range, all spent bullets could be recycled. The soil could be washed to remove residual metals.

5.4 Area 4, Abandoned Fueling Facility and Area near Hangars.

Large amounts of fuels, solvents, oils, and aircraft cleaners were used at and around the four hangars and the fuel pits, as described in Section 4.2. Station personnel who worked at NAAS Saufley in 1940 through 1950 reported that aircraft parts were degreased with solvents both inside and outside the hangars. The hangars and aircraft parking areas are adjacent to grassy areas. Liquid materials spilled or placed on the concrete next to the hangars may have been washed

into the grass during periods of precipitation or when the cement was washed down. Figure 15 shows the layout of the area.

Fuel spills that occurred while refueling aircraft were either allowed to evaporate or washed off the aircraft parking area into grassy areas. Fuels and solvents that reached soil or grass around the hangers and aircraft parking area could easily migrate into underlying ground water.

All the fuel pits are thought to have been removed, but it is not known if all of the fuel lines were removed also.

5.4.1 Potential Migration Pathways.

Surface Water Receptors. Eleven Mile Creek is the closest body of water from the refueling system. It is approximately 1000 yards to the northwest. Suspected hazardous wastes would be below the surface, thus contamination via surface run-off would be unlikely.

Air Migration Pathway. Suspected hazardous wastes are below the surface. Due to the volatility of aviation gasoline products, at this date, it is unlikely that it poses a threat to the surrounding air unless the soil is disrupted.

Ground Water Migration Pathways. The fuel system was located in an area where the ground water is approximately ten feet below the surface. Top soil in the area is composed mainly of sand. Due to the porosity of the soil adjacent to the fuel system, residual aviation gasoline could potentially reach ground water.

If the fuel system contains residual aviation gasoline, it has the potential to threaten the potable water wells located on the base. The fueling system may be in the capture zone of potable water wells located at the Base. To this date there are no reports of contamination in the wells.

5.4.1 Recommendations.

A soil gas survey is recommended near the four hangars and around the old fueling system. If contamination is detected during the soil gas survey monitoring wells should be installed in constructed where the contamination is located.

If the fuel lines were not removed, information needs to be obtained to verify that they were purged of fuel and properly closed.

5.5 Possible off-site contamination. During the PA investigation, two off-base environmental sources were discovered that could potentially contaminate base property. These threats may not fall under the IR program but samples should be taken to protect the base's property.

Source 1. Eleven Mile Creek was cited in a 1965 report (Musgrove et. al., 1965) as a disposal site for industrial waste. The creek is topographically lower than the fire fighter training area, the pistol range, and the reported burial ground near Perimeter Road. There are no reports that the Navy disposed of any waste in Eleven Mile Creek, and only a small section of the creek is on Navy property.

Recommendations. Prior to any sampling, all literature on sampling or environmental studies on Eleven Mile Creek should be obtained. Sediment samples should be taken in Eleven Mile Creek to see if any contamination is migrating from or to Navy property. Samples should be taken where the creek first enters and leaves Navy property. Sediments should be analyzed for metals and semi-volatiles.

Source 2. A county landfill is situated just east of the eastern fence line and north of the main gate. The landfill is an old clay pit which was excavated approximately 40 feet below ground level. Reportedly, no hazardous waste is disposed of in the landfill, but it is possible that small quantities of hazardous waste from residential sources could migrate to Navy property. The bottom of the clay pit is below the local ground water table so the pit may disrupt local ground water flow. Regional ground water flow in the area is towards the west. The landfill could be a potential threat to potable water wells located at Saufley.

Recommendations. Ground water wells should be installed between the base and the landfill. This will help determine the groundwater gradients and detect for possible contamination migrating onto the Navy's property.

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APPENDIX
Population Densities for NETPMSA Saufley Field

Track	Population	Area(sq mile)	Density
27	6333	12	528
28	11806	7	1687
30	6849	5	1370
32.01	4751	9	528
32.02	4652	8.5	547
33.01	1883	4	471
33.02	6841	7	977
33.03	9657	10	966
36.03	8198	20	410

TOTAL: 60970 persons in a five mile radius of NETPMSA Saufley Field.

CALCULATIONS FOR THE POPULATION DENSITIES:

Area= $R^2 (\pi)$ where, R= 5 miles.

Area=(5 miles)² (π)

Area=78.54 mile²

Therefore, the population density for NETPMSA Saufley Field is:

Density= Population/Area

Density=60970 people/78.54 mile²

Density=776.

PA-Score

PA SCORESHEETS

Site Name: Burial of Metallic Objects
CERCLIS ID No.: FL170024473
Street Address: Code 100P
City/State/Zip: PENSACOLA, FL 32509-5000

Investigator: SCOTT L. HORWITZ
Agency/Organization: NEESA
Street Address: CODE 112E3
City/State: PORT HUENEME, CA

Date: 4/92

WASTE CHARACTERISTICS

Waste Characteristics (WC) Calculations:

1 M. Object Buried	Drums	Ref: 1	WQ value	maximum
Volume	3.50E+01 drums		3.50E+00	3.50E+00

Northwest of Perimeter Road, between Runways 9 and 13, is the location where 30 to 40 steel bottles containing nuclear wash down liquid and old shop equipment were reportedly buried.

The steel bottles were reportedly buried at an approximate depth of nine feet and in a trench about 60 feet in length. No information is known pertaining to the depths or amounts of shop equipment reportedly buried.

Waste Characteristics Score: WC = 18

Ground Water Pathway Criteria List
 Suspected Release

Are sources poorly contained? (y/n/u)	Y
Is the source a type likely to contribute to ground water contamination (e.g., wet lagoon)? (y/n/u)	Y
Is waste quantity particularly large? (y/n/u)	U
Is precipitation heavy? (y/n/u)	Y
Is the infiltration rate high? (y/n/u)	Y
Is the site located in an area of karst terrain? (y/n)	N
Is the subsurface highly permeable or conductive? (y/n/u)	Y
Is drinking water drawn from a shallow aquifer? (y/n/u)	Y
Are suspected contaminants highly mobile in ground water? (y/n/u)	U
Does analytical or circumstantial evidence suggest ground water contamination? (y/n/u)	U

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) Y

Summarize the rationale for Suspected Release:

The suspected hazardous wastes located near Perimeter Road could possibly contain low levels of radioactive materials and petroleum waste products. If the hazardous materials escaped from the containment bottles, they could pose a threat to the local ground water.

Ground Water Pathway Criteria List
Primary Targets

Is any drinking water well nearby? (y/n/u)	Y
Has any nearby drinking water well been closed? (y/n/u)	N
Has any nearby drinking water well user reported foul-testing or foul-smelling water? (y/n/u)	N
Does any nearby well have a large drawdown/high production rate? (y/n/u)	Y
Is any drinking water well located between the site and other wells that are suspected to be exposed to a hazardous substance? (y/n/u)	Y
Does analytical or circumstantial evidence suggest contamination at a drinking water well? (y/n/u)	U
Does any drinking water well warrant sampling? (y/n/u)	Y

Other criteria? (y/n) N

PRIMARY TARGET(S) IDENTIFIED? (y/n) Y

Summarize the rationale for Primary Targets:

Well #3 and Well #4 supply drinking water to personnel at Saufley Field. Thus, if the area has contaminated the drinking water, the potable water wells are in jeopardy.

GROUND WATER PATHWAY SCORESHEETS

Pathway Characteristics

		Ref.
Do you suspect a release? (y/n)	Yes	
Is the site located in karst terrain? (y/n)	No	
Depth to aquifer (feet):	10	6
Distance to the nearest drinking water well (feet):	27400	5

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	550		
2. NO SUSPECTED RELEASE		0	
LR =	550	0	

Targets

TARGETS	Suspected Release	No Suspected Release	References
3. PRIMARY TARGET POPULATION 8620 person(s)	86200		
4. SECONDARY TARGET POPULATION Are any wells part of a blended system? (y/n) N	0	0	
5. NEAREST WELL	50	0	
6. WELLHEAD PROTECTION AREA Underlies Site	20	0	
7. RESOURCES	5	0	
T =	86275	0	

WASTE CHARACTERISTICS

WC =

32	0
----	---

GROUND WATER PATHWAY SCORE:

100

Ground Water Target Populations

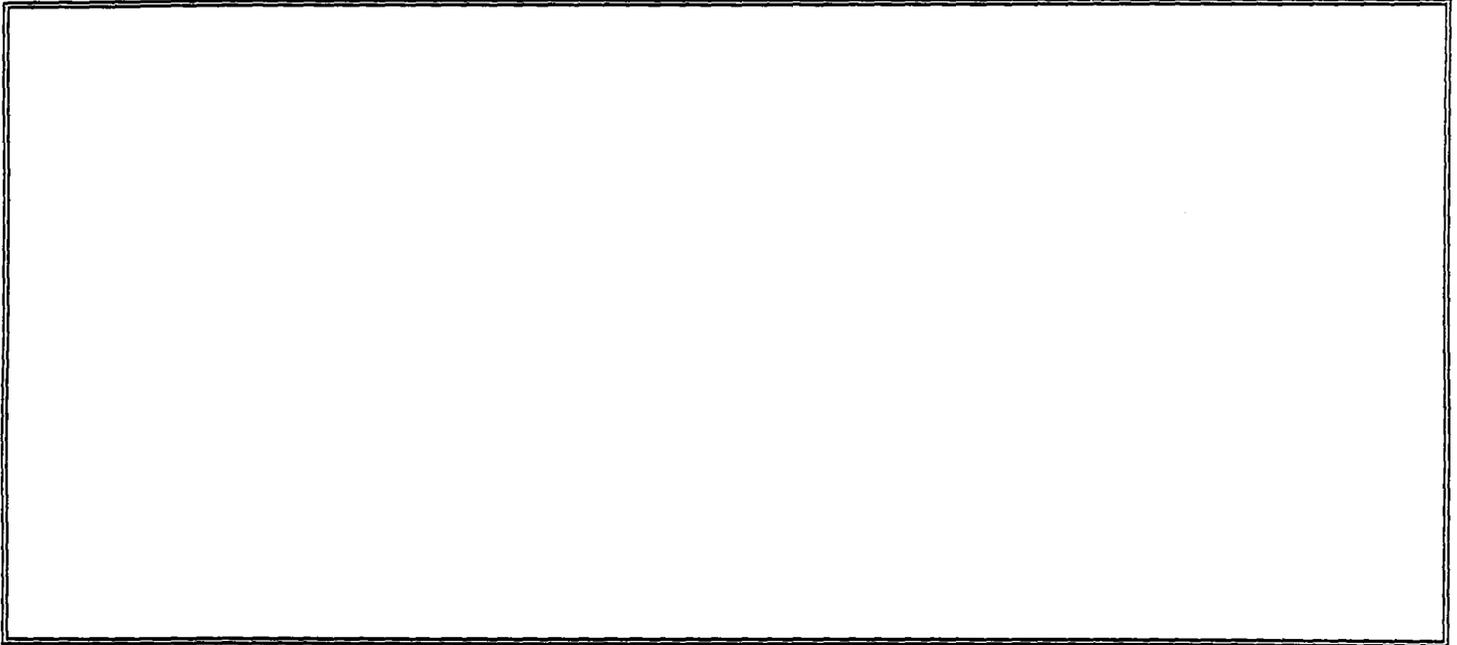
Primary Target Population Drinking Water Well ID	Dist. (miles)	Population Served	Reference	Value
1 Well #3	0.10	4310	5	43100
2 Well #4	0.10	4310	5	43100
None				
Total				86200

