FINAL REPORT

SITE EVALUATION AND CLEANUP REQUIREMENTS, AMERICAN CREOSOTE PLANT, SLIDELL, LOUISIANA

Jacqueline Michel, Daniel D. Domeracki, and Walter J. Sexton

Research Planning Institute, Inc. Miles O. Hayes, President 925 Gervais Street Columbia, South Carolina 29201

PREPARED FOR:

National Oceanic and Atmospheric Administration Hazardous Materials Response Project Boulder, Colorado 80302

RPI/R/81/4/7-11

April 1981

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INTRODUCTION

The American Creosote Plant was established in 1882 by a railroad company on approximately 55 acres adjacent to Bayou Bonfouca. The plant operated under several owners until around 1970, at which time it burned down, rupturing two large storage tanks of unknown capacity. Although a large amount of creosote was released during the fire, there were chronic releases of creosote during the entire operating history of the plant. Because there has been no cleanup of the site, creosote contamination has continued due to surface runoff and seepage.

There have been several investigations of the site and bayou, including grab sampling, water quality surveys, fish surveys, chemical analyses, toxicity tests, and evaluations of cleanup costs. Reports of these efforts are available from the Captain of the Port (COTP) of New Orleans. During one survey on 7 May 1976, two U.S. Coast Guard divers taking bottom samples received second degree chemical burns. On 8 December 1980 the COTP of New Orleans requested a scientific support coordinator (SSC) from the National Oceanic and Atmospheric Administration (NOAA). As part of the NOAA response, Research Planning Institute, Inc. (RPI) conducted field surveys of the site in December 1980 and January 1981. The purposes of these surveys were to: (1) document the extent and depth of the contamination of the land site and bayou, (2) make estimates of the volume of creosote-contaminated material

present, (3) assist in the evaluation of the owner's land cleanup proposal, and (4) to participate in the evaluation and selection of alternative cleanup procedures for the bayou and land sites.

This report contains the raw data collected and observations made during the field surveys, and the estimates of the volumes of material to be treated for cleanup of the site. The evaluation of various cleanup alternatives have been extensively discussed with the private, state, and federal parties involved with the project, but are not included in this report.

METHODS OF STUDY

To determine the lateral extent and depth of creosote contamination of the plant property, bayou, and adjacent properties, detailed surveys were made with 50 sites selected for subsurface coring and sampling (Fig. 1). In addition, the dimensions of sites of surficial creosote piles were measured. Each site was surveyed in and flagged. The land sites were cored with a one-inch diameter, stainless-steel hand auger. The cores were logged and samples were collected in the field in aluminum-lined glass jars. The bayou and swamp sites were sampled with a vibracore using three-inch aluminum core barrels. The cores were capped and transported to the UNO laboratory each night for splitting and sampling. The soft fluff mud, mid-bayou cores were frozen before splitting. One split of each core was described in terms of sedimentological characteristics and visual estimates of creosote content. Descriptions of all the cores are given in Appendix Samples of various depths were collected in clean glass I. jars with aluminum cap liners. A total of 67 samples, listed in Table 1, were collected and stored in freezers at UNO. Selected samples were analyzed using gas chromatography by the UNO Center for Bio-organic Studies. The other split of the core was photographed and stored at UNO at ambient temperatures.

FIGURE 1. Location of the American Creosote Plant property showing the core sites, the numbered land sites referred to in Table 2, and the proposed bayou cleanup area. The creek's floodplain which has variable contamination is outlined.

Δ



SAMPLE NUMBER	DESCRIPTION	VISUAL ESTI- MATE OF CREOSOTE ¹
A0101	Background upland soil, 0-15 cm, east edge of property	ø
B0101	Head of drainage canal, 30-40 cm, clay	М
в0201	Drainage canal, second bridge, 20-25 cm, silty clay	Н
B0301	Pure creosote, first bridge, drainage canal, 0-5 cm	Н
в0401	Mouth of drainage canal, 35-40 cm, peaty clay	н
C0401	Background, 2-20 cm, field where land farming probably occurred	Ø
C0501	Background, 0-10 cm, soil in field where land farm- ing probably occurred	ø
C0502	Background, 20-30 cm, gray silty clay in field for old land farming	L
C0601	Background, 0-10 cm, soil in field where land farm- ing probably occurred	ø
C1001	Swamp, 27-31 cm, gray clay with roots	М
C1002	Swamp, 57-62 cm, brown clay and wood	L
C1003	Swamp, 120-125 cm, mottled blue-gray clay with pos- sible creosote	L?
C1101	North edge of bayou, 2 m in, 65-70 cm, black hard clay	М
C1201	North side of bayou floodplain, 25-35 cm, gray silty clay with organic detritus	L?
C1601	Lower floodplain of creek near bayou, 10-16 cm, sandy silt	L
C1602	Lower floodplain of creek near bayou, 70-77 cm, peaty clay with heavy creosote	Н
C1603	Lower floodplain of creek near bayou, 150-155 cm, black hard clay	L
C1604	Lower floodplain of creek near bayou, 220-227 cm, clayey peat	L
C1701	Near creek at mouth, 10-20 cm, woody, layered clayey peat	М
C1702	Near creek at mouth, 35-45 cm, firm clayey peat	М
C1703	Near creek at mouth, 90-95 cm, loose clayey peat	Н
C1704	Near creek at mouth, 175-185 cm, sand plug in blue- gray clay	L

TABLE 1. List of samples collected for creosote spill.

