

**Dixie Oil Processors
Friendswood, Texas
Region 6
TXD089793046**

Site Exposure Potential

The Dixie Oil Processors site is in an area of intensive oil and gas drilling 3 km north of Friendswood, Texas, 32 km southeast of Houston (Figure 1). The site consists of north and south parcels separated by Dixie Farm Road. The property adjacent to the site contains another potential source of hazardous waste, the Brio Refining Inc. Superfund site (I.T. Corp. 1987).

From 1969 to 1978, Intercoastal Chemical Company conducted copper recovery and hydrocarbon washing operations on the eight-hectare northern parcel. During this period, a series of surface impoundments was used to store cuprous wastewater prior to copper recovery and to treat wastewater prior to discharge. The impoundments have all been closed and filled in (I.T. Corp. 1987).

In 1978, Dixie Oil Processors began operations on the 3.4-hectare southern parcel. This portion of the site was used primarily for regeneration of cuprous chloride catalyst; hydrocarbon washing for oil recovery and to produce ethylbenzene, toluene, aromatic solvents, styrene pitch; and blending of chemical plant and refinery wastes. Although there has been no known disposal of material in pits on the southern parcel, an area of tarry material was found in 1984. Approximately 4,600 m³ of this material were removed from two areas and disposed of off-site. Activity on the site ceased in 1986 (I.T. Corp. 1987).

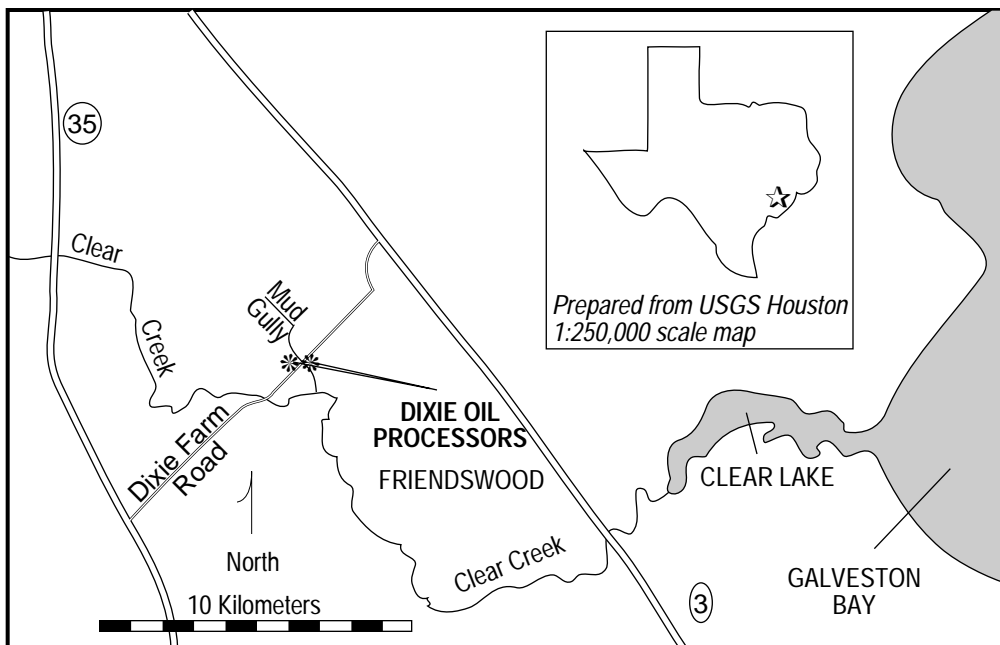


Figure 1. The Dixie Oil Processors site in Friendswood, Texas.

Surface water runoff from most of the site drains into a flood control ditch called Mud Gully. Mud Gully flows along the site boundary for 600 meters before discharging into Clear Creek. Clear Creek flows into Clear Lake, 19 km further downstream and, 8 km

after Clear Lake, the stream enters Galveston Bay and the Gulf of Mexico. A large portion of the site was originally within the 100-year floodplain. However, the floodplain has probably been altered by the extensive stream channelization for flood control that has been performed upstream of the site since 1981. The southern parcel is elevated approximately 1.8 meters above the surrounding natural grade, which likely places it above the floodplain. Groundwater is shallow and flows toward Mud Gully and will either run parallel to, or discharge into, the gully.

Contaminant migration pathways to NOAA trust resources are groundwater discharge and surface water runoff to Mud Gully and Clear Creek.

