PRELIMINARY ASSESSMENT
HIGHWAY 6 DUMP
CERCLIS ID. TXD 987990405

WORK ASSIGNMENT NO. WA# 24-6JZZ

RPM - ED SIERRA

Program Manager — Date 05/22/92

Project Manager — Date 5/22/92

9117275

PRELIMINARY ASSESSMENT
HIGHWAY 6 DUMP
CERCLIS ID. TXD 987990405

INTRODUCTION

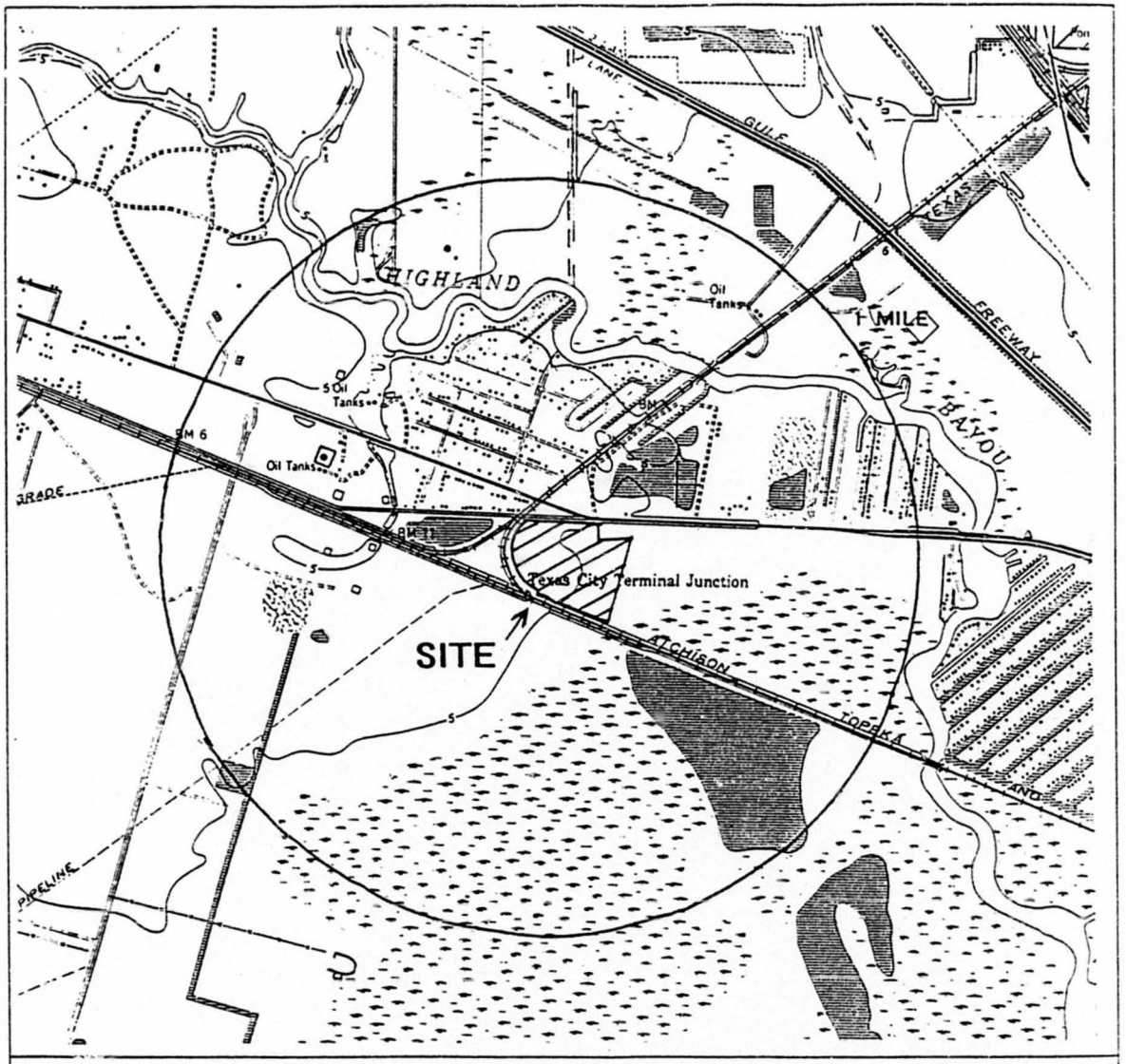
A Preliminary Assessment (PA) was performed by Fluor Daniel, Inc. (FDI) under the ARCS Contract with the United States Environmental Protection Agency (USEPA) for the Highway 6 Dump Site. The Highway 6 Dump Site (CERCLIS ID 987990405) is located north of Highway 6 in the city of Hitchcock, Galveston County, Texas.

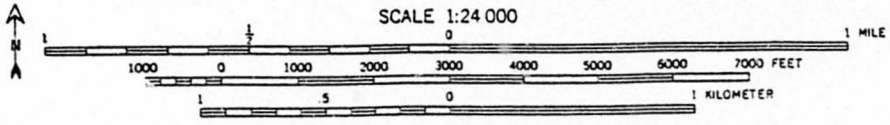
The purpose of the PA was to collect information sufficient to support a decision regarding the need for further action under CERCLA/SARA. The scope of the investigation included an off-site reconnaissance, a review of available file information from the city and county, in addition to a target survey and identification of adjacent and surrounding properties.

File information was requested from the following agencies: EPA Region VI, Texas Water Commission, Texas Department of Health, Texas Air Control Board, and the Galveston County Health Department. The site reconnaissance was conducted on December 16, 1991.

SITE DESCRIPTION AND OPERATIONAL HISTORY

Site access was not granted, correspondence sent to the identified owner was returned without a forwarding address. County tax records identify the property owner as Harry Fiegel, Jr. Additional addresses for Mr. Fiegel were found at the County Tax Assessors Office (Ref. 15). An off-site reconnaissance of the site revealed the site to be active (Ref. 1). The property is 38 acres in size. Site coordinates are latitude 29°19'51" North and longitude 94°57'52" West (Ref. 3). Figure 1 is a vicinity map that shows the location of the site. The land borders Highway 6 along the north, railroad tracks along the west and south boundaries, and





QUADRANGLE LOCATION

SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAP
VIRGINIA POINT TEXAS QUADRANGLE

FLUOR DANIEL

FIGURE 1
LOCATION MAP
HIGHWAY SIX DUMP SITE
HITCHCOCK, TEXAS
TXD987990405

a wetlands area along the eastern border. On the southern edge of the wetlands and north of the railroad tracks is a drilling rig, Cliff's Drilling Rig 28.

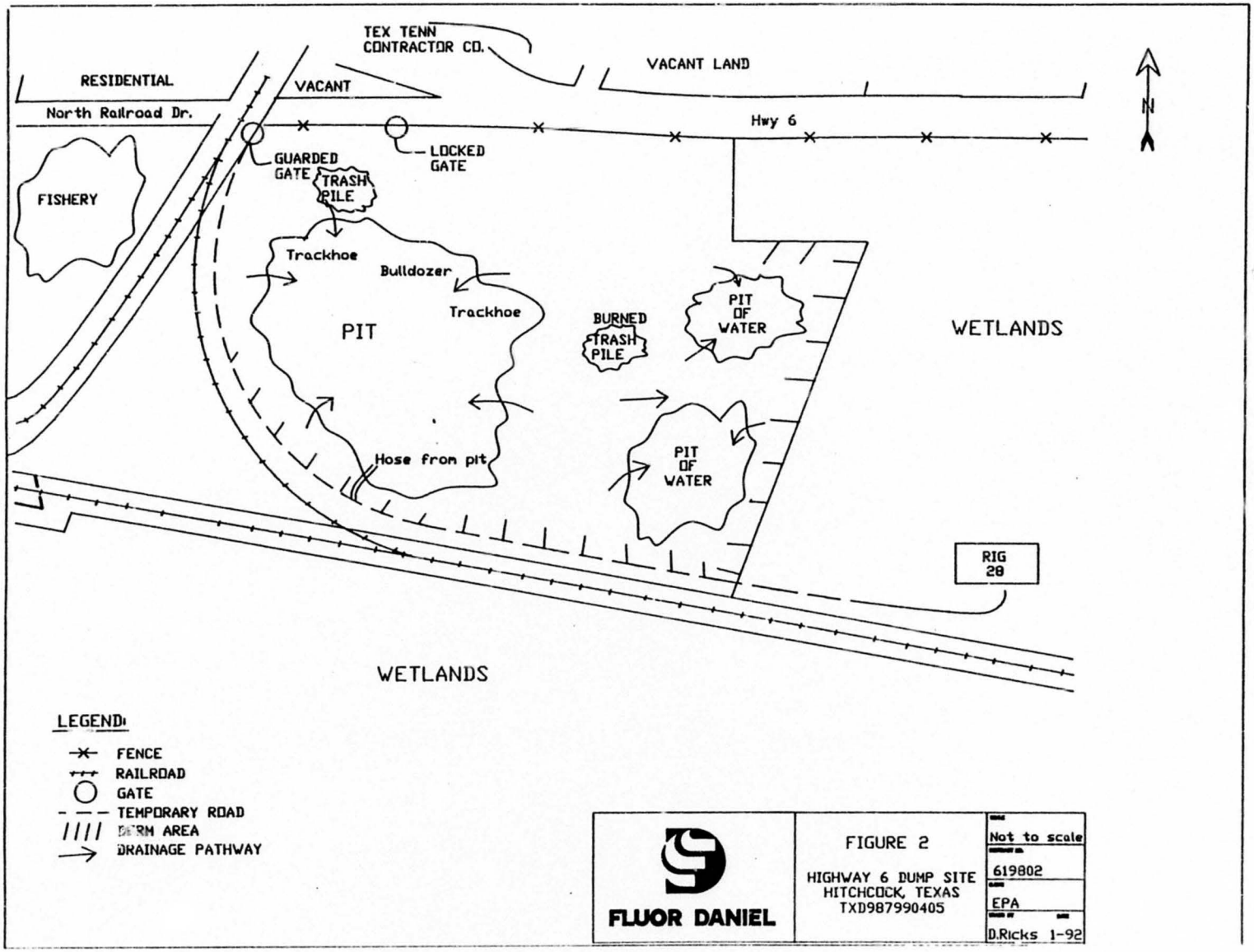
The drilling rig is accessed by a temporary board drive. Sandafer Petroleum Company maintains a guarded entrance and is responsible for permission to enter the area (Ref. 1).

There were no obvious indications that hazardous wastes are generated or disposed of, however, observation was limited to outside boundaries. Two or three rusted drums were observed on one portion of the property, but no storage tanks were identified as noted by the FIT report. A high bermed area separates two ponds from the wetland area adjacent to the eastern border. Two or three rusty metal drums were observed near the ponds, but no specifics could be confirmed.

A burned pile of debris was situated in the center portion of the property between the two ponds and the large pit. The debris deposition appears to be old, so recent burning has probably not taken place. The specific type of debris could not be identified from off-site. The second debris pile is located north of the large pit near the western edge of the property. The types of debris included timber, lumber, and an old wooden boat. The debris had not been burned and appeared to be recent disposal (Ref. 1).

The large pit spans almost half the property along the southern edge. An accurate estimate of its size could not be determined from off-site, however an estimate of 1200 feet by 90 feet was made for calculating the PA Score. The bottom of the pit could not be observed, but it is suspected to contain water (Ref. 1). Figure 2, a site sketch shows the layout of the site.

In a telephone conversation with Mr. Buzz Sawyer of Sandafer Leasing, it was stated that material from the drilling at Rig 28 is



FLUOR DANIEL

FIGURE 2

HIGHWAY 6 DUMP SITE
HITCHCOCK, TEXAS
TXD987990405

Not to scale

619802

EPA

D.Ricks 1-92

occasionally dumped at the Highway 6 Dump Site. From what Mr. Sawyer understands the site digs and sells sand and fill material (Ref. 10).

The operational history can not be confirmed. From observation and phone interviews, it appears that the site is used as a dredge disposal and sand/fill material pit. The large pit had heavy equipment that appeared to be operational. A 1985 complaint filed about the property lists a operating company name as Bayshore Resources, which no longer exists. The only site owner identified from county land records is Harry Fiegel, Jr. (Ref. 11).

Past regulatory activities include a 1985 complaint to the Galveston County Health District for outdoor burning without a permit. The complaint indicated that plastic materials were present during burning. Analytical information was not found in the violation file (Ref. 11).

PATHWAY/ENVIRONMENTAL HAZARD ASSESSMENT

General Geology

The general geology of Galveston County is in the West Gulf subdivision of the Gulf Coastal Plain. The sediments and sedimentary bedrock units in this subdivision dip gently seaward. Galveston County can be divided into two geomorphic units according to age and lithology. The northwestern part of the county consists of Pleistocene age sediments on the mainland. These deposits are alluvial and/or deltaic in origin. The south and southeastern portions of Galveston County consist of a barrier island (Galveston Island) and a peninsula (Bolivar Peninsula). These deposits are Holocene in age and are coastal and/or eolian (wind-borne) in origin. The Pleistocene mainland deposits are underlain by the Beaumont formation; the off-shore Holocene deposits are underlain by alluvium and barrier island sediments.

Outcrop areas of the Beaumont Formation in Galveston County are relict meander ridges and deltaic distributaries. The ancient Brazos River is responsible for most of these deposits. During the Pleistocene, sea level was similar to the present and a laterally shifting Brazos River laid down these fluvial and deltaic deposits as it prograded over shallow shelf surfaces. Deep pits and excavations in Galveston County exhibit a characteristic reddish-brown to yellow color indicating Permian "red beds" as source material. The Brazos River flows through these Permian deposits in northwest Texas.

The Beaumont Formation was deposited during Pleistocene interglacial periods when sea levels rose as continental glacials retreated. Although the Beaumont's age is disputed, it was probably deposited between 25,000 to 125,000 years ago.

The deposits underlying Galveston Island and Bolivar Peninsula began forming 3,000 to 5,000 years ago. Galveston Island was originally a small off-shore bar which accumulated less than ten feet of water. Accretion progressed in a southwest direction which is the dominant direction of longshore drift. Bolivar Peninsula formed by accretion in response to the elevated Pleistocene surface associated with the salt dome known as High Island, located in the eastern part of the county. Bolivar Peninsula also accredit in the direction of longshore drift, to the southwest (Ref. 7; Ref. 8).

Ground Water

Ninety-five percent of the drinking water for the City of Hitchcock is purchased from the City of Galveston who purchases from the City of Houston (Ref. 12). Ninety percent of Galveston's drinking water comes from treated surface water from Houston's Southeast Water Treatment Plant, and ten percent of the drinking water comes from the Alta Loma Well Field near Dickinson, Texas. One ground water well in the City of Hitchcock is used for 5% drinking water (Ref. 12). Depth to groundwater is 1-2 feet (Ref.8). The city water well

obtains water from the Chico Aquifer at a depth of 950 feet. The well extends to a total depth of 1,080 feet (Ref. 14).

Surface Water

The site is located within the 100 year floodplain (Ref. 4). A fishery is located west of the site on the west side of the railroad tracks. It is a small pond, probably brackish in nature. Distance from the site to the fishery is approximately 150 yards (Ref. 1). Wetlands are adjacent to the eastern border of the property, and to the south across the railroad tracks (Ref. 5; Ref. 6). Sensitive environments in the surrounding area include Endangered and Threatened Species. Bird rookeries are located in the wetland and Tiki Island areas and Diamond back turtles are known to be in the West Bay (Ref. 13).

Overland migration to surface water is unlikely due to the flat topography of the Galveston area. The site is bermed almost completely around. Surface water migration is likely through mechanical pumping of the large pit. A hose was observed extending out of the pit and over the southern boarder, which appears to be used to pump water out of the pit. The two ponds were bermed and did not display a potential threat of migrating off site. There are several commercial and recreational fisheries in the Galveston area. During the site reconnaissance, commercial fishing boats and recreational fishing were observed (Ref. 1). The distance to fisheries are as follows (Ref. 3):

Distance to Fishery(miles)	Fishery	Direction from site
.1	Unnamed Pond	West
3	Galveston Bay	South
1	Highland Bayou	East
1.75	Basford Bayou	South
3.5	Greens Lake	Southwest

Surface Exposure and Air

This site is included within four soil units: the Ijam clay, Narta fine sandy loam, Tracosa clay and the Veston loam as described in the Soil Survey of Galveston County, Texas (Ref. 7). The majority of the site is comprised of the Narta and Tracosa units with lesser amounts of Ijam clay and Veston loam.

Ijam Clay

The Ijam clay is a nearly level, poorly drained clayey soil and subsoil. This unit is found in coastal marshes and was formed from materials dredged in local bays and canals. The Ijam clay extends to a depth of sixty-one inches and is comprised of dark grayish brown, gray and bluish gray clay. The middle and lower zone also contain sand and sandy clay loams. The upper part of the unit is calcarious and is moderately saline throughout.

Permeability and run-off is very slow within the Ijam clay. The areas covered by this unit are rarely flooded but can remain boggy for years if the dredged material has just been deposited. The water table is generally within 1.5 feet of the surface during most of the winter. Salinity is dependent on the original parent material.

Narta Fine Sandy Loam

The Narta fine sandy loam is a nearly level, poorly drained soil found on uplands bordering coastal marshes. The unit extends to a depth of sixty inches and is comprised of dark, very dark to light gray fine sandy loam and clay. Permeability and run-off are very slow. Areas within the Narta soils unit are rarely flooded and the water table is generally within one foot below the surface most of the winter.

Tracosa Clay

The Tracosa mucky clay is a nearly level, poorly drained soils unit found in tidal marshes. This unit extends to a depth of 60 inches and is comprised of dark to light gray clay. Permeability and run-off is very slow and the soil is saturated most of the year. Flooding occurs daily at high tide and also during spring tides, storm tides and heavy rains.

Veston Loam

The Veston loam is nearly level, poorly drained, and is located on coastal marsh flats. The unit extends to a depth of 65 inches and is comprised of dark gray, light gray and bluish gray loam, clay loam and clay. Permeability and run-off are very slow and the areas within this unit are frequently flooded by storm tides. The water table is generally within two feet of the surface most of the year (Ref. 8).

The number of employees on-site is unknown. No schools, daycare facilities, or residences were identified within 200 feet of the site. The estimated population within 4 miles of the property are as follows (Ref. 3; Ref. 9):

0 - ¼ mile	100
¼ - ½ mile	30
½ - 1 mile	344
1 - 2 mile	2,716
2 - 3 mile	2,022
3 - 4 mile	2,696

SUMMARY

The Highway 6 Dump Site is an active facility, however, specific site operations are unknown. The off-site reconnaissance did confirm two ponds along the eastern edge of the property, a pile of burned debris in the center portion of the site, a large pit area, and another pile of debris which was not burned, on the

west/northwest portion of the property.

Due to the size of tne site, not being able to access the property, and unconfirmed operations, an accurate assessment for potential hazardous materials can not be determined. For the same reasons, an accurate account of the dimensions for the site or it's potential sources can not be assessed.

REFERENCE LIST

1. Cynthia Shires, Fluor Daniel, Inc., Site Visit, Highway 6 Dump Site, December 16, 1991.

2. Gary Stone, City of Galveston Municipal Water District, Telephone Conversation with Bill Park, Fluor Daniel, Inc., November 18, 1991. Re: Source of City Drinking Water.

3. U.S.G.S. 7.5 MINUTE SERIES - Topographic maps. GALVESTON, TX, 1954, photo-revised 1974. LAKE COMO, TX, 1954, photo-revised 1974. VIRGINIA POINT, TX, 1954, photo-revised 1974.

4. Federal Emergency Management Agency, Flood Insurance Rate Map, City of Galveston, Texas, May 2, 1983.

5. U.S. Department of the Interior, Fish and Wildfire Service, National Wetlands Inventory Map. Galveston, Texas, November 1979.

6. U.S. Department of the Interior, Fish and Wildfire Service. Memorandum to Bill Park listing Endangered Species in Galveston County, Texas, November 21, 1991.

7. U.S. Department of Agriculture, Soil Conservation Service Soil Survey of Galveston County, Texas, February 1988.

8. Bureau of Economic Geology, Geologic Atlas of Texas, Houston Sheet, Scale: 1:250,000, 1982.

9. U.S. Department of Commerce, Bureau of the Census, County and City Data Book, 1988.

10. Buzz Sawyer, Sandafer Petroleum Company, Telephone conversation with Cynthia Shires, Fluor Daniel, Inc., December 23, 1991, RE: Nature of Rig 28 work, and access to drive bordering site.

11. Galveston County Health District. File Search, October 21, 1991, RE: Violations cited to Highway 6 Dump property.

12 Rosemarie Theiler, City of Hitchcock Utilities Department, Telephone conversation with Cynthia Shires, Fluor Daniel, Inc., January 14, 1992. Re: Hitchcock Drinking Water.

13. Dorinda Sullivan; Texas Parks and Wildlife; Natural Heritage Program, Telephone Conversation with Cynthia Shires, Fluor Daniel, Inc.; April 20, 1992. RE: Endangered Species near or on-site.

14. Michael Chrismer; Coastal Subsidence District, Telephone Conversation with Cynthia Shires, Fluor Daniel, Inc.; April 23, 1992, RE: Depth of well in City of Hitchcock.

15. Galveston County Tax Assessor Office, County Tax Records on Harry J. Fiegel, Jr., Galveston, Texas, December 17, 1991.

REFERENCE 1

CYNTHIA SHIRES, FDI
SITE VISIT,
HIGHWAY 6 DUMP SITE
DECEMBER 16, 1991

REFERENCE 1

SITE VISIT TO HIGHWAY 6 DUMP
TXD 987990405
DECEMBER 16, 1991

- Owner was not contacted, correct mailing address was never established.

- Off-site reconnaissance was performed.

- A truck was leaving the site as we arrived. The site is fenced with barb wire and a locked entrance gate.

- The entrance gate is on a dirt turn-off of Highway 6. Galveston area roadmaps show the road to be named North Railroad.