TABLE 1. (continued)

SAMPLE NUMBER	DESCRIPTION	VISUAL ESTI- MATE OF CREOSOTE ¹
D0201	Mid-channel of creek in middle of swamp, 8-10 cm, loose organic detritus	Н
D0202	Mid-channel of creek in middle of swamp, 120-125 cm, basal blue-gray clay	L
D0301	Mid-channel of creek near mouth, 12-15 cm, loose organic detritus	Н
D0302	Mid-channel of creek near mouth, 75-82 cm, plastic blue-gray clay	Ø
E0201	Upper floodplain west side of creek, 34-44 cm, organic detritus	Н
E0401	Background, forest on west side of creek, 1-12 cm, organic gray clay	Ø
E0701	Upper floodplain west of creek, mid-swamp, 16-26 cm, tan silty clay	Ø
F0101	Mid-bayou, 60 m downstream of canal, 0-10 cm, black clay	Н
F0102	Mid-bayou, 60 m downstream of canal, 100-110 cm, black and gray clay	Н
F0201	Mid-bayou at canal mouth, 10-20 cm, black clay	Н
F0202	Mid-bayou at canal mouth, 90-95 cm, clayey peat	Н
F0301	North shore of bayou near bulkhead, 55-65 cm, black clay and leaves	н
F0401	Mid-bayou in front of bulkhead, 10-20 cm, black clay and detritus	Н
F0402	Mid-bayou in front of bulkhead, 55-60 cm, brown fluff mud	Н
F0501	Mid-bayou in front of bulkhead, 0-10 cm, black fluff mud	Н
F0502	Mid-bayou in front of bulkhead, 50-55 cm, black peaty clay	Н
F0701	Mid-bayou, 30 m south of creek, 0-10 cm, soft blue- gray clay	Н
F0702	Mid-bayou, 30 m south of creek, 45-50 cm, black fluff mud	Н
F1001	Mid-bayou at creek mouth, 0-10 cm, soupy black fluff mud	Н
F1002	Mid-bayou at creek mouth, 90-92 cm, stiff black fluff mud	Н

TABLE 1. (continued)

SAMPLE NUMBER	DESCRIPTION .	VISUAL ESTI- MATE OF CREOSOTE ¹
G0101	Swamp on south edge of bayou, 4-14 cm, soupy peaty clay	м
G0102	Swamp on south edge of bayou, 112-120 cm, soft peaty clay	М
G0301	South edge of bayou near creek, 22-30 cm, stiff peaty clay	L
Z0101	West edge of creek floodplain near mouth, 0-3 cm, soil	Ø
Z0102	West edge of creek floodplain near mouth, 30-35 cm, hard gray clay	Ø
Z0201	West floodplain of creek near mouth, 10-15 cm, woody silty clay	L
Z0202	West floodplain of creek near mouth, 60-62 cm, hard woody clay ball	L
Z0301	Lower floodplain swamp, 34-46 cm, clayey peat	Н
Z0302	Lower floodplain swamp, 102-106 cm, permeable clayey peat	М
Z0401	Mid-channel of upper creek, 16-24 cm, black organic detritus	Н
Z0402	Mid-channel of upper creek, 86-92 cm, soft blue- gray clay	L
Z0501	Upper floodplain, west side of creek, 110-120 cm, gray clay	L?
Z0601	East bank of creek, 120 m from north road, 54-64 cm, blue-gray clay	L
Z0602	East bank of creek, 120 m from north road, 28-32 cm, black fluff mud	Н
Z0701	Northwest lower floodplain, 0-10 cm, rich soil	Ø
Z0801	Creosote pit 30 m west of creek, 1-15 cm, pure creosote	Н
Z0802	Creosote pit 30 m east of creek, 75-85 cm, creosote- soaked clay	Н
Z0901	Swamp on south side of bayou near canal, 0-10 cm, clayey peat	Ø
т0201	Mid-bayou, 150 m upstream of creek, 20-25 cm, black reducing organic-rich soft clay	Ø

Table 1. (continued)

SAMPLE NUMBER	DESCRIPTION	VISUAL ESTI- MATE OF CREOSOTE ¹
т0301	Mid-bayou, 300 m downstream from drainage canal	
	10-20 cm, reducing black and brown organic-rich clay, creosote odor	L
т0401	Mid-bayou, 475 m downstream from drainage canal, 120-130 cm, dark brown, porous clayey peat, creosote-stained	М
т0501	Mid-bayou, 700 m downstream from drainage canal, 10-20 cm, soft sticky brown clay, possible creosote odor	L?
т0601	Mid-bayou, 925 m downstream from drainage canal, 120-130 cm, brown stiff clayey peat, creosote odor	L
т0701	Mid-bayou, 150m downstream from drainage canal, composite of 0-5 cm, 50-55 cm, and 100-105 cm, brown soft organic-rich clay	Н
1 н = не	avv creosote contamination	

- M = Moderate creosote contamination
- L = Light creosote contamination
- \emptyset = No creosote detected

RESULTS

The spill site can be divided into three areas for discussion of the distribution and cleanup of creosotecontaminated materials: the land site, the cypress swamp, and Bayou Bonfouca. Estimates of the volume of creosotecontaminated materials in each area are given in Table 2. Estimates of the total volume of creosote are given in Table 3.

