

**FLTG, Incorporated**

**Crosby, Texas**



**Natural Resource Mitigation  
Preliminary Wetlands  
Site Selection Assessment**

**ENSR Consulting and Engineering  
(Formerly ERT)**

**October 4, 1989  
Document Number 2870-014-983**

## TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1-1
2.0 INDIVIDUAL SITE ASSESSMENTS	2-1
2.1 Site I	2-1
2.2 Site IIA	2-6
2.3 Site IIbN	2-10
2.4 Site IIbS	2-15
2.5 Site III	2-19
2.6 Site V	2-23
2.7 Site VIA	2-29
2.8 Site VIb	2-33
2.9 Site VII	2-38

## TABLE OF CONTENTS (Continued)

### LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Prospective Wetland Sites Relative to the French Limited Site	1-2
2	Preliminary Wetland Creation Sites; Site I, IIa, IIbN, IIbS, III, and VII	1-3
3	Preliminary Wetland Creation Sites; Site V, VIa, VIb	1-4
4	Site I	2-2
5	Site I	2-3
6	Site IIa	2-7
7	Site IIa	2-8
8	Site IIbN and S	2-11
9	Site IIbN	2-12
10	Site IIbS	2-16
11	Site III	2-20
12	Site III	2-21
13	Site V	2-24
14	Site V	2-25
15	Site V	2-26
16	Site VIa	2-30
17	Site VIa	2-31
18	Site VIb	2-34
19	Site VIb	2-35
20	Site VII	2-39

### LIST OF PLATES

<u>Plate</u>		<u>Page</u>
1	Preliminary Wetland Site Assessment Matrix	1-8

## 1.0 INTRODUCTION

As part of the French Limited remediation plan, it will be necessary to mitigate impacts that may have occurred to natural resources due to past releases of chemical constituents at the site. Freshwater sloughs which surrounded the site and water bodies downstream may have incurred environmental impacts. To mitigate these potential impacts, a wetland area will be created which is tidally connected to Galveston Bay through the San Jacinto River. The new wetlands site will be 20 to 24 acres in size.

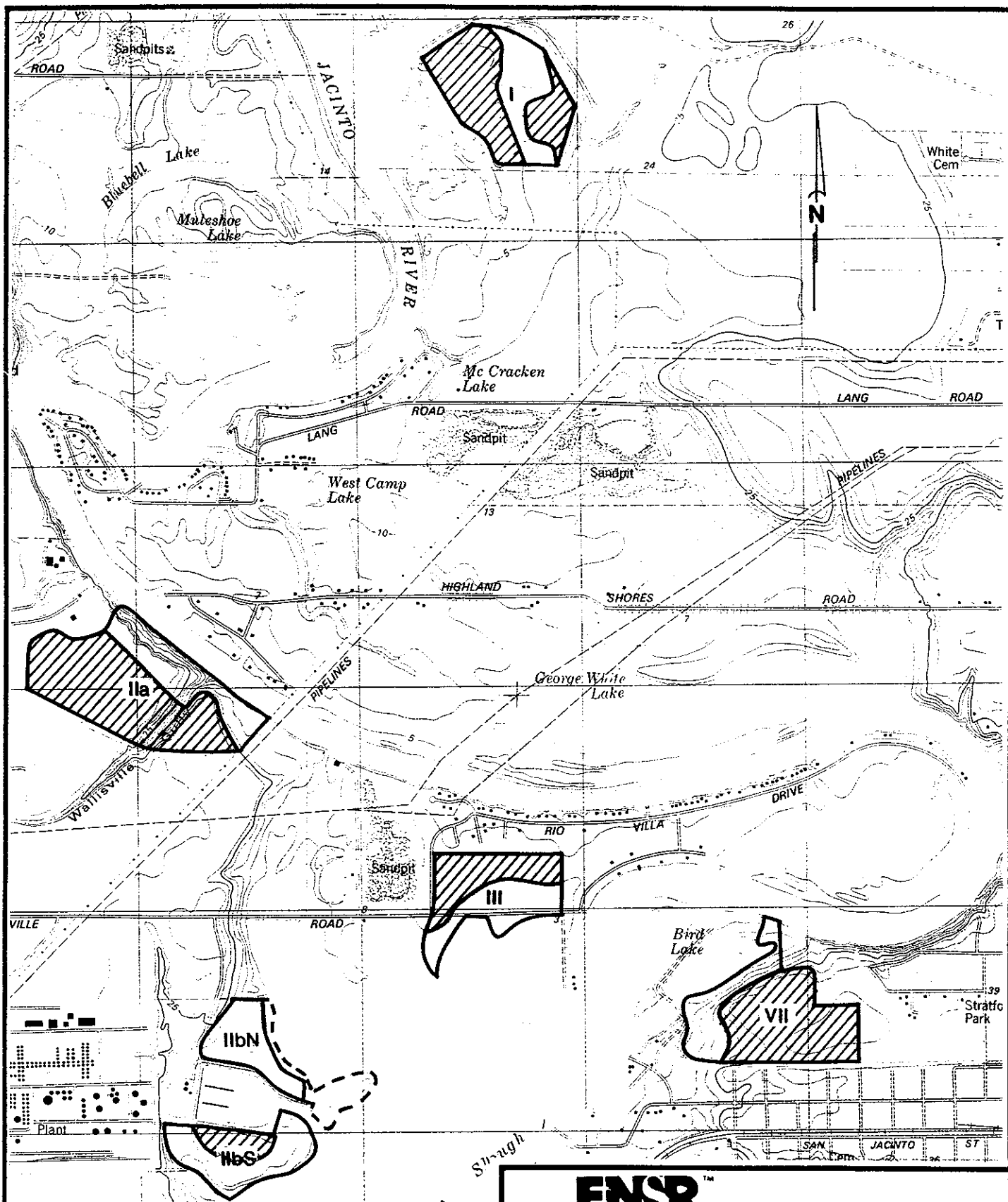
This report summarizes the preliminary site selection process used to perform the initial screening of potential sites for wetlands creation. The area examined for potential wetlands locations is adjacent to the San Jacinto River from State Highway 90 to Morgans Point, at LaPorte, Texas.

Prospective sites were selected based on land use after reviewing color infrared aerial photographs. The area of interest was then surveyed visually from a helicopter. Nine locations which appeared suitable for wetland creation were chosen as prospective sites. Figure 1 shows the location of selected sites relative to the French Limited site. Figures 2 and 3 provide topographic and watershed information for each site. Potential wetland configurations are also shown.

These nine sites were then evaluated using a set of criteria to assess factors on the relative economic or environmental desirability of a site. The criteria defined for this assessment are as follows:

- 1) Distance to the San Jacinto River - The distance to the San Jacinto River and/or its estuary is an important factor in the feasibility of engineering proper hydrologic considerations (tidal connections and water table depth) for establishment of a wetlands environment.





NOTE: UNSHADED AREAS WITHIN SITES REPRESENT  
POTENTIAL WETLAND CONFIGURATIONS

0 1000 2000 3000 4000  
SCALE IN FEET

REF.: USGS HIGHLANDS, TEXAS QUADRANGLE MAP, 1982

**ENSR**

ENSR CONSULTING AND ENGINEERING

FIGURE 2  
PRELIMINARY WETLAND CREATION SITES;  
SITE I, IIa, IIbN, IIbS, III, & VII  
FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY ASSESSMENT