Secondary Target Population Distance Categories	Population Served	Reference	Value
0 to 1/4 mile	0		0
Greater than 1/4 to 1/2 mile	0		0
Greater than 1/2 to 1 mile	0		0
Greater than 1 to 2 miles	0		0
Greater than 2 to 3 miles	0		0
Greater than 3 to 4 miles	0		0
Total			0

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Apportionment Documentation for a Blended System



Surface Water Pathway Criteria List
 Suspected Release

Is surface water nearby? (y/n/u)	Y
Is waste quantity particularly large? (y/n/u)	U
Is the drainage area large? (y/n/u)	Y
Is rainfall heavy? (y/n/u)	Y
Is the infiltration rate low? (y/n/u)	Y
Are sources poorly contained or prone to runoff or flooding? (y/n/u)	Y
Is a runoff route well defined(e.g.ditch/channel to surf.water)? (y/n/u)	U
Is vegetation stressed along the probable runoff path? (y/n/u)	N
Are sediments or water unnaturally discolored? (y/n/u)	N
Is wildlife unnaturally absent? (y/n/u)	N
Has deposition of waste into surface water been observed? (y/n/u)	N
Is ground water discharge to surface water likely? (y/n/u)	Y
Does analytical/circumstantial evidence suggest S.W. contam? (y/n/u)	U

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) Y

Summarize the rationale for Suspected Release:

Eight Mile and Eleven Mile Creeks are located north of the facility and Perdido Bay is located approximately 1000 yards to the west. Suspected hazardous wastes are buried below the surface, thus contamination via surface run-off would be unlikely.

Surface Water Pathway Criteria List
Primary Targets

Is any target nearby? (y/n/u) If yes: N
 N Drinking water intake
 N Fishery
 N Sensitive environment

Has any intake, fishery, or recreational area been closed? (y/n/u) N

Does analytical or circumstantial evidence suggest surface water
 contamination at or downstream of a target? (y/n/u) N

Does any target warrant sampling? (y/n/u) If yes: N
 U Drinking water intake
 U Fishery
 N Sensitive environment

Other criteria? (y/n) N

PRIMARY INTAKE(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Intakes:

continued -----

continued -----

Other criteria? (y/n) N

PRIMARY FISHERY (IES) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Fisheries:

Other criteria? (y/n) N

PRIMARY SENSITIVE ENVIRONMENT(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Sensitive Environments:

SURFACE WATER PATHWAY SCORESHEETS

Pathway Characteristics

Pathway Characteristics		Ref.
Do you suspect a release? (y/n)	Yes	█
Distance to surface water (feet):	5000	4
Flood frequency (years):	100	5
What is the downstream distance (miles) to:		
a. the nearest drinking water intake?	0.0	
b. the nearest fishery?	0.0	
c. the nearest sensitive environment?	0.0	

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	550	█	█
2. NO SUSPECTED RELEASE	█	0	
LR =	550	0	

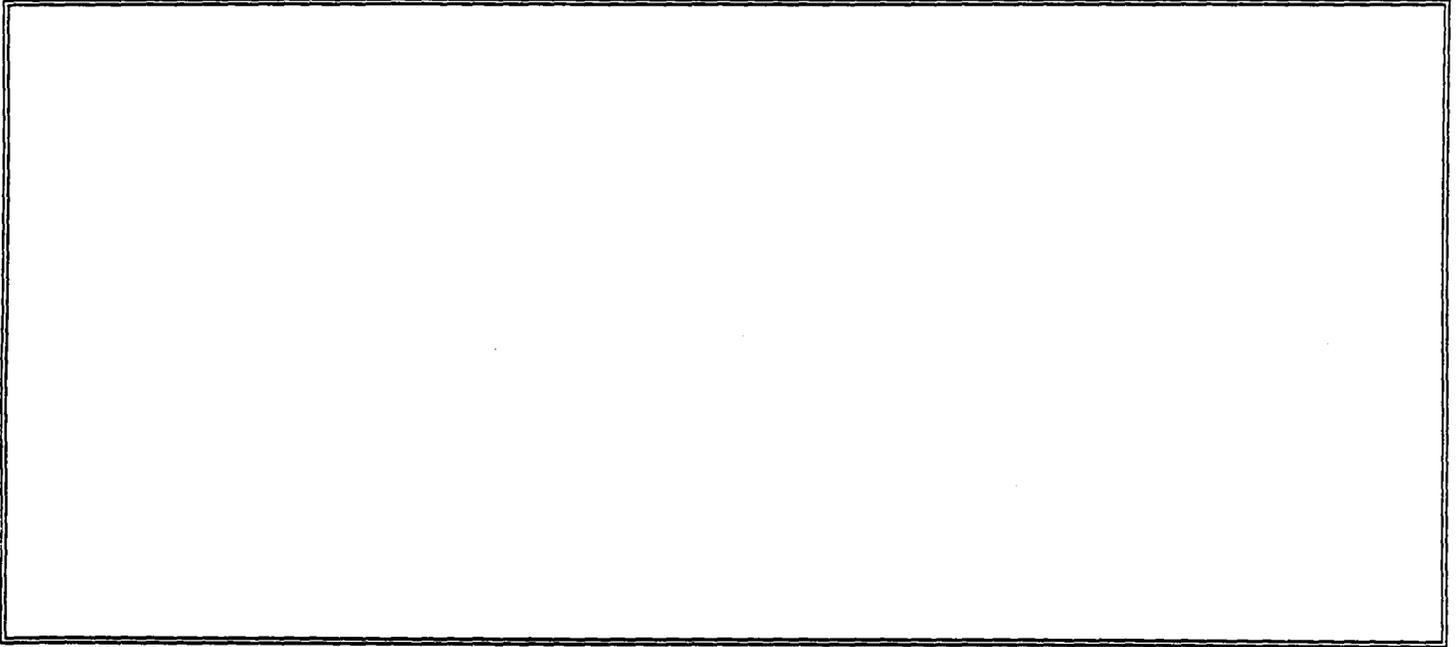
Drinking Water Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
3. Determine the water body type, flow (if applicable), and number of people served by each drinking water intake.			
4. PRIMARY TARGET POPULATION 0 person(s)	0		
5. SECONDARY TARGET POPULATION Are any intakes part of a blended system? (y/n): Y	0	0	
6. NEAREST INTAKE	0	0	
7. RESOURCES	5	0	
T =	5	0	

Drinking Water Threat Target Populations

Intake Name	Primary (y/n)	Water Body Type/Flow	Population Served	Ref.	Value
None					
Total Primary Target Population Value					0
Total Secondary Target Population Value					0

Apportionment Documentation for a Blended System



Human Food Chain Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
8. Determine the water body type and flow for each fishery within the target limit.			
9. PRIMARY FISHERIES	0		
10. SECONDARY FISHERIES	0	0	
T =	0	0	

Human Food Chain Threat Targets

Fishery Name	Primary (y/n)	Water Body Type/Flow	Ref.	Value
None				
Total Primary Fisheries Value				0
Total Secondary Fisheries Value				0

Environmental Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
11. Determine the water body type and flow (if applicable) for each sensitive environment.			
12. PRIMARY SENSITIVE ENVIRONMENTS	0		
13. SECONDARY SENSITIVE ENVIRONS.	0	0	
T =	0	0	

Environmental Threat Targets

Sensitive Environment Name	Primary (y/n)	Water Body Type/Flow	Ref.	Value
None				
Total Primary Sensitive Environments Value				0
Total Secondary Sensitive Environments Value				0

Surface Water Pathway Threat Scores

Threat	Likelihood of Release(LR) Score	Targets(T) Score	Pathway Waste Characteristics (WC) Score	Threat Score LR x T x WC / 82,500
Drinking Water	550	5	18	1
Human Food Chain	550	0	18	0
Environmental	550	0	18	0

SURFACE WATER PATHWAY SCORE:

1

Soil Exposure Pathway Criteria List
Resident Population

- | | |
|--|---|
| Is any residence, school, or daycare facility on or within 200 feet of an area of suspected contamination? (y/n/u) | N |
| Is any residence, school, or daycare facility located on adjacent land previously owned or leased by the site owner/operator? (y/n/u) | N |
| Is there a migration route that might spread hazardous substances near residences, schools, or daycare facilities? (y/n/u) | N |
| Have onsite or adjacent residents or students reported adverse health effects, exclusive of apparent drinking water or air contamination problems? (y/n/u) | N |
| Does any neighboring property warrant sampling? (y/n/u) | N |

Other criteria? (y/n) N

RESIDENT POPULATION IDENTIFIED? (y/n) N

Summarize the rationale for Resident Population:

SOIL EXPOSURE PATHWAY SCORESHEETS

Pathway Characteristics

		Ref.
Do any people live on or within 200 ft of areas of suspected contamination? (y/n)	No	
Do any people attend school or daycare on or within 200 ft of areas of suspected contamination? (y/n)	No	
Is the facility active? (y/n):	Yes	

LIKELIHOOD OF EXPOSURE	Suspected Contamination	References
1. SUSPECTED CONTAMINATION LE =	550	

Targets

2. RESIDENT POPULATION 0 resident(s) 0 school/daycare student(s)	0	
3. RESIDENT INDIVIDUAL	0	
4. WORKERS None	0	
5. TERRES. SENSITIVE ENVIRONMENTS	0	
6. RESOURCES	0	
T =	0	

WASTE CHARACTERISTICS

WC =

RESIDENT POPULATION THREAT SCORE:

NEARBY POPULATION THREAT SCORE:

Population Within 1 Mile: 10,001 - 50,000

SOIL EXPOSURE PATHWAY SCORE:

Soil Exposure Pathway Terrestrial Sensitive Environments

Terrestrial Sensitive Environment Name	Reference	Value
None		
Total Terrestrial Sensitive Environments Value		

Air Pathway Criteria List
Suspected Release

Are odors currently reported? (y/n/u) N

Has release of a hazardous substance to the air
been directly observed? (y/n/u) N

Are there reports of adverse health effects (e.g., headaches,
nausea, dizziness) potentially resulting from migration
of hazardous substances through the air? (y/n/u) N

Does analytical/circumstantial evidence suggest release to air? (y/n/u) N

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) N

Summarize the rationale for Suspected Release:

AIR PATHWAY SCORESHEETS

Pathway Characteristics

Do you suspect a release? (y/n)			No	Ref.
Distance to the nearest individual (feet):			0	
LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References	
1. SUSPECTED RELEASE	0			
2. NO SUSPECTED RELEASE		500		
LR =	0	500		

Targets

TARGETS	Suspected Release	No Suspected Release	References
3. PRIMARY TARGET POPULATION 0 person(s)	0		
4. SECONDARY TARGET POPULATION	0	0	
5. NEAREST INDIVIDUAL	0	0	
6. PRIMARY SENSITIVE ENVIRONS.	0		
7. SECONDARY SENSITIVE ENVIRONS.	0	0	
8. RESOURCES	0	5	
T =	0	5	

WASTE CHARACTERISTICS

WC =

0	18
---	----

AIR PATHWAY SCORE:

1

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Air Pathway Secondary Target Populations

Distance Categories	Population	References	Value
Onsite	0		0
Greater than 0 to 1/4 mile	0		0
Greater than 1/4 to 1/2 mile	0		0
Greater than 1/2 to 1 mile	0		0
Greater than 1 to 2 miles	0		0
Greater than 2 to 3 miles	0		0
Greater than 3 to 4 miles	0		0
Total Secondary Population Value			0

Air Pathway Primary Sensitive Environments

Sensitive Environment Name	Reference	Value
None		
Total Primary Sensitive Environments Value		

Air Pathway Secondary Sensitive Environments

Sensitive Environment Name	Distance	Reference	Value
None			
Total Secondary Sensitive Environments Value			

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SITE SCORE CALCULATION	SCORE
GROUND WATER PATHWAY SCORE:	100
SURFACE WATER PATHWAY SCORE:	1
SOIL EXPOSURE PATHWAY SCORE:	3
AIR PATHWAY SCORE:	1
SITE SCORE:	50

SUMMARY

1. Is there a high possibility of a threat to any nearby drinking water well(s) by migration of a hazardous substance in ground water? Yes

If yes, identify the well(s).

Two wells are located on the base:

Well #3

Well #4

If yes, how many people are served by the threatened well(s)? 2100

2. Is there a high possibility of a threat to any of the following by hazardous substance migration in surface water?

A. Drinking water intake

Yes

B. Fishery

No

C. Sensitive environment (wetland, critical habitat, others)

No

If yes, identify the target(s).

The suspected hazardous wastes located near Perimeter Road could possibly contain low levels of radioactive material and petroleum products.

If the hazardous materials escaped from the containment bottles then, they could pose a threat to the potable water wells on Saufley.

3. Is there a high possibility of an area of surficial contamination within 200 feet of any residence, school, or daycare facility? No

If yes, identify the properties and estimate the associated population(s)

4. Are there public health concerns at this site that are not addressed by PA scoring considerations? No

If yes, explain:

REFERENCE LIST

1. Interview with Base Personnel, 7/91
2. NAVFAC Drawing No. 25318, Gasoline Distribution System Showing Pipeline, Bower Numbers, and Tank Farm Details., July 28, 1944.
3. Reference deleted, but space may be reused
4. Musgrove, R.H., Barraclough, J.T., and Grantham, R.G., 1965. Water Resources of Escambia and Santa Rosa Counties, Florida: Florida Geol. Survey, Rept. Inv. 40, 102 p.
5. United States Geological Survey Topographic Map, West Pensacola, FLA. -ALA., 1970.
6. United States Navy, NETPMSA Saufley Field Master Plan, September 1988.
7. Marsh, O.T., 1966. Geology of Escambia and Santa Rosa Counties Western Florida Panhandle: Florida Geol. Survey, Bull. 46, 140 p.

PA-Score

PA SCORE SHEETS

Site Name: Fire Fighter Training Area
CERCLIS ID No.: FL170024473
Street Address: Code 100P
City/State/Zip: PENSACOLA, FL 32509-5000

Investigator: SCOTT L. HORWITZ
Agency/Organization: NEESA
Street Address: CODE 112E3
City/State: PORT HUENEME, CA

Date: 4/92

WASTE CHARACTERISTICS

Waste Characteristics (WC) Calculations:

1 Fire Fighter Area Surface impoundment Ref: 1 WQ value maximum
Wastestream 2.00E+05 lbs 4.00E+01 4.00E+01

The Fire Fighter Training Area is located about 400 feet southwest of Runway 13. The fire fighter training area is a 60 foot diameter concrete pad surrounded by soil. The concrete pad and surrounding soil is charred.

The exact details of the fire fighting drills are unknown. A typical burn by the Naval Crash Crews consisted of burning between 300 and 1000 gallons of flammable liquids per exercise. Burn exercises were typically conducted approximately once per month.
Ref: Interview with Base Personnel.

Waste Characteristics Score: WC = 18

Ground Water Pathway Criteria List
 Suspected Release

Are sources poorly contained? (y/n/u)	Y
Is the source a type likely to contribute to ground water contamination (e.g., wet lagoon)? (y/n/u)	Y
Is waste quantity particularly large? (y/n/u)	U
Is precipitation heavy? (y/n/u)	Y
Is the infiltration rate high? (y/n/u)	Y
Is the site located in an area of karst terrain? (y/n)	N
Is the subsurface highly permeable or conductive? (y/n/u)	Y
Is drinking water drawn from a shallow aquifer? (y/n/u)	Y
Are suspected contaminants highly mobile in ground water? (y/n/u)	U
Does analytical or circumstantial evidence suggest ground water contamination? (y/n/u)	Y

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) Y

Summarize the rationale for Suspected Release:

There are no known potable water wells down gradient from the Fire Fighter Training Area. Potential contaminants could contaminate underlying ground water. Ground water is believed to discharge into Perdido Bay. The potential for vertical migration to ground water and to surface discharge zones does exist.

Ground Water Pathway Criteria List
Primary Targets

Is any drinking water well nearby? (y/n/u)	Y
Has any nearby drinking water well been closed? (y/n/u)	N
Has any nearby drinking water well user reported foul-testing or foul-smelling water? (y/n/u)	N
Does any nearby well have a large drawdown/high production rate? (y/n/u)	Y
Is any drinking water well located between the site and other wells that are suspected to be exposed to a hazardous substance? (y/n/u)	N
Does analytical or circumstantial evidence suggest contamination at a drinking water well? (y/n/u)	N
Does any drinking water well warrant sampling? (y/n/u)	N

Other criteria? (y/n) N

PRIMARY TARGET(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Targets:

There are no known potable water wells down gradient from the Fire
Fighter Training Area.

GROUND WATER PATHWAY SCORESHEETS

Pathway Characteristics

		Ref.
Do you suspect a release? (y/n)	Yes	
Is the site located in karst terrain? (y/n)	No	
Depth to aquifer (feet):	10	6
Distance to the nearest drinking water well (feet):	27400	5

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	550		
2. NO SUSPECTED RELEASE		0	
LR =	550	0	

Targets

TARGETS	Suspected Release	No Suspected Release	References
3. PRIMARY TARGET POPULATION 862 person(s)	8620		
4. SECONDARY TARGET POPULATION Are any wells part of a blended system? (y/n) Y	0	0	
5. NEAREST WELL	50	0	
6. WELLHEAD PROTECTION AREA Underlies Site	20	0	
7. RESOURCES	5	0	
T =	8695	0	

WASTE CHARACTERISTICS

WC =	32	0
------	----	---

GROUND WATER PATHWAY SCORE:

100

Ground Water Target Populations

Primary Target Population Drinking Water Well ID	Dist. (miles)	Population Served	Reference	Value
1 Well #3	0.10	431	5	4310
2 Well #4	0.10	431	5	4310
Total				8620

Secondary Target Population Distance Categories	Population Served	Reference	Value
0 to 1/4 mile	0		0
Greater than 1/4 to 1/2 mile	0		0
Greater than 1/2 to 1 mile	0		0
Greater than 1 to 2 miles	0		0
Greater than 2 to 3 miles	0		0
Greater than 3 to 4 miles	0		0
Total			0

Apportionment Documentation for a Blended System

Wells #3 and Wells #4 supply drinking water to the personnel at Saufley Field. The population at the Base is approximatley 2100.

Surface Water Pathway Criteria List
 Suspected Release

Is surface water nearby? (y/n/u)	Y
Is waste quantity particularly large? (y/n/u)	U
Is the drainage area large? (y/n/u)	Y
Is rainfall heavy? (y/n/u)	Y
Is the infiltration rate low? (y/n/u)	Y
Are sources poorly contained or prone to runoff or flooding? (y/n/u)	Y
Is a runoff route well defined(e.g.ditch/channel to surf.water)? (y/n/u)	Y
Is vegetation stressed along the probable runoff path? (y/n/u)	N
Are sediments or water unnaturally discolored? (y/n/u)	N
Is wildlife unnaturally absent? (y/n/u)	N
Has deposition of waste into surface water been observed? (y/n/u)	N
Is ground water discharge to surface water likely? (y/n/u)	Y
Does analytical/circumstantial evidence suggest S.W. contam? (y/n/u)	U

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) Y

Summarize the rationale for Suspected Release:

Eight and Eleven Mile Creeks are located north of the facility while Perdido Bay is located approximately 3000 feet to the west. Surface run-off from the Fire Fighter Training Area could drain into the Creeks.