- Highway 6 is along the northern border of the site, railroad tracks on the western and southern borders, and a wetlands area along the eastern border.

- A drilling rig (petroleum) was observed north of the railroad tracks and on the southern edge of the wetlands.

- The drilling rig belongs to Sandafer Petroleum Company who maintains the guarded entrance to the drilling rig called Rig # 28. A temporary wooden driveway follows along the railroad tracks out to the rig.

- The Highway 6 Dump Site has one large pit on the southwest half of the property. The bottom of the pit could not be seen from off-site. Heavy construction equipment (2 trackhoes and a dump truck) were in or around the large pit.

- There were two trash debris piles one burned and one not burned.

- Two pond areas are located on the eastern border. A few rusted drums were observed nearby the ponds. A high berm area separates the ponds from the wetlands.

- A hose extending out of the large pit over the southern berm was observed. It is possibly used to pump water out of the pit.

- Driving west on North Railroad Drive, a man was observed fishing in a pond just west of the railroad tracks and the site.

- There is a residential community along the northern side of North Railroad Drive.

0187

9

Photo No. 1

Site Name: Highway 6 Dump

Location: Hitchcock, TX Galveston County

CERCLIS ID TXD 987990405

Photographer/Witness: Cynthia Shires/Bill Park

Date: 12/16/91 Time: 2:00pm Direction: Southeast

Description: No dumping sign near gate.

Photo No. 2

Photographer/Witness: Cynthia Shires/Bill Park

Date: 12/16/91 Time: 2:00pm Direction: South

Description: Locked gate - entrance

Form: fdaalias006

Photo No. 3

Site Name: Highway 6 Dump

Location: HitchCock, TX Galveston County

CERCLIS ID TXD 987990405

Photographer/Witness: Cynthia Shires/Bill Park

Date: 12/16/91 Time: 2:05 pm Direction: South

Description: Trailer along driveway entrance.

Photo No. 4

Photographer/Witness: Cynthia Shires/Bill Park

Date: 12/16/91 Time: 2:05pm Direction: Southwest

Description: Heavy equipment. Pipeline running from pit over berm, suspected of pumping water out of pit.

Form fdodallas005

Photo No. 5

Site Name: Highway 6 Dump

Location: Hitchcock, TX Galveston County

CERCLIS ID TXD 987990405

Photographer/Witness Cynthia Shires/Bill Park

Date 12/16/91 Time 2:10pm Direction Southwest

Description Western edge of large pit, tree trunks, wooden boat, and other debris, and underground pipeline signs.

Photo No. 6

Photographer/Witness Cynthia Shires/Bill Park

Date 12/16/91 Time 2:10pm Direction Southeast

Description Northeast edge of property. Pipelines on property. Sandafer rig 28 in background.

Form: fdsdallas005

Photo No. 7

Site Name: Highway 6 Dump

Location: Hitchcock, TX, Galveston County

CERCLIS ID TXD 987990405

Photographer/Witness Cynthia Shires/Bill Park

Date 12/16/91 Time 2:10pm Direction Southwest

Description Guarded entrance to Sandafer Petroleum Company Rig 28. Wood plank drive along railroad right-of-way.

Form: fddallas006

Photo No. 8

Site Name: Highway 6 Dump

Location: Hitchcock, TX Galveston County

CERCLIS ID TXD 987990405

Photographer/Witness Cynthia Shires/Bill Park

Date 12/16/91 Time 2:15pm Direction southeast

Description One of two "ponds" on east side of property. Larger of two, and most southerly one of the two.

Photo No. 9

Photographer/Witness Cynthia Shires/Bill Park

Date 12/16/91 Time 12:15pm Direction East

Description One of two"ponds" on east side of property. Smaller of two ponds, and most northerly of the two. Rig 28 in background.

Form: fddallas006

Photo No.
10

Site Name:
Highway 6 Dump

Location:
Hitchcock, TX
Galveston County

CERCLIS ID
TXD 987990405

Photographer/Witness Cynthia Shires/Bill Park

Date 12/16/91 Time 12:15pm Direction South

Description Southern berm, and burned rubble and non-functional heavy equipment.

Photo No.
_____

NO PHOTOGRAPH

Photographer/Witness _____

Date _____ Time _____ Direction _____

Description _____

Form: fddallas006

REFERENCE 2

GARY STONE,
CITY OF GALVESTON MUNICIPAL WATER DISTRICT,
TELEPHONE CONVERSATION
NOVEMBER 18, 1991

RECORD OF TELEPHONE CONVERSATION

From: Bill Park **Date:** 11-18-91

Location: Fluor Daniel, Inc. **Time:** _____

Subject: Drinking Water

To: Gary Stone (409) 766-2105 **P.O. Number:** _____

Location: City of Galveston Municipal Utility Dept.

Other Ref.: _____

Mr. Stone stated:

- All of the city's drinking water was purchased from the City of Houston;
- 90% of the water is treated surface water obtained from a lake near Ellington AFB. Southeast Water Treatment Plant.
- 10% of the water comes from 16 ground water wells in the Alta Loma Well Field off of Highway 6 near Dickinson, Texas.
- There are some wells on Galveston Island, however none of the water is potable. The wells are used for irrigation.
- Harris County, Galveston County Subsidence District would would have information on these wells.

0 1 8 9

REFERENCE 3

U.S.G.S.
7.5 MINUTE SERIES - TOPOGRAPHIC MAPS
GALVESTON, TEXAS, 1954, PHOTO-REVISED 1974,
LAKE COMO, TEXAS, 1954, PHOTO-REVISED 1974,
VIRGINIA POINT, TEXAS, 1954, PHOTO-REVISED 1974

HITCHCOCK QUADRANGLE
NOT AVAILABLE
TEXAS CITY
JONES
BAY
VIRGINIA POINT, TEX
TEXAS CITY, TEX
FLUOR DANIEL
TARGET MAP
HIGHWAY SIX DUMP SITE
HITCHCOCK, TEXAS

0 1 9 1

REFERENCE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY,
FLOOD INSURANCE RATE MAP,
CITY OF GALVESTON, TEXAS
MAY 2, 1983

NATIONAL FLOOD INSURANCE PROGRAM

R

FIRM

FLOOD INSURANCE RATE MAP

GALVESTON COUNTY, TEXAS

(UNINCORPORATED AREAS)

PANEL 205 OF 316

(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER

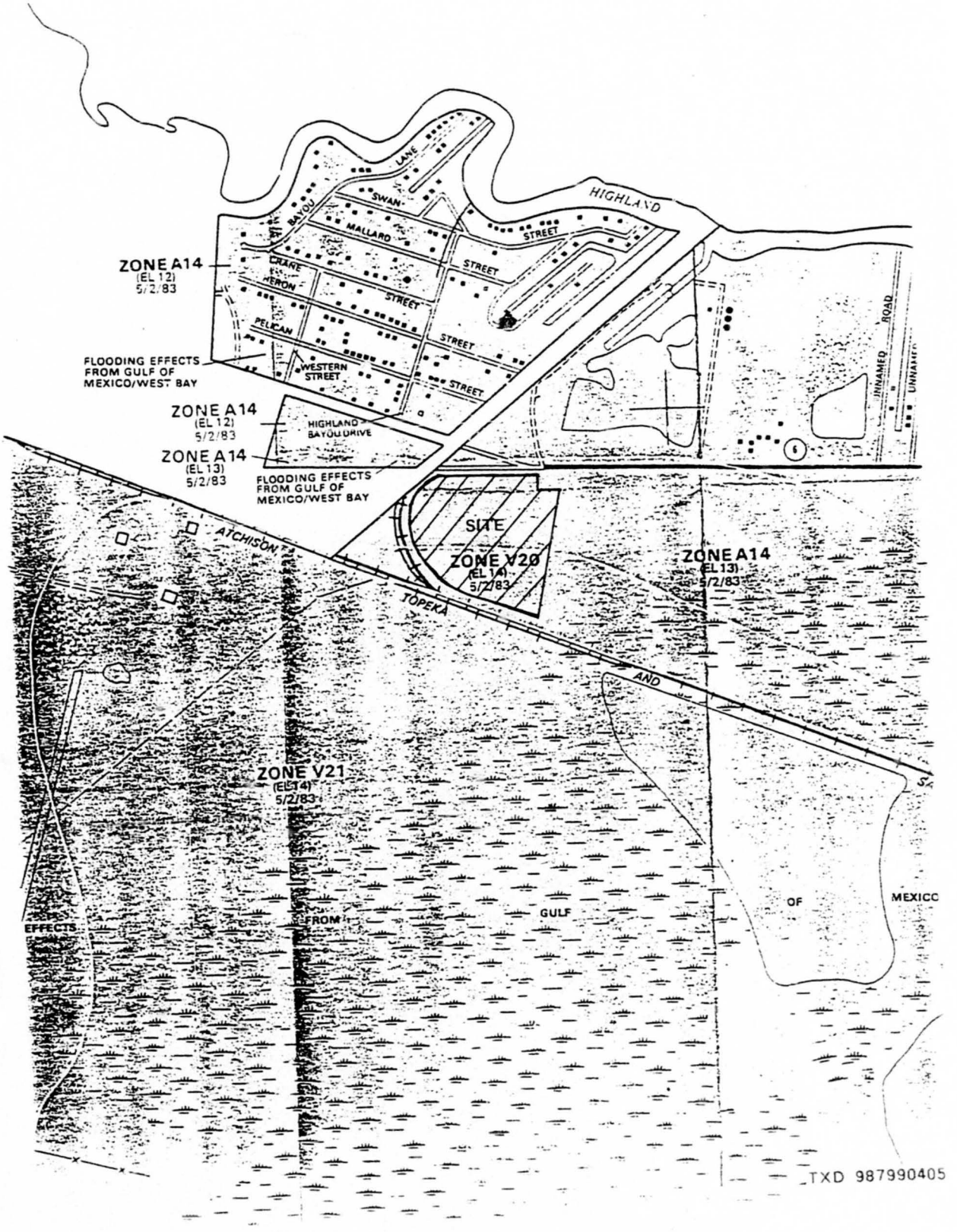
485470 0205 C

MAP REVISED:

MAY 2, 1983

Federal Emergency Management Agency

0 1 9 4


HIGHLAND
BAYOU
LANE
SWAN
MALLARD
STREET
ZONE A14
(EL 12)
5/2/83
CRANE
HERON
STREET
PELICAN
STREET
FLOODING EFFECTS
FROM GULF OF
MEXICO/WEST BAY
WESTERN
STREET
STREET
ZONE A14
(EL 12)
5/2/83
HIGHLAND
BAYOU DRIVE
ZONE A14
(EL 13)
5/2/83
FLOODING EFFECTS
FROM GULF OF
MEXICO/WEST BAY
UNNAMED
ROAD
SITE
ZONE V20
(EL 14)
5/2/83
ZONE A14
(EL 13)
5/2/83
ATCHISON
TOPEKA
AND
ZONE V21
(EL 14)
5/2/83
EFFECTS
FROM
GULF
OF
MEXICO
TXD 987990405

KEY TO MA

500-Year Flood Boundary	
100-Year Flood Boundary	ZONE B
Zone Designations* With Date of Identification e.g., 12/2/74	
100-Year Flood Boundary	ZONE B
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

Coastal Base Flood Elevations shown on this map include the effects of wave action.

INITIAL IDENTIFICATION:
APRIL 8, 1971

FLOOD INSURANCE RATE MAP EFFECTIVE:
APRIL 8, 1971

FLOOD INSURANCE RATE MAP REVISIONS:

Interim Map revision effective July 1, 1974 to change Zone Designations.

Map revision effective June 24, 1977 to reflect Curvilinear Flood Boundary, to change Base Flood Elevations, change county boundary, subsidence after 1955 has not been considered.

Map revised May 2, 1983 to change Zone Designations and Base Flood Elevations reflecting wave action effects.

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE

1000 0 1000 FEET

0196

REFERENCE 5

U.S. DEPT. OF INTERIOR,
FISH AND WILDFIRE SERVICE,
NATIONAL WETLANDS INVENTORY MAP,
GALVESTON, TEXAS
NOVEMBER 1979

VIRGINIA POINT, TEX.

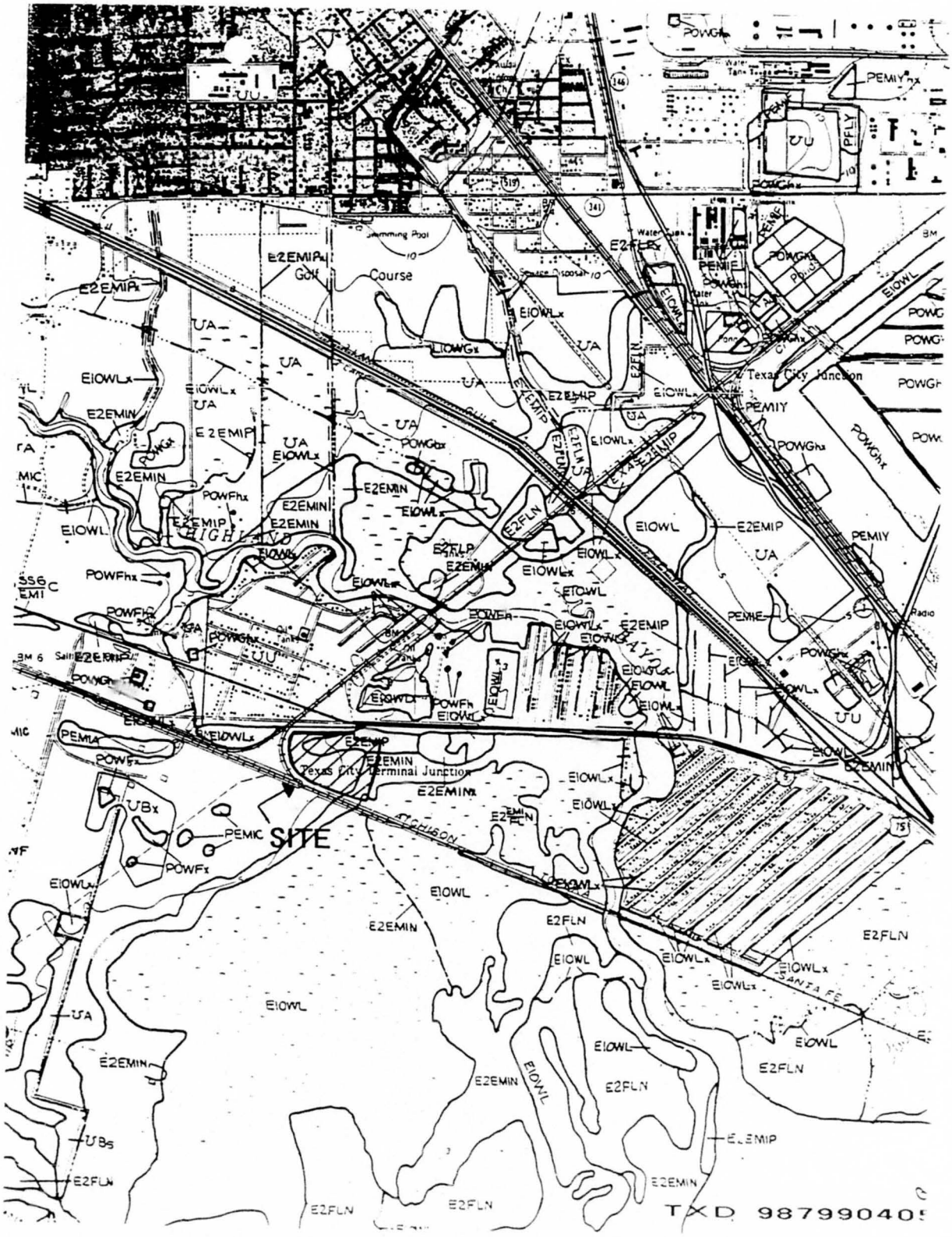
U.S. DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

Prepared by Office of Biological Services
for the National Wetlands Inventory
and the National Coastal Ecosystems Team

Sponsored by the Minerals Management Service
U.S. Department of the Interior
Gulf of Mexico OCS Office
Metairie, Louisiana

Photointerpretation by:
Texas A&M University
College Station, Texas



Golf Course
Texas City Junction
Texas City Terminal Junction
SITE
HIGHLAND
ATCHISON
SANTA FE
E2EMIP
E2EMIN
E1OWL
E2FLN
POWGhx
POWFhx
POWFx
PEMIY
PEMIC
PEMIA
UA
UU
UBx
UBs
TXD 98799040

0199

REFERENCE 6

U.S. DEPT. OF INTERIOR
FISH AND WILDLIFE SERVICE,
MEMORANDUM TO BILL PARK, RE: LIST OF
ENDANGERED SPECIES IN GALVESTON COUNTY, TEXAS
NOVEMBER 21, 1991.

Uni l States Departme.. of the In. .ior
Fish and Wildlife Service
DIVISION OF ECOLOGICAL SERVICES
17629 EL CAMINO REAL, SUITE 211
HOUSTON, TEXAS 77058

November 21, 1991

Bill C. Park
Fluor Daniel ARCS Team
12790 Merit Drive
Suite 200, LB 169
Dallas, Texas 75251

Dear Mr. Park:

This responds to your August 1, 1991 letter requesting information on federally listed species or those proposed to be listed as threatened or endangered which may be in your project areas. The proposed projects are involved in a preliminary assessment of five sites located in the Galveston area, Galveston County, Texas.

Enclosed is an inventory of species of concern for Galveston County. The inventory includes species that are officially listed as threatened or endangered under the Endangered Species Act as well as candidate species, which are currently under consideration by the U.S. Fish and Wildlife Service for listing as threatened or endangered, but which are not yet the subject of a proposed rule.

According to Section 7(a)(2) of the Endangered Species Act, each federal agency must ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed threatened or endangered species. Pursuant to the rules and regulations governing interagency cooperation under Section 7, the federal agency which is considering authorizing or funding any proposed activity must determine whether the action may affect any listed threatened or endangered species. If the determination for this project is "may affect", you must initiate formal Section 7 consultation with the Field Supervisor, at the above letterhead address. If it is determined that the proposed activity will not affect any listed species, formal consultation will not be necessary, but we would appreciate an opportunity to review the data upon which the decision was based.

The attached candidate species list is provided to you for project planning purposes only to alert you to their potential for change to listed status sometime in the future. As candidate species, however, they have no legal status and receive no protection under the Endangered Species Act. We suggest that you also contact the state regarding their associated habitats and their potential for occurrence on any project sites.

In addition to possible impacts to endangered species, you may need a Department of the Army permit to perform work in wetlands in your project area. You should contact the Compliance Section of the Galveston District Corps of Engineers at (409) 766-3941 and request a jurisdictional wetland determination. If a permit is required, please feel free to contact us for assistance in preparing an environmentally acceptable solution.

If we can be of further assistance, please contact Dede Albe at (713) 286-8282.