DRAWN BY: CS

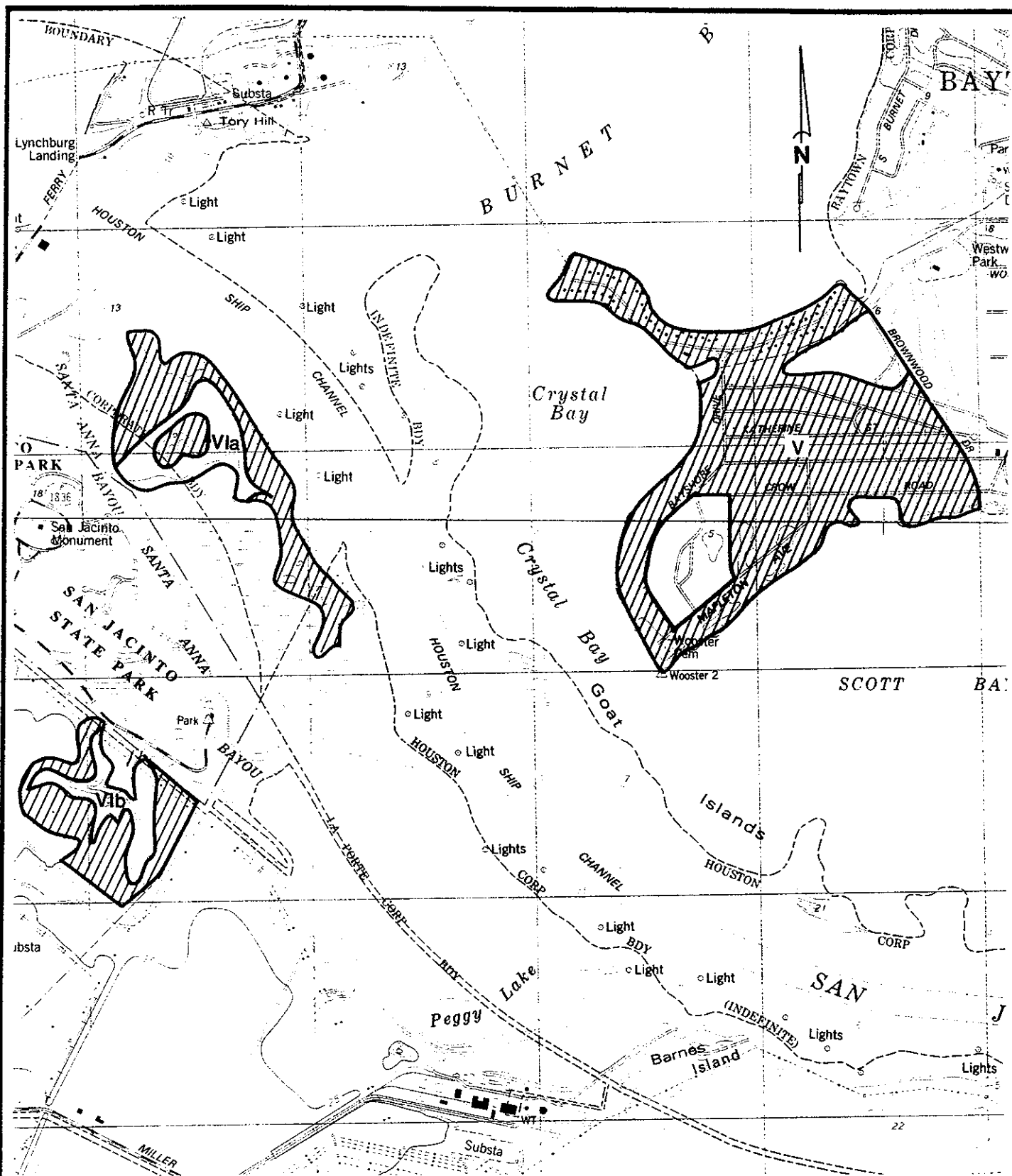
DATE: 9-19-89

PROJECT NO.: 2870-014

CHK'D BY:

REVISED:

DWG. NO.:



NOTE: UNSHADED AREAS WITHIN SITES REPRESENT POTENTIAL WETLAND CONFIGURATIONS

0 1000 2000 3000 4000  
SCALE IN FEET

**ENSR**

ENSR CONSULTING AND ENGINEERING

FIGURE 3  
PRELIMINARY WETLAND CREATION SITES;  
SITE V, Via, & Vlb  
FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY ASSESSMENT

DRAWN BY: CS

DATE: 9-14-89

PROJECT NO.: 2870-014

CHK'D BY:

REVISED:

DWG. NO.:

REF. USGS LA PORTE, TEXAS QUADRANGLE MAP, 1982

- 2) Highest and Lowest Elevation - The feasibility of creating a gradual rise in topography to prevent excessive erosion, inducing marsh zonation, and removal of earthen overburden are dependent on the elevation above mean sea level (MSL).
- 3) Existing Vegetation and Land Use - Existing wetlands and riparian hardwood bottom land are to be avoided. a forested area is preferred less than pasture land because it is an important habitat for a wide range of organisms and disposal of removed vegetation may be environmentally unsound.
- 4) Adjacent Vegetation and Land Use - The adjacent land area's vegetation is also an important consideration. Adding acreage to pre-existing wetland areas creates greater critical mass for organisms. An adjacent forested area provides a corridor for woodland species which utilize wetlands for food and water. Adjacent areas which are residential or developed may reduce habitat value through disturbance by the public.
- 5) Soil Types - The physical and chemical properties of the soil influence the success in, and ease of, establishing a wetlands. These include factors such as soil type, pH, water-table depth, and soil permeability.
- 6) Total Potential Conversion Dimensions - The available size of the prospective site may allow flexibility in creating the appropriate wetland design.
- 7) Site Configuration - The configuration which would result if an area was selected may also play a role in the



quality of habitat. An irregularly shaped wetlands may have a higher quality than one of square dimensions of equal area.

- 8) Nearest Construction Access - The ease of construction access to the site is an important consideration. A suitable site may have an access point which would require extensive road building for overburden removal and would thus be less desirable. Road construction may produce significant environmental impacts.
- 9) Mode of Access - The mode by which access is obtained may make a site less desirable. Generally, access by land would be preferable compared to access by water. Overburden disposal sites accessible by water may be limited. However, excessive transportation distances by truck may cause adverse impacts to road surfaces and cause traffic problems.
- 10) Distance to Spoil Disposal Site - The distance from the wetlands site to a suitable overburden disposal area is important because of the potential traffic, noise, and economic impacts involved in trucking or barging excavated material.
- 11) Susceptibility to Freshwater Flooding - While flooding is an important factor in wetland habitat evolution, areas which are frequently flooded with freshwater may be too prone to scouring or excessive sedimentation for successful establishment.
- 12) Susceptibility to Hurricane Flooding - Hurricane flooding, while not a common event, could destroy or

inhibit the establishment of wetlands through inundation of saltwater. Water control structures such as dikes could also be damaged.

- 13) Current Ownership - Present ownership may influence ease of acquisition. The expediency of attaining project objectives may be dependent on the landowner(s) willingness to sell or allow the proposed modifications (i.e., City of Baytown or Texas Parks and Wildlife).
- 14) Distance to French Limited Site - While not a critical criteria, the proximity of the selected site may be important during construction. The French Limited site may be used for disposal of excavated materials.
- 15) Stability - Certain areas are susceptible to subsidence due to excessive groundwater withdrawals.
- 16) Environmental Flaws - The presence of threatened and/or endangered species, cultural resources, past waste disposal practices and/or other environmental factors which might reduce the desirability of a site, will be reviewed.

A site selection comparison matrix was developed which shows how each site compares to the predefined criteria (Plate 1). For each prospective site evaluated and compared to each of the above criteria, the assessment of these criteria resulted in a number of sites which were selected for further evaluation and consideration. These sites will be investigated in more detail to select the final site. A final site selection report will be prepared describing the results of this second assessment.



## 2.0 INDIVIDUAL SITE ASSESSMENTS

Each site was evaluated for 16 site selection criteria. These criteria were developed to define factors which would facilitate or deter development of wetlands at a particular location. Each site is identified by Roman numerals and, in some cases, by additional letters. Alternate sites selected were eliminated initially based on limited size (Site IV, which is not described). The following subsections briefly describe each of the criteria for each site.

### 2.1 Site I

#### 1. Distance to the San Jacinto River

The site would be hydraulically connected to the San Jacinto River by a distance of approximately 4,500 feet. Currently, the intermittent creek which connects the site to the river flows through a single road culvert on a private road. Figures 4 and 5 show the site and its surroundings.

#### 2. Elevation

The topographic high is approximately 5 feet above mean sea level (MSL), as shown in Figure 2. Assuming an average of 5 feet of overburden and a configured area of 23 acres, a volume of approximately 185,533 cubic yards would require excavation.

#### 3. Existing Land Use and Vegetation

Currently, the site is a pasture with scattered hardwood trees. While there is an associated value with this habitat type, its value is lower than, for example, bottomland hardwoods or pine/deciduous forest.

#### 4. Adjacent Land Use and Vegetation

The site lies adjacent to woods, pasture, inactive borrow pits, and freshwater wetlands. North and south of the site are