Surface Water Pathway Criteria List
Primary Targets

Is any target nearby? (y/n/u) If yes: Y
 Y Drinking water intake
 N Fishery
 N Sensitive environment

Has any intake, fishery, or recreational area been closed? (y/n/u) N

Does analytical or circumstantial evidence suggest surface water
contamination at or downstream of a target? (y/n/u) Y

Does any target warrant sampling? (y/n/u) If yes: N
 U Drinking water intake
 U Fishery
 N Sensitive environment

Other criteria? (y/n) N

PRIMARY INTAKE(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Intakes:

continued -----

continued -----

Other criteria? (y/n) N

PRIMARY FISHERY (IES) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Fisheries:

Other criteria? (y/n) N

PRIMARY SENSITIVE ENVIRONMENT(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Sensitive Environments:

SURFACE WATER PATHWAY SCORESHEETS

Pathway Characteristics

Pathway Characteristics		Ref.
Do you suspect a release? (y/n)	Yes	
Distance to surface water (feet):	5000	4
Flood frequency (years):	100	5
What is the downstream distance (miles) to:		
a. the nearest drinking water intake?	0.0	
b. the nearest fishery?	0.0	
c. the nearest sensitive environment?	0.0	

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	550		
2. NO SUSPECTED RELEASE		0	
LR =	550	0	

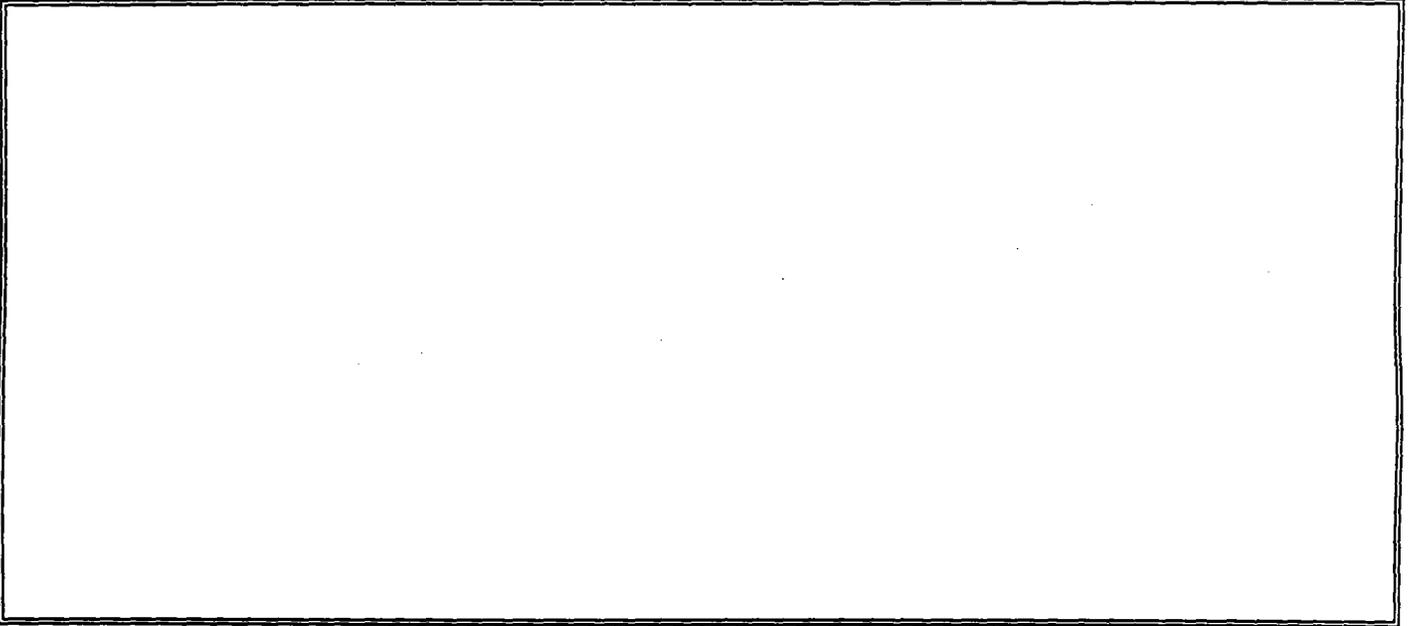
Drinking Water Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
3. Determine the water body type, flow (if applicable), and number of people served by each drinking water intake.			
4. PRIMARY TARGET POPULATION 0 person(s)	0		
5. SECONDARY TARGET POPULATION Are any intakes part of a blended system? (y/n): N	0	0	
6. NEAREST INTAKE	0	0	
7. RESOURCES	5	0	
T =	5	0	

Drinking Water Threat Target Populations

Intake Name	Primary (y/n)	Water Body Type/Flow	Population Served	Ref.	Value
None					
Total Primary Target Population Value					0
Total Secondary Target Population Value					0

Apportionment Documentation for a Blended System



Human Food Chain Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
8. Determine the water body type and flow for each fishery within the target limit.			
9. PRIMARY FISHERIES	0		
10. SECONDARY FISHERIES	0	0	
T =	0	0	

Human Food Chain Threat Targets

Fishery Name	Primary (y/n)	Water Body Type/Flow	Ref.	Value
None				
Total Primary Fisheries Value				0
Total Secondary Fisheries Value				0

Environmental Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
11. Determine the water body type and flow (if applicable) for each sensitive environment.			
12. PRIMARY SENSITIVE ENVIRONMENTS	0		
13. SECONDARY SENSITIVE ENVIRONS.	0	0	
T =	0	0	

Environmental Threat Targets

Sensitive Environment Name	Primary (y/n)	Water Body Type/Flow	Ref.	Value
None				
Total Primary Sensitive Environments Value				0
Total Secondary Sensitive Environments Value				0

Surface Water Pathway Threat Scores

Threat	Likelihood of Release (LR) Score	Targets (T) Score	Pathway Waste Characteristics (WC) Score	Threat Score LR x T x WC / 82,500
Drinking Water	550	5	18	1
Human Food Chain	550	0	18	0
Environmental	550	0	18	0

SURFACE WATER PATHWAY SCORE:

1

Soil Exposure Pathway Criteria List
Resident Population

Is any residence, school, or daycare facility on or within 200 feet of an area of suspected contamination? (y/n/u) N

Is any residence, school, or daycare facility located on adjacent land previously owned or leased by the site owner/operator? (y/n/u) N

Is there a migration route that might spread hazardous substances near residences, schools, or daycare facilities? (y/n/u) U

Have onsite or adjacent residents or students reported adverse health effects, exclusive of apparent drinking water or air contamination problems? (y/n/u) N

Does any neighboring property warrant sampling? (y/n/u) N

Other criteria? (y/n) N

RESIDENT POPULATION IDENTIFIED? (y/n) N

Summarize the rationale for Resident Population:

SOIL EXPOSURE PATHWAY SCORESHEETS

Pathway Characteristics	Ref.
Do any people live on or within 200 ft of areas of suspected contamination? (y/n)	No
Do any people attend school or daycare on or within 200 ft of areas of suspected contamination? (y/n)	No
Is the facility active? (y/n):	Yes

LIKELIHOOD OF EXPOSURE	Suspected Contamination	References
1. SUSPECTED CONTAMINATION LE =	550	

Targets

2. RESIDENT POPULATION 0 resident(s) 0 school/daycare student(s)	0	
3. RESIDENT INDIVIDUAL	0	
4. WORKERS None	0	
5. TERRES. SENSITIVE ENVIRONMENTS	0	
6. RESOURCES	5	
T =	5	

WASTE CHARACTERISTICS

WC =

RESIDENT POPULATION THREAT SCORE:

NEARBY POPULATION THREAT SCORE:

Population Within 1 Mile: 1 - 10,000

SOIL EXPOSURE PATHWAY SCORE:

Soil Exposure Pathway Terrestrial Sensitive Environments

Terrestrial Sensitive Environment Name	Reference	Value
None		
Total Terrestrial Sensitive Environments Value		

Air Pathway Criteria List
Suspected Release

Are odors currently reported? (y/n/u) N

Has release of a hazardous substance to the air
been directly observed? (y/n/u) N

Are there reports of adverse health effects (e.g., headaches,
nausea, dizziness) potentially resulting from migration
of hazardous substances through the air? (y/n/u) N

Does analytical/circumstantial evidence suggest release to air? (y/n/u) N

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) N

Summarize the rationale for Suspected Release:

AIR PATHWAY SCORESHEETS

Pathway Characteristics

Do you suspect a release? (y/n)			No	Ref.
Distance to the nearest individual (feet):			0	
LIKELIHOOD OF RELEASE				
		Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE		0		
2. NO SUSPECTED RELEASE			500	
LR =		0	500	

Targets

TARGETS	Suspected Release	No Suspected Release	References
3. PRIMARY TARGET POPULATION 0 person(s)	0		
4. SECONDARY TARGET POPULATION	0	0	
5. NEAREST INDIVIDUAL	0	0	
6. PRIMARY SENSITIVE ENVIRONS.	0		
7. SECONDARY SENSITIVE ENVIRONS.	0	0	
8. RESOURCES	0	5	
T =	0	5	

WASTE CHARACTERISTICS

WC =

0	18
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AIR PATHWAY SCORE:

1

Air Pathway Secondary Target Populations

Distance Categories	Population	References	Value
Onsite	0		0
Greater than 0 to 1/4 mile	0		0
Greater than 1/4 to 1/2 mile	0		0
Greater than 1/2 to 1 mile	0		0
Greater than 1 to 2 miles	0		0
Greater than 2 to 3 miles	0		0
Greater than 3 to 4 miles	0		0
Total Secondary Population Value			0

Air Pathway Primary Sensitive Environments

Sensitive Environment Name	Reference	Value
None		
Total Primary Sensitive Environments Value		

Air Pathway Secondary Sensitive Environments

Sensitive Environment Name	Distance	Reference	Value
None			
Total Secondary Sensitive Environments Value			

PA-Score 1.0 Scoresheets
Fire Fighter Training Area - 04/13/92

SITE SCORE CALCULATION	SCORE
GROUND WATER PATHWAY SCORE:	100
SURFACE WATER PATHWAY SCORE:	1
SOIL EXPOSURE PATHWAY SCORE:	2
AIR PATHWAY SCORE:	1
SITE SCORE:	50

SUMMARY

1. Is there a high possibility of a threat to any nearby drinking water well(s) by migration of a hazardous substance in ground water? Yes

If yes, identify the well(s).

Two wells are located on the base:

Well #3

Well #4

If yes, how many people are served by the threatened well(s)? 2200

2. Is there a high possibility of a threat to any of the following by hazardous substance migration in surface water?

A. Drinking water intake No

B. Fishery No

C. Sensitive environment (wetland, critical habitat, others) No

If yes, identify the target(s).