Land Site

From the field surveys and core data, six areas on the upland plant property were identified as being heavily contaminated with creosote (Fig. 1). Five of the areas are surficial piles of creosote which vary in depth from 1 to These piles have hardened, asphalt-like surfaces with 3 ft. soft, wet, heavily creosote-contaminated material below. There are approximately 3050 yd³ of contaminated material in these piles (Table 2). Also, on the eastern side of the land site is a drainage canal which is heavily contaminated with creosote to about 1.5 ft, the depth being limited by the hard clay canal bottom. There are about 1350 yd3 of contaminated material throughout the length of the drainage canal. Thus, approximately 4400 yd³ of material would need to be removed and properly disposed of for an effective cleanup of the upland areas on the property. The creosote content of the material recommended for cleanup ranges from 10 to 50 percent according to the report submitted by Steimle &

i.	SURFACE AREA (ft ²)	DEPTH (ft)	VOLUME (ft ³)	VOLUME (yd ³)	-
LAND SITE					
Area l					
A	7,500	3.5	26,250	972	
В	10,900	1.0	10,900	404	
Area 2	5,700	1.5	8,550	317	
Area 3					
A	4,200	3.5	14,700	544	
В	7,600	1.0	7,600	281	
Area 4 -	Drainage Canal (1,4	470 ft long	g by 17 ft w	ide)	
	24,310	1.5	36,465	1,350	
Area 5 - F	ive Piles Northwest	t of Canal			
1)	2,150	3.0	6,450	239	
2)	100	3.0	300	11	
3)	255	2.0	510	19	
4)	750	2.0	1,500	56	
5)	100	2.0	200	8	
Area 6					
	1,792	3.0	5,376	199	
			TOTAL LANI) SITE	4,400 yd ³
CREEK - 1,	225 ft long by 8 ft	z wide			
	9,800	2.0	19,600	726	
BAYOU BONF	OUCA				
	199,111	3.0	597 , 333	22,123	

TABLE 2. Estimates of disposal volumes of creosotecontaminated material at the American Creosote Plant site, Slidell, Louisiana.

Total Volume (yd ³)	Creosote Content (%)	Creosote Present (tons)
4,400	20	741
726	25	152
22,123	6	1,118
27,249		2,011
	Total Volume (yd ³) 4,400 726 22,123 27,249	Total Volume (yd ³) Creosote Content (%) 4,400 20 726 25 22,123 6 27,249 27,249

Table 3. Estimates of dredge volumes and creosote content at the American Creosote Plant Site, Slidell, Louisiana.

Associates in 1980. The volume-weighted, average creosote content is 20 percent so that there are approximately 740 tons of creosote on the land sites (Table 3).

Cypress Swamp Area

On the western side of the property is a low, cypress swamp drained by a small meandering creek. For approximately 400 ft from the northern property line, the creek and floodplain are narrow, incised, and show only minor contamination. From that point to its mouth at Bayou Bonfouca, the floodplain widens to several hundred feet with several, low swampy areas adjacent to the creek. The creek bed has heavily contaminated organic detritus (leaves and sticks) and soft fluff mud to an average depth of two feet; the depth again is controlled by a hard basal clay. There are about 726 yd^3 of material in the creek channel that should be removed (Table 2). Analysis of a core sample by UNO showed that the detrital muddy sediments had a creosote content of 27.5 percent. Using an estimate of 25 percent for the creosote content of the material in the creek channel, there is approximately 152 tons of creosote in this area.

Besides the creek channel itself, there are areas of variable amounts of creosote up to four feet deep in the floodplain on both sides of the creek shown in Figure 1. However, the heaviest contamination is on the eastern side adjacent to the creosote plant site. The creosote often occurs in separate layers with clean zones and clean surficial sediments. Because of the difficulty of cleanup in this type of environment and the probable adverse impact from the cleanup operations, at this time we have not included the subsurface swamp floodplain in the cleanup recommendations.

Bayou Bonfouca

Fourteen cores were taken in Bayou Bonfouca from 400 ft upstream to 2800 ft downstream from the site to determine the extent of contamination. The bottom sediments are composed of black, organic-rich fluff mud overlying peaty clays. Based on both chemical and visual estimates, about 1400 ft of the bayou is heavily contaminated to an average depth of three feet. Again, the depth of contamination is controlled by a basal, hard blue-gray clay. We estimate that 22,123 yd³ of material would need to be dredged from the bayou for the area shown in Figure 1.

Results from chemical analyses of some of the bayou cores by UNO are:

F1001	0-10 cm depth, near creek mouth	18.9%	creosote
F1002	90-92 cm depth, near creek mouth	5.9%	creosote
F0101	0-10 cm, near canal mouth	6.3%	creosote
F0102	100-110 cm, near canal mouth	6.8%	creosote
T0401	120-130 cm, 1500 ft downstream from canal	3.9%	creosote

Using an average creosote content of six percent we estimate that there are 1,118 tons of creosote in the 22,123 yd³ recommended for dredging from the bayou.