FIGURE 4  
SITE 1

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING SOUTH

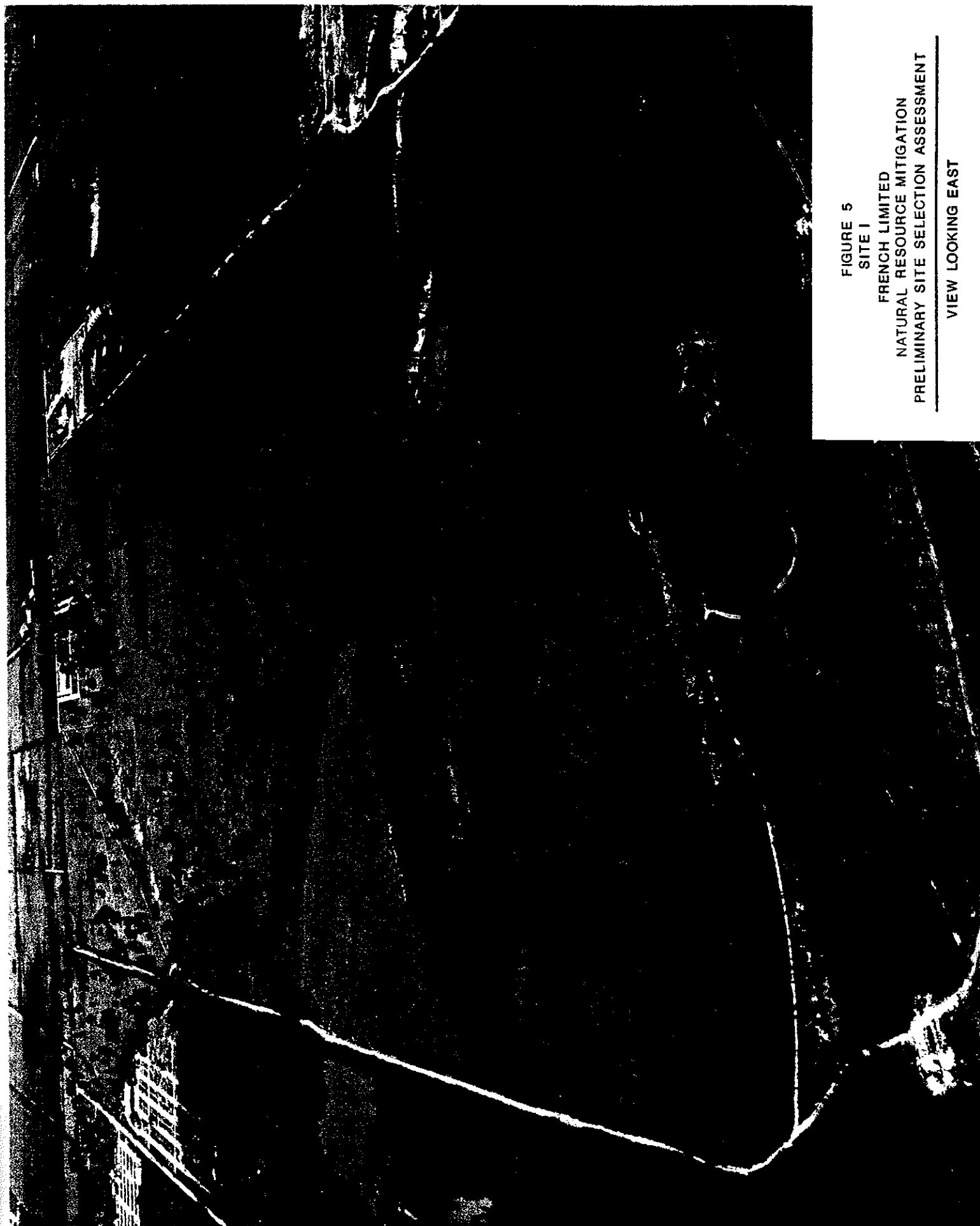


FIGURE 5  
SITE 1  
FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT  
VIEW LOOKING EAST

wooded areas which appear to be established in very wet soils. Directly east is a freshwater wetlands which appears to be dominated by bald cypress (Taxodium distichum). To the east of the wetland area lies a large pasture. Inactive borrow pits are located just west of the site.

#### 5. Soils

The soils in the configured area vary from clay to sandy clay to a fine sandy loam. The predominant soil type, Atasco series, is a fine sandy clay with silt. The water table is generally perched and 1.5 to 2.5 feet in depth. The permeability of this soil ranges from 0.06 to 2.0 inches per hour. The pH range is from 4.5 to 6.5.

#### 6. Total Property Area

The total property area within which a wetland area can be configured is approximately 63 acres. This does not represent the area which may require acquisition to adequately protect and maintain the wetlands created and its hydrologic requirements.

#### 7. Final Configuration

The potential final configuration shown in Figure 2 is approximately 23 acres in size. This configuration would expand existing wetlands, creating a greater area of wetland habitat. The final configuration may change in proportions and size depending on additional information.

#### 8. Nearest Access

Presently a private road is the nearest access to the site. This road connects to the Crosby-Lynchburg Road (Highway 2100).

#### 9. Mode of Access

The mode of access would be via the private road.

10. Distance to Soil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed, it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The approximate distance to the French Limited site is 3.8 miles.

12. Hurricane Flooding Impacts

The storm surge associated with a hurricane event may introduce saline waters which might affect the site. Storm waves would not affect the site because of its distance from open water.

13. Freshwater Flooding Impacts

During a flood event, the site area would become inundated; however, the site appears to be protected from scouring and deposition of floodwater sediments.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County.

15. Ownership

Owners are multiple with numerous deed instruments.

16. Environmental

No known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at this time.



## 2.2 Site IIa

### 1. Distance to the San Jacinto River

Site IIa lies on the west bank directly adjacent to the San Jacinto River. Figures 6 and 7 show the site and its surroundings.

### 2. Elevation

The topographic high is approximately 25 feet above MSL, as shown in Figure 2. The site is bisected by Wallisville Gully which receives runoff from an industrial facility west of the site. This creek would feed the created wetlands. The rise in elevation to 25 feet is rather sharp on the bank of the river and creek. Assuming an average of 25 feet of overburden and a configured area of 25 acres, a volume of approximately 1,008,333 cubic yards would require excavation.

### 3. Existing Land Use and Vegetation

Currently, the site is a pine/deciduous forest. This habitat type has considerable value to wildlife species. The area is traversed by a pipeline. The planned use of the site is unknown at this time.

### 4. Adjacent Land Use and Vegetation

The site lies adjacent to the river, woods, and a petrochemical facility. North of the site lies part of the plant facility and a golf course. South of the site are wooded areas and an electrical power transmission corridor. Directly to the east is the river. Across the river is a residential area. To the west of the site is an industrial facility.

### 5. Soils

The predominant soil type in the configured area is the Aldine series which is a very fine sandy loam to silty clay. The water



FIGURE 6  
SITE IIa

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING WEST

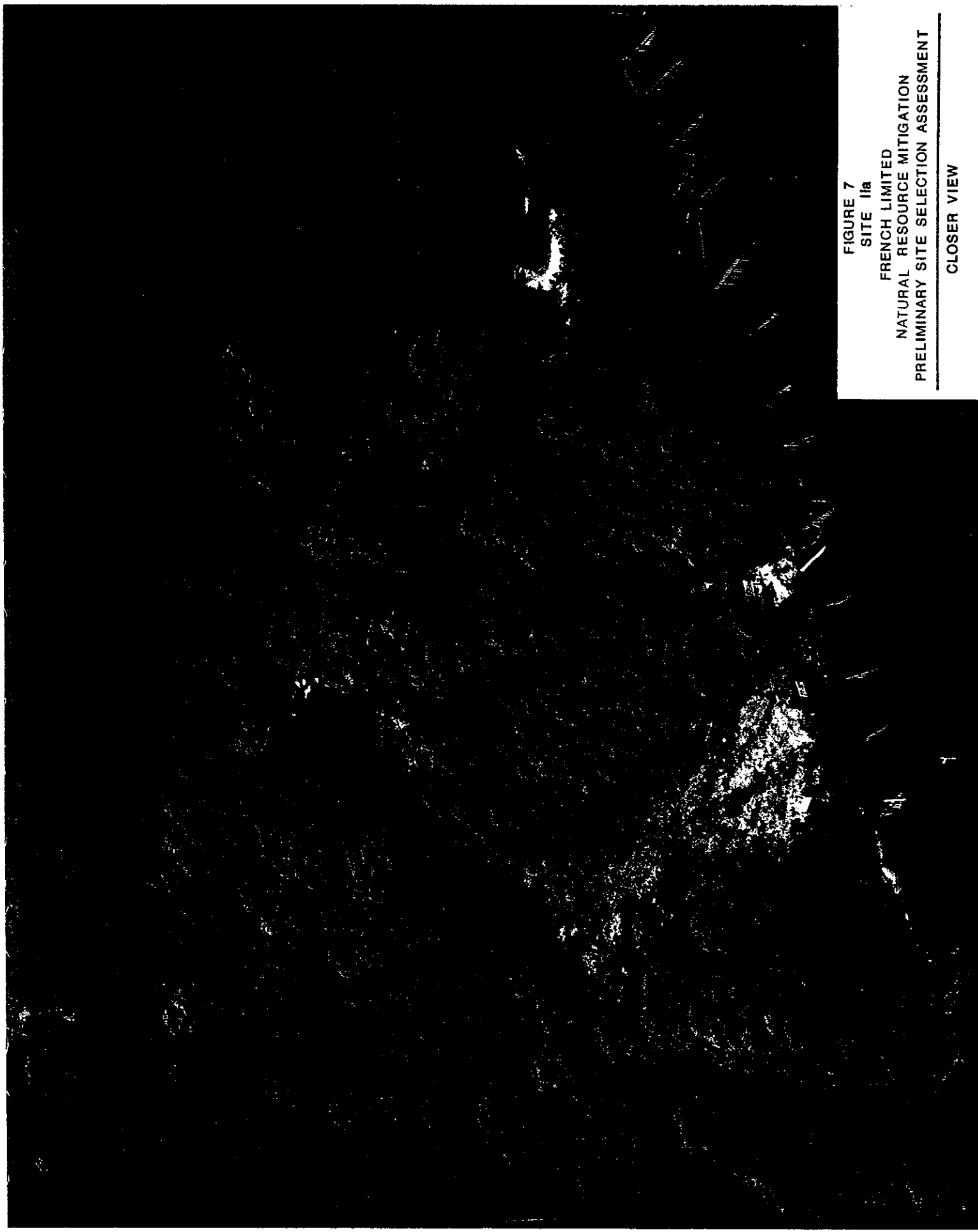


FIGURE 7  
SITE 11a

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT

CLOSER VIEW

table for this soil type is generally perched and 1.5 to 2.5 feet in depth. The permeability of this soil ranges from 0.06 to 2.0 inches per hour. The pH range is from 4.5 to 6.5.