3. Is there a high possibility of an area of surficial contamination within 200 feet of any residence, school, or daycare facility? No

If yes, identify the properties and estimate the associated population(s)

4. Are there public health concerns at this site that are not addressed by PA scoring considerations? No

If yes, explain:

REFERENCE LIST

1. Interview with Base Personnel, 7/91
2. NAVFAC Drawing No. 25318, Gasoline Distribution System Showing Pipeline, Bower Numbers, and Tank Farm Details., July 28, 1944.
3. Musgrove, R.H., Barraclough, J.T., and Grantham, R.G., 1965. Water Resources of Escambia and Santa Rosa Counties, Florida: Florida Geol. Survey, Rept. Inv. 40, 102 p.
4. United States Geological Survey Topographic Map, West Pensacola, FLA. -ALA., 1970.
5. United States Navy, NETPMSA Saufley Field Master Plan, September 1988.
6. Marsh, O.T., 1966. Geology of Escambia and Santa Rosa Counties Western Florida Panhandle: Florida Geol. Survey, Bull. 46, 140 p.

PA-Score

PA SCORESHEETS

Site Name: Refueling Facility
CERCLIS ID No.: FL170024473
Street Address: Code 100P
City/State/Zip: PENSACOLA, FL 32509-5000

Investigator: SCOTT L. HORWITZ
Agency/Organization: NEESA
Street Address: CODE 112E3
City/State: PORT HUENEME, CA

Date: 4/92

WASTE CHARACTERISTICS

Waste Characteristics (WC) Calculations:

1 Refueling Facility Non-drum containers Ref: 2 WQ value maximum

Volume 6.58E+04 gals 1.32E+02 1.32E+02

Large amounts of fuels, solvents, oils, and aircraft cleaners were used at and around the four hangars and the refueling pits. Station personnel who worked at NAAS Saufley in 1940 through 1950 reported that aircraft parts were degreased with solvents both inside and outside the hangars. The hangars and aircraft parking areas are adjacent to grassy areas. Liquid materials spilled or placed on the concrete next to the hangars may have been washed into the grass during periods of precipitation or when the cement was washed down.

Ref: Interview with Base Personnel.

Waste Characteristics Score: WC = 32

Ground Water Pathway Criteria List
 Suspected Release

Are sources poorly contained? (y/n/u)	Y
Is the source a type likely to contribute to ground water contamination (e.g., wet lagoon)? (y/n/u)	Y
Is waste quantity particularly large? (y/n/u)	Y
Is precipitation heavy? (y/n/u)	Y
Is the infiltration rate high? (y/n/u)	Y
Is the site located in an area of karst terrain? (y/n)	N
Is the subsurface highly permeable or conductive? (y/n/u)	Y
Is drinking water drawn from a shallow aquifer? (y/n/u)	Y
Are suspected contaminants highly mobile in ground water? (y/n/u)	U
Does analytical or circumstantial evidence suggest ground water contamination? (y/n/u)	Y

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) Y

Summarize the rationale for Suspected Release:

The fuel system was located in an area where the ground water is approximately ten feet below the surface. Top soil in the area is composed mainly of sand. Due to the porosity of the soil adjacent to the fuel system, any residue aviation gasoline could easily reach ground water.

If the fuel system has any residual aviation gasoline, it has the potential to threaten the potable water wells located on the base. The refueling system may be in the capture zone of potable water wells located at the base. At this date, there are no reports of contamination in the wells.

Ground Water Pathway Criteria List
 Primary Targets

Is any drinking water well nearby? (y/n/u)	Y
Has any nearby drinking water well been closed? (y/n/u)	U
Has any nearby drinking water well user reported foul-testing or foul-smelling water? (y/n/u)	U
Does any nearby well have a large drawdown/high production rate? (y/n/u)	Y
Is any drinking water well located between the site and other wells that are suspected to be exposed to a hazardous substance? (y/n/u)	Y
Does analytical or circumstantial evidence suggest contamination at a drinking water well? (y/n/u)	U
Does any drinking water well warrant sampling? (y/n/u)	Y

Other criteria? (y/n) N

PRIMARY TARGET(S) IDENTIFIED? (y/n) Y

Summarize the rationale for Primary Targets:

Wells #3 and #4 supply drinking water to 8,633 people on the base.
 If the refueling facility has contaminated the local ground water,
 then the drinking wells could also be in jeopardy.

GROUND WATER PATHWAY SCORESHEETS

Pathway Characteristics

		Ref.
Do you suspect a release? (y/n)	Yes	
Is the site located in karst terrain? (y/n)	No	
Depth to aquifer (feet):	10	6
Distance to the nearest drinking water well (feet):	27400	5

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	550		
2. NO SUSPECTED RELEASE		0	
LR =	550	0	

Targets

TARGETS	Suspected Release	No Suspected Release	References
3. PRIMARY TARGET POPULATION 8620 person(s)	86200		
4. SECONDARY TARGET POPULATION Are any wells part of a blended system? (y/n) N	0	0	
5. NEAREST WELL	50	0	
6. WELLHEAD PROTECTION AREA Underlies Site	20	0	
7. RESOURCES	5	0	
T =	86275	0	

WASTE CHARACTERISTICS

WC =	32	0
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GROUND WATER PATHWAY SCORE:

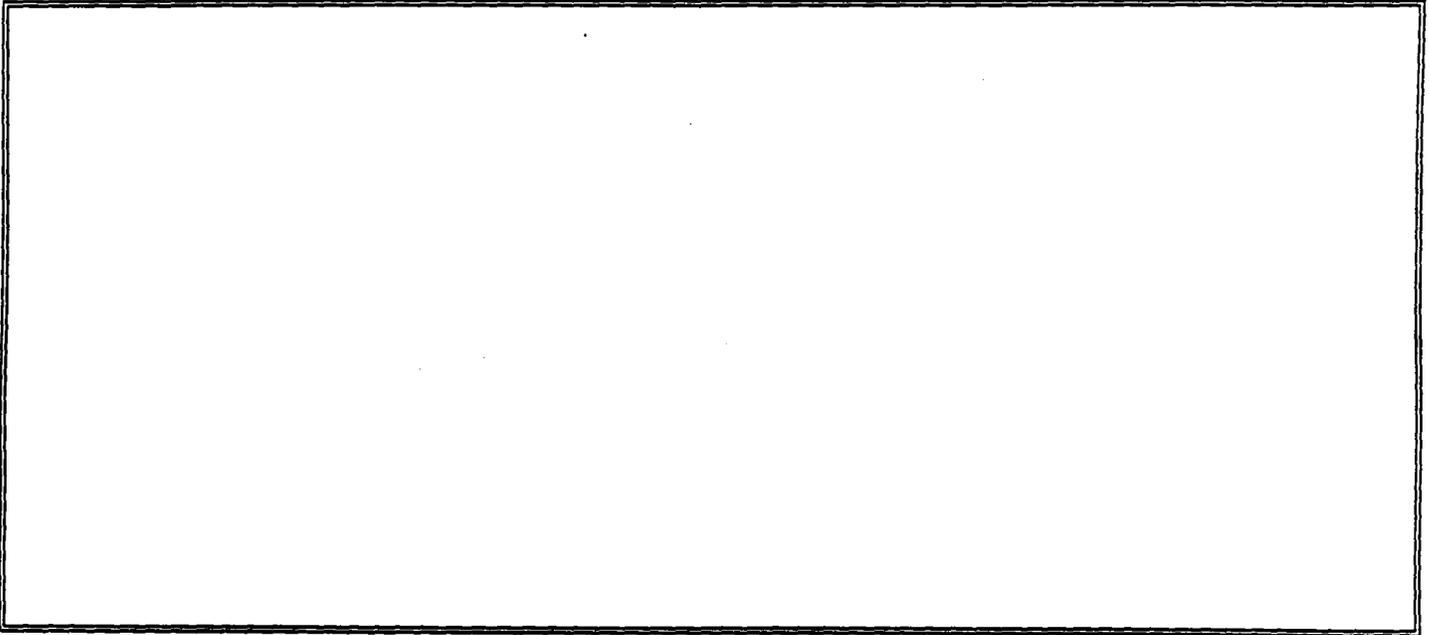
100

Ground Water Target Populations

Primary Target Population Drinking Water Well ID	Dist. (miles)	Population Served	Reference	Value
1 Well #3	0.10	4310	5	43100
2 Well #4	0.10	4310	5	43100
None				
Total				86200

Secondary Target Population Distance Categories	Population Served	Reference	Value
0 to 1/4 mile	0		0
Greater than 1/4 to 1/2 mile	0		0
Greater than 1/2 to 1 mile	0		0
Greater than 1 to 2 miles	0		0
Greater than 2 to 3 miles	0		0
Greater than 3 to 4 miles	0		0
Total			0

Apportionment Documentation for a Blended System



Surface Water Pathway Criteria List
 Suspected Release

Is surface water nearby? (y/n/u)	Y
Is waste quantity particularly large? (y/n/u)	U
Is the drainage area large? (y/n/u)	Y
Is rainfall heavy? (y/n/u)	Y
Is the infiltration rate low? (y/n/u)	Y
Are sources poorly contained or prone to runoff or flooding? (y/n/u)	U
Is a runoff route well defined(e.g.ditch/channel to surf.water)? (y/n/u)	N
Is vegetation stressed along the probable runoff path? (y/n/u)	N
Are sediments or water unnaturally discolored? (y/n/u)	N
Is wildlife unnaturally absent? (y/n/u)	N
Has deposition of waste into surface water been observed? (y/n/u)	N
Is ground water discharge to surface water likely? (y/n/u)	U
Does analytical/circumstantial evidence suggest S.W. contam? (y/n/u)	N

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) N

Summarize the rationale for Suspected Release:

Eleven and Eight Mile Creeks are the closest bodies of water from the refueling system. It is approximately 1000 yards to the northwest. Suspected hazardous wastes would be below the surface, thus contamination of surface run-off would be unlikely.

