
San Jacinto River Waste Pits

Channelview, Texas

EPA Facility ID: TXN000606611

Basin: Buffalo-San Jacinto

HUC: 12040104

Executive Summary

The San Jacinto River Waste Pits site is in Channelview, Harris County, Texas. The site is composed of former waste pits that were used to store sludge from a nearby paper mill. The waste pits are currently inundated by the San Jacinto River, which flows into Galveston Bay downstream of the site. Direct discharge to surface water and sediment transport are the primary pathways for the migration of contaminants from the site to NOAA trust resources. The tidal portions of the San Jacinto River and Galveston Bay provide rearing, spawning, and adult habitat for numerous NOAA trust resources including marine and estuarine fish, invertebrates, and sea turtles. The primary contaminants of concern to NOAA at the site are dioxins and furans.

Site Background

The San Jacinto River Waste Pits site is located just east of Houston in Channelview, Harris County, Texas (Figure 1 and 2). The site encompasses approximately 8-ha (20 acres) on the western bank of the San Jacinto River. The site is bounded to the north, west, and east by a tidally influenced reach of the San Jacinto River. The site is composed of three former waste pits. From 1964 to 1973, the pits were used to store waste sludge from a nearby paper mill. The waste pits are currently inundated by the San Jacinto River. There is no containment barrier to prevent contaminants from discharging from the impoundments directly into the San Jacinto River. During investigations conducted at the site, dioxins were detected at elevated concentrations in sediment, surface water, and aquatic biota samples.

Direct discharge to surface water and sediment transport are the primary pathways for the migration of contaminants from the site to NOAA trust resources. The site is inundated by the San Jacinto River, which connects to Galveston Bay approximately 19 km (12 mi) downstream of the site.

A site investigation was conducted by the Texas Commission on Environmental Quality in 2005. The site was placed on the United States Environmental Protection Agency's (USEPA's) National Priorities List in March 2008 (USEPA 2008). The USEPA is currently in the process of investigating parties who may be liable for the costs of cleaning up the site (USEPA 2008).