6. Total Property Area

The total property area within which a wetland area can be configured is approximately 90 acres.

7. Final Configuration

The potential final configuration shown in Figure 2 is approximately 25 acres in size. The final configuration may change in proportions and size depending on additional information. Large dikes would be required to deter scouring from river flood events.

8. Nearest Access

The most feasible access would be via the main plant road leading into the industrial facility to the west. This road connects to Sheldon Road.

9. Mode of Access

The mode of access would be via the industrial facility's road.

10. Distance to Soil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed, it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The approximate distance to the French Limited site is 3 miles.

#### 12. Hurricane Flooding Impacts

The storm surge associated with a hurricane event may introduce saline waters which might affect the site. Storm waves would not affect the site because of its distance from open water.

#### 13. Freshwater Flooding Impacts

During a flood event, the site area may become inundated. Because the site lies on the high energy bank of the river, the potential for scouring is high. Dikes may require rebuilding after a flood event.

#### 14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

#### 15. Ownership

The site is presently owned by an industrial company.

#### 16. Environmental

At this time, no known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at the site.

### 2.3 Site IIbN

#### 1. Distance to the San Jacinto River

Site IIbN lies on the western edge of the San Jacinto River estuary adjacent to Bear Lake. Figures 8 and 9 show the site and its surroundings.



FIGURE 8  
SITE 11b N & S  
FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT  
VIEW LOOKING WEST

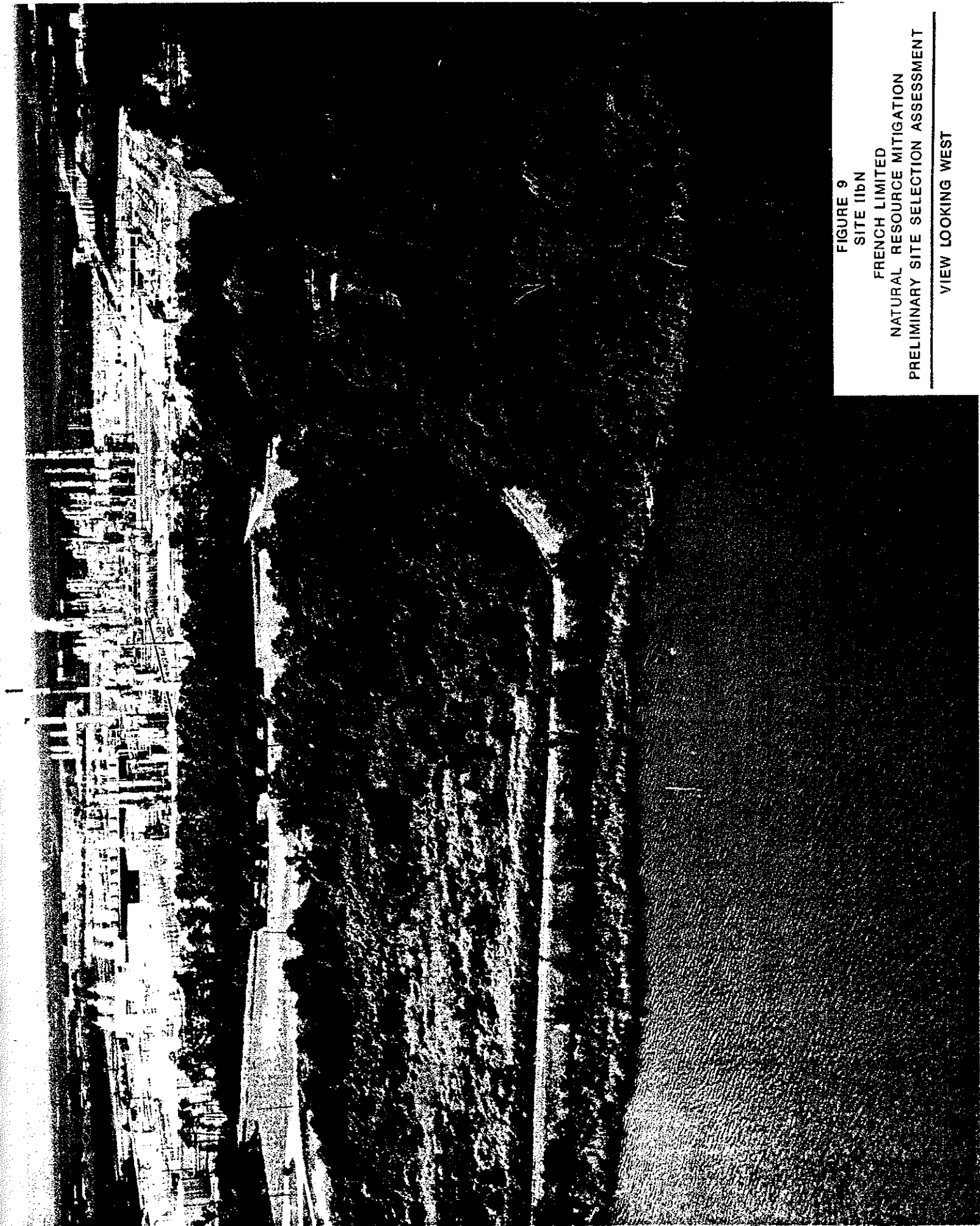


FIGURE 9  
SITE 11bN  
FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT  
VIEW LOOKING WEST

## 2. Elevation

The topographic high for the site is 25 feet (MSL). However, this elevation exists only in the very northeast edge of the site (Figure 2). The average elevation within the diked area appears to be between 5 and 10 feet. Assuming an average of 10 feet of overburden for 20 acres, a volume of approximately 322,666 cubic yards would require excavation.

## 3. Existing Land Use and Vegetation

The site is a diked area which has reverted to coastal prairie vegetation. Dominant species appear to be the false-willow (Bacchris sp.) and the Chinese tallow tree (Sapium sebiferum). Wetter areas are dominated by the sumpweed (Iva frutescens). The intended use of the site is presently unknown.

## 4. Adjacent Land Use and Vegetation

To the north of the site lies a wooded area with small ephemeral ponds. A barge loading and unloading facility lies just to the south. The waters of Bear Lake and the San Jacinto River are adjacent to the east. Just west of the site is a regularly mowed area, limited woods, and an industrial facility.

## 5. Soils

Two soil types at the site, Kaman and Wockley, are comprised mostly of clay and fine-sandy-to-clayey loam, respectively. The sandier soils exist in the depressed area. The water table for these soils ranges from 0 to 2.5 feet in depth and can be perched or apparent. Permeability is less than 0.6 and 0.2 to 6.0 inches per hour for the clay and sand, respectively. pH ranges for both soils are 5.1 to 7.8 with the sandier soil being slightly more acidic.

## 6. Total Property Area

The total property available for wetland configuration is approximately 33 acres.



7. Final Configuration

Configuration just within the diked area is approximately 20 acres (Figure 2). The addition of the area outside the diked areas and the roads is approximately 33 acres (dashed line in Figure 2).

8. Nearest Access

The road leading to the barge facility, which is connected to Wallisville Road, is the nearest access road to the site. The nearest exit from Wallisville Road is Sheldon Road.

9. Mode of Access

The mode of access would be via the above mentioned road, or possibly by barge.

10. Distance to Soil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed, it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The distance to the French Limited site via Wallisville Road is approximately 8.4 miles.

12. Hurricane Flooding Impacts

Impacts from hurricanes would likely be limited to inundation. The site would be protected from wave action by land just south of the barge facility.

13. Freshwater Flooding Impacts

The impact of freshwater flooding would be low due to site's location in the estuary.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The present owner is an industrial company.

16. Environmental

At this time, no known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at the site.

2.4 Site IIbS

1. Distance to the San Jacinto River

Site IIbS lies on the western edge of the San Jacinto River estuary adjacent to Bear Lake. Figures 8 and 10 show the site and its surroundings.