APPENDIX I

CORE DESCRIPTIONS

	LOCATION:	East of drainage canal,
		near eastern edge of prop-
: 45 cm		erty, surrounded by pines
(Hand auger)		
		*.
VISUAL		
ESTIMATE		
OF CREOSOTE	DESCRIPTION	
Ø	Humus, 'A' so	il horizon
Ø	Yellow, very	silty, crumbly clay; earthy
	odor; no creo	sote
	: 45 cm (Hand auger) VISUAL ESTIMATE OF CREOSOTE Ø Ø	LOCATION: : 45 cm (Hand auger) VISUAL ESTIMATE OF CREOSOTE DESCRIPTION Ø Humus, 'A' so Ø Yellow, very odor; no creo

Yellow, fine sandy crumbly silt

Yellow, stiff fine sandy clay

15-30

30-45

ø

Ø

CORE:	A02		LOCATION: East of drainage canal on	
DATE :	10 Jan 81		southeast side of property,	
TOTAL CO	ORED DEPTH:	65 cm	surrounded by pines	
		(Hand auger)		
COMPACT	ION: None			
	CHEMICAL			
	SAMPLE	VISUAL		
DEPTH	INTERVAL	ESTIMATE		
(cm)	(No.)	OF CREOSOTE	DESCRIPTION	
0-10		Ø	Humus, 'A' soil horizon; very rich	
10-20		Ø	Same but clayier, 'B' soil horizon	
20-35		Ø	Buff, slightly sandy and silty clay;	
			crumbly, with oxidized stains	
35-50		Ø	Same but more clay	
50-65		Ø	Same as above	

CORE: A03		LOCATION: East of drainage canal on
TOTAL CORED DEPTH	: 80 cm	thick vines
	(Hand auger)	
COMPACTION: None		
CHEMICAL		
SAMPLE	VISUAL	
DEPTH INTERVAL	ESTIMATE	
(cm) (No.)	OF CREOSOTE	DESCRIPTION
0-10	Ø	Humus, 'A' soil horizon
10-20	Ø	Soft, wet, mottled yellow and gray plas-
		tic clay
20-50	Ø	Wet, sticky, plastic gray clay with
		fewer yellow mottles
50-65	Ø	Water table; soft, crumbly, mottled
		light gray and tan clay

65-80

ø

Same, but stiffer clay

CORE: B01 LOCATION: At head of drainage canal DATE: 10 Jan 81 near road TOTAL CORED DEPTH: 50 cm (Vibracore) COMPACTION: None CHEMICAL SAMPLE VISUAL DEPTH INTERVAL ESTIMATE (cm) (No.) OF CREOSOTE DESCRIPTION 0- 1 М Light tan clay, probably lime from the concrete plant; strong creosote odor 1-20 L Coarse gravel (1 cm in diameter) at base, grading up to coarse tan sand at top; light creosote odor 20-50 30-40 cm М Light gray, soft, sticky, silty clay; (B0101) scattered organic matter; strong creosote

odor

CORE : DATE :	BO2 10 Jan 81		LOCATION:	On north side of second bridge over the drainage canal
TOTAL C	ORED DEPTH:	25 cm (Vibracore)		
COMPACT	ION: None			
DEPTH	CHEMICAL SAMPLE INTERVAL	VISUAL ESTIMATE		
(cm)	(No.)	OF CREOSOTE	DESCRIPTION	
0- 5		Н	Brownish gray soaked	, peaty clay; creosote-
5-15		Н	Dark brown, s organic detri	ilty clay with scattered tus; creosote-soaked
15-25	20-25 cm (B0201)	Н	Silvery black soaked; scatt	, silty clay, creosote- ered organic detritus

CORE:	B03					
DATE:	10 Ja	an	81			
TOTAL	CORED	DE	PTH:	45	CM	
				(Vi	ibrad	core)
COMPAC	CTION:	5	CM	(11%)	1	

LOCATION: North side of first bridge near Bayou Bonfouca

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (NO.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 5	0-5 cm (B0301)	Н	Pure liquid creosote
5-25		Н	Silvery black, soft fluff mud; mostly creosote
25-40		М	Light gray clay with orange-stained bands; stiff and plastic

CORE: B04 DATE: 10 Jan 81 TOTAL CORED DEPTH: 45 cm (Vibracore) COMPACTION: 5 cm (11%)

CORE: CO3

LOCATION: At mouth of drainage canal as it enters Bayou Bonfouca

LOCATION: On edge of pines near a

CHEMICAL SAMPLE VISUAL DEPTH INTERVAL ESTIMATE (cm) (No.) OF CREOSOTE DESCRIPTION 0-40 35-40 cm Η Dark brown, peaty clay; saturated with (B0401) creosote

DATE: 10 Jan 81 creosote pile TOTAL CORED DEPTH: 30 cm (Hand auger) COMPACTION: None CHEMICAL SAMPLE VISUAL DEPTH INTERVAL ESTIMATE (cm) (No.) OF CREOSOTE DESCRIPTION 0- 5 L Decaying pine needles with creosote odor 5-15 ø Organic-rich soil; no creosote odor detected 15-30 Ø Gray, organic-rich clay