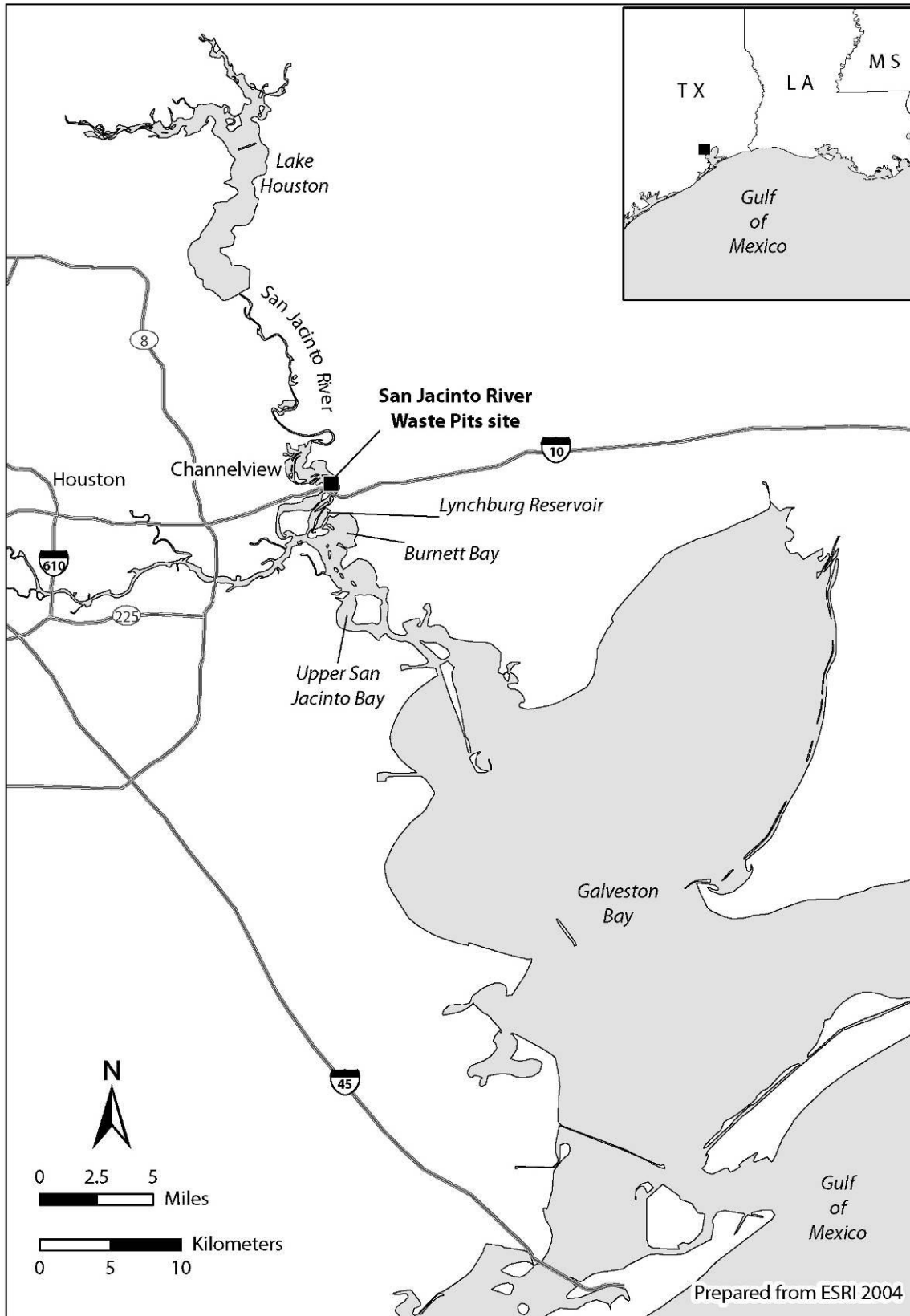


Figure 1. Location of the San Jacinto River Waste Pits site, Channelview, Texas.