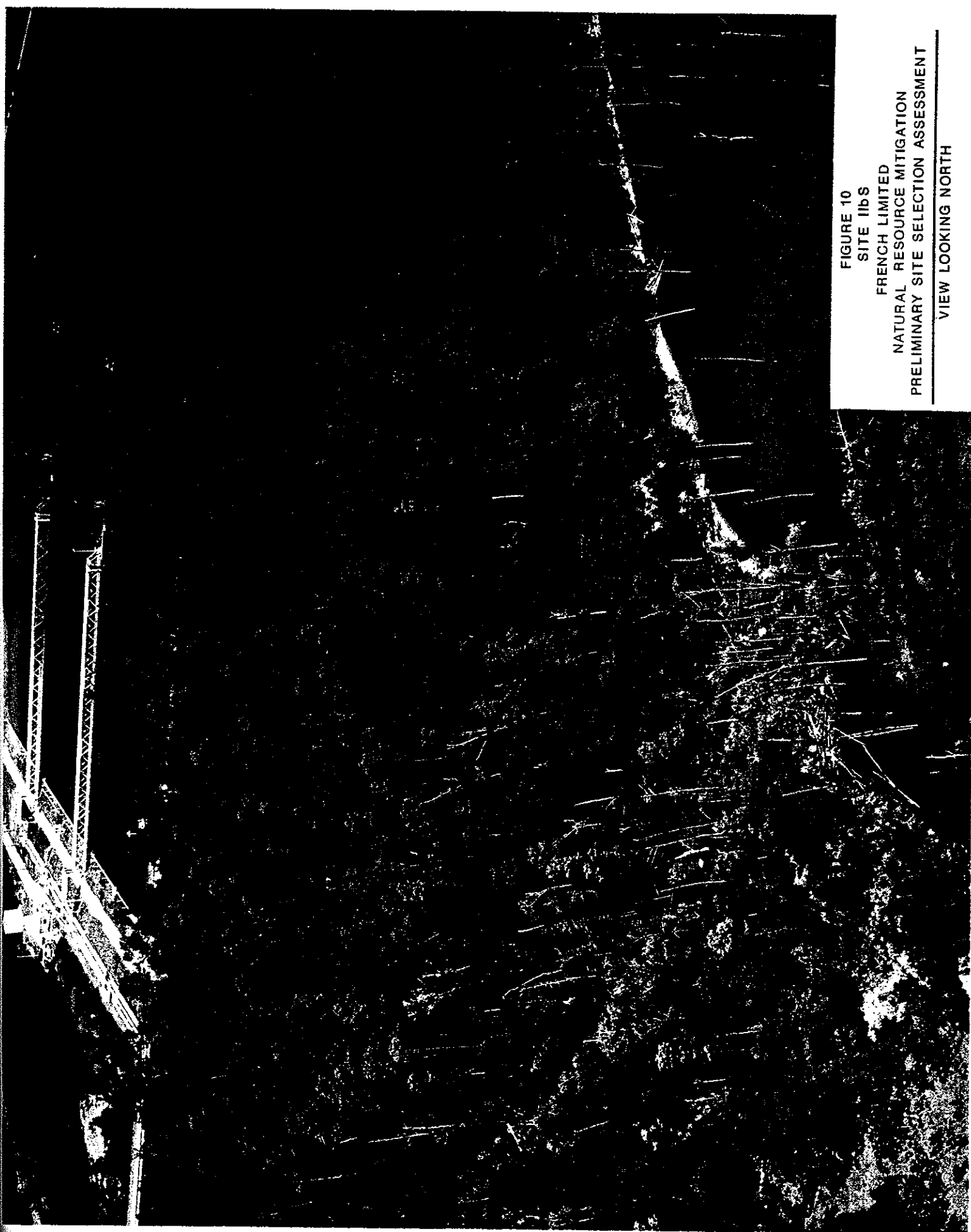
2. Elevation

The topographic high for this site is 10 feet. Assuming an average of 8 feet of overburden, a volume of 304,526 cubic feet of soil would require excavation.

3. Existing Land Use and Vegetation

The site is heavily wooded with pine and deciduous trees. Construction of a wetland area would require removal of these trees.

FIGURE 10  
SITE IIBS  
FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT  
VIEW LOOKING NORTH



#### 4. Adjacent Land Use and Vegetation

To the north of the site is a barge facility. Bear Lake lies to the south and east of the selected area. To the southwest of the site are wooded areas. Directly west is an industrial facility.

#### 5. Soils

The predominant soil type in the configured area is the Aldine series, which is a very fine sandy loam to silty clay. The water table for this soil type is generally perched and 1.5 to 2.5 feet in depth. The permeability of this soil ranges from 0.06 to 2.0 inches per hour. The pH range is from 4.5 to 6.5.

#### 6. Total Property Area

The total area available for configuring a wetland is approximately 31 acres.

#### 7. Final Configuration

A configuration, as seen in Figure 2, is 24 acres in size. The shape follows topographic contours and lies adjacent to tidal waters on its eastern perimeter. The western portion of the site would be inland with a creek directly on its southern edge.

#### 8. Nearest Access

The road leading to the barge facility, which is connected to Wallisville Road, is the nearest access road to the site. The nearest exit from Wallisville Road is Sheldon Road.

#### 9. Mode of Access

The mode of access would be via the above mentioned road.

#### 10. Distance to Spoil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed,

it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The distance to the French Limited site via Wallisville Road is approximately 9 miles.

12. Hurricane Flooding Impacts

The impact from hurricane events may be high due to the long open stretch of water. Storm waves could cause damage to dikes.

13. Freshwater Flooding Impacts

While the site may be inundated with freshwater, it is protected from scouring and deposition because of its location in the estuary.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The present owner is an industrial company.

16. Environmental

At this time, no known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at the site.

## 2.5 Site III

### 1. Distance to the San Jacinto River

Site III lies adjacent to a tidal inlet of the San Jacinto River estuary. Figures 11 and 12 show the site and its surroundings.

### 2. Elevation

The topographic high for this site is 5 feet (MSL) (Figure 2). Assuming 5 feet of overburden over approximately 20 acres, an estimated volume of 164,609 cubic yards of soil would require excavation.

### 3. Existing Land Use and Vegetation

The site currently is covered by shrubs and small trees, false-willow (Bacchris sp.) and Chinese tallow (Sapium sebiferum). The wetter areas of the site are dominated by sumpweed (Iva frutescens). The area appears to have been previously inundated with saline water as evidenced by a number of small dead trees. The use of this land remains questionable until more information is obtained from the present owner(s).

### 4. Adjacent Land Use and Vegetation

A residential area (Rio Villa) lies just north of the site along the bank of the San Jacinto River. South of the site is a marginal wetland area dominated by sumpweed (Iva frutescens) and the San Jacinto River estuary. To the west lies a small wooded area (pine/deciduous) adjacent to borrow pits. Additional residential area exists to the east of the site along the river.

### 5. Soils

The predominant soil present is the Hatliff sandy loam. The permeability of the soil ranges from 2.0 to 6.0 inches per hour. The water table is 0 to 2 feet in depth. The pH range is from 5.1 to 7.3.