LOCATION: In field 150 m northwest of upper bridge

CORE: C04 DATE: 10 Jan 81 TOTAL CORED DEPTH: 20 cm (Hand auger) COMPACTION: None

COMPACTION: None

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION	
0- 2 2-20	2-20 cm	Ø Ø	Humus, soil horizon Tan and gray, soft plastic clay	

CORE: C05 DATE: 10 Jan 81 TOTAL CORED DEPTH: 30 cm (Hand auger)

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0-10	0-10 cm (C0501)	Ø	Sticky, organic-rich, rooted soil
10-20		М	Black, reducing clay; creosote odor
20-30	20-30 cm (C0502)	L	Light gray, silty clay; possible creo- sote odor

CORE:	C06		× .	LOCATION:	In woods	s in nort	thern-
DATE:	ll Jan 81				central	part of	property
TOTAL (CORED DEPTH:	40 cm					
		(Hand	auger)				
COMPACT	FION: None						
	CHEMICAL						
	SAMPLE	VISUAL					
and seen and seen at a							

(cm)	(No.)	ESTIMATE OF CREOSOTE	DESCRIPTION
0-20	0-10 cm (C0601)	Ø	Very rich soil
20-30		Ø	Soft gray clay
30-40		Ø	Crumbly, soft, moist, gray clay with iron staining along roots

DATE: 7 Jan 81 TOTAL CORED DEPTH: 128 cm (Vibracore)

CORE: CO7

LOCATION: At edge of creek channel on eastern side

COMPACTION: 25 cm (20%) CHEMICAL SAMPLE VISUAL DEPTH INTERVAL ESTIMATE (Cm) (No.) OF CREOSOTE DESCRIPTION 0-9 L Medium brown, clayey silt, with scattered black organic detritus; larger clumps of wood and leaves; lower zone slightly lighter brown; light creosote 9-25 Η Layer of dark brown clay and organic matter (leaves, small sticks, wood chips); clays are very organically rich; heavy creosote 25-31 Η Discrete layers of tan, fine sand 1-2 cm thick, and thin dark brown clay layers; heavy creosote associated with clay; scoured basal contact 31-42 H Dark brown, clayey silt with large, angled layers of leaf litter; heavy creosote associated with leaf litter, especially at base 42-103 Μ Mottled tan (~5%) and brown, clayey silt; light creosote odor; no visible creosote except associated with organic detritus; large, 3-cm-long piece of wood at base is creosote-soaked

CORE: C DATE: 9 TOTAL CON	10 Jan 81 RED DEPTH: DN: 32 cm	177 cm (Vibracore) (18%)	LOCATION: In water-filled low spot east of main creek
DEPTH	CHEMICAL SAMPLE INTERVAL	VISUAL ESTIMATE	DECODEDETON
(Cm)	(NO.)	OF CREOSOTE	DESCRIPTION
0- 15		М	Soft, soupy, organic-rich clay with abundant leaves and wood chips; sharp basal contact; dark gray-brown, moder- ate creosote
15- 36	27-31 cm (C1001)	М	Mottled, dark and light gray clay, soft and plastic; a lot of small roots
36- 62	57-62 cm (C1002)	L	Very soft, slightly soupy, gray-brown clay; several large wood chips
62- 75		L?	Same as above but firmer
75-100		L?	Soft, plastic, mottled, blue-gray clay; mottles are yellow, light gray, and dark gray; oxidized patches; possible creosote odor
100-145	120-125 cm (C1003)	L?	Same as above; questionable creosote odor

CORE: CI	1		LOCATION: On northern bank of Bayou
DATE: IC) Jan 81		Bonfouca, 2 m inland
TOTAL COF	RED DEPTH:	164 cm	
		(Vibracore)	
COMPACTIC	N: None		
	CHEMICAL		
	SAMPLE	VISUAL	
DEPTH	INTERVAL	ESTIMATE	
(cm)	(No.)	OF CREOSOTE	DESCRIPTION
0- 10		Ø	Dark brown, clayey soil with roots and
			leaves
10- 32		ø	Medium brown, clayey peat of scattered
			1-cm roots; stiff and compacted
32- 40		Ø	Dark brown, peaty clay
40- 50		ø	Dark brown, clayey peat
50- 65		L	Very dark brown, organic-rich clay,
			very stiff and streaky
65- 88	65-70 cm	М	Black, hard, sticky clay, very compacted;
	(C1101)		strong creosote odor
88-110		L	Very hard, compact clay; grades from dark
			gray at top to light gray at base; stain-
			ing due to creosote; creosote odor
110-125		L	Gray clay, hard and stiff: slight creo-
			sote odor: has vellow-orange staining
125-164		Ø	Blue-gray clay, stiff and compact
			Jen and Jen and Compace

CORE: C1 DATE: 10	2 Jan 81		LOCATION: On northern floodplain of Bayou Bonfouca
TOTAL COR	ED DEPTH:	129 cm (Vibracore)	× * ***
COMPACTIO	N: 14 cm	(11%)	
DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 5		ø	Fibrous, rooted, brown, organic-rich clay; very soft and wet; abundant roots at 4-5 cm
5- 11		Ø	Dark brown, reduced organic-rich clay; abundant leaf detritus; very soft and water-saturated
11- 41	25-35 cm (Cl201)	L??	Medium-gray, silty clay; scattered, large pieces of wook, bark, and leaves; looks oxidizing; very faint creosote odor(?); patches of coarser (silt) and finer (clay) sediments
41-100		Ø	Light gray, homogeneous clay, slight silt context; moist, semiplastic; at 48-51 cm, there is a ball of fine-sand to silt in the clay, has a slight blue-
100-115		Ø	Mottled, blue-green clay and gray clay; very stiff and plastic; blue-green mot- tles look like large stained patches