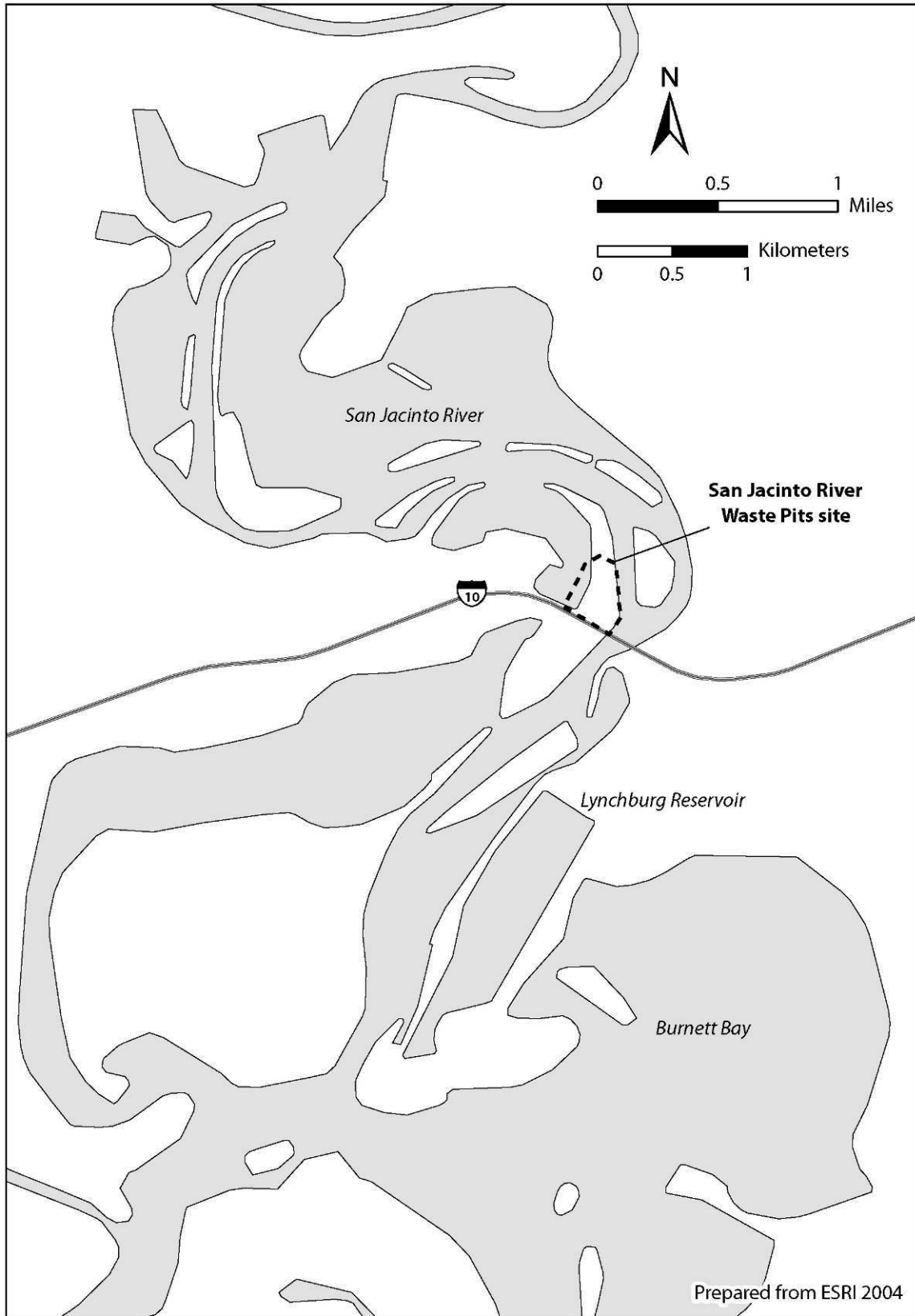


Figure 2. Detail of the San Jacinto River Waste Pits site.

NOAA Trust Resources

The habitats of primary concern to NOAA are the tidally influenced and estuarine portions of the San Jacinto River and Galveston Bay; the San Jacinto River is tidally influenced in the vicinity of the site. Approximately 28 percent of the freshwater entering Galveston Bay is from the San Jacinto River. Galveston Bay is generally shallow with depths ranging from approximately 2 to 4 m (6 to 12 ft). Salinity in the bay is influenced by freshwater input from rivers and ranges from approximately 2 to 20 parts per thousand. Substrates in the bay generally consist of mud, silt, and sand. Habitat types found in the estuary and bay include estuarine and freshwater marshes, mudflats, seagrass beds, oyster reefs, and open water (GBIC 2008).

The tidal portions of the San Jacinto River and Galveston Bay provide rearing, spawning, and adult habitat for numerous marine and estuarine fish and invertebrate species including blue crab, drum, flounder, oysters, spotted sea trout, and shrimp. Sea turtles, including the federally listed green, hawksbill, Kemp's Ridley, leatherback, and loggerhead turtles occasionally enter Galveston Bay to nest and feed (GBIC 2008).

Commercial and recreational fisheries occur in the vicinity of, and downstream of the San Jacinto River Waste Pits site. Table 1 identifies the species targeted in these fisheries.

A fish consumption advisory is in effect for the San Jacinto River below the U.S. Highway 90 bridge and Galveston Bay due to elevated levels of dioxins and PCBs in fish tissue (TDSHS 2008). The advisory recommends:

- people limit their consumption of blue crab, catfish, and spotted seatrout to no more than one meal per month
- no consumption of blue crab, catfish, and spotted seatrout by children and women who are pregnant, nursing, or who may become pregnant

Site-Related Contamination

During the most recent investigation of the site completed in 2005, sediment samples were collected at the San Jacinto River Waste Pits site and analyzed for dioxins (TCEQ 2007). Based on the results of this investigation, the primary contaminants of concern to NOAA are dioxins and furans.

Table 2 summarizes the maximum concentrations of contaminants of concern to NOAA detected during the site investigations and compares them to relevant screening guidelines. Site-specific or regionally specific screening guidelines are always included when available. The screening guidelines used for comparison to sediment results detected at this site are the freshwater upper effects threshold (UET) for bioassays as reported in Buchman (1999). Only maximum concentrations that exceeded relevant screening guidelines or for which no screening guidelines are currently available, are discussed below. When known, the general sampling locations are also provided (refer to Figure 1 and Figure 2).

Sediment

Dioxins and furans were detected in sediment samples collected from the San Jacinto River Waste Pit site. Each dioxin and furan is assigned a toxic equivalency factor (TEF) relative to 2,3,7,8 tetrachlorodibenzodioxin, which is the most toxic in this group of compounds. In

order to determine the toxicity of a mixture of dioxin and furan compounds, the measured concentration of the individual dioxin and furan is multiplied by its assigned TEF. The results are summed to produce a toxic equivalent value (TEQ). The maximum TEQ at the site was detected in a sediment sample collected from the middle of the site. The TEQ at this sample location exceeded the UET by three orders of magnitude (Table 2). No screening guidelines are currently available for the individual dioxins and furans detected during the site investigations (Table 2).