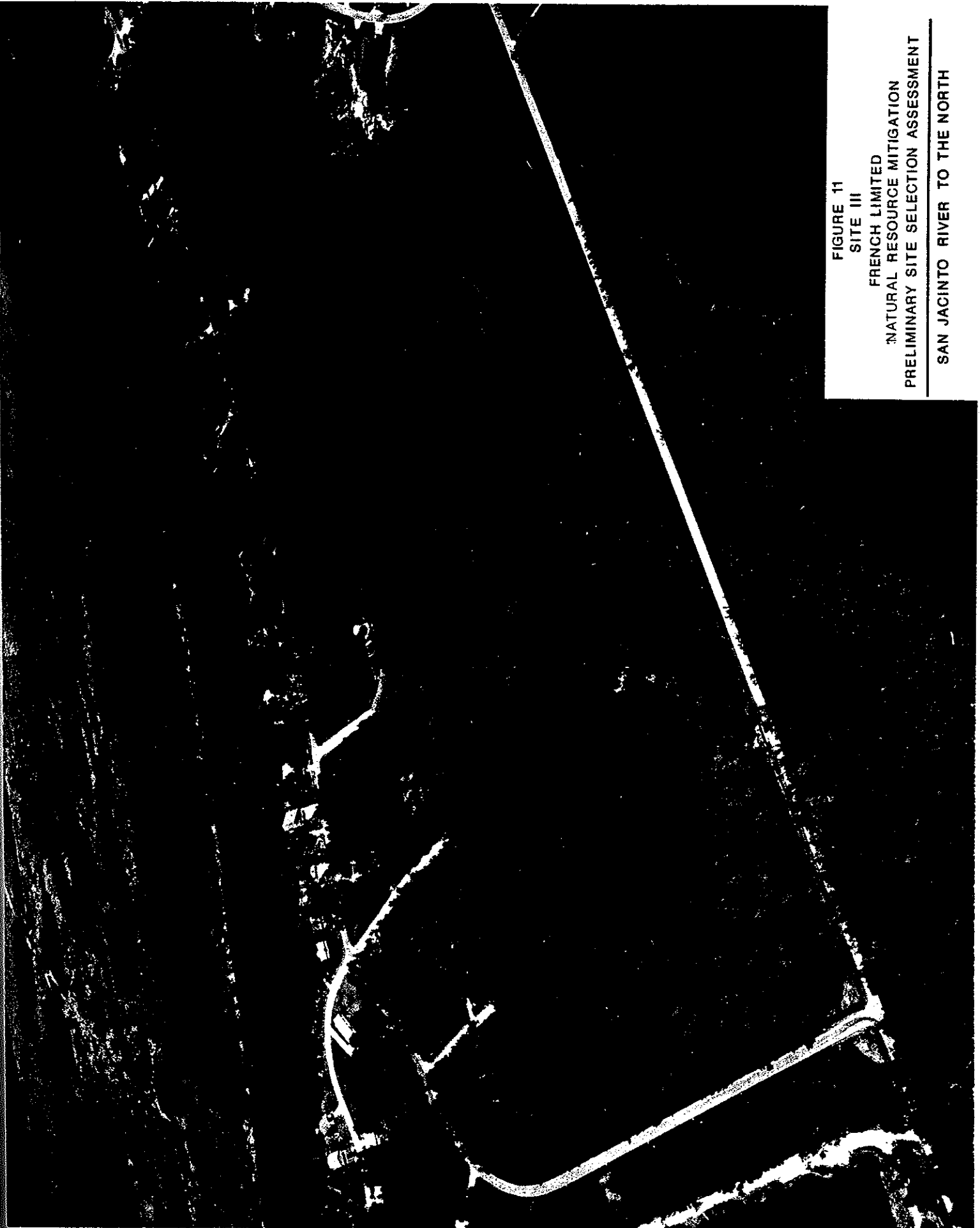


FIGURE 11  
SITE III

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT

SAN JACINTO RIVER TO THE NORTH

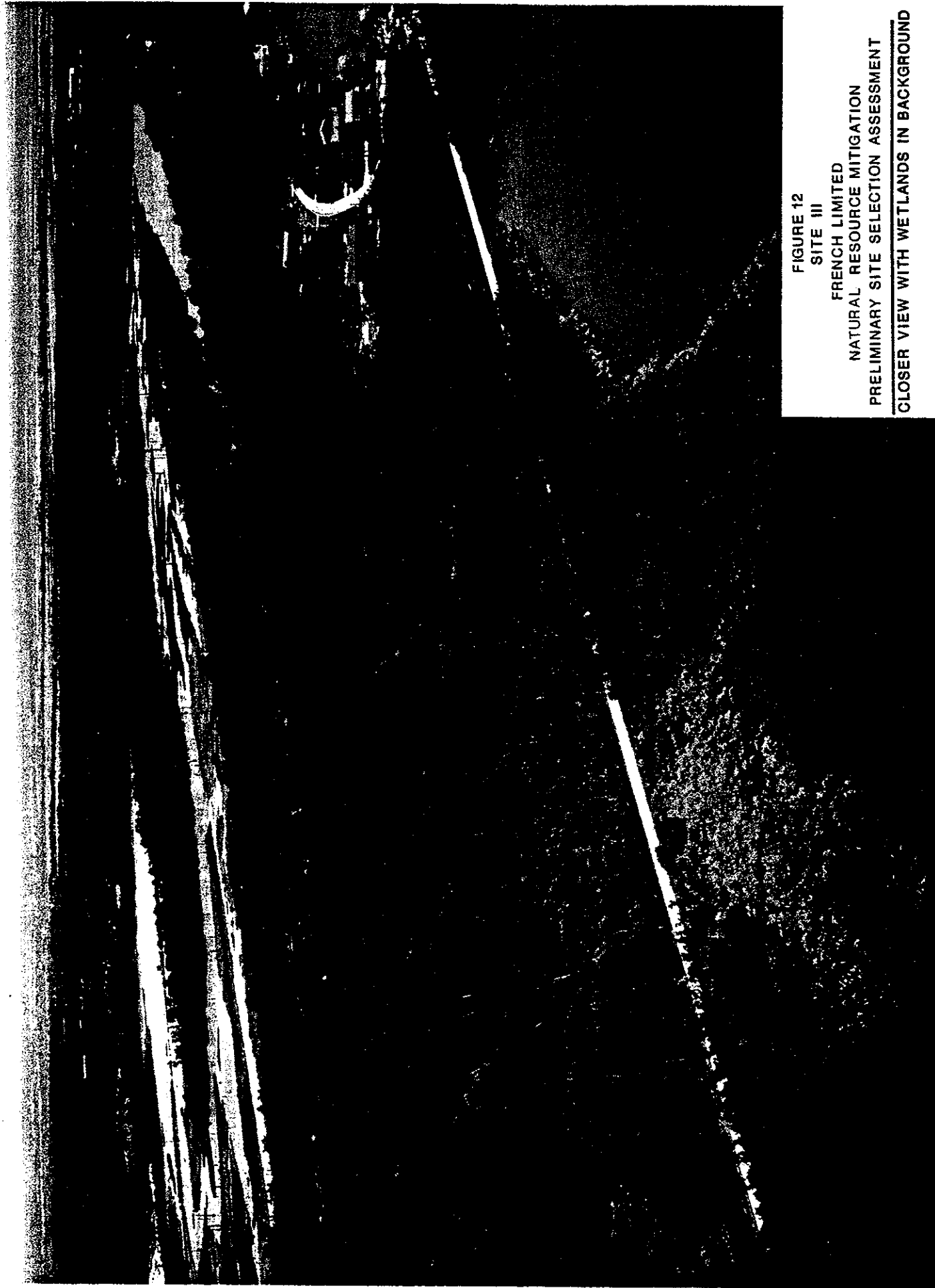


FIGURE 12  
SITE III

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT  
CLOSER VIEW WITH WETLANDS IN BACKGROUND



6. Total Property Area

The total acreage available for wetlands configuration is 48 acres.

7. Final Configuration

Figure 2 shows a potential wetlands configuration. This configuration would be 20 to 22 acres in size and be contiguous to an existing wetland area.

8. Nearest Access

Wallisville Road would be the nearest access road to the site. The nearest exit from Wallisville Road is Sheldon Road.

9. Mode of Access

The mode of access would be via the above mentioned road.

10. Distance to Soil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed, it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The distance to the French Limited site via Wallisville Road is approximately 9.4 miles.

12. Hurricane Flooding Impacts

The site would be inundated by storm surges. Storm wave action may be problematic due to the open stretch of water to the south.

13. Freshwater Flooding Impacts

While the site might be inundated with freshwater, it is protected from scouring because of the wooded areas just north of the site.

#### 14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

#### 15. Ownership

The site is presently owned by multiple private owners.

#### 16. Environmental

At this time, no known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at the site.

### 2.6 Site V

#### 1. Distance to the San Jacinto River

Site V is a peninsula extending into the San Jacinto River estuary. Figures 13, 14, and 15 show the site and its surroundings.

#### 2. Elevation

The elevation at this site ranges from the high water mark to 10 feet (MSL). This area has experienced substantial subsidence in the past and elevations may only range to 5 feet (USGS Map, 1982). It is expected that a minimal volume of soil would require removal. Any soil excavated could be used on site to raise areas adjacent to the created wetlands.

#### 3. Existing Land Use and Vegetation

This site was once a subdivision of the city of Baytown. Present usage is for recreation, particularly fishing. There are freshwater to brackish ponds present which are used by wildlife, particularly shorebirds and wading birds. Vegetation is limited



FIGURE 13  
SITE V

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING TO THE SOUTH



FIGURE 14  
SITE V

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW IS TO THE NORTHEAST

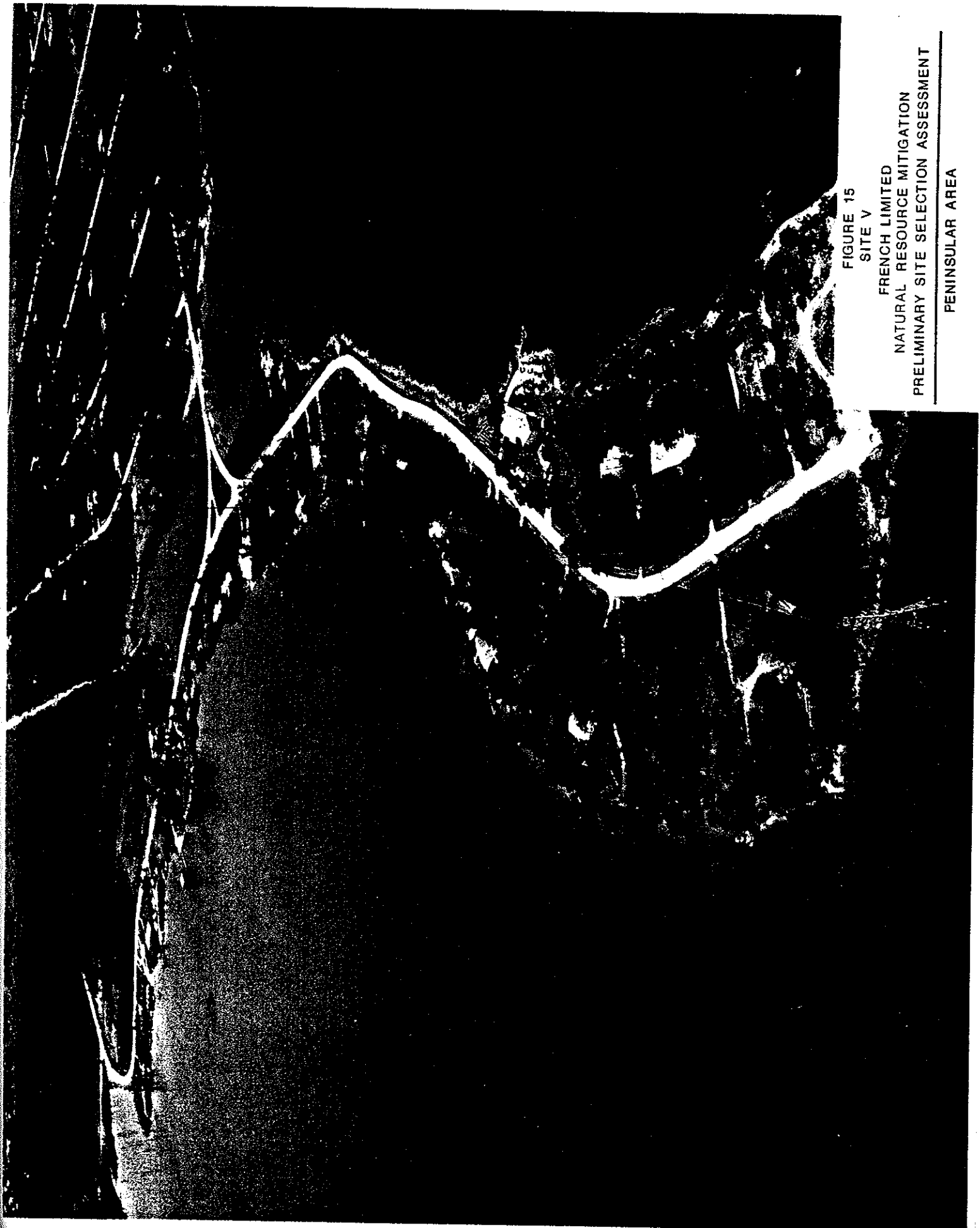


FIGURE 15  
SITE V  
FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT  
PENINSULAR AREA

to domestic plantings, now feral, false-willow shrubs (Bacchris sp.), Chinese tallow (Sapium sebiferum), and scattered live oaks.