Sincerely,

Frederick T. Werner
Regulatory Activities

Enclosure

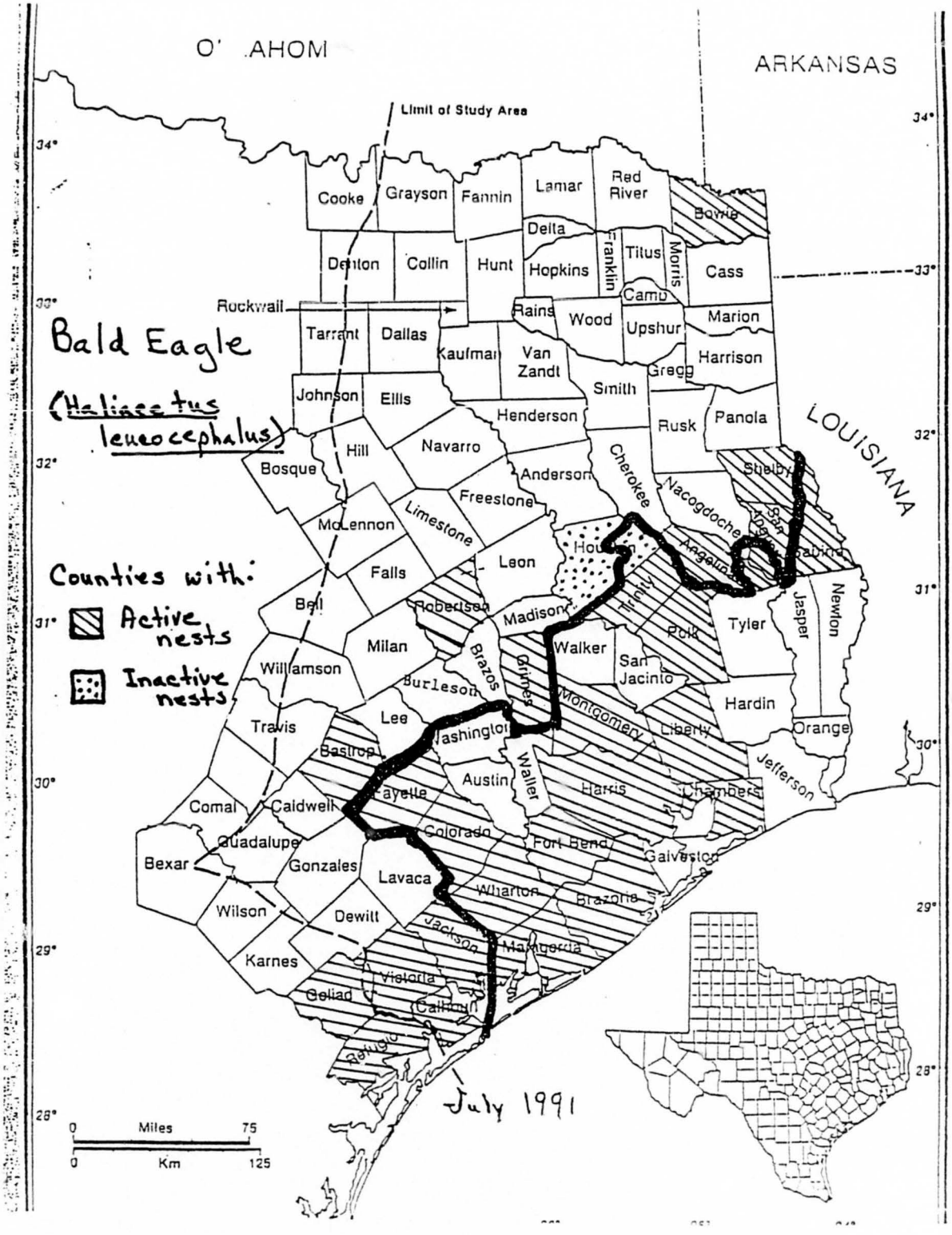
cc:
District Engineer, U.S. Army Corps of Engineers, Galveston, TX
Executive Director, Texas Parks and Wildlife Department, Austin, TX

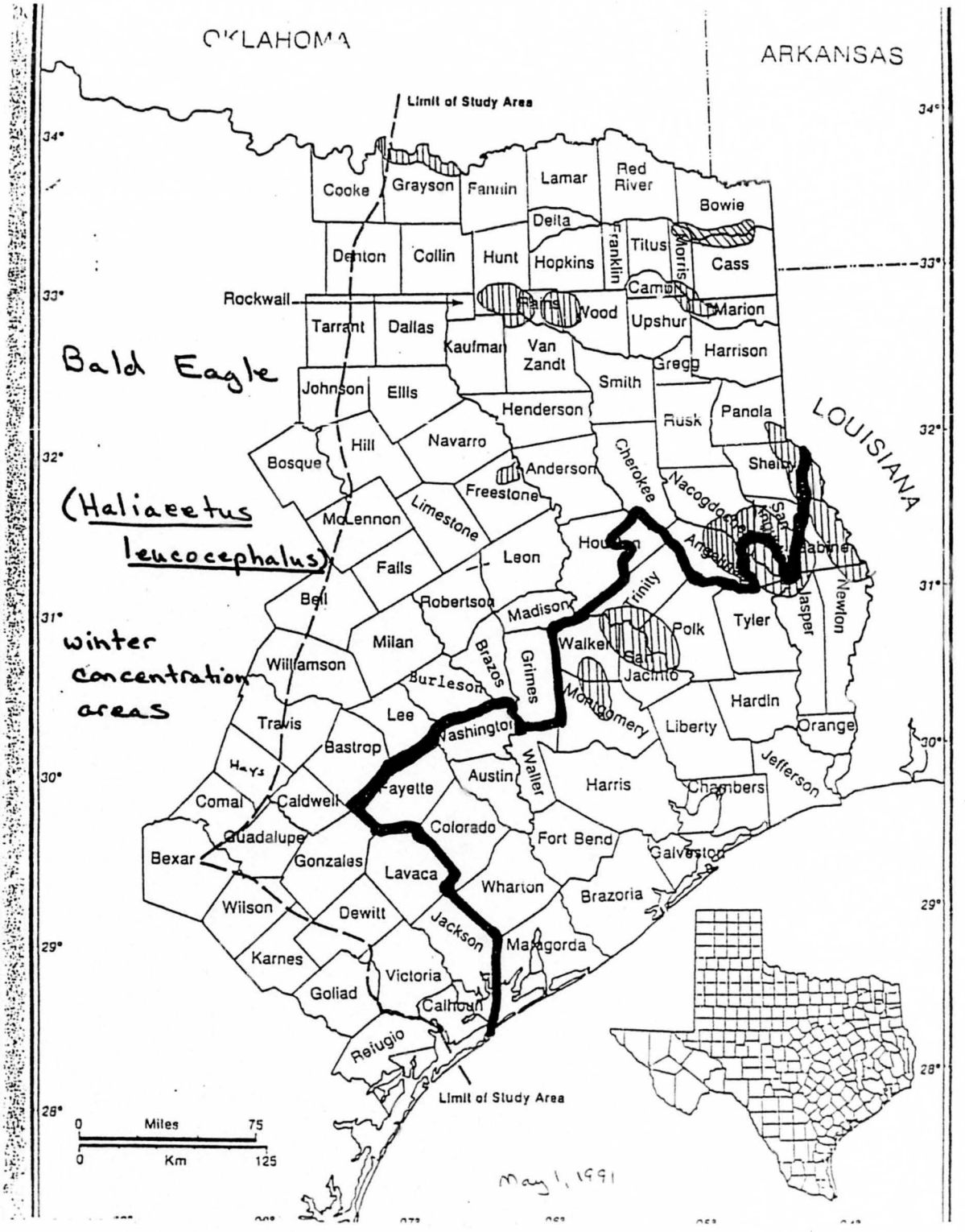
GALVESTON COUNTY

Status	Common Name	Scientific Name
	LISTED SPECIES	
Reptiles:		
T	Loggerhead sea turtle	Caretta caretta
T	Green sea turtle	Chelonia mydas
E	Leatherback sea turtle	Dermochelys coriacea
E	Hawksbill sea turtle	Eretmochelys imbricata
E	Kemp's ridley sea	Lepidochelys kempii
Birds:		
E	Brown pelican	Pelecanus occidentalis
T	Piping plover (W)	Charadrius melodus
E	Attwater's greater prairie-chicken (R)	Tympanuchus cupido attwateri
E	Bald eagle	Haliaeetus leucocephalus
T	Arctic peregrine falcon	Falco peregrinus tundrius
	CANDIDATE SPECIES	
Plants:		
C2	Texas windmill-grass	Chloris texensis
C2	Houston machaeranthera	Machaeranthera aurea
C2	Grand Prairie evening-primrose	Oenothera pilosella var. sessilis
C2	Correll's false dragon-head	Physostegia correllii
Reptiles:		
C2	Texas diamondback terrapin	Malaclemys terrapin littoralis
C2	Texas horned lizard	Phrynosoma cornutum
C2	Gulf salt marsh snake	Nerodia fasciata clarki
Birds:		
C2	Reddish egret	Egretta rufescens
C2	White-faced ibis	Plegadis chihi
C2	Southeastern snowy plover	Charadrius alexandrinus tenuirostris
C2	Black rail	Laterallus jamaicensis
C2	Long-billed curlew	Numenius americanus
C2	Henslow's sparrow	Ammodramus henslowii
Mammals:		
C2	Plains spotted skunk	Spilogale putorius interrupta

E= Endangered
T= Threatened
C2= Candidate with some information on hand for listing
R= Year-round resident
W= Winter resident

May 1, 1991


O' .AHOM
ARKANSAS
LOUISIANA
Limit of Study Area
Bald Eagle
(Haliaeetus leucocephalus)
Counties with:
Active nests
Inactive nests
Cooke
Grayson
Fannin
Lamar
Red River
Bowie
Delta
Franklin
Titus
Morris
Cass
Denton
Collin
Hunt
Hopkins
Camp
Rockwall
Rains
Wood
Upshur
Marion
Tarrant
Dallas
Kaufman
Van Zandt
Gregg
Harrison
Johnson
Ellis
Smith
Henderson
Rusk
Panola
Hill
Navarro
Bosque
Anderson
Cherokee
Nacogdoches
Shelby
Freestone
Limestone
McLennon
Houston
Angelina
San Augustine
Sabine
Leon
Falls
Bell
Robertson
Madison
Trinity
Polk
Tyler
Jasper
Newton
Milan
Brazos
Grimes
Walker
San Jacinto
Williamson
Burleson
Montgomery
Hardin
Lee
Washington
Liberty
Orange
Travis
Bastrop
Austin
Waller
Harris
Jefferson
Chambers
Comal
Caldwell
Fayette
Colorado
Fort Bend
Galveston
Guadalupe
Bexar
Gonzales
Lavaca
Wharton
Brazoria
Wilson
Dewitt
Jackson
Matagorda
Karnes
Victoria
Goliad
Calhoun
Refugio
July 1991
Miles
Km
0
75
125
34°
33°
32°
31°
30°
29°
28°


OKLAHOMA
ARKANSAS
LOUISIANA
Limit of Study Area
Cooke
Grayson
Fannin
Lamar
Red River
Bowie
Delta
Franklin
Titus
Morris
Cass
Denton
Collin
Hunt
Hopkins
Camp
Rockwall
Hains
Wood
Upshur
Marion
Tarrant
Dallas
Kaufman
Van Zandt
Gregg
Harrison
Johnson
Ellis
Smith
Henderson
Rusk
Panola
Hill
Navarro
Bosque
Anderson
Cherokee
Shelby
Freestone
Limestone
McLennon
Leon
Houston
Angelina
Sabine
Falls
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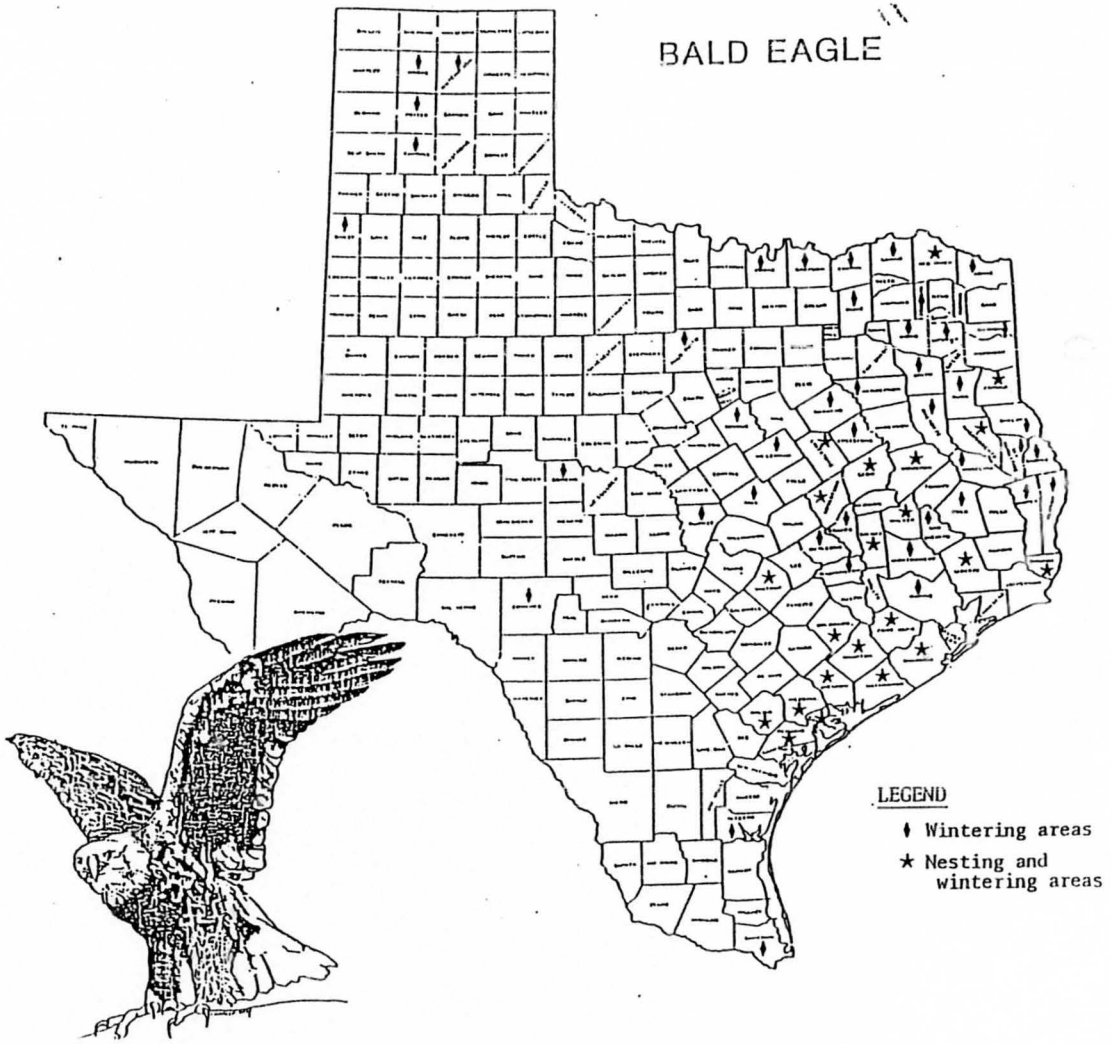
Robertson
Madison
Trinity
Polk
Tyler
Jasper
Newton
Milan
Brazos
Grimes
Walker
San Jacinto
Williamson
Burleson
Montgomery
Hardin
Lee
Travis
Washington
Liberty
Orange
Bastrop
Hays
Waller
Austin
Harris
Jefferson
Comal
Caldwell
Fayette
Chambers
Guadalupe
Colorado
Fort Bend
Galveston
Bexar
Gonzales
Lavaca
Wharton
Brazoria
Wilson
Dewitt
Jackson
Matagorda
Karnes
Victoria
Goliad
Calhoun
Refugio
Limit of Study Area
0 Miles 75
0 Km 125
Bald Eagle
(Haliaeetus leucocephalus)
winter concentration areas
May 1, 1991


BALD EAGLE
LEGEND
Wintering areas
Nesting and wintering areas

0 2 0 0 6

BALD EAGLE.....*Haliaeetus leucocephalus*

STATUS: Endangered (32 FR 4001, March 11, 1967; 43 FR 6233, Febrauary 14, 1978) without critical habitat

SPECIES DESCRIPTION: Large eagle with white head and tail in the adult; immatures are dark or mottled. Feet are bare of feathers. Wingspan is 6-7.5 feet.

HABITAT: Bald eagles require large trees or cliffs near water with abundant fish for nesting. They spend the winters along major rivers, reservoirs, or in areas where carrion is available. For nesting eagles, fish are the primary food source. Waterfowl, rabbits, and carrion are also important food items for transient and wintering eagles.

DISTRIBUTION:

Historic: Found throughout the U.S., Canada, and northern Mexico. Resident eagles occur in Arizona, and there are wintering populations in both New Mexico and Arizona.

Present: Current breeding range has diminished slightly, but most areas remain occupied with fewer breeding pairs. Wintering populations still may occur statewide. Winter concentrations occur around large bodies of water from December through March. Seventeen nesting territories are known in east Texas along rivers, near reservoirs, and along the Gulf Coast.

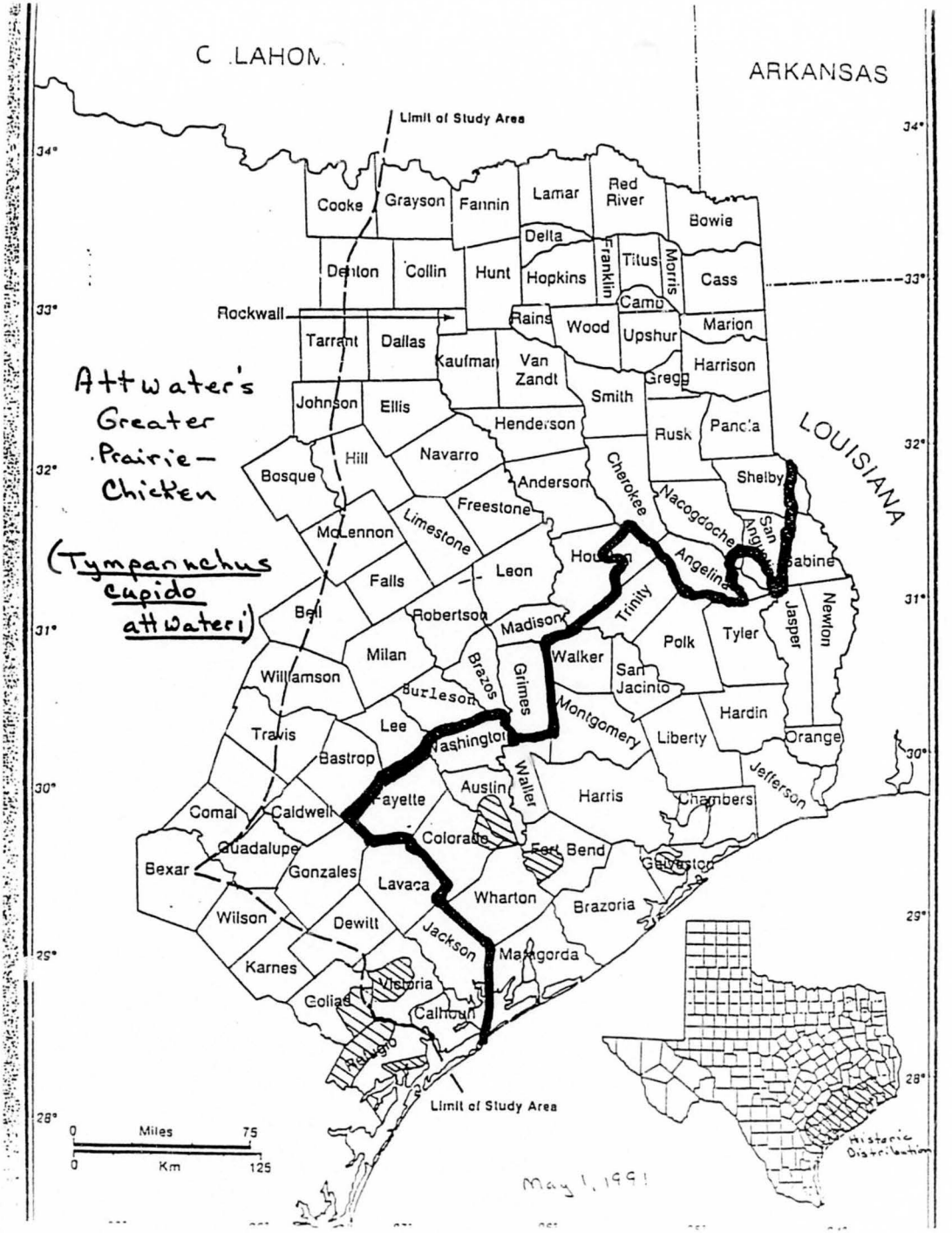
REASONS FOR DECLINE: Degradation and loss of riparian habitat, pesticide-induced reproductive failure, and human disturbance (including shooting, poisoning and trapping).

OTHER INFORMATION: Southeastern Bald Eagle Recovery Plan approved in 1983. The bald eagle is endangered in all but 5 of the lower 48 States. In Washington, Oregon, Minnesota, Wisconsin, and Michigan, it is listed as threatened. It is not listed in Alaska, Mexico, or Canada. Nesting populations are gradually increasing in most areas of the country, including Texas.

REFERENCES: Lish 1975, USFWS 1983b, Busch (in press), Johnson (in press).

ARCTIC PEREGRINE FALCON.....*Falco peregrinus tundrius*

STATUS:	Threatened (49 FR 10520; March 20, 1984) without critical habitat
SPECIES DESCRIPTION:	Same as American peregrine falcon except slightly smaller and paler.
HABITAT:	Nests in the Arctic tundra. Winters in Central and South America, especially along coastlines and in mountains.
DISTRIBUTION:	Breed in North American tundra and winters along the Gulf Coast from Florida west to the eastern Mexico coast and Baja California, south to mid-Chile and mid-Argentina.
Historic:	In Texas, it occurred statewide (during migration only).
Present:	Occurs statewide in Texas during the fall and spring migration, with a few wintering along the Texas Gulf coast. Concentrate in April and October on North and South Padre Island.
REASONS FOR DECLINE:	Reproductive failure due to pesticides.
OTHER INFORMATION:	Recent population increases due to reduced contaminant levels, resulting in the recent downlisting to threatened status. Recovery Team appointed. Recovery Plan for Alaska approved and being implemented. Protected by the State of Texas.
REFERENCES:	Oberholser 1974, USFWS 1982c.