DATE: 1	0 Jan 81		e	east of c	reek	
TOTAL CO	RED DEPTH:	30 cm				
		(Hand auger)				
COMPACTI	ON: None					÷
	CHEMICAL					
	SAMPLE	VISUAL				
DEPTH	INTERVAL	ESTIMATE				
(cm)	(No.)	OF CREOSOTE	DESCRIPTION			

ø

ø

ø

CORE: C14

0- 1

1- 5

5- 30

Dry leaf and pine needle litter Humus; soil horizon Mottled yellow and gray, stiff clay

LOCATION: On rising slope in forest

CORE:	C16		
DATE:	9 Jai	n 81	
TOTAL	CORED	DEPTH:	271 cm
			(Vibracore)
COMPAC	CTION:	26 cm	(10%)

LOCATION: 12 m east of C17 in the lower floodplain of the creek near Bayou Bonfouca

.

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 10		L	Dark brown, soft, peaty clay with a large root; many small roots; creosote
10- 16	10-16 cm (C1601)	L	Medium brown, fine sandy silt with irregular base and creosote odor
16- 20		L	Large root 5 cm long in a clayey peat; light creosote staining
20- 27		M	Blue-gray, reduced layer of fine sand; small, fining-upward sequence; sharp lower contact
27- 70		L	Dark brown, organic-rich, silty clay; scattered large roots: soft and crumbly
70- 77	70-77 cm (C1602)	Н	Dark brown, peaty clay with high amounts of liquid brown creosote; sampled entire
77-100		L	Peaty clay with large pieces of wood and roots: based in 8-cm-wide root
100-125		L	Medium to dark brown, hard plastic clay; at base is a more permeable zone with small holes; creosote odor present
125 - 155	150-155 cm (C1603)	L	Dark brown-black, hard plastic clay; slightly permeable; indistinct clay balls at base; few scattered large roots
155-200		L	Same as above; base gets more peaty; light creosote odor
200-227	220-227 cm (C1604)	L	Same as above; increasing peat content to becoming a clayey peat; gradual con- tact with clay below
227-245		Ø	Blue-gray clay interbedded with peat; bottoms in clay

CORE: CI DATE: 9 TOTAL COP	L7 Jan 81 RED DEPTH:	257 cm	LOCATION: 15 m east of creek in the lower floodplain near Bayou Bonfouca
COMPACTIO	DN: 37 cm	(14%)	
DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 7		Н	Half the core consists of a large tree root; the rest is silvery black, creo- sote-soaked humus
7- 40	10-20 cm (C1701)	М	Spongy, soft, clayey peat with indis- tinct layering; about 30% of core is woody material (creosote adsorbs to woody material)
40- 60	35-45 cm (C1702)	М	Firmer, dark brown, clayey peat; less wood except in a few layers; sharp break at base into more woody zone
60- 80		Н	Woody peat; heavy creosote associated with wood
80-100	90-95 cm (C1703)	Н	Loosely packed, clayey peat; creosote occurs as a brown liquid associated with the wood
100-172		Н	Same as above; largely wood/bark in layers soaked with creosote
172-186	175-185 cm (C1704)	L	Half the core is a sand-filled burrow which is creosote-stained; the other half is a blue-gray clay which is not stained; sampled the sand plug
186-220		Ø	Blue-gray, massive, silty clay, soft and plastic; approx. ten percent wood material near base

DATE: 9 Jan 81		ter of swamp
TOTAL CORED DEPTH:	170 cm (Vibracore)	
COMPACTION: 40 cm	(24%)	
CHEMICAL SAMPLE	VISUAL	
DEPTH INTERVAL	ESTIMATE	
(cm) (No.)	OF CREOSOTE	DESCRIPTION
0- 5	Н	100 percent leaf litter, heavily soaked with creosote
5-35 8-10 cm (D0201)	Н	Mostly organic debris composed of leaves, bark, and wood chips with small amounts of organic-rich, black muck very loosely packed; very heavily creosote-soaked
35- 66	Н	Same as above, but more dense
66- 68	Н	Very soft, dark brown, organic-rich clay: high creosote content
68-128 120-125	L	Massive, soft, plastic, blue-gray clay;
Cm		slightly mottled with purple; becomes
(D0202)		hard at base, but may be from drilling; slight creosote odor and brown patches throughout

CORE: DO2

CORE:	D03				LOCATION:	Mid-creek in a tig	ght meander
DATE:	9 Jar	n 81				just before the cr	reek enters
TOTAL	CORED	DEP	ΓH:	109 cm		Bayou Bonfouca	
				(Vibracore))		
COMPAC	TION:	24	CM	(22%)			
	CH	IEMI	CAL				