#### 4. Adjacent Land Use and Vegetation

The peninsula is surrounded on three sides by tidal waters. Burnett Bay lies to the north, Crystal Bay to the west, and Scott Bay to the south. To the east lies a residential area.

#### 5. Soils

Due to the large area of interest, there are 7 soil types present. The predominant soil is the Aldine series which is a very fine sandy loam to silty clay. The water table for this soil type is generally perched and 1.5 to 2.5 feet in depth. The permeability of this soil ranges from 0.06 to 2.0 inches per hour. The pH range is from 4.5 to 6.5.

#### 6. Total Property Area

The total property available is approximately 340 acres. Substantial acreage (approximately 100 acres) is now inundated.

#### 7. Final Configuration

Many possible configurations exist. Existing roads could serve as dikes with the created wetland areas existing in the housing tract areas (Figure 3).

#### 8. Nearest Access

Access to the site would be by roads into the subdivision. These roads connect to Decker Drive in Baytown.

#### 9. Mode of Access

Access would be by road.

#### 10. Distance to Soil Disposal Site

Distance to a disposal site for demolished houses is estimated to be 15 miles.

11. Distance to the FLTG Site

Distance to the French Site is approximately 16 miles, via Interstate 10, to Sheldon Road, to High State Highway 90.

12. Hurricane Flooding Impacts

This area may be significantly affected by hurricane events. An established breakwater would limit the impacts from storm waves but storm surge flooding would definitely occur.

13. Freshwater Flooding Impacts

Impacts would be limited due to the site's remoteness from the San Jacinto River.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The City of Baytown has acquired ownership and may have plans to build a park on the peninsula.

16. Environmental

Threatened or endangered species are unlikely to occur in the area of interest. The remains of the demolished houses may be of hazard to wildlife through such media as broken glass and household chemicals. Contaminants from sewer lines or septic systems may also impact wildlife species which would utilize wetland habitat. Several known archeological sites occur along major portions of the shoreline in this area.

## 2.7 Site VIa

### 1. Distance to the San Jacinto River

Site VIa lies adjacent to Santa Anna Bayou, which flows into the San Jacinto River estuarine area. Figures 16 and 17 show the site and its surroundings.

### 2. Elevation

The topographic high for this site is approximately 10 feet (MSL). Assuming 7 feet of overburden over approximately 25 acres, an estimated volume of 282,333 cubic yards of soil would require excavation.

### 3. Existing Land Use and Vegetation

The area appears to be an old soil disposal area. Dominant plant species are the false willow (Bacchris sp.), chines tallow (Sapium sebiferum), and sumpweed (Iva frutescens). The intended use of this land remains questionable until more information is obtained from the present owner(s).

### 4. Adjacent Land Use and Vegetation

To the north of the site is the San Jacinto River and Burnett Bay. South and southwest of the site lies Santa Anna Bayou and a wetland area dominated by sumpweed. East of the site is the San Jacinto River and Crystal Bay. Directly to the west is the San Jacinto State Park.

### 5. Soils

The soil type present at this location is the Ijam series, a clay with some silt. The permeability is low, less than 0.06 inches per hour. The pH range is 6.6 to 9.0. The water table is 0 to 3 feet in depth.



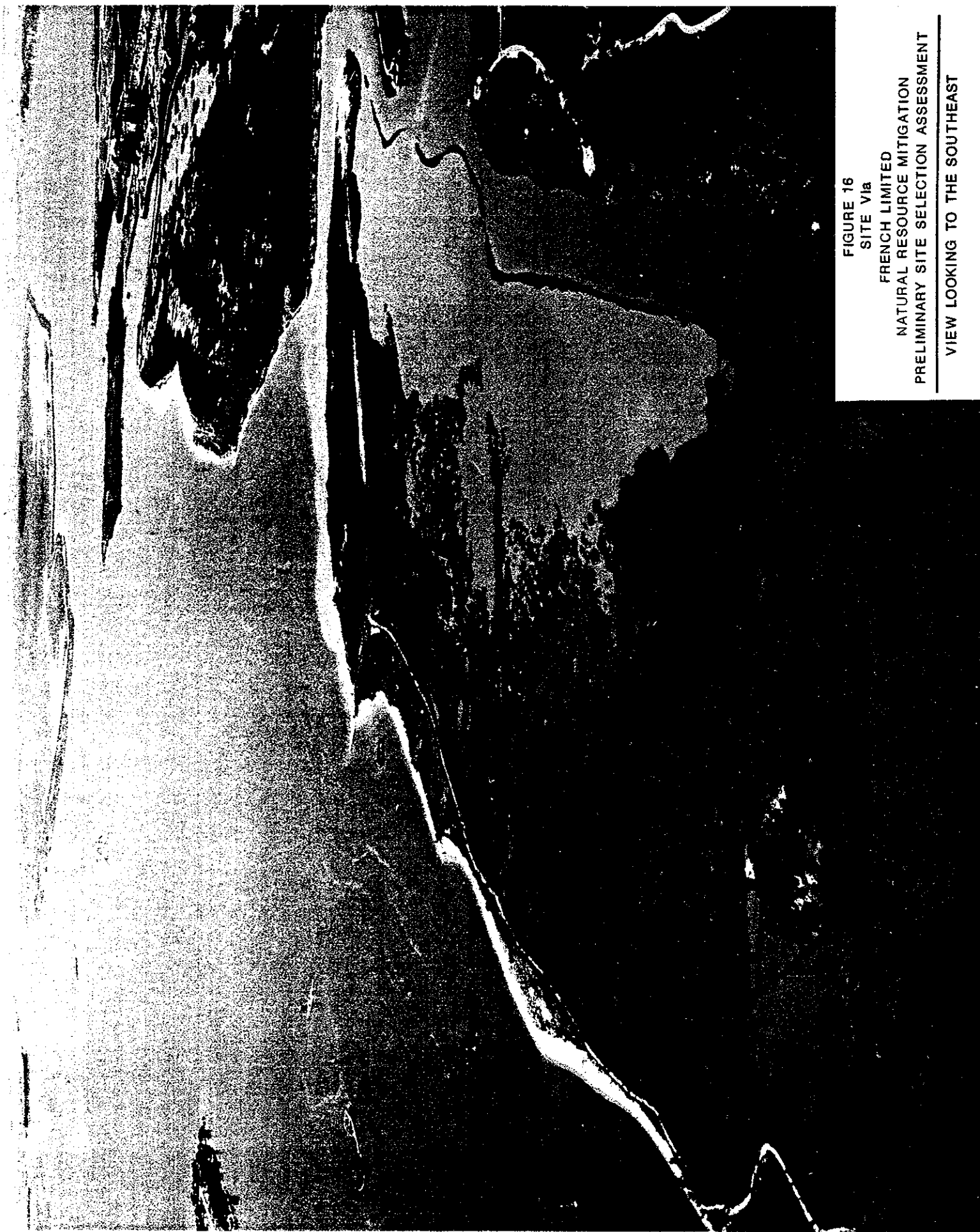


FIGURE 16  
SITE Via

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING TO THE SOUTHEAST



FIGURE 17  
SITE Via

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT

SAN JACINTO MONUMENT IN THE FOREGROUND

6. Total Property Area

Available acreage for wetland configuration is approximately 100 acres.

7. Final Configuration

The potential configuration shown in Figure 3 would be on the southwest side of the site and expand the existing wetland area. The size would be approximately 23 acres in size.

8. Nearest Access

Nearest access would be an unimproved road which runs off of Battleground Road. For construction access, this road connects to Highway 225.

9. Mode of Access

The mode of access would be by road although barge access may be possible from the northeast side of the site.

10. Distance to Soil Disposal Site

Soils may be used on site. If disposal of removed soils is required, the timing of construction will determine disposition.

11. Distance to the FLTG Site

The approximate distance to the French Limited site is 21 miles.