Surface Water Pathway Criteria List
Primary Targets

Is any target nearby? (y/n/u) If yes: N
 N Drinking water intake
 N Fishery
 N Sensitive environment

Has any intake, fishery, or recreational area been closed? (y/n/u) N

Does analytical or circumstantial evidence suggest surface water
contamination at or downstream of a target? (y/n/u) N

Does any target warrant sampling? (y/n/u) If yes: N
 N Drinking water intake
 U Fishery
 N Sensitive environment

Other criteria? (y/n) N

PRIMARY INTAKE(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Intakes:

continued -----

continued -----

Other criteria? (y/n) N

PRIMARY FISHERY(IES) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Fisheries:

Other criteria? (y/n) N

PRIMARY SENSITIVE ENVIRONMENT(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Sensitive Environments:

SURFACE WATER PATHWAY SCORESHEETS

Pathway Characteristics

Pathway Characteristics		Ref.
Do you suspect a release? (y/n)	No	
Distance to surface water (feet):	3000	4
Flood frequency (years):	100	5
What is the downstream distance (miles) to:		
a. the nearest drinking water intake?	0.5	4
b. the nearest fishery?	0.0	
c. the nearest sensitive environment?	0.0	

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	0		
2. NO SUSPECTED RELEASE		400	
LR =	0	400	

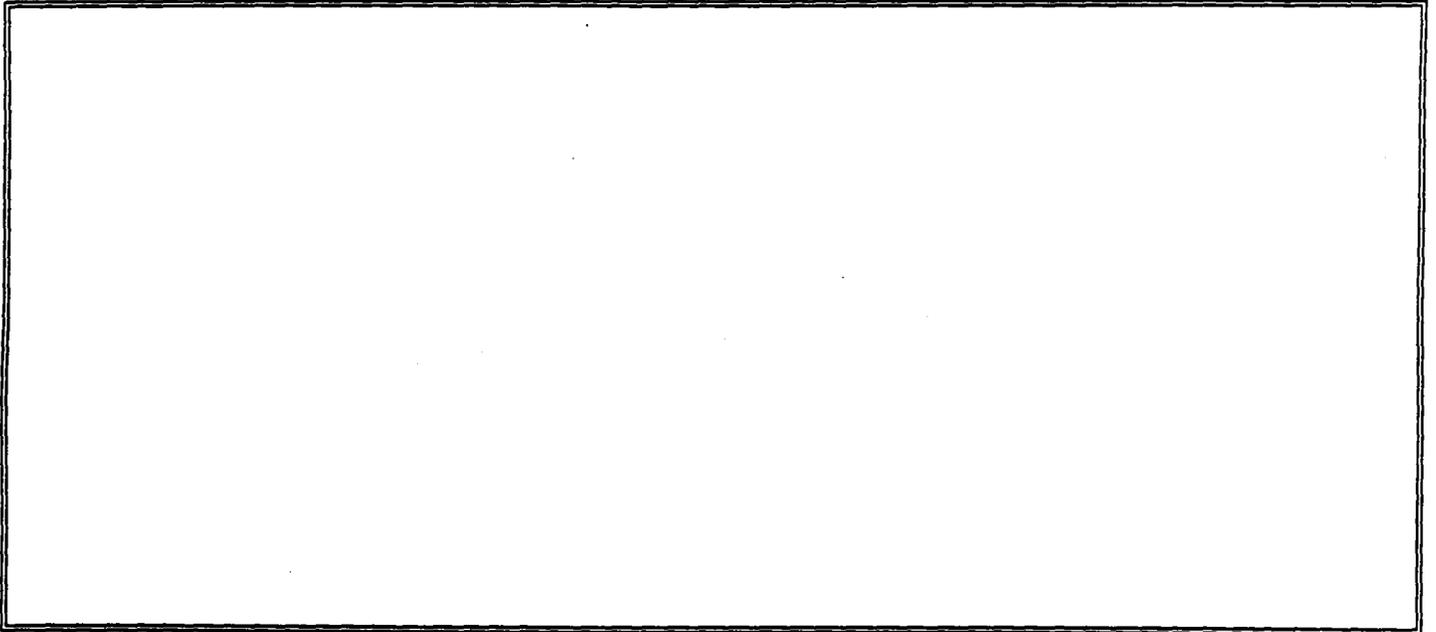
Drinking Water Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
3. Determine the water body type, flow (if applicable), and number of people served by each drinking water intake.			
4. PRIMARY TARGET POPULATION 0 person(s)	0		
5. SECONDARY TARGET POPULATION Are any intakes part of a blended system? (y/n): N	0	0	
6. NEAREST INTAKE	0	0	
7. RESOURCES	0	5	
T =	0	5	

Drinking Water Threat Target Populations

Intake Name	Primary (y/n)	Water Body Type/Flow	Population Served	Ref.	Value
None					
Total Primary Target Population Value					0
Total Secondary Target Population Value					0

Apportionment Documentation for a Blended System



Human Food Chain Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
8. Determine the water body type and flow for each fishery within the target limit.			
9. PRIMARY FISHERIES	0		
10. SECONDARY FISHERIES	0	0	
T =	0	0	

Human Food Chain Threat Targets

Fishery Name	Primary (y/n)	Water Body Type/Flow	Ref.	Value
None				
Total Primary Fisheries Value				0
Total Secondary Fisheries Value				0

Environmental Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
11. Determine the water body type and flow (if applicable) for each sensitive environment.			
12. PRIMARY SENSITIVE ENVIRONMENTS	0		
13. SECONDARY SENSITIVE ENVIRONS.	0	0	
T =	0	0	

Environmental Threat Targets

Sensitive Environment Name	Primary (y/n)	Water Body Type/Flow	Ref.	Value
None				
Total Primary Sensitive Environments Value				0
Total Secondary Sensitive Environments Value				0

Surface Water Pathway Threat Scores

Threat	Likelihood of Release (LR) Score	Targets (T) Score	Pathway Waste Characteristics (WC) Score	Threat Score LR x T x WC / 82,500
Drinking Water	400	5	32	1
Human Food Chain	400	0	32	0
Environmental	400	0	32	0

SURFACE WATER PATHWAY SCORE:

1

Soil Exposure Pathway Criteria List
Resident Population

Is any residence, school, or daycare facility on or within 200 feet of an area of suspected contamination? (y/n/u) N

Is any residence, school, or daycare facility located on adjacent land previously owned or leased by the site owner/operator? (y/n/u) N

Is there a migration route that might spread hazardous substances near residences, schools, or daycare facilities? (y/n/u) U

Have onsite or adjacent residents or students reported adverse health effects, exclusive of apparent drinking water or air contamination problems? (y/n/u) N

Does any neighboring property warrant sampling? (y/n/u) N

Other criteria? (y/n) N

RESIDENT POPULATION IDENTIFIED? (y/n) N

Summarize the rationale for Resident Population:

SOIL EXPOSURE PATHWAY SCORESHEETS

Pathway Characteristics		Ref.
Do any people live on or within 200 ft of areas of suspected contamination? (y/n)	No	
Do any people attend school or daycare on or within 200 ft of areas of suspected contamination? (y/n)	No	
Is the facility active? (y/n):	Yes	5

LIKELIHOOD OF EXPOSURE	Suspected Contamination	References
1. SUSPECTED CONTAMINATION LE =	550	

Targets

2. RESIDENT POPULATION 0 resident(s) 0 school/daycare student(s)	0	
3. RESIDENT INDIVIDUAL	0	
4. WORKERS 1 - 100	5	
5. TERRES. SENSITIVE ENVIRONMENTS	0	
6. RESOURCES	5	
T =	10	

WASTE CHARACTERISTICS

WC =

RESIDENT POPULATION THREAT SCORE:

NEARBY POPULATION THREAT SCORE:

Population Within 1 Mile: 10,001 - 50,000

SOIL EXPOSURE PATHWAY SCORE:

Soil Exposure Pathway Terrestrial Sensitive Environments

Terrestrial Sensitive Environment Name	Reference	Value
None		
Total Terrestrial Sensitive Environments Value		

Air Pathway Criteria List
Suspected Release

Are odors currently reported? (y/n/u) N

Has release of a hazardous substance to the air
been directly observed? (y/n/u) N

Are there reports of adverse health effects (e.g., headaches,
nausea, dizziness) potentially resulting from migration
of hazardous substances through the air? (y/n/u) N

Does analytical/circumstantial evidence suggest release to air? (y/n/u) N

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) N

Summarize the rationale for Suspected Release:

AIR PATHWAY SCORESHEETS

Pathway Characteristics

Do you suspect a release? (y/n)			No	Ref.
Distance to the nearest individual (feet):			0	
LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References	
1. SUSPECTED RELEASE	0			
2. NO SUSPECTED RELEASE		500		
LR =	0	500		

Targets

TARGETS	Suspected Release	No Suspected Release	References
3. PRIMARY TARGET POPULATION 0 person(s)	0		
4. SECONDARY TARGET POPULATION	0	0	
5. NEAREST INDIVIDUAL	0	0	
6. PRIMARY SENSITIVE ENVIRONS.	0		
7. SECONDARY SENSITIVE ENVIRONS.	0	0	
8. RESOURCES	0	5	
T =	0	5	

WASTE CHARACTERISTICS

WC =

0	32
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AIR PATHWAY SCORE:

1

Air Pathway Secondary Target Populations

Distance Categories	Population	References	Value
Onsite	0		0
Greater than 0 to 1/4 mile	0		0
Greater than 1/4 to 1/2 mile	0		0
Greater than 1/2 to 1 mile	0		0
Greater than 1 to 2 miles	0		0
Greater than 2 to 3 miles	0		0
Greater than 3 to 4 miles	0		0
Total Secondary Population Value			0

Air Pathway Primary Sensitive Environments

Sensitive Environment Name	Reference	Value
None		
Total Primary Sensitive Environments Value		

Air Pathway Secondary Sensitive Environments

Sensitive Environment Name	Distance	Reference	Value
None			
Total Secondary Sensitive Environments Value			

PA-Score 1.0 Scoresheets
Refueling Facility - 04/16/92

SITE SCORE CALCULATION	SCORE
GROUND WATER PATHWAY SCORE:	100
SURFACE WATER PATHWAY SCORE:	1
SOIL EXPOSURE PATHWAY SCORE:	4
AIR PATHWAY SCORE:	1
SITE SCORE:	50

SUMMARY

1. Is there a high possibility of a threat to any nearby drinking water well(s) by migration of a hazardous substance in ground water? Yes

If yes, identify the well(s).

Two wells are located on the base:

Well #3

Well #4

If yes, how many people are served by the threatened well(s)? 2200

2. Is there a high possibility of a threat to any of the following by hazardous substance migration in surface water?

A. Drinking water intake

Yes

B. Fishery

No

C. Sensitive environment (wetland, critical habitat, others)

No

If yes, identity the target(s).

The fuel system was located in an area where the ground water is approximately ten feet below the surface. If the system has any residual aviation gasoline, it has the potential to threaten the potable water wells located on the base.