Table 1. NOAA trust resources found in the estuarine portion of the San Jacinto River and Galveston Bay (Nelson 1992; GBIC 2008).

Species		Habitat Use			Fisheries	
		Spawning Area	Nursery Area	Adult Habitat	Comm. Fishery	Rec. Fishery
Common Name	Scientific Name					
MARINE/ESTUARINE FISH						
Atlantic croaker	<i>Micropogonias undulates</i>	♦	♦	♦	♦	♦
Atlantic menhaden	<i>Brevoortia tyrannus</i>	♦	♦			
Bay anchovy	<i>Anchoa mitchilli</i>	♦	♦	♦		
Bay squid	<i>Lolliguncula brevis</i>	♦	♦	♦	♦	
Black drum	<i>Pogonias cromis</i>		♦	♦	♦	♦
Gizzard shad	<i>Dorosoma cepedianum</i>			♦		
Hardhead catfish	<i>Arius felis</i>	♦	♦	♦		
Red drum	<i>Sciaenops ocellatus</i>	♦	♦	♦		♦
Sand seatrout	<i>Cynoscion arenarius</i>	♦	♦	♦		♦
Sheepshead	<i>Archosargus probatocephalus</i>	♦	♦	♦	♦	♦
Silversides	<i>Menidia species</i>		♦	♦		
Southern flounder	<i>Paralichthys lethostigma</i>		♦	♦	♦	♦
Spot	<i>Leiostomus xanthurus</i>		♦	♦	♦	
Spotted seatrout	<i>Cynoscion nebulosus</i>	♦	♦	♦		♦
Striped mullet	<i>Mugil cephalus</i>		♦	♦	♦	♦
INVERTEBRATES						
Blue crab	<i>Callinectes sapidus</i>		♦	♦	♦	♦
Brown shrimp	<i>Farfantepenaeus aztecus</i>		♦	♦	♦	♦
Eastern oyster	<i>Crassostrea virginica</i>	♦	♦	♦	♦	♦
Grass shrimp	<i>Palaemonetes pugio</i>	♦	♦	♦		
Gulf stone crab	<i>Menippe adina</i>	♦	♦	♦	♦	♦
Hard clam	<i>Mercenaria species</i>	♦	♦	♦		
White shrimp	<i>Litopenaeus setiferus</i>		♦	♦	♦	♦
SEA TURTLES						
Green sea turtle	<i>Chelonia mydas</i>		♦	♦		
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>		♦	♦		
Kemp's Ridleys sea turtle	<i>Lepidochelys kempii</i>		♦	♦		
Leatherback sea turtle	<i>Dermochelys coriacea</i>		♦	♦		
Loggerhead sea turtle	<i>Caretta caretta</i>		♦	♦		

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Table 2. Maximum concentrations of contaminants of concern to NOAA at the San Jacinto River Waste Pits site (TCEQ 2007). Contaminant values in bold exceed screening guidelines.

Contaminant	Sediment (mg/kg)	
	Sediment	UET ^a
DIOXINS/FURANS		
2,3,7,8-Tetrachlorodibenzodioxin	0.019	NA
1,2,3,7,8-Pentachlorodibenzodioxin	0.00018	NA
1,2,3,4,7,8-Hexachlorodibenzodioxin	0.0000036	NA
1,2,3,6,7,8-Hexachlorodibenzodioxin	0.000011	NA
1,2,3,7,8,9-Hexachlorodibenzodioxin	0.0000057	NA
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	0.00019	NA
2,3,7,8-Tetrachlorodibenzofuran	0.041	NA
1,2,3,7,8-Pentachlorodibenzofuran	0.0019	NA
2,3,4,7,8-Pentachlorodibenzofuran	0.0013	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	0.0056	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	0.0014	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	0.00022	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	0.00044	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.00096	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.00035	NA
TEQ (Toxic Equivalent Value) ^b	0.022	0.0000088

a: Freshwater upper effects threshold (UET) for bioassays as reported in Buchman (1999). The UET represents the concentration above which adverse biological impacts would be expected.

b: Maximum toxic equivalent value (TEQ) is provided. Each dioxin/furan is assigned a toxic equivalency factor (TEF) relative to 2,3,7,8 tetrachlorodibenzodioxin, which is the most toxic in this group of compounds. In order to determine the toxicity of a mixture of dioxin/furan compounds the measured concentration of the individual dioxin/furans is multiplied by its assigned TEF. The results are summed to produce a TEQ.

NA: Screening guidelines not available.

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