12. Hurricane Flooding Impacts

While flooding would be likely, the site is protected from wave action by existing shallows and the upland areas of the state park. Erosion from wave action due to shipping traffic in the Houston Ship Channel may be severe. Some spoil islands have disappeared from this type of erosion.

### 13. Freshwater Flooding Impacts

Freshwater flooding impacts would be limited due to the sites's location in the bay system of the San Jacinto River.

### 14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

### 15. Ownership

The Texas Parks and Wildlife Department owns most of the site area. A small portion (approximately 30 acres) may be owned by a private individual.

### 16. Environmental

While the presence of threatened or endangered species and contaminants from past waste disposal practices is unlikely, the potential for nearby cultural resources is significant. The site is very near, if not within, the area where the Battle of San Jacinto took place.

## 2.8 Site VIb

### 1. Distance to the San Jacinto River

Site VIb lies adjacent to a tidal inlet of Santa Anna Bayou which flows into the Houston Ship Channel and Crystal Bay. Figures 18 and 19 show the site and its surroundings.

### 2. Elevation

The topographic high for this site is approximately 20 feet MSL. Assuming 15 feet of overburden over approximately 20 acres, an estimated volume of 278,300 cubic yards of soil would require excavation.



FIGURE 18  
SITE VIIb  
FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT  
VIEW LOOKING TO THE NORTHEAST

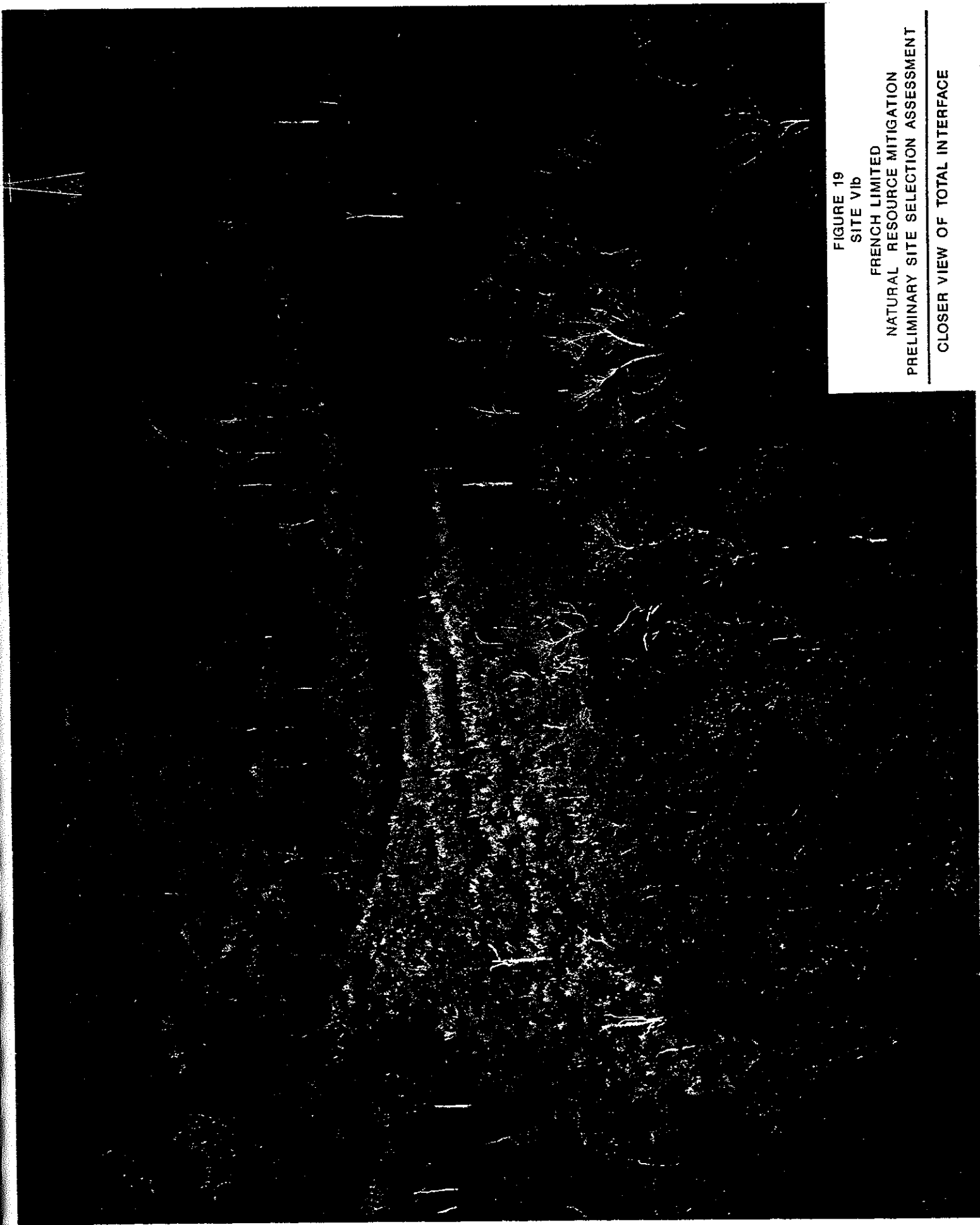


FIGURE 19  
SITE V1b

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT

---

CLOSER VIEW OF TOTAL INTERFACE

### 3. Existing Land Use and Vegetation

The potential wetland area is covered by hardwoods. Dominant species likely include water oak, laurel oak, and red oak. Wetland areas are dominated by sumpweed (Iva frutescens). The use of this land remains questionable until more information is obtained from the present owner.

### 4. Adjacent Land Use and Vegetation

To the north of the site lies San Jacinto State Park and Santa Anna Bayou. South of the area lie woods and an industrial facility. East of the area are some woods and industrial land. To the west are woods and industrial lands.

### 5. Soils

The predominant soil is Lake Charles clay. The permeability of this clay is low, ranging from 0.06 to 2.0 inches per hour. The water table depth is from 0 to 2 feet. The pH of the soil ranges from 6.1 to 8.4.

### 6. Total Property Area

Approximately 80 acres are available for configuring a wetlands area.

### 7. Final Configuration

The potential configuration of the wetlands area follows the topographic contours, as shown in Figure 3.

### 8. Nearest Access

The nearest access is by Park Road 1836. This road connects to Battleground Road (136) which connects to Highway 225.

### 9. Mode of Access

The mode of access is by the above mentioned roads.

10. Distance to Spoil Disposal Site

Disposal of excavated soils is depends on the timing of construction.

11. Distance to the FLTG Site

The approximate distance to the French Limited site is 22 miles.

12. Hurricane Flooding Impacts

While flooding would be likely, the site is protected from wave action by surrounding upland areas.

13. Freshwater Flooding Impacts

Impacts from freshwater flooding would be limited due to the site's remoteness from the San Jacinto River.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The Texas Parks and Wildlife Department is the present owner of the site area.

16. Environmental

While the presence of threatened or endangered species and contaminants from past waste disposal practices is unlikely, the potential for nearby cultural resources is significant. The site is very near, if not within, the area where the Battle of San Jacinto took place.



## 2.9 Site VII

### 1. Distance to the San Jacinto River

Site VII lies adjacent to the San Jacinto River. Figure 20 shows the site and its surroundings.

### 2. Elevation

The topographic high for a potential wetlands configuration is 25 feet (MSL). Assuming 13 feet of overburden over approximately 22 acres, an estimated volume of 555,555 cubic yards of soil would require excavation.

### 3. Existing Land Use and Vegetation

The potential wetland area is covered by hardwoods. Dominant species likely include water oak, laurel oak, and red oak. The site appears to be used for recreation by nearby residents.

### 4. Adjacent Land Use and Vegetation

To the north and west of the site lies the San Jacinto River. South and east of the area are residential areas.

### 5. Soils

The two soil types which lie in the potential wetland configuration are the Bernard Urban Land Complex and the Vamont Urban Land Complex. The Bernard soil is clayey-to-silty loam. The pH ranges from 6.1 to 8.4. Permeability is low ranging from 0.06 to 2.0 inches per hour. The water table depth is from 0 to 2 feet. The water table depth is from 0 to 3 feet in depth. The Vamont is also a clayey to silty loam with a similar permeability. pH ranges from 4.5 to 7.8. The water table depth is from 0 to 2 feet in depth.

### 6. Total Property Area

Approximately 79 acres are available for configuring a wetlands area.

FIGURE 20  
SITE VII

FRENCH LIMITED  
NATURAL RESOURCE MITIGATION  
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING TO THE SOUTH

7. Final Configuration

The potential configuration of the wetlands area follows the topographic contours, as shown in Figure 2. It would lie adjacent to Bird Lake and its associated wetlands.

8. Nearest Access

Access would be via residential streets or potentially by barge.

9. Mode of Access

The mode of access would be the above mentioned roads or via a barge, water depth permitting.

10. Distance to Soil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed, it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The approximate distance to the French Limited site is 10 miles.

12. Hurricane Flooding Impacts

While flooding would be likely, the site is protected from wave action by surrounding upland areas.

13. Freshwater Flooding Impacts

The site lies on the high energy side of the river. The potential for scouring during a flood event is high.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per five years in the eastern portions of Harris County.

Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The site is currently owned by multiple private owners.

16. Environmental

At this time, no known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at the site.