3. Is there a high possibility of an area of surficial contamination within 200 feet of any residence, school, or daycare facility? No

If yes, identify the properties and estimate the associated population(s)

4. Are there public health concerns at this site that are not addressed by PA scoring considerations? No

If yes, explain:

REFERENCE LIST

1. Interview with Base Personnel, 7/91
2. NAVFAC Drawing No. 25318, Gasoline Distribution System Showing Pipeline, Bower Numbers, and Tank Farm Details., July 28, 1944.
3. Musgrove, R.H., Barraclough, J.T., and Grantham, R.G., 1965. Water Resources of Escambia and Santa Rosa Counties, Florida: Florida Geol. Survey, Rept. Inv. 40, 102 p.
4. United States Geological Survey Topographic Map, West Pensacola, FLA. -ALA., 1970.
5. United States Navy, NETPMSA Saufley Field Master Plan, September 1988.
6. Marsh, O.T., 1966. Geology of Escambia and Santa Rosa Counties Western Florida Panhandle: Florida Geol. Survey, Bull. 46, 140 p.

PA-Score

PA SCORESHEETS

Site Name: Pistol Range
CERCLIS ID No.: FL170024473
Street Address: Code 100P
City/State/Zip: PENSACOLA, FL 32509-5000

Investigator: SCOTT L. HORWITZ
Agency/Organization: NEESA
Street Address: CODE 112E3
City/State: PORT HUENEME, CA

Date: 4/92

WASTE CHARACTERISTICS

Waste Characteristics (WC) Calculations:

1 Pistol Range	Pile	Ref: 1	WQ value	maximum
Volume	1.00E+03 cu ft		1.48E+01	1.48E+01

The Pistol Range is situated on a large clay hill approximately 100 feet in length, 30 feet wide, and 20 feet high. Large amounts of spent bullets are scattered about the area and lodged in the hill. Many of the bullets are lead with some having steel jackets, and others having copper jackets.

Waste Characteristics Score: WC = 18

Ground Water Pathway Criteria List
Suspected Release

Are sources poorly contained? (y/n/u)	Y
Is the source a type likely to contribute to ground water contamination (e.g., wet lagoon)? (y/n/u)	U
Is waste quantity particularly large? (y/n/u)	Y
Is precipitation heavy? (y/n/u)	Y
Is the infiltration rate high? (y/n/u)	Y
Is the site located in an area of karst terrain? (y/n)	N
Is the subsurface highly permeable or conductive? (y/n/u)	Y
Is drinking water drawn from a shallow aquifer? (y/n/u)	Y
Are suspected contaminants highly mobile in ground water? (y/n/u)	N
Does analytical or circumstantial evidence suggest ground water contamination? (y/n/u)	U

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) N

Summarize the rationale for Suspected Release:

Underlying ground water may discharge into the creeks north of the base and/or into Perdido Bay. There are no known potable water wells down gradient from the Pistol Range. Metals from the area are not expected to migrate. Thus, the area is not believed to be a threat to local ground water.

Ground Water Pathway Criteria List
Primary Targets

Is any drinking water well nearby? (y/n/u)	Y
Has any nearby drinking water well been closed? (y/n/u)	U
Has any nearby drinking water well user reported foul-testing or foul-smelling water? (y/n/u)	U
Does any nearby well have a large drawdown/high production rate? (y/n/u)	Y
Is any drinking water well located between the site and other wells that are suspected to be exposed to a hazardous substance? (y/n/u)	U
Does analytical or circumstantial evidence suggest contamination at a drinking water well? (y/n/u)	U
Does any drinking water well warrant sampling? (y/n/u)	Y

Other criteria? (y/n) N

PRIMARY TARGET(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Targets:

GROUND WATER PATHWAY SCORESHEETS

Pathway Characteristics

Pathway Characteristics		Ref.
Do you suspect a release? (y/n)	No	
Is the site located in karst terrain? (y/n)	No	
Depth to aquifer (feet):	10	6
Distance to the nearest drinking water well (feet):	27400	5

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	0		
2. NO SUSPECTED RELEASE		500	
LR =	0	500	

Targets

TARGETS	Suspected Release	No Suspected Release	References
3. PRIMARY TARGET POPULATION 0 person(s)	0		
4. SECONDARY TARGET POPULATION Are any wells part of a blended system? (y/n) N	0	0	
5. NEAREST WELL	0	0	
6. WELLHEAD PROTECTION AREA Underlies Site	0	20	
7. RESOURCES	0	5	
T =	0	25	

WASTE CHARACTERISTICS

WC =

0	18
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GROUND WATER PATHWAY SCORE:

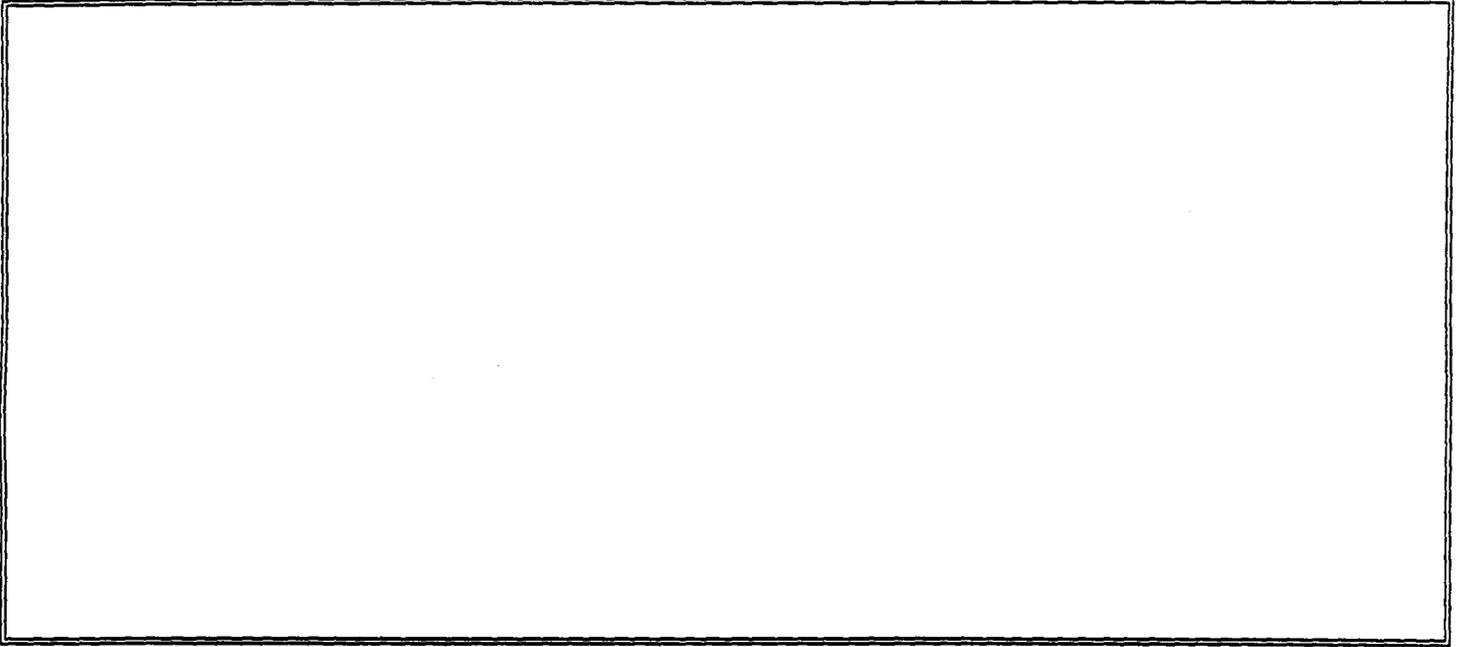
3

Ground Water Target Populations

Primary Target Population Drinking Water Well ID	Dist. (miles)	Population Served	Reference	Value
1 Well #3	0.10	431	5	4310
2 Well #4	0.10	431	5	4310
Total				8620

Secondary Target Population Distance Categories	Population Served	Reference	Value
0 to 1/4 mile	0		0
Greater than 1/4 to 1/2 mile	0		0
Greater than 1/2 to 1 mile	0		0
Greater than 1 to 2 miles	0		0
Greater than 2 to 3 miles	0		0
Greater than 3 to 4 miles	0		0
Total			0

Apportionment Documentation for a Blended System



Surface Water Pathway Criteria List
Suspected Release

Is surface water nearby? (y/n/u)	Y
Is waste quantity particularly large? (y/n/u)	Y
Is the drainage area large? (y/n/u)	Y
Is rainfall heavy? (y/n/u)	Y
Is the infiltration rate low? (y/n/u)	Y
Are sources poorly contained or prone to runoff or flooding? (y/n/u)	Y
Is a runoff route well defined(e.g.ditch/channel to surf.water)? (y/n/u)	U
Is vegetation stressed along the probable runoff path? (y/n/u)	N
Are sediments or water unnaturally discolored? (y/n/u)	N
Is wildlife unnaturally absent? (y/n/u)	N
Has deposition of waste into surface water been observed? (y/n/u)	N
Is ground water discharge to surface water likely? (y/n/u)	Y
Does analytical/circumstantial evidence suggest S.W. contam? (y/n/u)	U

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) Y

Summarize the rationale for Suspected Release:

Surface water run-off from the Pistol Range drains northward towards Eleven Mile Creek. Heavy metals tend to bind to clay particles in sediments and are generally not very mobile. Erosion of top soil from the Pistol Range may allow small amounts of heavy metals to reach Eleven Mile Creek.

continued -----

Other criteria? (y/n) N

PRIMARY FISHERY(IES) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Fisheries:

Other criteria? (y/n) N

PRIMARY SENSITIVE ENVIRONMENT(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Sensitive Environments:

SURFACE WATER PATHWAY SCORESHEETS

Pathway Characteristics

Pathway Characteristics		Ref.
Do you suspect a release? (y/n)	Yes	
Distance to surface water (feet):	5000	4
Flood frequency (years):	100	5
What is the downstream distance (miles) to:		
a. the nearest drinking water intake?	0.0	
b. the nearest fishery?	0.0	
c. the nearest sensitive environment?	0.0	

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	550		
2. NO SUSPECTED RELEASE		0	
LR =	550	0	