C LAHOM
ARKANSAS
LOUISIANA
Limit of Study Area
Cooke
Grayson
Fannin
Lamar
Red River
Bowie
Delta
Franklin
Titus
Morris
Cass
Denton
Collin
Hunt
Hopkins
Camp
Rockwall
Rains
Wood
Upshur
Marion
Tarrant
Dallas
Kaufman
Van Zandt
Gregg
Harrison
Johnson
Ellis
Smith
Henderson
Rusk
Panola
Hill
Navarro
Bosque
Anderson
Cherokee
Nacogdoche
Shelby
Freestone
Limestone
McLennon
San Augustine
Angelina
Sabine
Falls
Leon
Trinity
Jasper
Newton
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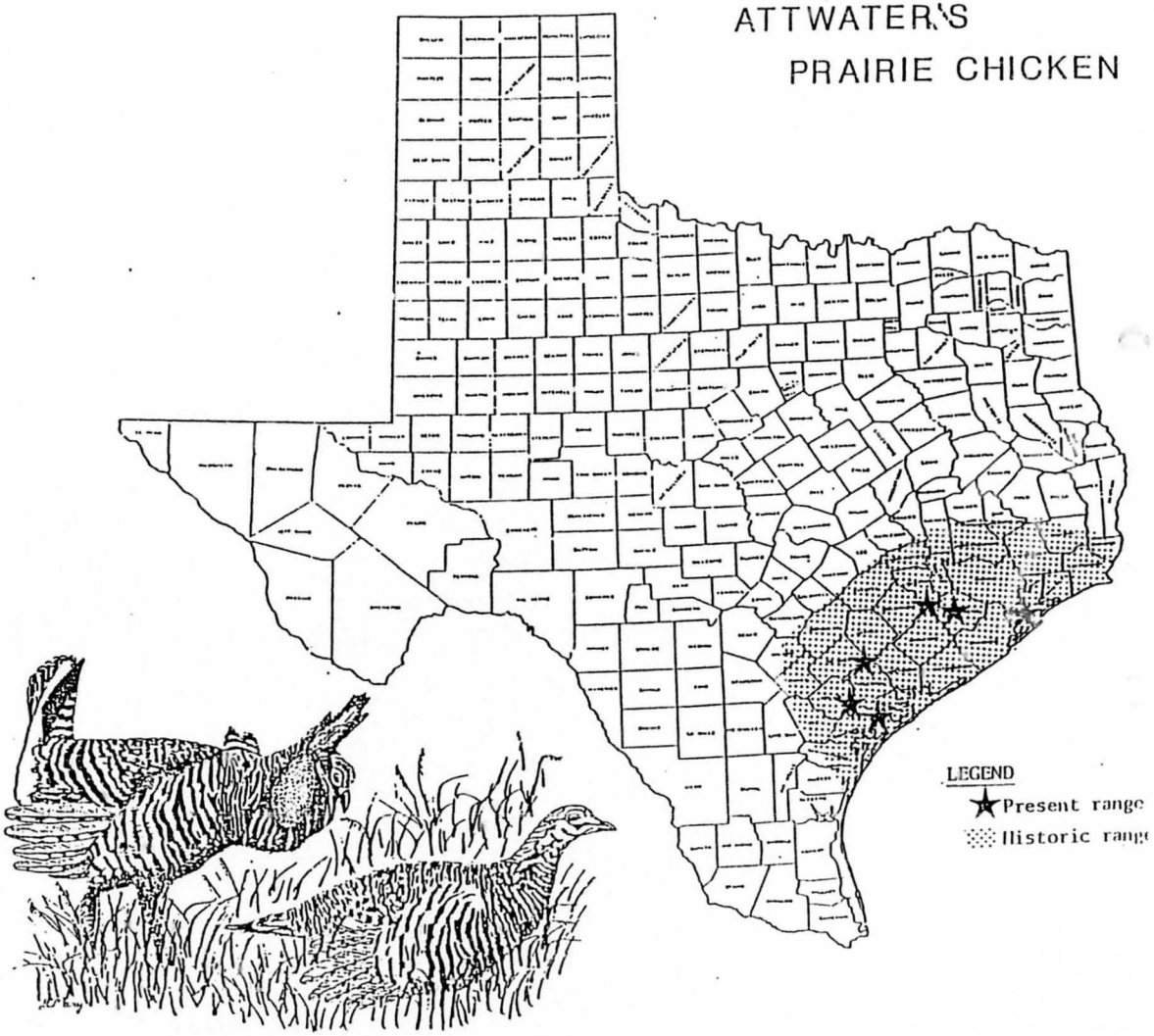
Robertson
Madison
Polk
Tyler
Milan
Brazos
Grimes
Walker
San Jacinto
Williamson
Burleson
Montgomery
Hardin
Travis
Lee
Washington
Liberty
Orange
Bastrop
Waller
Jefferson
Fayette
Austin
Harris
Chambers
Comal
Caldwell
Colorado
Fort Bend
Guadalupe
Galveston
Bexar
Gonzales
Lavaca
Wharton
Brazoria
Wilson
Dewitt
Jackson
Matagorda
Karnes
Victoria
Goliad
Calhoun
Hidalgo
Limit of Study Area
Miles
Km
Historic Distribution
Attwater's Greater Prairie-Chicken
(Tympanuchus cupido attwateri)
May 1, 1991


ATTWATER'S
PRAIRIE CHICKEN
LEGEND
Present range
Historic range

0 2 1 0

ATTWATER'S PRAIRIE CHICKEN.....*Tympanuchus cupido attwateri*

STATUS: Endangered (32 FR 4001; March 11, 1967) without critical habitat

SPECIES DESCRIPTION: A brownish, strongly black-barred, medium-sized grouse with a short, rounded, blackish tail. Males have long pinnates on the sides of the neck, which point forward during courtship. Males also have an orange comb above the eye, and, on each side of the neck, an area of orange skin that inflates during the courtship display. Elaborate displays by males on the booming grounds commence in February, peak in March, and end in May. Females lay an average of 12 eggs per clutch.

HABITAT: Native tallgrass prairies of the Texas coastal region. Diversification of habitat, including interspersion of short-, mid-, and tallgrass prairie, is optimum. Light (<10 inches in height) cover, artificially maintained areas, and hardpan areas are used for courtship, feeding, and avoidance of moisture. Light- to medium-light (10-16 inches) cover is used for roosting and feeding. Medium to heavy cover is used for nesting, loafing, feeding, and escape. Heavy cover (>24 inches) is used as shade, protection against inclement weather and predators, and for fall feeding.

DISTRIBUTION:

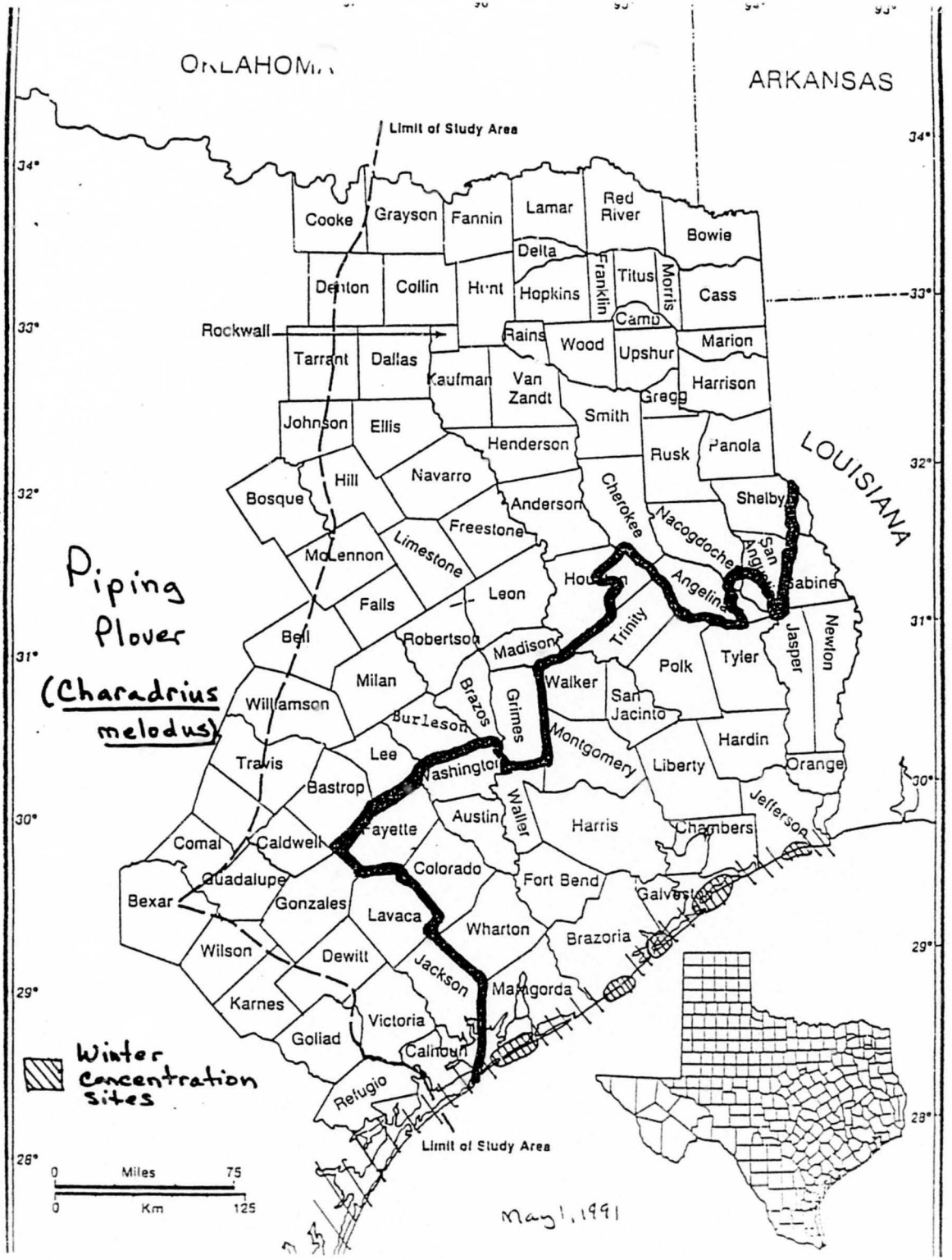
Historic: Formerly occupied some 8 million acres of coastal prairie from Kleberg County, Texas, northward to Bayou Teche, Louisiana.

Present: Reduced to several coastal counties in Texas. Total adult population in Texas estimated to be under 1,200 birds. Presently (1987), populations occur in Aransas, Austin, Colorado, Fort Bend, Galveston, Goliad, Refugio, and Victoria counties.

REASONS FOR DECLINE: Habitat loss is the greatest threat to existing populations. This loss is due to conversion of native prairie to farmlands, urban development, brush invasion, and overgrazing. The rate of loss has accelerated markedly during the past decade.

OTHER INFORMATION: Recovery Team appointed. Recovery Plan approved in 1983, and is being implemented. Protected by the State of Texas. The Attwater Prairie Chicken National Wildlife Refuge (Eagle Lake, Texas) was established in 1972 to protect the prairie chicken. Additional lands in Victoria County have been proposed for permanent protection.

REFERENCES: Lehmann 1941, Oberholser 1974, Jurries 1979, Lawrence and Silvy 1980, USFWS 1983a, Morrow 1986.


OKLAHOMA
ARKANSAS
LOUISIANA
Limit of Study Area
Cooke
Grayson
Fannin
Lamar
Red River
Bowie
Delta
Franklin
Titus
Morris
Cass
Denton
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Hopkins
Camp
Rockwall
Rains
Wood
Upshur
Marion
Tarrant
Dallas
Kaufman
Van Zandt
Gregg
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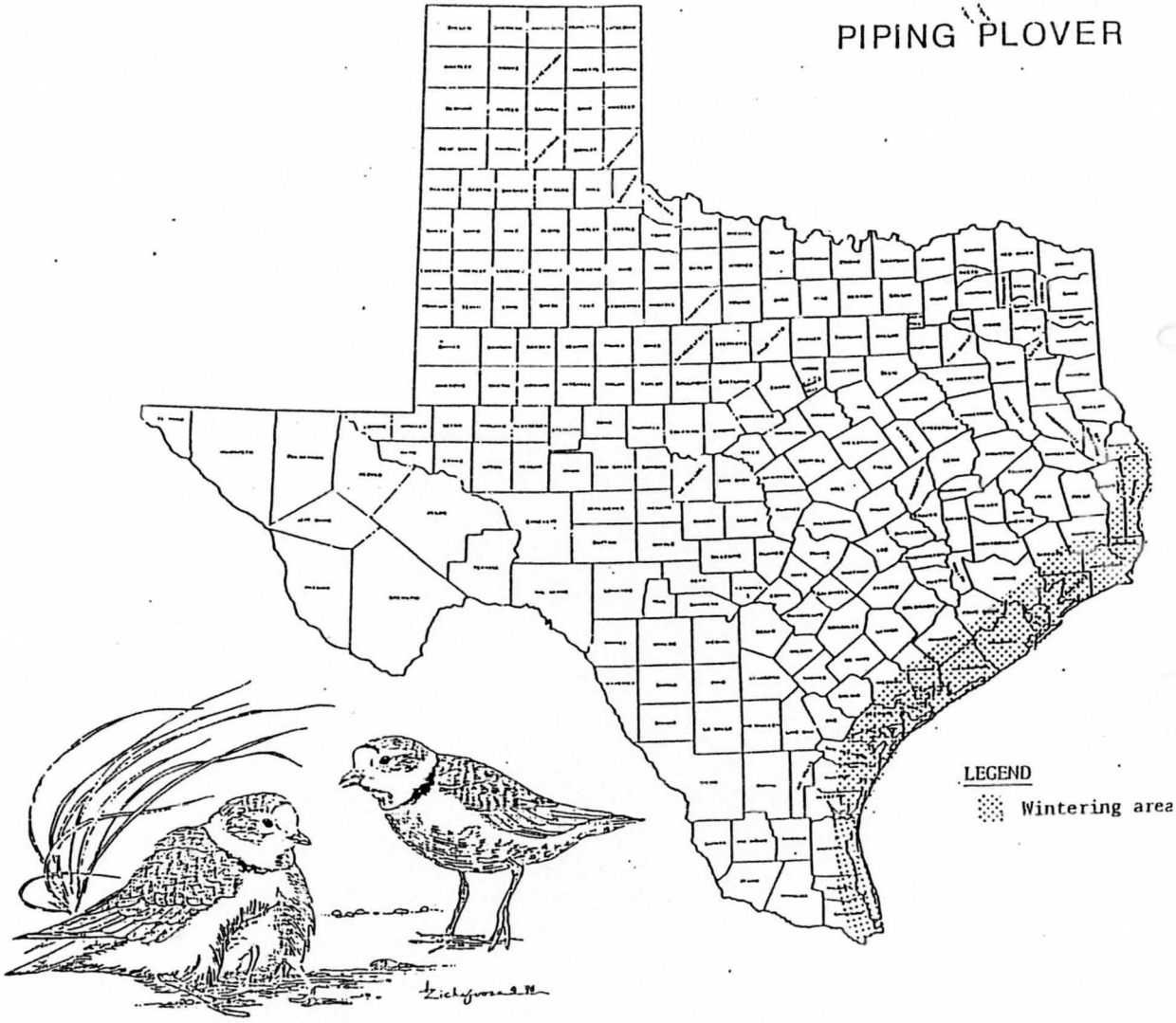
Johnson
Ellis
Smith
Henderson
Rusk
Panola
Hill
Navarro
Bosque
Anderson
Cherokee
Shelby
Freestone
Nacogdoches
San Augustine
McLennon
Limestone
Houston
Angelina
Sabine
Falls
Leon
Trinity
Jasper
Newton
Bell
Robertson
Madison
Polk
Tyler
Milan
Brazos
Grimes
Walker
San Jacinto
Williamson
Burleson
Montgomery
Hardin
Travis
Lee
Washington
Liberty
Orange
Bastrop
Waller
Jefferson
Austin
Harris
Chambers
Comal
Caldwell
Fayette
Colorado
Guadalupe
Fort Bend
Galveston
Bexar
Gonzales
Lavaca
Wharton
Brazoria
Wilson
Dewitt
Jackson
Matagorda
Karnes
Victoria
Goliad
Calhoun
Refugio
Piping Plover (Charadrius melodus)
Winter Concentration Sites
0 Miles 75
0 Km 125
May 1, 1991

PIPING PLOVER



PIPING PLOVER.....*Charadrius melodus*

STATUS: Endangered in the watershed of the Great Lakes, threatened in the remainder of its range (including coastal Texas; 50 FR 50726; December 11, 1985) without critical habitat.

SPECIES DESCRIPTION: A small, stocky shorebird about 7 inches long with a wingspread of about 15 inches. Both sexes have pale brownish upper parts and white underparts. A dark band encircling the body below the collar and a dark stripe across the forecrown are distinguishing marks in summer adults, but are obscure in winter.

HABITAT: Nest sites include sandy beaches along the ocean or inland lakes; bare areas on dredge-created and natural alluvial islands in rivers; gravel pits along rivers; and salt-encrusted bare areas of sand, gravel or pebbly mud on interior alkali lakes and ponds. During the winter, piping plovers utilize beaches, sandflats, and dunes along the Gulf Coast and adjacent offshore islands. Spoil islands in the intercoastal waterway are also used.

DISTRIBUTION:

Historic: Common along the Atlantic and Gulf Coasts, and on the northern Great Plains, the Great Lakes and the Bahamas and West Indies.

Present: Drastically reduced, remnant populations occur throughout historic range.

REASONS FOR DECLINE: Loss or modification of habitat due to commercial, residential, and recreational developments, dune stabilization, damming and channelization of rivers (eliminating sandbars, encroachment of vegetation, and altering water flows), and wetland drainage. Other threats include human disturbance, egg predation by feral pets, and recreational use of habitat.

OTHER INFORMATION: Piping plover recovery plan drafted 1986; Recovery Team appointed. Listed as endangered by the States of Michigan, Wisconsin, Minnesota, and Iowa, and as threatened by New York, South Dakota, and Nebraska. Survey work is underway and is planned to continue. Conservation efforts have included: research into habitat requirements, predation, and feeding ecology; habitat protection and acquisition; law enforcement; and educational efforts.

REFERENCES: Burleigh 1944; Gandy and Turcotte 1970; Haig and Oring 1985; Haig 1986, 1987; USFWS 1986d.

C .LAHOM .
ARKANSAS
LOUISIANA
Limit of Study Area
Brown Pelican
(Pelecanus occidentalis)
nesting sites
Cooke
Grayson
Fannin
Lamar
Red River
Bowie
Delta
Franklin
Titus
Morris
Cass
Denton
Collin
Hunt
Hopkins
Camp
Rockwall
Rains
Wood
Upshur
Marion
Tarrant
Dallas
Kaufman
Van Zandt
Gregg
Harrison
Johnson
Ellis
Smith
Henderson
Rusk
Panola
Hill
Navarro
Bosque
Anderson
Cherokee
Shelby
Freestone
Nacogdoches
San Augustine
McLennon
Limestone
Houston
Angelina
Sabine
Falls
Leon
Trinity
Jasper
Newton
Bell
Robertson
Madison
Polk
Tyler
Milan
Brazos
Grimes
Walker
San Jacinto
Williamson
Burleson
Montgomery
Hardin
Lee
Liberty
Orange
Travis
Washington
Bastrop
Waller
Jefferson
Austin
Harris
Chambers
Comal
Caldwell
Fayette
Colorado
Fort Bend
Galveston
Quadalupe
Bexar
Gonzales
Lavaca
Wharton
Brazoria
Wilson
Dewitt
Jackson
Matagorda
Karnes
Victoria
Goliad
Calhoun
Refugio
Cedar Lakes
Dressing Point Island
Sundown Island
Steamboat Island
Second Chain of Islands
Limit of Study Area
Pelican Island
0 Miles 75
0 Km 125
May 1, 1991

BROWN PELICAN

Legend

Counties where brown pelicans have been seen migrating, nesting

Counties where brown pelicans have nested since 1970

Drawing by John Yunck

BROWN PELICAN.....Pelecanus occidentalis

STATUS: Endangered (35 FR 16047, October 13, 1970; 35 FR 18320, December 2, 1970) without critical habitat

SPECIES DESCRIPTION: A large, dark gray-brown water bird (wingspan 6.5 feet) with a long, pouched, grayish bill. Adults have a white head and neck, are brownish black on their breast and belly, and are silver grayish on most of their upper parts.

HABITAT: Sea coasts and coastal islands.

DISTRIBUTION: Coastal waters of North and South America.

Historic: Southeastern states from South Carolina to Florida and west to Texas. Another subspecies is found in California. In Texas, this species is found primarily along the coast.

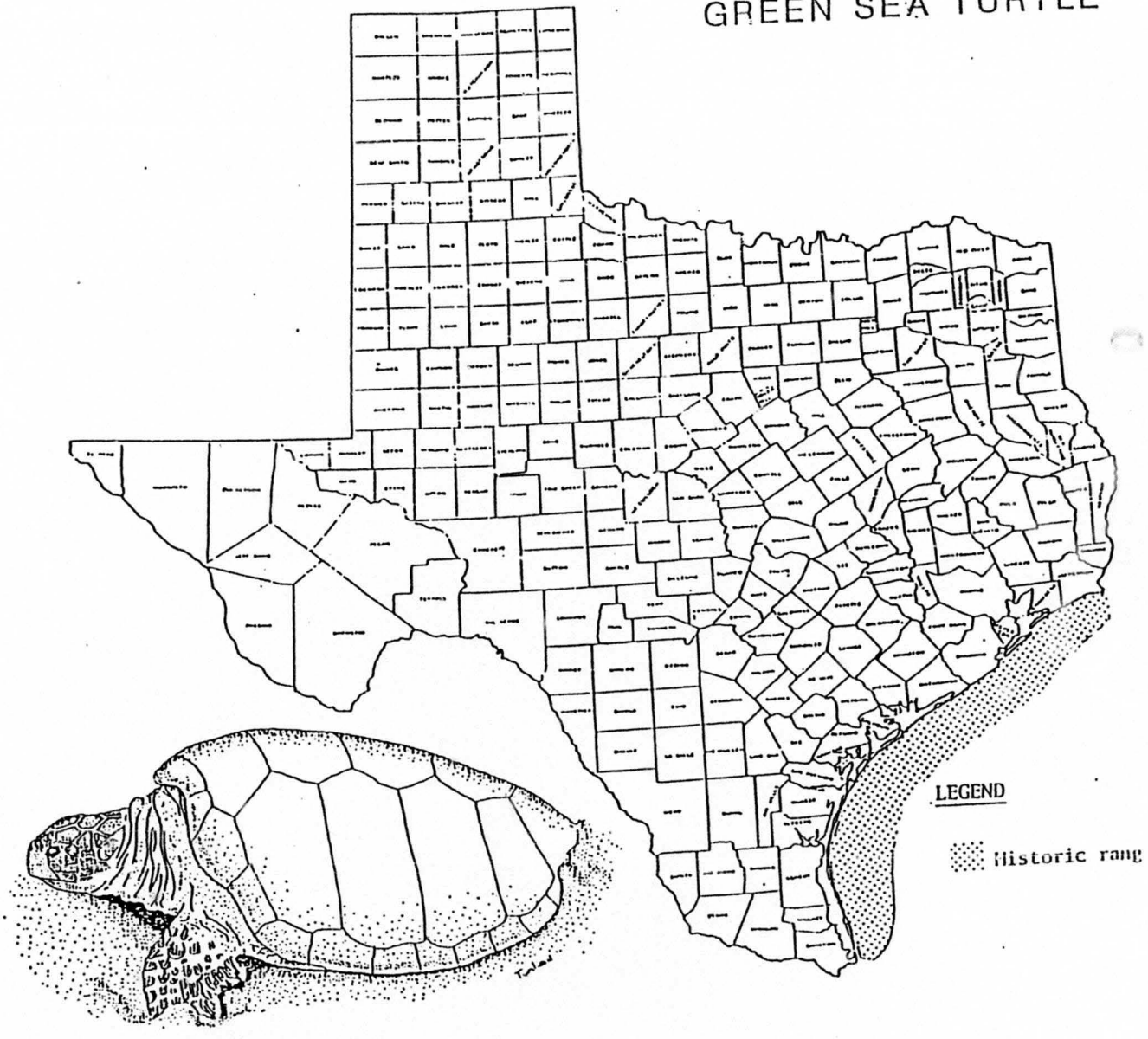
Present: Southeastern states from South Carolina to Florida and west to Texas. In Texas, this species is reduced to a small resident flock along the coast, nesting on only one island (Pelican Island in Corpus Christi Bay). Migrating flocks from the Mexican Gulf Coast frequently enter Texas waters in late summer.