DEPTH (cm)	SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 18	12-15 cm	Н	Silvery black, organic debris composed
	(D0301)		primarily of leaves and sticks; very high creosote content
11- 33		Н	Large cypress root; void spaces filled with creosote
33- 57		Ø	Very soft, gray, silty clay; water- saturated and very loose; scattered large roots and pieces of wood
5 7- 85	75-82 cm (D0302)	Ø	Reduced, blue-gray clay; not as soft; plastic; small roots

27

LOCATION: Located mid-creek in cen-

CORE: E01 DATE: 11 Jan 81 TOTAL CORED DEPTH:	60 cm (Hand auger)	LOCATION: Head of creek at north property line on western edge of channel
competition. Mone		
CHEMICAL SAMPLE DEPTH INTERVAL (cm) (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0-15	ø	Brownish gray mix of sand, silt, and clay; slump block of channel side; no creosote odor
15-45	Ø	Same as above, with small roots
45-60	Ø	Soft plastic, gray clay NOTE: Minor sheens noted around water edge

CORE: E02 DATE: 9 Jan 81

LOCATION: On upper floodplain on western side of creek

TOTAL CORED DEPTH: 120 cm COMPACTION: None

	QUENTONT		
DEPTH (cm)	SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 8		ø	Wet soil zone; abundant leaf and wood pieces
8- 20		Ø	Wet, sticky, crumbly brown clay; some organic matter
20- 25		Ø	Leaf litter zone; flat-lying leaves; water-saturated
30- 45	34-44 cm (E0201)	Н	Creosote-soaked, organic detritus; poorly sorted mix of leaves, sticks, and coal chunks
45- 55		L	Creosote-stained, blue-gray clay with mottling of black, yellow, and gray
55- 75		L	Slightly creosote-stained, blue-gray clay
75-120		Ø	Blue-gray-green, stiff clay

CORE: E03			LOCATION:	On western side of creek
DATE: 10	Jan 81			in dense forest
TOTAL COREI	D DEPTH:	20 cm		
		(Hand auger)		
COMPACTION	: None			· .
	CHEMICAL			
2	SAMPLE	VISUAL		
DEPTH 1	INTERVAL	ESTIMATE		
(cm)	(No.)	OF CREOSOTE	DESCRIPTION	
0-3		Ø	Drv leaf lit	ter
3- 5		Ø	Black soil z	ione
5-20		Ø	Buff vellow	crumbly clay, earthy small

CORE: EO	4		LOCATION: ON	n western side	of creek
DATE: 10	Jan 81		iı	n dense forest	30 m west
TOTAL COR	ED DEPTH:	20 cm	03	f E03	
		(Hand auger)			
COMPACTION	N: None	,,,, ,			
	CHEMICAL				
	SAMPLE	VISUAL.			
DEPTH	INTERVAL.	FSTIMATE			
(cm)	(No.)	OF CREOSOTE	DESCRIPTION		
0- 1		ø	Black soil zor	ne	
1-12	1-12	ø	Dark gray, cru	umbly clay with	abundant
	(E0401)		roots and orga	anic matter	abundunt
12-20		Ø	Light gray cla ing around roo	ay with minor i ot cavities	ron stain-

CORE: EO DATE: 9 J	7 Jan 81		LOCATION:	On western upper flood creek	edge of t plain alc	:he ong
TOTAL CORE	ED DEPTH:	ll0 cm (Vibracore)				
COMPACTION	N: 14 cm ()	13%)				
	CHEMICAL SAMPLE	VISUAL				
DEPTH	INTERVAL	ESTIMATE				
(cm)	(No.)	OF CREOSOTE	DESCRIPTION			
0- 5		ø	Brown, organ grades gradu creosote odo	nic-rich soi ally into c or	l zone wh lay below	ich ; no
5- 40	16-26 cm	ø	Soft, crumbl	y, tan, sil	ty clay;	par-
	(E0701)		tially oxidi sote	zed along r	oots; no	creo-
40- 96		ø	Soft, plasti same as abov	c, mottled e but plast	tan, silt ic	y clay;

CORE:	FO	1		
DATE :	10	Jan	81	

DEPTH

0-125

(cm)

LOCATION:

In middle of Bayou Bonfouca about 60 m below entrance of drainage canal

TOTAL CORED DEPTH: 133 cm (Vibracore) COMPACTION: 8 cm (6%)

CHEMICAL

CM

(F0102)

SAMPLE VISUAL INTERVAL ESTIMATE (No.) OF CREOSOTE DESCRIPTION 0-10 cm H Creosote-laden, black, soft, watersaturated clay with scattered organic detritus; at 100 cm, thin lense of

gray clay

CORE: FO DATE: 10	2 Jan 81		LOCATION:	In middle of Bayou Bonfouca directly in front of the drainage canal
TOTAL COR	ED DEPTH:	95 cm (Vibracore)		,
COMPACTIO	N: None			
DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION	
0- 30	10-20 cm (F0201)	Н	Silvery blac clay with al	ck, soft, water-saturated bundant organic matter;
30- 95	90-95 cm	ч	sote Brownish bla	ack clavey neat. soaked
30- 93	(F0202)	11	with creoso	te

CORE: F03 DATE: 10 Jan 81 TOTAL CORED DEPTH: 178 cm (Vibracore) COMPACTION: 14 cm (8%)

LOCATION: On northern side of Bayou Bonfouca at base of bulkhead, 30 cm below water level