Site-Related Contamination

The contaminants of concern to NOAA are trace metals; high levels of copper and lead have been measured in on-site pits (Table 1). Copper concentrations in on-site runoff (3,500 µg/l) and groundwater (110,000 µg/l) exceeded both the acute (2.9 µg/l) and chronic (2.9 µg/l) AWQC for the protection of saltwater aquatic life. Chromium concentrations exceeding the chronic AWQC of 50 µg/l were also observed in runoff (EPA 1986). In addition, high levels of organic compounds have been measured in on-site groundwater. Elevated concentrations of copper and total PAHs have been documented in the stretch of Mud Gully adjacent to the site.

Table 1. Maximum concentrations of selected contaminants at the Dixie Oil Processors site and in Mud Gully (I.T. Corp. 1987); concentrations in soil and sediment in mg/kg and in water in µg/l.

Contaminant	Groundwater	On-site Runoff	Pit Soil	Mud Gully Sediment		
				Upstream	Adjacent	Downstream
ORGANIC COMPOUNDS						
<u>Volatiles</u>						
1,1,2 trichloroethane	4,910	N/A	N/A	N/A	N/A	N/A
ethylbenzene	480	ND	ND	ND	ND	ND
vinyl chloride	2,470	ND	ND	ND	ND	ND
<u>Semi-volatiles</u>						
hexachlorobenzene	N/A	N/A	674	N/A	N/A	N/A
total base/neutral organics	N/A	N/A	885	N/A	N/A	N/A
INORGANICS						
<u>Trace Metals</u>						
copper	110,000	3,500	98,900	370	1,586	167
chromium	ND	260	226	34	35	26
lead	N/A	N/A	8648	N/A	N/A	N/A
N/A: Not available ND: Not detected						

NOAA Trust Habitats and Species in Site Vicinity

Habitats of interest to NOAA include Clear Creek and Clear Lake. Clear Creek, 610 meters below the site, is the trust habitat of concern. The lower reaches of the Clear Creek watershed are tidally influenced, estuarine habitats, while the upper reaches are freshwater. The saline/freshwater interface is variable, depending upon the tidal stage and the season of the year. The maximum incursion of estuarine waters is 25 km upstream of Galveston Bay (ACOE 1982). Marine fauna similar to those in Galveston Bay dominate the estuarine portion of the creek, whereas freshwater species of inland rivers inhabit the non-saline

portions. Both marine and freshwater fauna can be found in an intermediate zone that is between 22 and 32 km above the stream mouth (ACOE 1982). The confluence of Mud Gully and Clear Creek 600 meters below the site is within this intermediate zone. Freshwater species are predominant in this zone; however, a few marine euryhaline species are also present (Table 2).

Table 2. Marine euryhaline species present near the Dixie Oil Processors site (ACOE 1982).

Species	Estuarine ¹	Intermediate Zone ²	Freshwater ³
INVERTEBRATES			
blue crab	x	x	
brown shrimp	x	x	
grass shrimp	x	x	
white shrimp	x	x	
FISH			
alligator gar	x	x	
gizzard shad	x	x	x
spotted gar	x	x	
1 Clear Lake/Lower Clear Creek			
2 Between 22 and 32 km upstream from the mouth (confluence of Mud Gully and Clear Creek is within this zone)			
3 Greater than 32 km upstream from the mouth (above the confluence of Mud Gully and Clear Creek)			

The Clear Lake estuary and lower Clear Creek form an important nursery area of the Galveston Bay system. This estuary has considerable value to both the commercial and sport fisheries of Texas and the Gulf of Mexico. Lower Clear Creek and Clear Lake have been classified by the Texas Parks and Wildlife Department as "nursery habitat-seasonal estuarine shallow water areas."

Response Category: Federal Enforcement Lead

Current Stage of Site Action: Record of Decision signed March 31, 1988

EPA Site Manager

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References

ACOE. 1982. Clear Creek, Texas - Flood Control, Preconstruction Authorization Planning Report, Appendix VI, Natural Resources. Galveston, Texas: U.S. Army Corps of Engineers.

EPA. 1986. Quality Criteria for Water. Washington, D.C.: Office of Water Regulations and Standards, Criteria and Standards Division. EPA 440/5-86-001.

I.T. Corporation. 1987. Summary Report for the Brio Refining, Inc. and Dixie Oil Processors Site, Friendswood, Texas-Final Report. Dallas: U.S. Environmental Protection Agency, Region 6.

I.T. Corporation. 1988. Endangerment Assessment for the Brio Refining, Inc. and Dixie Oil Processors Site, Friendswood, Texas-Final Report. Dallas: U.S. Environmental Protection Agency, Region 6.