REASONS FOR DECLINE: Pesticides, human disturbance, and loss of habitat due to commercial and residential development.

OTHER INFORMATION: Recovery Plan approved 1979. Protected by the State of Texas. Recovery is progressing well throughout the Southeast and in California as a result of reduced contaminant levels. Breeding numbers in Texas had increased to over 300 pairs in 1986.

REFERENCES: Oberholser 1974, USFWS 1979, Blankenship 1986.

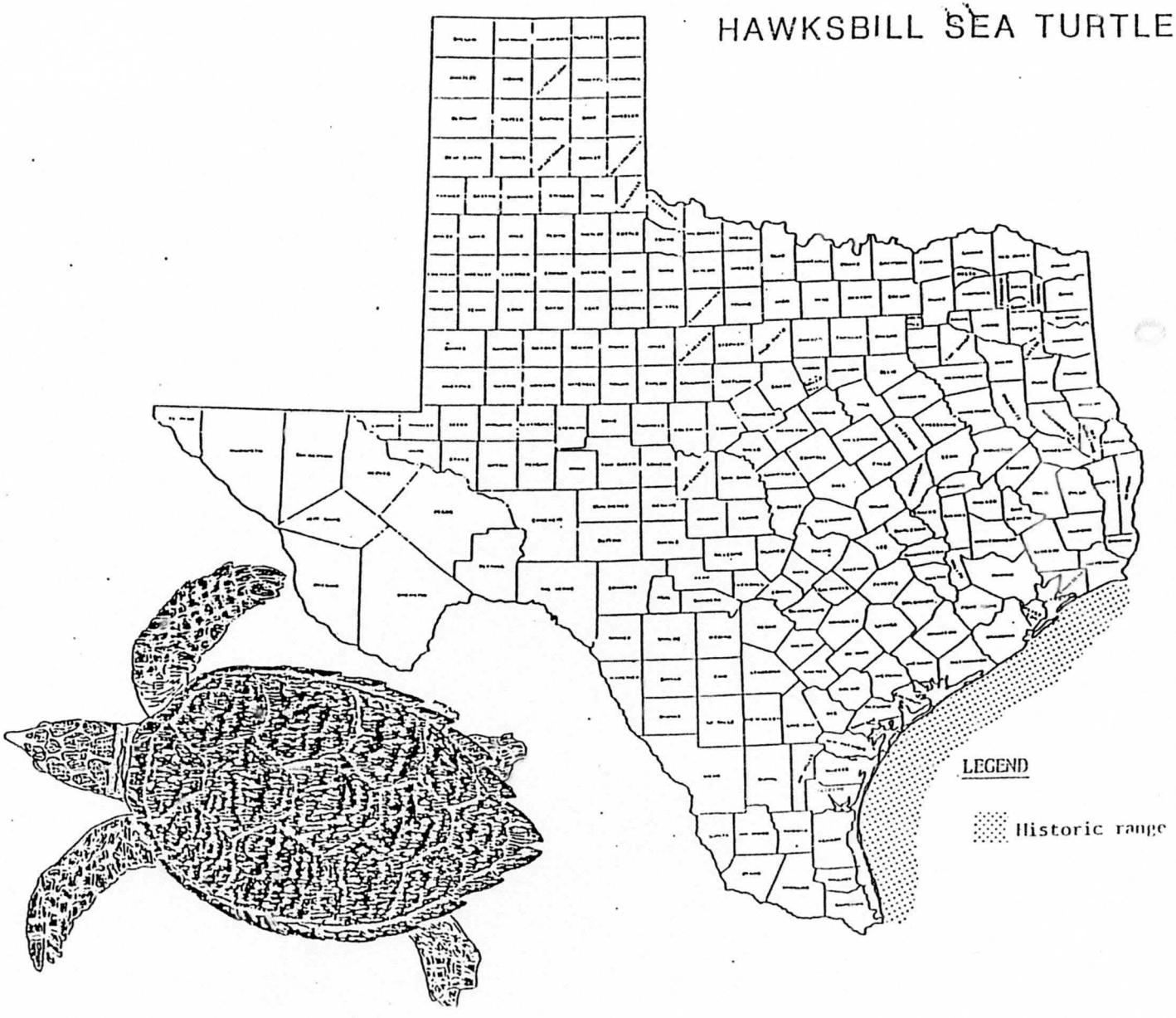
GREEN SEA TURTLE



GREEN SEA TURTLE.....Chelonia mydas

STATUS:	Endangered (43 FR 32808; July 28, 1978) without critical habitat in Florida waters and the Pacific Coast of Mexico including the Gulf of California. Threatened elsewhere.
SPECIES DESCRIPTION:	Adults can grow to a carapace (top shell) length of 4 feet, and range from 250 to 450 pounds. The adult carapace is smooth, lacks a keel (without a center ridge), and is light to dark brown with dark mottling. Juveniles are omnivorous, and adults eat sea grasses and algae.
HABITAT:	Generally found in shallow waters (except when migrating) inside reefs, bays, estuaries and inlets, especially in sea grass beds. Open beaches with a sloping platform and minimal disturbance are required for nesting. Hatchlings are often found in floating masses of sea plants (e.g. sargassum).
DISTRIBUTION:	Found throughout the world predominantly in subtropical and tropical seas.
Historic:	The North American distribution is from Massachusetts to Mexico and from British Columbia to Mexico.
Present:	Occasionally occurs along the Texas Gulf Coast. Nesting in the continental United States is limited to Florida.
REASONS FOR DECLINE:	Overuse as a food source (fat was used for turtle soup), mortality from commercial fishing operations and dredging, and habitat (nesting) disturbance (i.e. beach development etc.).
OTHER INFORMATION:	Recovery Plan completed by the Recovery Team and approved by the National Marine Fisheries Service (NMFS) in 1984.
REFERENCES:	Conant 1975, Texas Parks and Wildlife Department 1978, NMFS 1984.

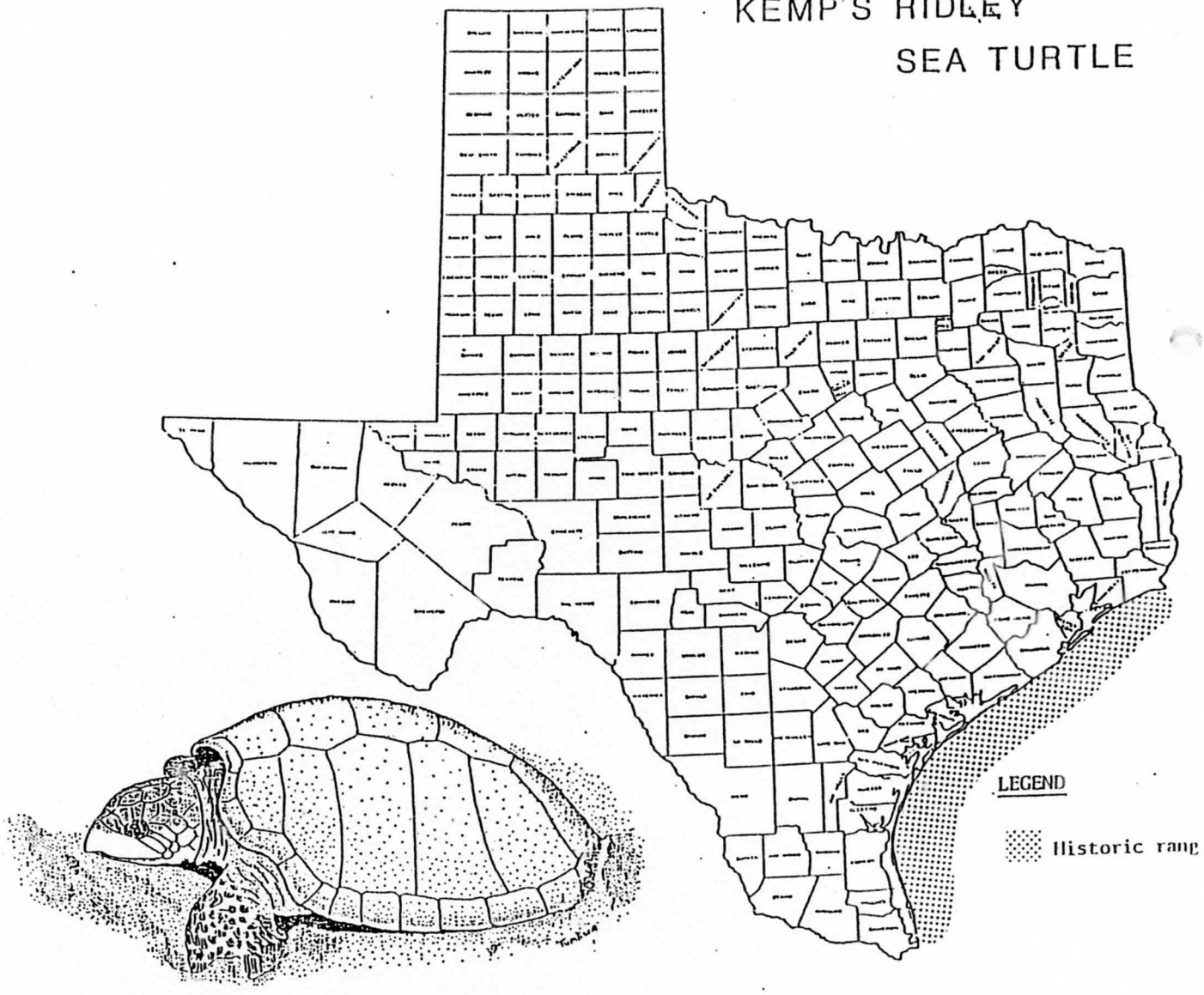
HAWKSBILL SEA TURTLE



HAWKSBILL SEA TURTLE.....*Eretmochelys imbricata*

STATUS:	Endangered (35 FR 8495; June 2, 1970) without critical habitat
SPECIES DESCRIPTION:	Hawksbills are one of the smaller species of sea turtles, reaching 95-165 lbs. The shell is elongated and oval, and the scutes (shell plates) overlap. The carapace (top shell) is brown and strikingly patterned with yellow, orange or reddish-brown. Hawksbills get their name from their beak, which is relatively long and pointed like a hawk's beak. Adults and juveniles are omnivorous feeding on reef dwelling arthropods (i.e. crabs, sponges, etc).
HABITAT:	Hawksbills are found in rock areas, reefs, shallow coastal areas, and lagoons of oceanic islands. Hatchlings are often found in floating masses of sea plants.
DISTRIBUTION:	Worldwide in subtropical and tropical waters. Continental U.S. nesting is limited to Florida.
Historic:	Atlantic coast to the Texas Gulf Coast.
Present:	Same as above. Rare visitor along the Texas coast.
REASONS FOR DECLINE:	Primary cause is harvesting eggs, or for the shell (hawksbills are the source of "tortoise shell").
OTHER INFORMATION:	Recovery Plan completed by the Sea Turtle Recovery Team and approved by the National Marine Fisheries Service in 1984. Protected by the State of Texas.
REFERENCES:	Conant 1975, Witzell 1983, NMFS 1984.

KEMP'S RIDLEY SEA TURTLE



KEMP'S RIDLEY SEA TURTLE.....*Lepidochelys kempii*

STATUS: Endangered (35 FR 18320; December 2, 1970) without critical habitat

SPECIES DESCRIPTION: Adults reach 80-100 lbs., making this species the smallest sea turtle. Kemp's ridley and the olive ridley are the only sea turtles with a nearly circular carapace (upper shell). Juveniles have a dark-charcoal colored carapace, but as they age this color changes to a olive-green or grey. The lower shell is a creamy white. Juveniles are omnivorous, but adults predominately eat crabs.

HABITAT: Shallow coastal and estuarine water primarily where crabs are found.

DISTRIBUTION: Principally in the Gulf of Mexico, with juveniles extending into the North Atlantic Ocean.

Historic: Gulf of Mexico. The major nesting beach is in Mexico, but individuals have occasionally nested on the south coast of Texas.

Present: The entire nesting population is effectively limited to the Playa de Rancho Nuevo, in the State of Tamaulipas, Mexico. Solitary females occasionally nest on Padre Island National Seashore and on other locations in the western Gulf of Mexico.

REASONS FOR DECLINE: Over harvesting of eggs (100% in the 1950's and 1960's) and of adults for food (and skins), and mortality from incidental capture by shrimp trawlers and other fishing operations.

OTHER INFORMATION: Current adult population is estimated at less than 2,000. Currently, the major source of mortality is shrimp trawl fisheries in the Gulf of Mexico and south Atlantic and associated bays and estuaries. Recovery Plan completed in 1984 by the Sea Turtle Recovery Team and approved by the National Marine Fisheries Service. A joint U.S.-Mexican protection program is underway, which includes protection and incubation of eggs, an experimental hatchling "headstart" program (captive rearing for six months to a year), and attempts to establish a new nesting colony at Padre Island National Seashore, Texas. Protected by the State of Texas.

REFERENCES: Brown 1950, Conant 1975, NMFS 1984.

KEMP'S RIDLEY SEA TURTLE.....*Lepidochelys kempii*

STATUS: Endangered (35 FR 18320; December 2, 1970) without critical habitat

SPECIES DESCRIPTION: Adults reach 80-100 lbs., making this species the smallest sea turtle. Kemp's ridley and the olive ridley are the only sea turtles with a nearly circular carapace (upper shell). Juveniles have a dark-charcoal colored carapace, but as they age this color changes to a olive-green or grey. The lower shell is a creamy white. Juveniles are omnivorous, but adults predominately eat crabs.

HABITAT: Shallow coastal and estuarine water primarily where crabs are found.

DISTRIBUTION: Principally in the Gulf of Mexico, with juveniles extending into the North Atlantic Ocean.

Historic: Gulf of Mexico. The major nesting beach is in Mexico, but individuals have occasionally nested on the south coast of Texas.

Present: The entire nesting population is effectively limited to the Playa de Rancho Nuevo, in the State of Tamaulipas, Mexico. Solitary females occasionally nest on Padre Island National Seashore and on other locations in the western Gulf of Mexico.

REASONS FOR DECLINE: Over harvesting of eggs (100% in the 1950's and 1960's) and of adults for food (and skins), and mortality from incidental capture by shrimp trawlers and other fishing operations.

OTHER INFORMATION: Current adult population is estimated at less than 2,000. Currently, the major source of mortality is shrimp trawl fisheries in the Gulf of Mexico and south Atlantic and associated bays and estuaries. Recovery Plan completed in 1984 by the Sea Turtle Recovery Team and approved by the National Marine Fisheries Service. A joint U.S.-Mexican protection program is underway, which includes protection and incubation of eggs, an experimental hatchling "headstart" program (captive rearing for six months to a year), and attempts to establish a new nesting colony at Padre Island National Seashore, Texas. Protected by the State of Texas.

REFERENCES: Brown 1950, Conant 1975, NMFS 1984.

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HABITAT: Shallow coastal and estuarine water primarily where crabs are found.

DISTRIBUTION: Principally in the Gulf of Mexico, with juveniles extending into the North Atlantic Ocean.

Historic: Gulf of Mexico. The major nesting beach is in Mexico, but individuals have occasionally nested on the south coast of Texas.

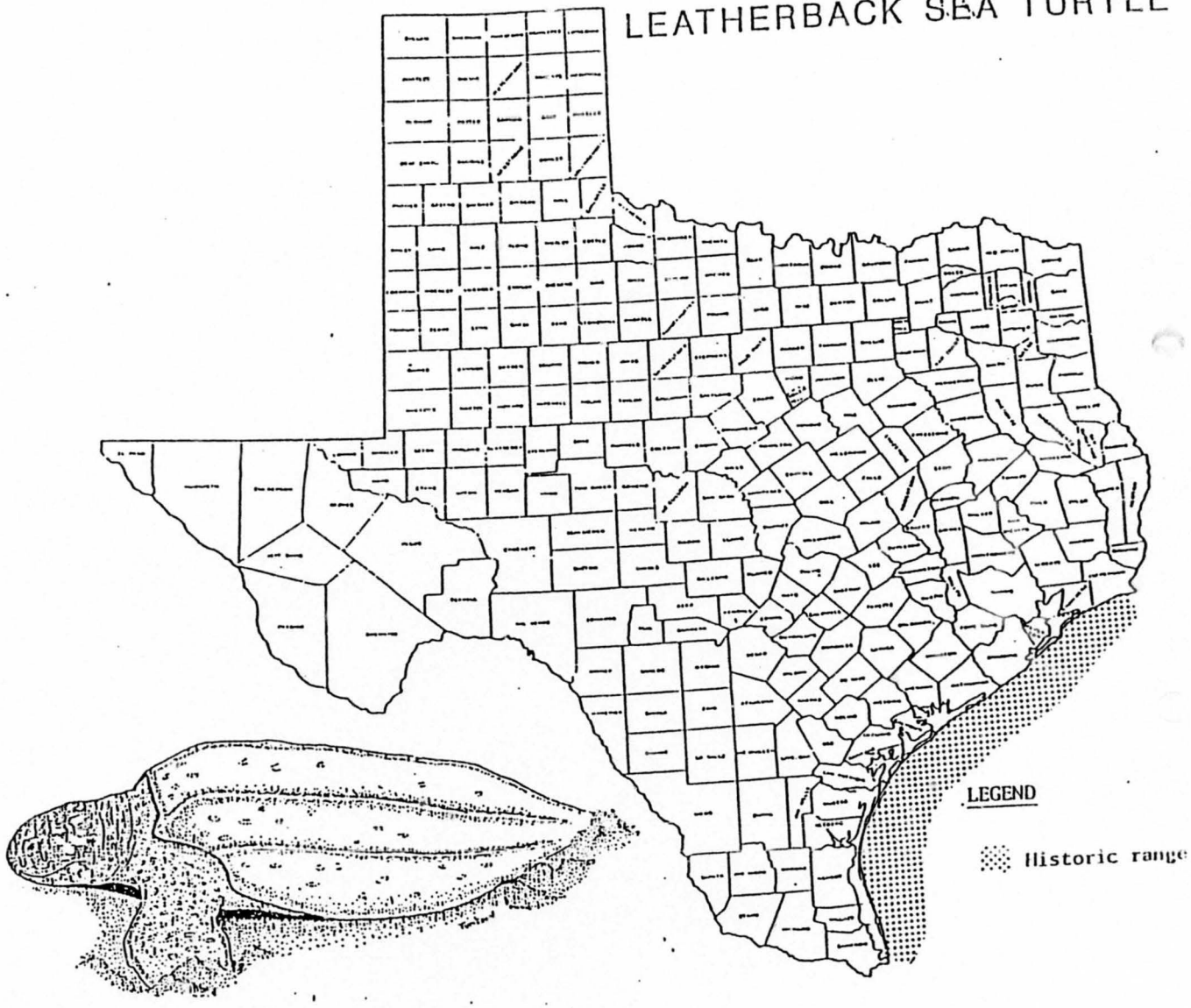
Present: The entire nesting population is effectively limited to the Playa de Rancho Nuevo, in the State of Tamaulipas, Mexico. Solitary females occasionally nest on Padre Island National Seashore and on other locations in the western Gulf of Mexico.

REASONS FOR DECLINE: Over harvesting of eggs (100% in the 1950's and 1960's) and of adults for food (and skins), and mortality from incidental capture by shrimp trawlers and other fishing operations.

OTHER INFORMATION: Current adult population is estimated at less than 2,000. Currently, the major source of mortality is shrimp trawl fisheries in the Gulf of Mexico and south Atlantic and associated bays and estuaries. Recovery Plan completed in 1984 by the Sea Turtle Recovery Team and approved by the National Marine Fisheries Service. A joint U.S.-Mexican protection program is underway, which includes protection and incubation of eggs, an experimental hatchling "headstart" program (captive rearing for six months to a year), and attempts to establish a new nesting colony at Padre Island National Seashore, Texas. Protected by the State of Texas.

REFERENCES: Brown 1950, Conant 1975, NMFS 1984.