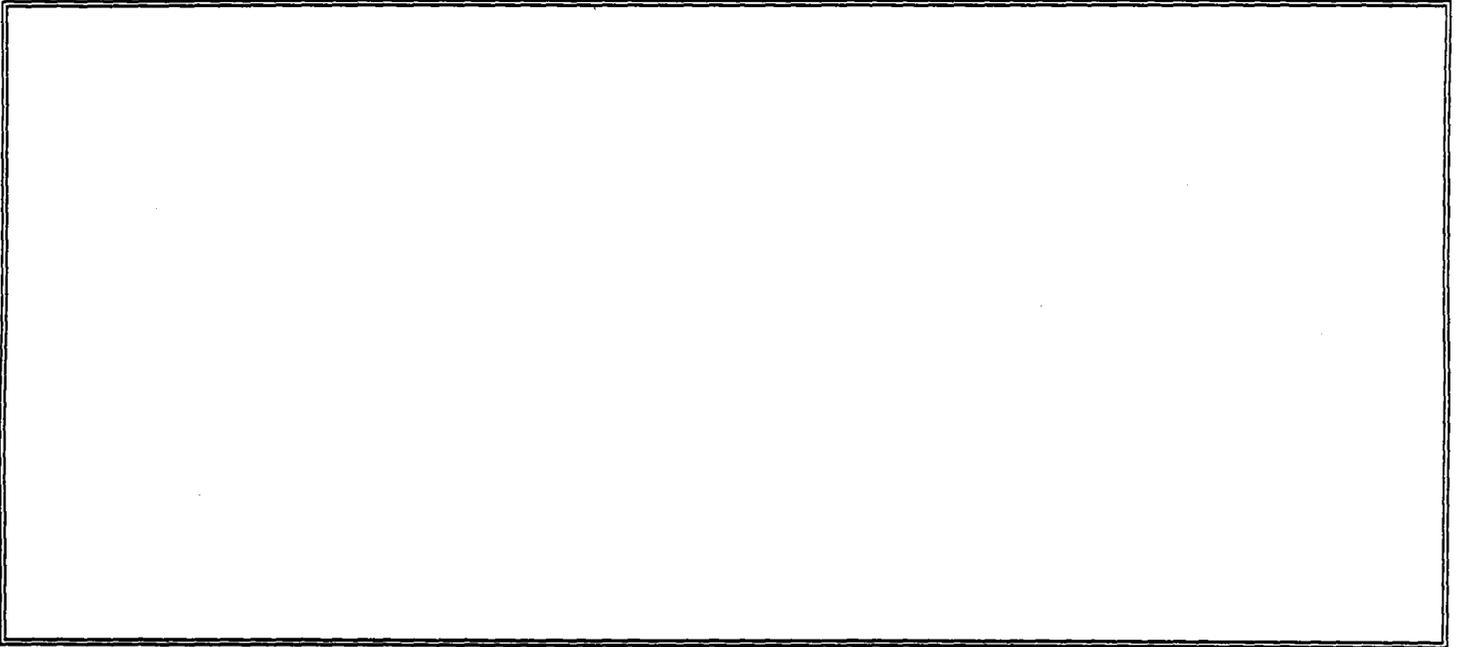
Drinking Water Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
3. Determine the water body type, flow (if applicable), and number of people served by each drinking water intake.			
4. PRIMARY TARGET POPULATION 0 person(s)	0		
5. SECONDARY TARGET POPULATION Are any intakes part of a blended system? (y/n): Y	0	0	
6. NEAREST INTAKE	0	0	
7. RESOURCES	5	0	
T =	5	0	

Drinking Water Threat Target Populations

Intake Name	Primary (y/n)	Water Body Type/Flow	Population Served	Ref.	Value
None					
Total Primary Target Population Value					0
Total Secondary Target Population Value					0

Apportionment Documentation for a Blended System



Human Food Chain Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
8. Determine the water body type and flow for each fishery within the target limit.			
9. PRIMARY FISHERIES	0		
10. SECONDARY FISHERIES	0	0	
T =	0	0	

Human Food Chain Threat Targets

Fishery Name	Primary (y/n)	Water Body Type/Flow	Ref.	Value
None				
Total Primary Fisheries Value				0
Total Secondary Fisheries Value				0

Environmental Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
11. Determine the water body type and flow (if applicable) for each sensitive environment.			
12. PRIMARY SENSITIVE ENVIRONMENTS	0		
13. SECONDARY SENSITIVE ENVIRONS.	0	0	
T =	0	0	

Environmental Threat Targets

Sensitive Environment Name	Primary (y/n)	Water Body Type/Flow	Ref.	Value
None				
Total Primary Sensitive Environments Value				0
Total Secondary Sensitive Environments Value				0

Surface Water Pathway Threat Scores

Threat	Likelihood of Release(LR) Score	Targets(T) Score	Pathway Waste Characteristics (WC) Score	Threat Score LR x T x WC / 82,500
Drinking Water	550	5	18	1
Human Food Chain	550	0	18	0
Environmental	550	0	18	0

SURFACE WATER PATHWAY SCORE:

1

Soil Exposure Pathway Criteria List
Resident Population

Is any residence, school, or daycare facility on or within 200 feet of an area of suspected contamination? (y/n/u)	N
Is any residence, school, or daycare facility located on adjacent land previously owned or leased by the site owner/operator? (y/n/u)	N
Is there a migration route that might spread hazardous substances near residences, schools, or daycare facilities? (y/n/u)	U
Have onsite or adjacent residents or students reported adverse health effects, exclusive of apparent drinking water or air contamination problems? (y/n/u)	N
Does any neighboring property warrant sampling? (y/n/u)	N
Other criteria? (y/n)	N

RESIDENT POPULATION IDENTIFIED? (y/n) N

Summarize the rationale for Resident Population:

SOIL EXPOSURE PATHWAY SCORESHEETS

Pathway Characteristics

Pathway Characteristics		Ref.
Do any people live on or within 200 ft of areas of suspected contamination? (y/n)	No	
Do any people attend school or daycare on or within 200 ft of areas of suspected contamination? (y/n)	No	
Is the facility active? (y/n):	Yes	5

LIKELIHOOD OF EXPOSURE	Suspected Contamination	References
1. SUSPECTED CONTAMINATION LE =	550	

Targets

2. RESIDENT POPULATION 0 resident(s) 0 school/daycare student(s)	0	
3. RESIDENT INDIVIDUAL	0	
4. WORKERS 1 - 100	5	
5. TERRES. SENSITIVE ENVIRONMENTS	0	
6. RESOURCES	5	
T =	10	

WASTE CHARACTERISTICS

WC =

RESIDENT POPULATION THREAT SCORE:

NEARBY POPULATION THREAT SCORE:

Population Within 1 Mile: 1 - 10,000

SOIL EXPOSURE PATHWAY SCORE:

Soil Exposure Pathway Terrestrial Sensitive Environments

Terrestrial Sensitive Environment Name	Reference	Value
None		
Total Terrestrial Sensitive Environments Value		

Air Pathway Criteria List
Suspected Release

Are odors currently reported? (y/n/u) N

Has release of a hazardous substance to the air
been directly observed? (y/n/u) N

Are there reports of adverse health effects (e.g., headaches,
nausea, dizziness) potentially resulting from migration
of hazardous substances through the air? (y/n/u) N

Does analytical/circumstantial evidence suggest release to air? (y/n/u) N

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) N

Summarize the rationale for Suspected Release:

AIR PATHWAY SCORESHEETS

Pathway Characteristics

Do you suspect a release? (y/n)			No	Ref.
Distance to the nearest individual (feet):			0	
LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References	
1. SUSPECTED RELEASE	0			
2. NO SUSPECTED RELEASE		500		
LR =	0	500		

Targets

TARGETS	Suspected Release	No Suspected Release	References
3. PRIMARY TARGET POPULATION 0 person(s)	0		
4. SECONDARY TARGET POPULATION	0	0	
5. NEAREST INDIVIDUAL	0	0	
6. PRIMARY SENSITIVE ENVIRONS.	0		
7. SECONDARY SENSITIVE ENVIRONS.	0	0	
8. RESOURCES	0	5	
T =	0	5	

WASTE CHARACTERISTICS

WC =	0	18
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AIR PATHWAY SCORE:

1

Air Pathway Secondary Target Populations

Distance Categories	Population	References	Value
Onsite	0		0
Greater than 0 to 1/4 mile	0		0
Greater than 1/4 to 1/2 mile	0		0
Greater than 1/2 to 1 mile	0		0
Greater than 1 to 2 miles	0		0
Greater than 2 to 3 miles	0		0
Greater than 3 to 4 miles	0		0
Total Secondary Population Value			0

Air Pathway Primary Sensitive Environments

Sensitive Environment Name	Reference	Value
None		
Total Primary Sensitive Environments Value		

Air Pathway Secondary Sensitive Environments

Sensitive Environment Name	Distance	Reference	Value
None			
Total Secondary Sensitive Environments Value			

PA-Score 1.0 Scoresheets
Pistol Range - 04/13/92

SITE SCORE CALCULATION	SCORE
GROUND WATER PATHWAY SCORE:	3
SURFACE WATER PATHWAY SCORE:	1
SOIL EXPOSURE PATHWAY SCORE:	2
AIR PATHWAY SCORE:	1
SITE SCORE:	2

SUMMARY

1. Is there a high possibility of a threat to any nearby drinking water well(s) by migration of a hazardous substance in ground water? No

If yes, identify the well(s).

If yes, how many people are served by the threatened well(s)? 0

2. Is there a high possibility of a threat to any of the following by hazardous substance migration in surface water?
- A. Drinking water intake No
 - B. Fishery No
 - C. Sensitive environment (wetland, critical habitat, others) No

If yes, identify the target(s).

3. Is there a high possibility of an area of surficial contamination within 200 feet of any residence, school, or daycare facility? No

If yes, identify the properties and estimate the associated population(s)

4. Are there public health concerns at this site that are not addressed by PA scoring considerations? No

If yes, explain:

REFERENCE LIST

1. Interview with Base Personnel, 7/91
2. NAVFAC Drawing No. 25318, Gasoline Distribution System Showing Pipeline, Bower Numbers, and Tank Farm Details., July 28, 1944.
3. Musgrove, R.H., Barraclough, J.T., and Grantham, R.G., 1965. Water Resources of Escambia and Santa Rosa Counties, Florida: Florida Geol. Survey, Rept. Inv. 40, 102 p.
4. United States Geological Survey Topographic Map, West Pensacola, FLA.-ALA., 1970.
5. United States Navy, NETPMSA Saufley Field Master Plan, September 1988.
6. Marsh, O.T., 1966. Geology of Escambia and Santa Rosa Counties Western Florida Panhandle: Florida Geol. Survey, Bull. 46, 140 p.