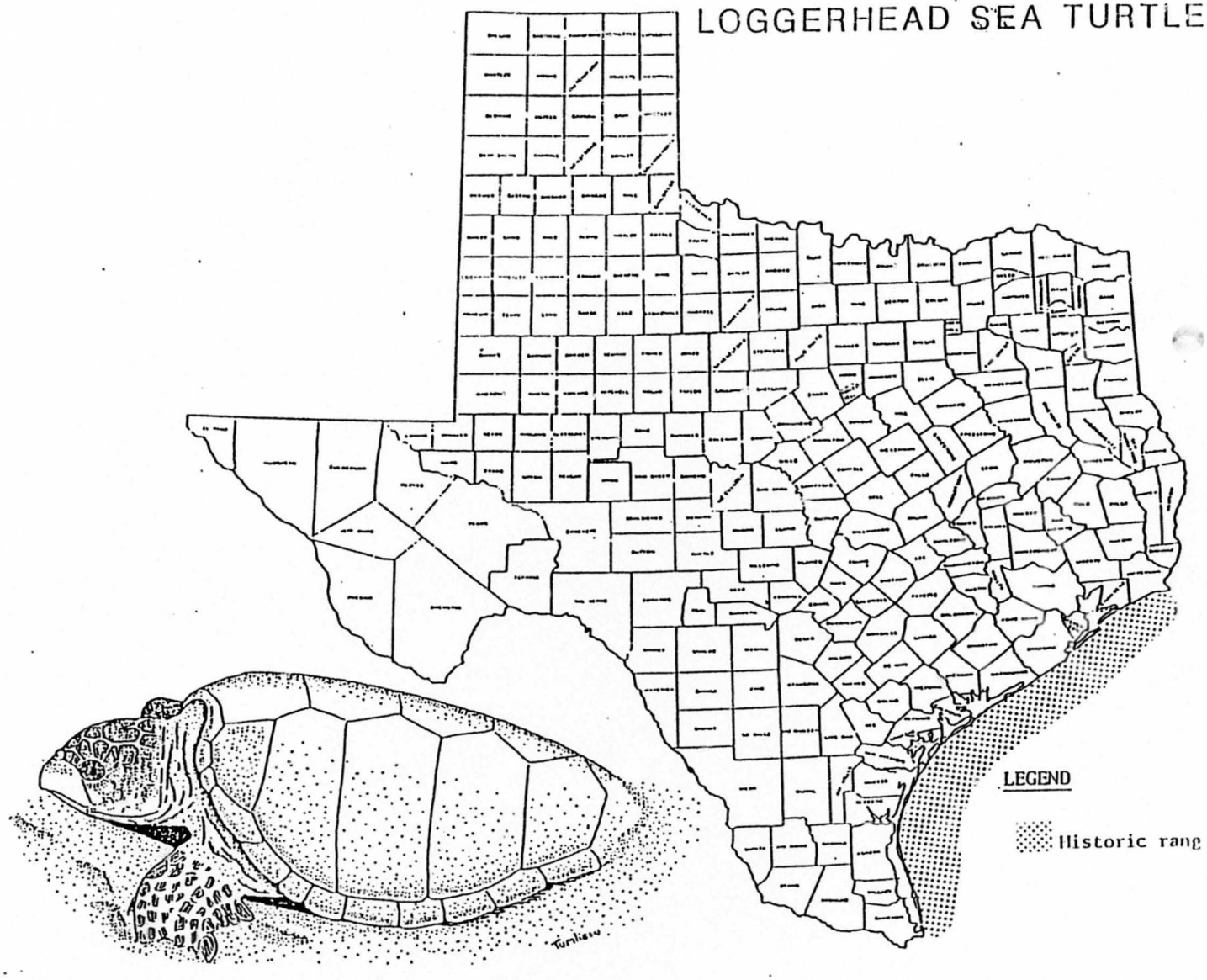
LEATHERBACK SEA TURTLE



LEATHERBACK SEA TURTLE.....*Dermochelys coriacea*

STATUS:	Endangered (35 FR 8495; June 2, 1970) without critical habitat
SPECIES DESCRIPTION:	Leatherbacks are the largest of all living turtles, reaching 650-1200 lbs. This turtle has lost the bony shell and scutes (shell plates) and is covered with smooth, mottled brown or mottled slaty-black to dark bluish-black skin with 7 longitudinal dorsal ridges. Juveniles are omnivorous and adults subsist primarily on jellyfish and salps.
HABITAT:	Leatherbacks are the most pelagic (open sea) of the sea turtles. They nest on beaches where there is a deepwater approach.
DISTRIBUTION:	Cold-temperate, tropical, and semi-tropical Atlantic and Pacific Oceans, including the Gulf of Mexico. Nesting in the U.S. is restricted to the Florida Coast.
Historic:	Texas Gulf coast, Atlantic and Pacific Oceans.
Present:	A rare visitor to the Texas Gulf coast.
REASONS FOR DECLINE:	Primarily the result of overuse of eggs by humans and destruction of nesting habitat.
OTHER INFORMATION:	Critical habitat has been established in the Virgin Islands. Recovery Plan written by the Sea Turtle Recovery Team in 1984 and approved by the National Marine Fisheries Service. Protected by the State of Texas.
REFERENCES:	Brown 1950, Conant 1975, NMFS 1984.

LOGGERHEAD SEA TURTLE



LOGGERHEAD SEA TURTLE.....*Caretta caretta*

STATUS:	Threatened (43 FR 32808; July 28, 1978) without critical habitat
SPECIES DESCRIPTION:	Loggerheads have characteristically large heads with powerful jaws. The carapace (upper shell) is brown to reddish-brown, flippers are brown to yellow, and the plastron (lower shell) is yellow. Adults weigh 170-500 lbs., and have a carapace up to 45 inches long. Both juveniles and adults are omnivorous.
HABITAT:	This species is widely distributed within its range. It is found hundreds of miles out to sea as well as in inshore areas such as bays, lagoons, salt marshes, ship channels, and mouths of large rivers. Hatchlings are often found in floating masses of sea weed.
DISTRIBUTION:	Found in temperate and subtropical waters worldwide.
Historic:	Texas Gulf Coast, Atlantic and Pacific Oceans.
Present:	Rarely nests on the Texas Gulf Coast. There is one authenticated nesting record on South Padre Island in 1979.
REASONS FOR DECLINE:	Loss of nesting beaches due to human habitation and recreational use, previously active fishing operations and presently incidental catch and mortality by fishing gear (e.g. shrimp trawls) targeting other species, predation on eggs by raccoons, coyotes, and other carnivores.
OTHER INFORMATION:	Recovery Plan completed in 1984 by the Sea Turtle Recovery Team and approved by the National Marine Fisheries Service.
REFERENCES:	Conant 1975, Texas Parks and Wildlife Department 1978, NMFS 1984.

REFERENCE 7

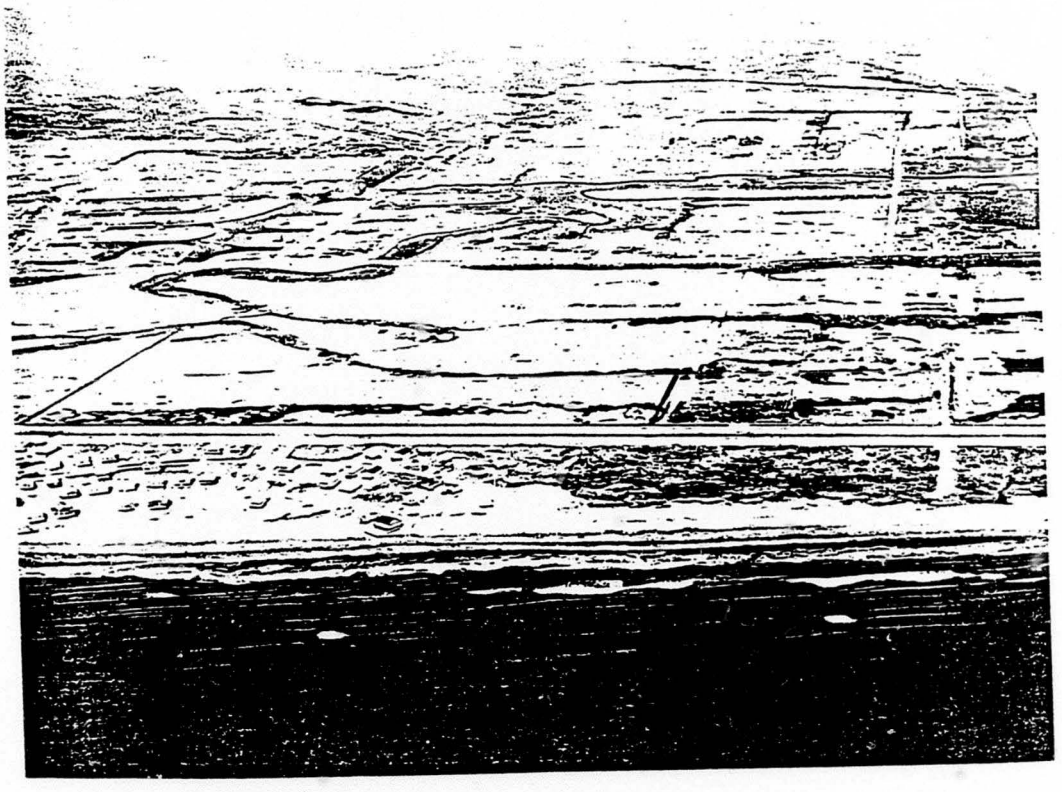
U.S. DEPT. OF AGRICULTURE,
SOIL CONSERVATION SERVICE SOIL SURVEY
OF GALVESTON COUNTY, TEXAS
FEBRUARY 1988

United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
Texas Agricultural
Experiment Station and
Texas State Soil and Water
Conservation Board

Soil Survey of Galveston County, Texas



Ha—Harris clay. This is a nearly level, very poorly drained, saline, clayey soil that has a clayey subsoil. It is in the coastal marshes. The slopes average about 0.1 percent. The mapped areas are irregular in shape and range from 10 acres to about 300 acres.

Typically, this soil has a surface layer that is very dark gray clay about 13 inches thick. It is neutral and moderately saline to a depth of 6 inches, and the lower part is moderately alkaline and strongly saline. The upper part of the subsoil, to a depth of 38 inches, is dark gray clay. The lower part to a depth of 60 inches is gray clay. This soil is strongly saline and moderately alkaline throughout the subsoil.

Included with this soil in mapping are small areas of Follet, Francitas, Placedo, Tatlum, Tracosa, and Veston soils. Follet, Francitas, Tatlum, Tracosa, and Veston soils are in slightly higher positions on the landscape than Harris soil, Tracosa soils are in slightly lower positions, and Placedo soils are in similar positions. The included soils make up less than 10 percent of the map unit.

This soil is very slowly permeable. The surface runoff is very slow. This soil is occasionally flooded by runoff from the uplands, unusually high spring tides, and storm tides. The high water table is at or near the surface during most of the winter.

This Harris soil is mainly used as rangeland and as habitat for wildlife. It is not suited to crop production or pastureland because of salinity and wetness. Flooding also is a hazard. This area of Harris soil is used extensively by many wetland wildlife game species.

This soil is capable of producing high yields of marsh range grasses when properly managed. Plant vigor can be maintained by proper stocking and by using a grazing rotation system. Prescribed burning also can be effectively used to help maintain plant vigor. Proper location of freshwater facilities and bedding areas for cattle also helps achieve proper grazing.

For most urban uses, the main limitations are wetness, salinity, clayey texture, and low strength. Flooding is a hazard.

This Harris soil is in capability subclass VIIw. It is in the Salt Marsh range site.

ImA—Ijam clay, 0 to 2 percent slopes. This is a nearly level to gently sloping, poorly drained, saline, clayey soil that has a clayey subsoil. It is in the coastal marshes. This soil formed in materials dredged from bays and canals. The slopes average about 1 percent. The mapped areas are mostly long and narrow and range from 10 acres to several hundred acres.

Typically, this soil has a surface layer that is calcareous, moderately alkaline, dark grayish brown clay about 10 inches thick. The upper part of the underlying material, to a depth of 35 inches, is calcareous, moderately alkaline, dark gray clay. The middle part, to a depth of 56 inches, is moderately alkaline, gray clay that has a few strata of sand. The lower part to a depth of 61 inches is neutral, bluish gray sand that has a few strata of sandy clay loam. This soil is moderately saline throughout.

Included with this soil in mapping are Sievers soils. Also included are small oyster shell beds and small areas that are similar to Ijam soil. These included soils are more yellow than Ijam soil or are noncalcareous. The included soils make up less than 25 percent of the map unit.

This soil is very slowly permeable. The surface runoff is very slow. This soil is rarely flooded by storm tides. The high water table is within 1.5 feet of the surface during most of the winter. Areas where dredged material has just been added can remain boggy for several years. Although the soil is generally moderately saline, the salinity is dependent on the original salinity of the dredged material and the length of time that the dredged material has been laid down.

This Ijam soil is used mainly as habitat for wildlife and as rangeland. This soil is not suited to crop production or pasture because of salinity.

This soil will produce high yields of marsh range grasses. In areas where dredged material has just been added, the plant community may not become stable for many years. Plant vigor can be maintained by proper stocking and by using a grazing rotation system. Prescribed burning also can be effectively used to maintain plant vigor. This Ijam soil is in pastures in the higher positions in the marsh. These areas are dryer than nearby soils and are used extensively by cattle as bedding areas and as a refuge during abnormally high tides. Therefore, the plants in these areas generally are overgrazed while the plants in the lower positions in the marsh are lightly grazed. Management of these areas is difficult.

For most urban uses, the main limitations are wetness, salinity, and high shrink-swell potential of the soil. Flooding is a hazard.

This Ijam soil is in capability subclass VIIw. It is in the Salty Prairie range site.

ImB—Ijam clay, 2 to 8 percent slopes. This is a gently sloping to strongly sloping, poorly drained, saline, clayey soil that has a clayey subsoil. It is in the coastal marshes. This soil formed in material dredged from the bays and canals. The slopes average about 3 percent. The mapped areas are mainly long and narrow and range from 10 acres to a few hundred acres.

Typically, this soil has a surface layer that is calcareous, dark grayish brown clay about 12 inches thick. The upper part of the underlying material, to a depth of about 45 inches, is calcareous, dark gray clay. The lower part to a depth of about 60 inches is gray clay. This soil is moderately saline, moderately alkaline throughout.

Included with this soil in mapping are the Sievers soils. Also included are small oyster shell beds and small

upper part of the underlying material, to a depth of about 35 inches, is neutral, light brownish gray fine sand. The lower part to a depth of 60 inches is moderately alkaline, light gray fine sand. This soil is nonsaline throughout.

Urban land consists of soils that have been altered or covered by buildings or other urban structures making mapping impractical. Typically, these structures are single and multiple unit dwellings, garages, sidewalks, driveways, streets, shopping centers, office buildings, wharves, warehouses, railroad yards, and parking lots.

Included in mapping are areas of Galveston, Karankawa, and Nass soils. Also included are some areas of soils that are similar to Mustang soil that have loamy and clayey layers in the underlying material. Also some small landfills and excavated areas are included in mapping. Most of this map unit has had an average of 2 feet of sandy dredged material added to the original surface layer in the last 80 years.

The soils in this complex are rapidly permeable above the high water table. The surface runoff is very slow. The high water table is within 1 foot of the surface during most of the year. These soils are occasionally flooded by storm tides. They are nonsaline most of the year except during prolonged dry periods. During these dry periods, the surface layer becomes slightly saline because of the salt spray. The salt is readily leached from the soil by rain. This soil is also susceptible to wind erosion if it is left unprotected after being disturbed.

For most urban uses, the main limitation is wetness. The susceptibility to flooding by storm tides, wind damage by hurricanes, and the susceptibility to wind erosion if the soil is left unprotected for long periods are severe hazards. Because of the proximity of these soils to the beaches of the Gulf of Mexico, they are often used as sites for weekend and summer cottages and for other related urban uses.

The soils in this complex have not been assigned to a capability subclass or to a range site.

Na—Narta fine sandy loam. This is a nearly level, somewhat poorly drained, moderately saline, loamy soil that has a clayey subsoil. It is on the uplands that border the coastal marsh. The slopes average about 0.3 percent. The mapped areas are irregular in shape and range from 5 acres to about 1,000 acres.

Typically, this soil has a surface layer that is moderately saline, mildly alkaline, dark gray fine sandy loam about 9 inches thick. The upper part of the subsoil, to a depth of 14 inches, is very dark gray clay. The middle part, to a depth of 38 inches, is gray clay. The lower part to a depth of 60 inches is light gray clay. This soil is moderately saline and moderately alkaline throughout the subsoil.

Included with this soil in mapping are small areas of Bernard, Edna, Francitas, and Placedo soils. Bernard and Edna soils are in slightly higher positions on the landscape than Narta soil. Francitas soils are in similar positions. Placedo soils are in slightly lower positions. The included soils make up less than 20 percent of the map unit.

This soil is very slowly permeable. The surface runoff is very slow. This soil is rarely flooded by heavy rains and storm tides. The high water table is within 1 foot of the surface during most of the winter.

This Narta soil is used as rangeland and as habitat for wildlife. This soil is not suited to crop production or to pastureland because of salinity.

This soil produces high yields of marsh range grasses. Plant vigor can be maintained by proper stocking and by using a grazing rotation system. Prescribed burning can be effectively used to maintain plant vigor. This Narta soil is in pasture in the higher positions near the marsh. These areas are dryer than nearby soils and are used extensively by cattle as bedding areas and as a refuge during abnormally high tides. Therefore, the plants in these areas generally are overgrazed while the plants in the lower positions in the marsh are lightly grazed. Management of these areas is difficult.

For most urban uses, the main limitations are wetness, high shrink-swell potential, and salinity. The susceptibility to flooding by storm tides is a hazard.

This Narta soil is in capability subclass VIs. It is in the Salty Prairie range site.

Ns—Nass very fine sandy loam. This is a nearly level, very poorly drained, slightly saline to strongly saline, sandy soil. It is in the enclosed depressional coastal areas that parallel the coastline. The surface is concave. The slopes average about 0.3 percent. The mapped areas are circular to elongated and range from 10 acres to about a hundred acres.

Typically, this soil has a surface layer that is slightly saline, mildly alkaline, dark gray very fine sandy loam about 27 inches thick. The upper part of the underlying material, to a depth of 44 inches, is moderately saline, gray loamy very fine sand. The middle part, to a depth of 57 inches, is strongly saline, dark grayish brown very fine sand. The lower part of the underlying material to a depth of 65 inches is strongly saline, gray very fine sand. Reaction is moderately alkaline throughout the underlying material.

Included with this soil in mapping are small areas of Mustang and Karankawa soils. Mustang soils are in higher positions on the landscape than Nass soil. Karankawa soils are in lower positions. Also included is a soil that is similar to Nass soil that is loamy throughout. The included soils make up less than 20 percent of the map unit.

This soil is rapidly permeable above the high water table. The surface runoff is very slow, or the soil is ponded. Most of the time, the high water table is near the surface or up to 2 feet of water stands on the surface. This soil is occasionally flooded by storm tides

Pits is not suitable for farming. Some of the abandoned areas can be reclaimed and used as habitat for wildlife or for water storage.

Pits has not been assigned to a capability subclass or to a range site.

Pd—Placedo clay. This is a nearly level, very poorly drained, saline, clayey soil that has a clayey subsoil. It is in the coastal marshes. The slopes average about 0.1 percent. The mapped areas are irregular in shape and range from 10 acres to several hundred acres.

Typically, this soil has a surface layer that is 28 inches thick. It is dark gray clay in the upper part and grades to gray clay in the lower part. The upper part of the underlying material, to a depth of 36 inches, is light gray clay. The lower part to a depth of 60 inches is light gray sandy clay. This soil is strongly saline and moderately alkaline throughout.

Included with this soil in mapping are small areas of Follet, Francitas, Harris, Tatlum, Tracosa, and Veston soils. Francitas soils are in slightly higher positions on the landscape than Placedo soil; Follet, Tatlum, Tracosa, and Veston soils are in slightly lower positions; and Harris soils are in similar positions. The included soils make up less than 15 percent of the map unit.

This soil is very slowly permeable. The surface runoff is very slow. This soil is frequently flooded by heavy rains, unusually high spring tides, and storm tides. The high water table is at or near the surface most of the year.

This soil is mainly used as rangeland and as habitat for wildlife. It is not suited to crop production or pastureland because of salinity and flooding. This soil is used extensively by many of the wetland wildlife game species.

This soil is capable of producing high yields of marsh range grasses when properly managed. Plant vigor can be maintained by proper stocking and by using a grazing rotation system. Prescribed burning also can be effectively used to maintain plant vigor.

For most urban uses, the main limitations are wetness, salinity, clayey texture, and low strength. Flooding is a hazard.

This Placedo soil is in capability subclass VIIw. It is in the Salt Marsh range site.

Sa—Sabine loamy fine sand. This is a gently undulating, somewhat excessively drained, nonsaline, sandy soil. It is in the coastal areas and is on the old, abandoned beach ridges. The slopes range from 0.2 to 1 percent. The mapped areas are generally oblong and range from 10 acres to several hundred acres.

Typically, this soil has a surface layer that is slightly acid, very dark grayish brown loamy fine sand about 14 inches thick. The upper part of the underlying material, to a depth of 30 inches, is slightly acid, brown fine sand. The middle part, to a depth of 60 inches, is neutral, light brownish gray loamy fine sand. The lower part to a depth of 75 inches is moderately alkaline, light gray fine sand. This soil is nonsaline throughout.

Included with this soil in mapping are small areas of Galveston, Mustang, and Nass soils. Galveston soil is in similar positions on the landscape as Sabine soil. Mustang and Nass soils are in lower positions. The included soils make up less than 10 percent of the map unit.

This soil is rapidly permeable above the high water table. The surface runoff is very slow. The high water table is at a depth of 2.5 to 4 feet. This soil is rarely flooded by storm tides and hurricanes. It is nonsaline most of the year except during prolonged dry periods. Without adequate rainfall, the surface layer becomes slightly saline because of salt spray. The salt is readily leached from the soil during rainy periods. This soil is also susceptible to wind erosion if it is left unprotected after being disturbed.

This Sabine soil is mainly used as rangeland or pastureland. A few areas are used for speciality crops. This soil is not suited to general cropland or pastureland because of plant exposure to salt spray and sandy texture.

This soil is suited to specific truck crops that can tolerate salt spray. Because of its low available water capacity, this soil is droughty. Incorporating crop residue in the surface layer improves the available water capacity and reduces soil loss by wind and water erosion.

This soil is suited to only certain pasture grasses that can withstand salt spray and the droughtiness of the soil. A grazing management system that includes fertilization increases forage yields and improves quality.

This soil produces high yields when properly managed. Plant vigor should be maintained by proper stocking and rotating grazing. Prescribed burning also can be effectively used to help maintain plant vigor. This Sabine soil is in pastures in the higher positions near the marsh. These areas are dryer than nearby soils and are used extensively by cattle as bedding areas and as a refuge during abnormally high tides. The plants in these areas generally are overgrazed while the plants in the lower positions in the marsh are lightly grazed. Management of these areas is difficult.

For most urban uses, the susceptibility to flooding by storm tides, wind damage by hurricanes, and the susceptibility to wind erosion when the soil is left unprotected for long periods are severe hazards. Because of the proximity of this soil to the beaches of the Gulf of Mexico, it is used as sites for weekend and summer cottages and for other related urban uses.

This Sabine soil is in capability subclass IIIs. It is in the Coastal Sand range site.

SeB—Sievers loam, 0 to 3 percent slopes. This is a nearly level to gently sloping, somewhat poorly drained, moderately saline, loamy soil that has a loamy subsoil. It

management system that includes fertilization increases forage yield and improves quality.

The potential range forage yields of the soils in this complex are medium. The overall production is lowered because of the depressional areas that are less productive and that produce forbs and grasses that are not very palatable for livestock.

For most urban uses, the main limitation is wetness.

The soils in this complex are in capability subclass IVw. Stowell soil is in the Loamy Prairie range site. Leton soil is in the Lowland range site.

Ta—Tatlum mucky clay loam. This is a nearly level, very poorly drained, saline, loamy soil. It is in the tidal marshes. The slope averages about 0.1 percent. The mapped areas are irregular in shape and range from 20 acres to a few hundred acres.

Typically, this soil has a surface layer that is gray mucky clay loam about 12 inches thick. The upper part of the underlying material, to a depth of 38 inches, is light gray mucky clay loam. The lower part to a depth of 60 inches is light gray stratified fine sandy loam. This soil is strongly saline and moderately alkaline throughout.

Included with this soil in mapping are small areas of Caplen, Follet, Mustang, Tracosa, and Veston soils. Caplen, Mustang and Veston soils are in higher positions on the landscape than Tatlum soil, and Follet and Tracosa soils are in similar positions. The included soils make up less than 20 percent of the map unit.

This soil is very slowly permeable. The surface runoff is very slow. The permanent high water table allows very little water movement through the soil. This soil remains saturated throughout the year. It is flooded with 2 to 12 inches of tidal water at some time during the day, and it is frequently flooded by spring tides, storm tides, and heavy rains.

This Tatlum soil is mainly used as habitat for wildlife. It is not suited to crop production or pastureland because of wetness, flooding, and salinity. This Tatlum soil is used extensively by nongame wetland wildlife and is an important part of the marine estuarine system.

This soil is capable of producing high yields of native range grasses, but it is generally not suited to livestock grazing because the soil can not support the weight of livestock.

For most urban uses, the main limitations are low strength, wetness, and salinity. Flooding is a hazard.

This Tatlum soil is in capability subclass VIIIw. It is in the Tidal Flat range site.

Tc—Tracosa clay, low. This is a nearly level, very poorly drained, saline, clayey soil that has a clayey subsoil. It is in broad, tidal marshes. This map unit is essentially barren. The slopes average about 0.1 percent. The mapped areas are irregular in shape and range from about 500 acres to 1,000 acres.

Typically, this soil is clay to a depth of about 60 inches that is dark gray in the upper part and gray in the lower part. It is moderately alkaline throughout.

Included with this soil in mapping are small areas of Follet, Placedo, and Tatlum soils. Follet and Tatlum soils are in similar positions on the landscape as Tracosa soil, and Placedo soils are in slightly higher positions. The included soils make up less than 10 percent of the map unit.

This soil is very slowly permeable. The surface runoff is very slow. This soil remains saturated throughout the year. It is covered daily with 2 to 12 inches of water during high tide and is frequently flooded by spring tides, heavy rains, and storm tides.

This soil is used as habitat for wildlife. It is not suited to crop production or pastureland because vegetation is scarce and because of wetness, flooding, and salinity. This area of Tracosa soil is used some by nongame wetland wildlife and is an important part of the marine estuarine system.

Although this soil is barren, it has the potential to produce native range grasses (fig. 11). There is some evidence of a plant community of salt-tolerant grasses growing on the soils in these areas in the past. Barren areas have no potential for livestock use.

For most urban uses, the main limitations are wetness, clayey texture, and salinity. Flooding is a hazard.

This Tracosa soil is in capability subclass VIIw. It has not been assigned to a range site; but, if areas of this soil become vegetated, management would be similar to that of the Tracosa mucky clay soil in the Tidal Flat range site.

Tm—Tracosa mucky clay. This is a nearly level, very poorly drained, saline, clayey soil that has a clayey subsoil. It is in tidal marshes. The slopes average about 0.1 percent. The mapped areas are irregular in shape and range from 20 acres to several hundred acres.

Typically, this soil has a surface layer that is dark gray mucky clay about 12 inches thick. The upper part of the underlying material, to a depth of about 18 inches, is dark gray clay. The middle part, to a depth of 45 inches, is gray clay. The lower part to a depth of 60 inches is light gray clay. This soil is strongly saline and moderately alkaline throughout.

Included with this soil in mapping are small areas of Follet, Karankawa, and Tatlum soils. These soils are in similar positions on the landscape as Tracosa soil. The included soils make up less than 20 percent of the map unit.

This soil is very slowly permeable. The surface runoff is very slow. This soil remains saturated throughout the year. It is flooded daily with 2 to 12 inches of water during high tide and is frequently flooded by spring tides, heavy rains, and storm tides.

This soil is used as habitat for wildlife. It is not suited to crop production or pastureland because of wetness,

REFERENCE 8

BUREAU OF ECONOMIC GEOLOGY,
GEOLOGIC ATLAS OF TEXAS,
HOUSTON, SHEET
SCALE: 1:250,000, 1982

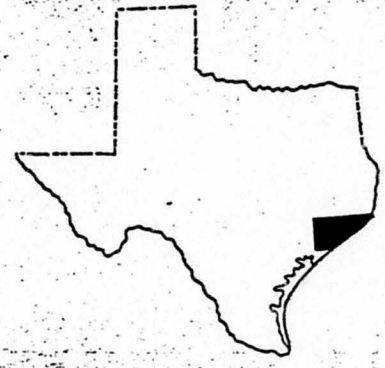
BUREAU OF ECONOMIC GEOLOGY
THE UNIVERSITY OF TEXAS AT AUSTIN
AUSTIN, TEXAS 78712

W. L. FISHER, *Director*

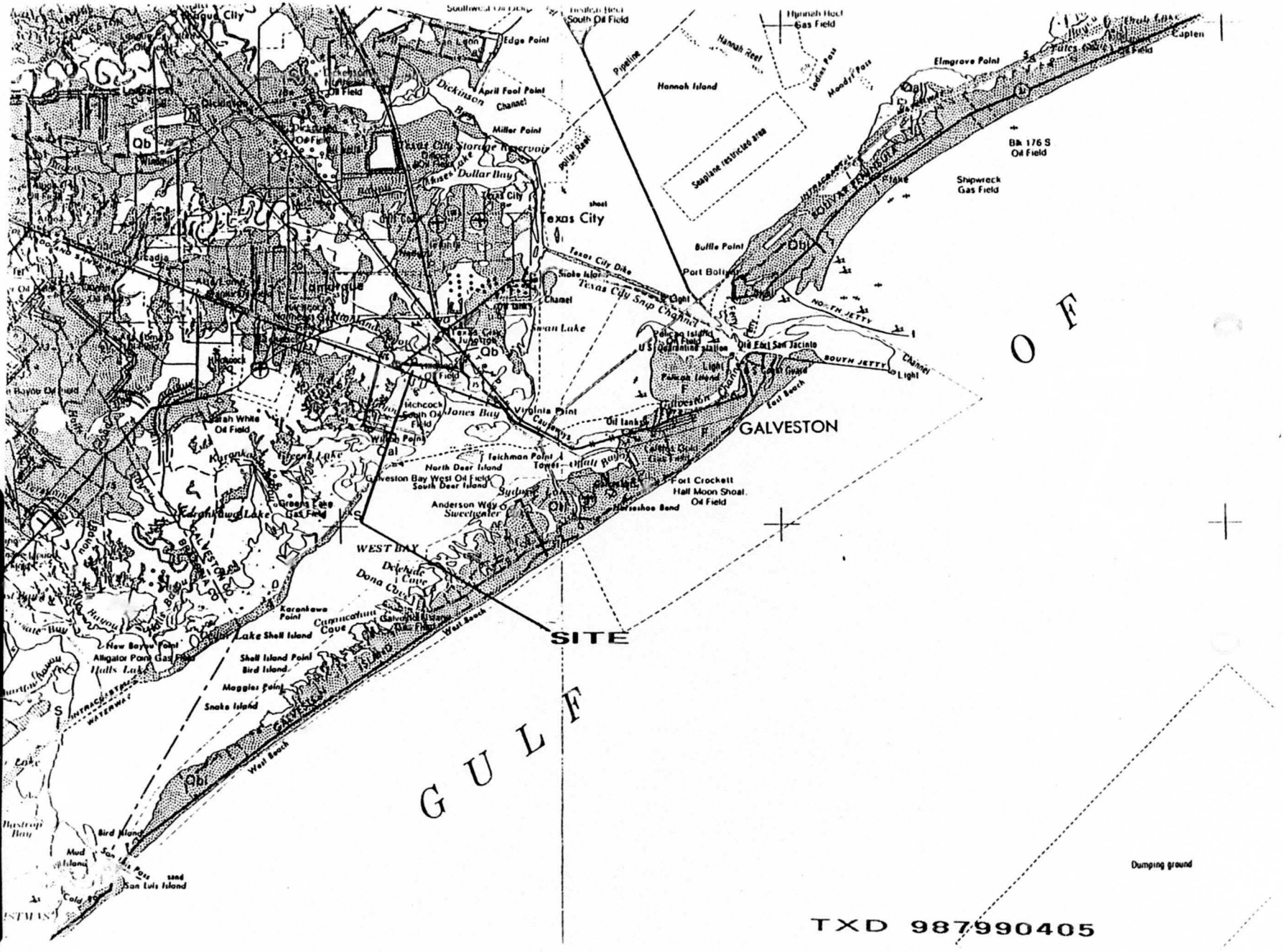
GEOLOGIC ATLAS OF TEXAS

Houston Sheet

Scale: 1:250,000



1982



Texas City
Dickinson
Dollar Bay
Texas City Storage Reservoir
Texas City Dike
Texas City Ship Channel
Swan Lake
Jones Bay
Virginia Point
Teichman Point
North Deer Island
Galveston Bay West Oil Field
South Deer Island
Anderson Way
Sweetwater
WEST BAY
Delahide Cove
Dona Cove
Karankawa Point
Shell Island
Shell Island Point
Bird Island
Maggies Point
Snake Island
Bird Island
Mud Island
San Luis Island
Hannah Island
Seaplane restricted area
Hannah Reef
Elmgrove Point
Bluffe Point
Port Bolivar
Old Fort San Jacinto
Pelican Island
Galveston
Fort Crockett
Half Moon Shoal Oil Field
Horseshoe Bend
Shipwreck Gas Field
Blk 176 S Oil Field
Capten
Dumping ground
GALVESTON
SITE
GULF OF
TXD 987990405

EXPLANATION

FS

Fill and spoil

Fill, F, material dredged for raising land surface above alluvium and barrier-island deposits and for creating land. Spoil, S, dredged material along waterways

Qal

Alluvium

Clay, silt, and sand, organic matter abundant locally; includes point-bar, natural levee, stream channel, backswamp, coastal marsh, mud-flat, and narrow beach deposits that are shown by line symbol

Qbi

Barrier-island deposits

Sand, silt, and clay; mostly sand, well-sorted, fine grained, abundant shells and shell fragments; interfingers with clay and silt in landward direction; includes beach ridge, spit, tidal channel, tidal delta, and sand dune deposits

Qd | Qd'

Deweyville Formation

Sand, silt, and clay, some gravel; includes point-bar, natural levee, stream channel, and backswamp deposits at a level only slightly above that of the present floodplain; sand coarser than that in alluvium; surface characterized by relict meanders of much larger radius of curvature than those of present streams, some scattered pimple mounds; thickness locally more than 50 feet. High-level Deweyville, Qdl, surfaces cut into the Beaumont Formation, and high-level Deweyville deposits along Trinity River are intermediate in position between the surface of the Beaumont and the level of most Deweyville deposits

Qbb | Qb | Qb

Beaumont Formation

Beaumont Formation, Qb, with barrier-island and beach deposits, Qbb, mapped separately. Beaumont Formation, Qb, mostly clay, silt, and sand; includes mainly stream channel, point-bar, natural levee, backswamp, and to a lesser extent coastal marsh and mud-flat deposits; concretions of calcium carbonate, iron oxide, and iron-manganese oxides in zone of weathering; surface almost featureless, characterized by relict river channels shown by meander patterns and pimple mounds on meanderbelt ridges, separated by areas of low, relatively smooth, featureless backswamp deposits without pimple mounds; thickness ± 100 feet. The stippled overprint (source shown in Index to Geologic Mapping) shows areas that are "Dominantly clay and mud of low permeability, high water-holding capacity, high compressibility, high to very high shrink-swell potential, poor drainage, level to depressed relief, low shear strength, and high plasticity; geologic units include interdistributary muds, abandoned channel-fill muds, and overbank fluvial muds." The nonstippled areas are "Dominantly clayey sand and silt of moderate permeability and drainage, low to moderate compressibility and shrink-swell potential, level relief with local mounds and ridges, and high shear strength; geologic units include meanderbelt, levee, crevasse splay, and distributary sands"

QUATERNARY

Pleistocene

Barrier-island and beach deposits, Qbb, mostly fine grained sand normally without shell material; surface slightly higher than that of surrounding deposits, characterized by numerous pimple mounds and rounded depressions; probably part of "Ingleside" barrier-island system; thickness less than 30 feet
Physical properties: "Dominantly sand, high to very high permeability, low water-holding capacity, low compressibility, low shrink-swell potential, good drainage, low ridge and depressed relief, high shear strength, and low plasticity. Geologic units include beach, foredunes, barrier-strandplain-chenier repetated flats, Pleistocene barrier and strandplain sands"

Ql

Lissie Formation

Upper part, clay, silt, sand, and very minor siliceous gravel of granule and small pebble size, gravel more abundant northwestward, locally calcareous, concretions of calcium carbonate, iron oxide, and iron-manganese oxides common in zone of weathering; fluviatile; surface fairly flat and featureless except for numerous rounded shallow depressions and pimple mounds. Lower part, clay, silt, sand, and minor amount of gravel; gravel slightly coarser than in upper part, noncalcareous, iron oxide concretions more abundant than in upper part; fluviatile; very gently rolling; thickness ± 200 feet

Qw

Willis Formation

Clay, silt, sand, and minor siliceous gravel of granule to pebble size including some petrified wood; sand coarser than in younger units. Deeply weathered and lateritic, indurated by clay and cemented by iron oxide locally, concretions of iron oxide numerous, noncalcareous; fluviatile; maximum thickness 75 feet

Miocene

$\mathcal{N}_T$

Tertiary rocks on Hockley salt dome

Sandstone, very fine grained, hard, abundant porcelaneous to opaline cement, poorly bedded, jointed, grayish white; possibly Catahoula Formation (Stenzel, 1946) (See Index of Geologic Mapping for reference.)

QUATERNARY

TERTIARY

CR

Outcrop of caprock reported on Damon Mound

Not found. Reportedly used for building stone (Hevier, 1925)

U
D

Fault

U, upthrown; D, downthrown side

10,000-meter Universal Transverse Mercator grid ticks, shown in blue

Partially funded by Texas Department of Water Resources

15'

29°00'

REFERENCE 9

U.S. DEPT OF COMMERCE
BUREAU OF THE CENSUS,
COUNTY AND CITY DATA BOOK, 1988

A Statistical Abstract Supplement

County and City Data Book

1988

States

Counties

Cities of 25,000 or More

Places of 2,500 or More

U.S. Department of Commerce

C. William Verity, Secretary
Donna C. Tuttle, Deputy Secretary
Robert Ortner, Under Secretary for Economic Affairs

BUREAU OF THE CENSUS
John G. Keane, Director

Table C. Cities — **Area and Population**

MSA/ CMSA code[1]	State and place code	City	Land area[2] 1985 (Sq. mi.)	Land area[2] 1980 (Sq. mi.)	Population 1986 Total persons	Population 1986 Rank	Population 1986 Per square mile	Population 1980	Net change, 1980-1986 Number	Net change, 1980-1986 Percent	Population characteristics, 1980 Percent— White	Black	American Indian, Eskimo, and Aleut	Asian and Pacific Islander	Hispanic[3]	[illegible]
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
		TEXAS—Con.														
—	48 1130	Del Rio	14.7	12.6	34 700	707	2 361	30 034	4 666	15.5	80.90	1.40	.15	.22	70.04	7.9
1922	48 1140	Denton	44.6	32.8	55 160	407	1 237	48 063	7 097	14.8	84.91	9.87	.34	.97	5.75	6.6
1922	48 1230	Duncanville	11.2	11.2	35 080	996	3 132	27 781	7 299	26.3	96.20	1.29	.28	1.14	3.25	4.6
2320	48 1340	El Paso	239.7	239.2	491 800	24	2 052	425 259	66 541	15.6	58.60	3.17	.29	.83	62.51	6.8
1922	48 1500	Fort Worth	258.5	240.2	429 550	30	1 662	385 164	44 386	11.5	68.92	22.78	.32	.61	12.64	11.6
3362	48 1570	Galveston	48.2	48.2	60 210	358	1 249	61 902	-1 692	-2.7	61.89	28.93	.26	1.38	17.75	12.1
1922	48 1580	Garland	56.1	55.7	176 510	91	3 146	138 857	37 653	27.1	89.69	5.33	.41	1.31	8.29	4.1
1922	48 1695	Grand Prairie	72.9	60.7	95 880	198	1 315	71 462	24 418	34.2	84.33	7.27	.59	1.03	14.04	5.7
1922	48 1800	Haltom City	12.1	12.0	33 440	742	2 764	29 014	4 426	15.3	94.84	.44	.42	.79	4.70	10.4
1240	48 1820	Harlingen	31.1	30.3	54 960	409	1 768	43 543	11 437	26.3	75.68	.92	.20	.23	68.44	11.6
3362	48 1975	Houston	572.7	556.4	1 728 910	4	3 019	1 595 138	133 772	8.4	61.33	27.61	.20	2.07	17.64	6.8
1922	48 2015	Hurst	9.9	.5	35 150	692	3 551	31 420	3 730	11.9	97.76	.55	.36	.44	2.35	4.9
1922	48 2060	Irving	67.4	67.3	128 530	132	1 907	109 943	18 587	16.9	93.23	1.50	.50	1.20	7.36	4.7
3810	48 2220	Killeen	22.1	21.8	59 560	362	2 695	46 296	13 264	28.7	64.52	23.14	.46	4.52	12.52	3.1
—	48 2235	Kingsville	12.6	11.1	26 600	848	2 270	28 608	-208	-.7	81.92	4.15	.22	1.56	53.13	7.4
4080	48 2400	Laredo	27.1	19.7	117 060	145	4 320	91 449	25 611	28.0	90.76	.10	.11	.08	93.03	8.6
4420	48 2530	Longview	52.2	41.4	73 870	275	1 415	62 762	11 108	17.7	78.77	18.97	.33	.51	2.29	10.6
4600	48 2565	Lubbock	106.3	90.6	186 400	81	1 754	173 873	12 527	7.2	80.85	8.16	.24	.87	18.55	7.8
—	48 2575	Lufkin	22.7	20.5	32 080	768	1 413	28 562	3 518	12.3	70.27	25.69	.09	.38	6.31	12.7
4680	48 2595	McAllen	30.7	28.2	83 300	236	2 713	66 281	17 019	25.7	89.37	.24	.07	.19	71.45	9.6
1922	48 2795	Mesquite	41.2	34.5	88 700	218	2 153	67 053	21 647	32.3	95.51	.58	.50	.78	5.43	4.5
5040	48 2810	Midland	47.2	34.2	98 060	186	2 078	70 525	27 535	39.0	80.96	9.98	.26	.35	15.66	7.8
—	48 2945	Nacogdoches	24.4	23.8	28 350	859	1 162	27 149	1 201	4.4	75.48	22.49	.13	.56	2.90	10.4
1922	48 3050	North Richland Hills	18.5	18.6	43 960	539	2 376	30 592	13 368	43.7	97.44	.51	.34	.45	2.95	5.2
5800	48 3080	Odessa	35.0	29.4	101 210	178	2 892	90 027	11 183	12.4	83.28	5.63	.41	.44	23.21	7.4
—	48 3195	Paris	22.3	21.9	26 210	906	1 175	25 498	712	2.8	79.18	19.48	.50	.30	.38	10.6
3362	48 3200	Pasadena	38.2	38.0	118 050	144	3 090	112 560	5 490	4.9	89.03	.84	.38	1.02	17.00	4.8
1922	48 3310	Plano	62.1	46.8	111 030	155	1 788	72 331	38 699	53.5	93.82	3.29	.27	1.17	3.48	2.7
0840	48 3335	Port Arthur	83.7	56.9	62 360	339	745	61 251	1 109	1.8	55.30	40.51	.13	2.22	6.30	13.6
1922	48 3520	Richardson	28.0	28.0	78 040	254	2 787	72 496	5 544	7.6	94.99	1.71	.22	2.02	2.49	3.9
7200	48 3740	San Angelo	43.1	37.9	86 280	227	2 001	73 240	13 020	17.8	83.32	4.51	.28	.58	23.08	12.4
7240	48 3745	San Antonio	304.5	262.7	914 350	9	3 003	785 940	128 410	16.3	78.64	7.34	.23	.65	53.88	9.6
7840	48 3920	Sherman	32.8	27.4	31 530	784	961	30 413	1 117	3.7	87.21	10.63	.67	.35	2.27	14.8
3810	48 4205	Temple	44.1	41.2	46 580	494	1 056	42 354	4 226	10.0	77.20	15.71	.16	.60	10.52	14.4
8360	48 4225	Texarkana	22.1	20.8	33 130	750	1 499	31 271	1 859	5.9	67.02	32.23	.14	.31	1.18	16.9
*—3362	48 4230	Texas City	62.7	62.7	42 250	568	674	41 201	1 049	2.5	71.50	22.58	.32	.89	12.29	6.1
8640	48 4350	Tyler	40.4	35.1	75 440	259	1 867	70 508	4 932	7.0	70.48	26.14	.16	.36	4.61	13.1
6750	48 4405	Victoria	28.7	19.1	56 640	395	1 907	50 695	5 945	11.7	78.20	7.90	.22	.31	33.77	8.7
8800	48 4415	Waco	75.8	74.1	105 220	168	1 388	101 261	3 959	3.9	71.99	21.77	.18	.37	11.10	14.2
9080	48 4605	Wichita Falls	49.5	49.2	99 940	183	2 019	94 201	5 739	6.1	82.78	11.09	.44	1.28	7.80	11.2
—	49 0000	UTAH	82 072.9	82 072.9	1 685 000	X	20	1 461 037	203 963	14.0	94.63	.63	1.32	1.03	4.13	7.3
7160	49 0075	Bountiful	10.1	9.7	34 510	713	3 417	32 877	1 633	5.0	98.35	.03	.28	.74	1.11	6.5
—	49 0520	Logan	10.5	9.9	28 880	845	2 750	26 844	2 036	7.6	94.75	.76	.49	2.18	1.67	6.6
7160	49 0640	Murray	9.6	9.4	23 730	943	2 472	25 750	-2 020	-7.8	96.80	.30	.46	.89	3.34	6.5
7160	49 0695	Ogden	26.7	26.1	67 490	309	2 528	64 407	3 083	4.8	89.27	2.58	.64	1.09	9.62	13.8
6520	49 0720	Orem	17.5	17.3	61 590	346	3 519	52 399	9 191	17.5	96.71	.04	.96	1.02	1.89	4.4
6520	49 0800	Provo	40.6	35.0	77 480	257	1 908	74 111	3 369	4.5	95.56	.14	1.24	1.48	2.91	5.9
7160	49 0870	Salt Lake City	100.5	75.2	158 440	104	1 577	163 034	-4 594	-2.8	89.76	1.55	1.30	2.04	7.55	14.7
7160	49 0875	Sandy City	20.9	20.2	67 430	310	3 228	52 210	15 220	29.2	97.18	.19	.28	1.03	2.71	2.1
7160	49 1075	West Jordan	21.4	17.2	44 440	526	2 077	27 325	17 115	62.6	94.84	.04	.80	.81	6.97	1.9
—	50 0000	VERMONT	9 273.0	9 273.0	541 000	X	58	511 456	29 544	5.8	98.08	.22	.19	.26	.86	11.6
1305	50 0460	Burlington	10.8	10.8	38 310	630	3 547	37 712	598	1.6	98.52	.58	.18	.38	.78	10.8
—	51 0000	VIRGINIA	39 703.5	39 703.5	5 787 000	X	146	5 346 797	440 203	8.2	79.11	18.86	.18	1.24	1.49	8.5
6840	51 0025	Alexandria	15.0	15.0	107 800	163	7 187	103 217	4 583	4.4	72.40	22.29	.26	2.80	3.92	6.2
—	51 0100	Blacksburg town	18.7	18.7	30 380	812	1 625	30 638	-258	-.8	94.21	2.52	.11	2.16	1.09	4.1
1540	51 0225	Charottesville	10.4	10.4	41 100	588	3 952	39 916	1 184	3.0	80.50	18.11	.07	.95	.94	11.4
5720	51 0242	Chesapeake	340.0	340.0	134 400	127	395	114 486	19 914	17.4	71.06	27.50	.22	.84	.93	7.1
1950	51 0370	Danville	17.2	17.2	44 700	521	2 599	45 642	-942	-2.1	69.77	29.74	.08	.29	.87	15.4
5720	51 0590	Hampton	51.3	51.3	126 000	134	2 456	122 617	3 383	2.8	63.89	34.31	.20	1.00	1.29	7.9
4640	51 0780	Lynchburg	48.6	48.6	68 000	308	1 371	66 743	1 257	1.9	75.44	23.68	.07	.53	.88	14.9
5720	51 0860	Newport News	85.3	85.3	161 700	101	2 478	144 903	16 797	11.6	66.21	31.46	.22	1.32	1.79	7.8

[1]MSA = Metropolitan statistical area. CMSA = Consolidated MSA. All areas defined as of October 18, 1986. [2]Dry land and land temporarily or partially covered by water. [3]Persons of Hispanic origin may be of any race.

REFERENCE 10

BUZZ SAWYER,
SANDAFER PETROLEUM COMPANY,
TELEPHONE CONSERVATION
DECEMBER 23, 1991

RECORD OF TELEPHONE CONVERSATION

From: Cynthia Shires **Date:** 12-23-91

Location: Fluor Daniel, Inc. **Time:** 11:00 am

Subject: Highway 6 Dump and Rig 28

To: Buzz Sawyer; Sandafer Leasing (409) 986-6532

P.O. Number: TXD980799405

Location: Galveston, Texas; Rig 28

Other Ref.:

- Contacted Mr. Buzz Sawyer; mechanic with Sandafer Leasing, company backing Rig 28 drilling.
- I asked Mr. Sawyer if he knew the owner, had a current mailing address, or phone number, he did not. He did say that they (Rig 28) dump some of their drilling material at that site. From what he understands they (Highway 6 Dump) dig & sell off sand and fill material. Mr. Sawyer said their landmen would be able to help me out on owner name, and other additional information. Alan Wilhite; PLM, will be back in the office on Thursday 12/26/91, and Mr. Sawyer stated that he would give my name and number to him and ask him to call.

- Before speaking with Mr. Sawyer, I talked to Chester at Rig 28 and he stated that he knows (Highway 6 Dump) are pumping water out of the large pit across their road. I asked him if he had

RECORD OF TELEPHONE CONVERSATION (Cont.)

From: Cynthia Shires **Date:** 12-23-91

Location: Fluor Daniel, Inc. **Time:** 11:00 am

Subject: Highway 6 Dump and Rig 28

To: Buzz Sawyer; Sandafer Leasing (409) 986-6532

P.O. Number: TXD98799405

Location: Galveston, Texas; Rig 28

Other Ref.:

seen dump material there and he said yes, but it looked like it was material that had been there a long time. Chester referred me to Mr. Sawyer.

12/31/91

- Mr. Sawyer was ill, and would return the call when better.

01/07/92

- Mr. Sawyer was not available.

0 2 4 5

REFERENCE 11

GALVESTON COUNTY HEALTH DISTRICT
FILE SEARCH
RE: VIOLATIONS CITED TO HIGHWAY 6 DUMP PROPERTY
OCTOBER 21, 1991

GALVESTON COUNTY HEALTH DISTRICT

MAINLAND OFFICE: P.O. BOX 939, LA MARQUE, TEXAS 77568 (409) 938-7221
GALVESTON OFFICE: P.O. BOX 838, GALVESTON, TEXAS 77553, (409) 763-8531

ANIMAL CONTROL
GALVESTON COUNTY COORDINATED COMMUNITY CLINICS
GALVESTON EMERGENCY MEDICAL SERVICE
MOSQUITO CONTROL
POLLUTION CONTROL

PUBLIC HEALTH LABORATORY
PUBLIC HEALTH NURSING
SANITATION
VENEREAL DISEASE CONTROL
VITAL STATISTICS

December 12, 1985

Keith Fiegel
Bayshore Resources
P. O. Box 2660
Galveston, Texas 77553

CM/RRR: P 674 635 070

NOTICE OF VIOLATION

December 12, 1985

Mr. Fiegel:

An onsite inspection conducted with Otis Redriguez at 10:30 A.M. on December 12, 1985 revealed the following violations of Texas Air Control Board (TACB) permit, rules and Galveston County Air Pollution Ordinance III.

Specifically: 1) Permit X-16400 special provision #9, plastic materials present in trench not just untreated wood.

2) TACB Rule 111.1 and Galveston County Air Pollution Ordinance III outdoor burning of debris which had been removed from the trench.

You are directed to comply with all applicable TACB Rules, and Regulations and submit within ten (10) days of the receipt of this notice steps you have taken to correct these violations and prevent their recurrance.

Sincerely,

Jackie W. Ickes
Air Control Division
Galveston County Health District

Approved:

E. R. Ibert, Ph.D.
Director Environmental Control
Galveston County Health District

JWI/pjg

GALVESTON COUNTY HEALTH DISTRICT

MAINLAND OFFICE: P.O. BOX 939, LA MARQUE, TEXAS 77568 (409) 938-7221
GALVESTON OFFICE: P.O. BOX 838, GALVESTON, TEXAS 77553, (409) 763-8531

ANIMAL CONTROL
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Sincerely,

Jackie W. Ickes
Air Control Division
Galveston County Health District

Approved:

E. R. Ibert, Ph.D.
Director Environmental Control
Galveston County Health District

JWI/pjg

GALVESTON COUNTY HEALTH DISTRICT

MAINLAND OFFICE: P.O. BOX 939, LA MARQUE, TEXAS 77568 (409) 938-7221
GALVESTON OFFICE: P.O. BOX 838, GALVESTON, TEXAS 77553, (409) 763-8531

ANIMAL CONTROL
GALVESTON COUNTY COORDINATED COMMUNITY CLINICS
GALVESTON EMERGENCY MEDICAL SERVICE
MOSQUITO CONTROL
POLLUTION CONTROL

PUBLIC HEALTH LABORATORY
PUBLIC HEALTH NURSING
SANITATION
VENEREAL DISEASE CONTROL
VITAL STATISTICS

December 12, 1985

Keith Fiegel
Bayshore Resources
P. O. Box 2660
Galveston, Texas 77553

CM/RRR: P 674 635 070

NOTICE OF VIOLATION

December 12, 1985

Mr. Fiegel:

An onsite inspection conducted with Otis Redriguez at 10:30 A.M. on December 12, 1985 revealed the following violations of Texas Air Control Board (TACB) permit, rules and Galveston County Air Pollution Ordinance III.

Specifically: 1) Permit X-16400 special provision #9, plastic materials present in trench not just untreated wood.

2) TACB Rule 111.1 and Galveston County Air Pollution Ordinance III outdoor burning of debris which had been removed from the trench.

You are directed to comply with all applicable TACB Rules, and Regulations and submit within ten (10) days of the receipt of this notice steps you have taken to correct these violations and prevent their recurrance.

Sincerely,

Jackie W. Ickes
Air Control Division
Galveston County Health District

Approved:

E. R. Ibert, Ph.D.
Director Environmental Control
Galveston County Health District

JWI/pjg

0
2
4
4

GALVESTON COUNTY HEALTH DISTRICT

CONFIRMED COMPLAINT

NATURE OF COMPLAINT:

X ODOR ____ FALLOUT X BURNING ____ DUST ____ OTHER

SOURCE NAME: Bayshore Resources ACCT. No. 916400D

ADDRESS: Hitchcock

CONTACT NAME AND PHONE NUMBER: Keith Fiegel

PROCESS/UNIT INVOLVED: trench burner

SPECIFIC PROBLEM: smoldering pit

WAS NOTIFICATION RECEIVED OF: ____ UPSET?

____ MAINTENANCE?

____ STARTUP?

____ SHUTDOWN?

ACTION TO MITIGATE OR MINIMIZE: AEC scheduled

COMPLAINT RECEIVED BY: K. Kilpatrick DATE: 10/18/85 TIME: 3pm

INVESTIGATED BY: same DATE: 10/18/85

COMMENTS:

REFERENCE COMPLAINT # 85-368

also 85-364 10/17/85

1/85

GALVESTON COUNTY HEALTH DISTRICT

CONFIRMED COMPLAINT

NATURE OF COMPLAINT:

_____ODOR _____FALLOUT __✓__BURNING _____DUST _____OTHER

SOURCE NAME: Baishore Resources ACCT. No. _____

ADDRESS: Hwy 6 - Hitchcock

CONTACT NAME AND PHONE NUMBER: Keith Fiegle

PROCESS/UNIT INVOLVED: trench burner

SPECIFIC PROBLEM: opens visible emissions

WAS NOTIFICATION RECEIVED OF: _____UPSET?

_____MAINTENANCE?

_____STARTUP?

_____SHUTDOWN?

ACTION TO MITIGATE OR MINIMIZE: comply w/ permit special provisions

COMPLAINT RECEIVED BY: D Gilliland DATE: 10/17/86 TIME: 11:05

INVESTIGATED BY: K. Kilpatrick DATE: _____

COMMENTS: directed operator to discontinue operation until material is dry and to comply with special provisions

REFERENCE COMPLAINT # 85-364

1/82

D-216

No. .....

COMPLAINT

THE STATE OF TEXAS

vs.

KEITH FEIGLE of Bayshore Resources
P. O. Box 2660 – [illegible]
Galveston, Texas 77553

Filed ..... day of ....., 19 .....

Justice of the Peace, Precinct No. .....

..... County, Texas

WITNESSES:

Jackie W. Ickes, Galveston County-
Air Control, 1205 Oak Street
La Marque, Texas 77568

Otis Rodriguez, Bayshore Resources
4501 Highway 6
Hitchcock, Texas 77563

SIGNED + FILED 27 DEC 85 IRIS; JUDGE LEONARD [signature]

[illegible]

D-216—COMPLAINT—Affidavit for Warrant of Arrest—(Short Form)—Class 2 ..... (Arts. [illegible] and [illegible], C. C. P.)

IN THE NAME AND BY AUTHORITY OF THE STATE OF TEXAS:

BEFORE ME, the undersigned authority, on this day personally appeared JACKIE W. ICKES of the Galveston County Health District - Air Pollution Control who, after being by me duly sworn, on oath deposes and says: That heretofore, to-wit, on or about the 12th day of DECEMBER, A. D., 19 85, and before the making and filing of this Complaint, in the County of GALVESTON and State of Texas, KEITH FEIGEL, of Bayshore Resources, P. O. Box 2660, Galveston, Texas 77553 did then and there unlawfully* Cause, suffer, allow, or permit outdoor burning of debris in violation of the Galveston County Health District - Air Pollution ordinance III adopted June 26, 1974.

against the peace and dignity of the State.

.....
Complainant

Sworn to and subscribed before me, this ..... day of ....., A. D., 19 .....

.....
Justice of the Peace.

Precinct No. ....., ... County, Texas

*Here describe specifically the offense committed.

REFERENCE 12

ROSEMARIE THEILER,
CITY OF HITCHCOCK-UTILITIES DEPT.
TELEPHONE CONVERSATION
JANUARY 14, 1992

RECORD OF TELEPHONE CONVERSATION

From: Cynthia Shires **Date:** 01-14-92

Location: Fluor Daniel, Inc. **Time:**

Subject: Highway 6 Dump Site

To: Rosemarie Theiler; City of Hitchcock **P.O. Number:** TXD987990405

Location: Utilities Dept. (409) 986-5591 **Other Ref.:**

Drinking water is 95% from Galveston and 5% deep water well.

Located ≈ 3 miles west of the site. The well is on Shannon St.

Date: 04/27/92 **Time: 8:30 am**

To: Richard Saucier; Director Utilities

The well draws from the Chico Aquifer and depth to bottom of well is 1100 feet.

Population of Hitchcock = 6,634

0 2 5 4

REFERENCE 13

DORINDA SULLIVAN,
TEXAS PARKS AND WILDLIFE
TELEPHONE CONVERSATION
APRIL 20, 1992

RECORD OF TELEPHONE CONVERSATION

From: Cynthia Shires **Date:** 04-20-92

Location: Fluor Daniel, Inc. **Time:** 2:15 pm

Subject: Endangered Species on site

To: Dorinda Sullivan; Info. System Mgr. **P.O. Number:** TXD987990405

Location: Texas Natural Heritage Program, Resource Protection Division, Texas Parks and Wildlife (512) 448-4311

Other Ref.:

Spoke with Ms. Dorinda Sullivan to get information concerning Endangered/Threatended Species near the Highway 6 Dump Site. Information for Preliminary Assessments will be given by phone only. The following may be located near the site:

1. Bird rookeries are around the wetland areas and in the Tiki Island area.
2. Diamondback Turtles are known to be in the West Bay area.
3. There are several Category II species (not listed but being considered for listing) believed to be in the area.

REFERENCE 14

MICHAEL CHRISMER,
COASTAL SUBSIDENCE DISTRICT
TELEPHONE CONVERSATION
APRIL 23, 1992

RECORD OF TELEPHONE CONVERSATION

From: Cynthia Shires **Date:** 04-23-92

Location: Fluor Daniel, Inc. **Time:** 4:30 pm

Subject: Information on Hitchcock well

To: Michael Chrismer; Field Inspector **P.O. Number:** TXD987990405

Location: Coastal Subsidence District (409) 486-1105

Other Ref.:

Mr. Chrismer provided information on the City of Hitchcock well on Shannon Street. The well is 1,030 feet in depth. The first screen is at 950 feet. It is believed to draw from the Chico Aquifer. From the map and information provided to the Subsidence District, it does not appear to extend to the Evangaline Aquifer.

REFERENCE 15

GALVESTON COUNTY
TAX ASSESSOR OFFICE,
COUNTY TAX RECORDS
ON HARRY J. FIEGEL, JR.,
GALVESTON, TEXAS
DECEMBER 17, 1991

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TXAS001ACAD IDs R212629          Year1991          Last Chg:  -  -    CUR/DL
CAD ID15:..0175-0005-0000-000/8          Unmail:Type   Reason   Date  -  -
Name. FIEGEL HARRY J JR                                     Delete Code:
Addr1 1912 RAMPART
Addr2                                                 0175-0005-0000-000
City. LEAGUE CITY                  State TX ZIP 77573-0000
Property Location..                                  Roll0-REAL PROPERTY
Desc. ABST 175 PAGE 7 J SPILLMAN SUR TR 5 38.100 ACRS
Desc.
Desc.
Curr Work:Name                 Date  -  -    Rmk
Mtg........        Abst..0175  Owners Int....              Chg Typ.   -
County..... 01-GALVESTON      School. 14-HITCHCOCK        City... 00-
Nav Dist...   -               Rd.Dist.   -                College. 5-MAINLAND
Water......  -                Drainage  -                 Mud.....   -
Comm.Pct... 2-CARMONA         Volume/Page..     /         Micro-Film 001-065-0478
Partial....  -NONE            Dis Vet   -000000000        Full Exempt ........ 00
Spec Use...   -                 Late Ag Pnlty.            Rnvstmt   -
Status..... 60-CERTIFIED      Status Date... 08-07-91     Roll Date..... 08-07-91
C/O Id...  70657-0000-00      C/O Id Date... 07-01-87     Total Acres.     38.100
Lnd SPTB 07-D4 REAL PROPERImp SPTB 07-D4 REAL PROPER      Frozen Taxes
C.A.D. L     58870 I          T    58870   Absd L    58870 I          T    58870
Hmstd. L           I          T            Spuse L          I          T
000      Type 'Y' 2nd Screen    Fcn        0175-0006-0000-000/6              1991
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This address would not accept the EPA Request to Access property letter. Not Sure if the address is correct or not.

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TXAS001ACAD IDs R231589          Year1991          Last Chg:  -  -    CUR
CAD ID15:..0621-0008-0000-000/2          Unmail:Type   Reason   Date  -  -
Name. FIEGEL HARRY J JR                                      Delete Code:
Addr1 816 LILLEY RD
Addr2                                                  0621-0008-0000-000
City. ALVIN                        State TX ZIP 77511-0000
Property Location..                                  Roll0-REAL PROPERTY
Desc. ABST 621 PAGE 2 I & GN RR SUR SEC 29 TR 8 4.973 ACRS
Desc.
Desc.
Curr Work:Name              Date  -  -    Rmk
Mtg........       Abst..0621  Owners Int....              Chg Typ.   -
County..... 01-GALVESTON     School. 17-SANTA FE         City... 00-
Nav Dist...   -              Rd.Dist.   -                College. 5-MAINLAND
Water......  -               Drainage 1-#1 S F AREA      Mud.....   -
Comm.Pct... 2-CARMONA        Volume/Page..     /         Micro-Film    -   -
Partial....  -NONE           Dis Vet   -000000000        Full Exempt ........ 00
Spec Use...   -                Late Ag Pnlty.            Rnvstmt   -
Status..... 60-CERTIFIED     Status Date... 08-07-91     Roll Date..... 08-07-91
C/O Id...        -    -      C/O Id Date...   -  -       Total Acres.      4.973
Lnd SPTB 23-L1 TANG. PERS.Imp SPTB 23-L1 TANG. PERS.     Frozen Taxes
C.A.D. L    24870 I          T    24870   Assd L    24870 I          T    24870
Hmstd. L          I          T            Spuse L          I          T
000     Type 'Y' 2nd Screen    Fcn        0621-0009-0000-000/0              1991
```

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TXAS001ACAD IDs R115680          Year1991          Last Chg:  -  -    CUR
CAD ID15:..7205-0000-0502-007/4          Unmail:Type   Reason   Date  -  -
Name. FIEGEL HARRY J JR                                     Delete Code:
Addr1 P O BOX 2660
Addr2                                                 7205-0000-0502-007
City. GALVESTON                  State TX ZIP 77553-0000
Property Location..                                 Roll0-REAL PROPERTY
Desc. ABST 121 PAGE 76 PT OF LOT 502 (502-7) TRIMBLE & LINDSEY SEC 1
Desc.
Desc.
Curr Work:Name              Date  -  -    Rmk
Mtg........       Abst..0121  Owners Int....              Chg Typ.   -
County..... 01-GALVESTON     School. 10-GALVESTON        City... 30-GALVESTON
Nav Dist... 01-NAV DIST 1    Rd.Dist. 01-SAN LUIS BR     College. 1-GALVESTON
Water......  -               Drainage  -                 Mud.....   -
Comm.Pct... 2-CARMONA        Volume/Page..     /         Micro-Film    -   -
Partial....  -NONE           Dis Vet   -000000000        Full Exempt ........ 00
Spec Use...   -                Late Ag Pnlty.            Rnvstmt   -
Status..... 60-CERTIFIED     Status Date... 08-07-91     Roll Date..... 08-07-91
C/O Id...        -    -      C/O Id Date...   -  -       Total Acres.      7.138
Lnd SPTB 07-D4 REAL PROPERImp SPTB 07-D4 REAL PROPER     Frozen Taxes
C.A.D. L     25970 I         T    25970   Assd L    25970 I          T    25970
Hmstd. L          I          T            Spuse L          I          T
000     Type 'Y' 2nd Screen    Fcn        7205-0000-0503-001/9              1991
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