C S DEPTH I (cm) (CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 34		Μ	Medium to coarse brown sand, poorly sorted; abundant shells at 12-18 cm; strong creosote odor; thick creosote layer at 28-30 cm; creosote content
			increases toward base of sand
34- 50		Н	Layer of whole shells and clay, soaked with silvery black creosote
50-70 5 (55-65 cm (F0301)	Н	Silvery black, stained layer of clay and leaves
70- 74		Н	Dark brown clay layer
74-106		Н	Clayey peat with heavy creosote
106-120		L	Creosote-stained, dark gray clay
120-164		Ø	Blue-gray clay; no creosote

CORE: F04 DATE: 10 Jan 81		LOCATION: Middle of Bayou Bonfouca directly south of western edge of bulkhead	'n
TOTAL CORED DEPTH:	85 cm (Vibracore)		
COMPACTION: 10 cm	(12%)		
CHEMICAL SAMPLE DEPTH INTERVAL	VISUAL ESTIMATE		
(cm) (No.)	OF CREOSOTE	DESCRIPTION	
0-30 10-20 cm (F0401)	Н	Silvery black, soft clay with scatter organic detritus; heavy creosote odor and staining	red r
30-55	Н	Silvery black, soft clay; slightly mo compact than the above	ore
55-60 55-60 cm (F0402)	Н	Brown fluff mud with heavy creosote	
60-75	Н	Silvery black, soft, peaty clay; soak with creosote	٢ed

DATE: 10) Jan 81		70 m west of drainage
TOTAL COF	RED DEPTH:	68 cm (Vibracore)	canal
COMPACTIC	DN: 13 cm	(19%)	
DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0-30	0-10 cm (F0501)	Н	Silvery black, soft, fluff mud; satu- rated with creosote; scattered organic matter
30-55	50-55 cm (F0502)	Н	Black, peaty clay; saturated with creosote

CORE: F05

LOCATION: Middle of Bayou Bonfouca, 70 m west of drainage CORE: F07 DATE: 10 Jan 81 LOCATION: Middle of Bayou Bonfouca, 70 m southeast of canal

TOTAL CORED DEPTH: 82 cm (Vibracore) COMPACTION: 7 cm (9%)

	CHEMICAL SAMPLE	VISUAL	
DEPTH (cm)	INTERVAL (No.)	ESTIMATE OF CREOSOTE	DESCRIPTION
0- 40	0-10 cm (F0701)	Н	Blue-gray clay saturated with creosote
50- 50	45-50 cm (F0702)	Η	Black, fluff mud saturated with creosote
50-75		Н	Dark brown, clayey peat saturated with creosote

CORE: F10 DATE: 10 Jan 81

LOCATION: Entrance of creek into Bayou Bonfouca

TOTAL CORED DEPTH: 133 cm (Vibracore) COMPACTION: 33 cm (25%)

	CHEMICAL		
	SAMPLE	VISUAL	
DEPTH	INTERVAL	ESTIMATE	
(cm)	(No.)	OF CREOSOTE	DESCRIPTION
0-33	0-10 cm (F1001)	Н	Black, creosote-soaked, fluff mud; very soupy, water-saturated
33- 35		М	Thin, alternating layers of tan and gray, fluff mud with a strong creosote odor
35- 42		Н	Black, soupy, fluff mud: creosote-soaked
42- 50		М	Alternating layers of black and tan, fluff mud with a heavy creosote odor
50- 56		М	Black, creosote-soaked, fluff mud
56- 60		М	Thin layers of tan and gray, fluff mud with strong creosote odor
60- 68		Н	Silvery black, fluff mud with high creosote content throughout
68- 81		L	Light gray, fluff mud; top part has a few bands of darker gray clay
81- 92	90-92 cm (F1002)	Н	Dark gray to black, fluff mud; heavy creosote odor and staining; stiffer than those above
92-100		Ø	Blue-gray clay

CORE: GO1 DATE : 10 Jan 81 LOCATION: On a small swamp on southern edge of Bayou Bonfouca

TOTAL CORED DEPTH: 260 cm (Vibracore) COMPACTION: 122 cm (47%)

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 18	4-14 cm (G0101)	Μ	Spongy, brown, peaty clay; abundant roots; water-saturated and soft
18- 22		М	Brown, soft clay
22- 64		М	Spongy, peaty clay; brown; soaked with brown creosote
64- 98		М	Organic-rich, soft clay (almost fluff mud) with large wood fragments
98-138	112-120 cm (G0102)	М	Dark brown, soft, peaty clay with large wood fragments

CORE: G03 10 Jan 81 DATE:

LOCATION: On higher elevation of small point bar on southern side of Bayou Bonfouca which has heavy vegetation

TOTAL CORED DEPTH: 184 cm (Vibracore) COMPACTION: 34 cm (18%)

	CHEMICAL SAMPLE	VISUAL	
DEPTH	INTERVAL	ESTIMATE	
(cm)	(No.)	OF CREOSOTE	DESCRIPTION
0- 10		Ø	Wet, light brown layers of leaves and clay
10- 16		Ø	Medium brown, peaty clay; hard and stiff
16- 30	22-30 cm (G0301)	L	Dark brown, peaty clay; stiff, not so hard; slight creosote odor
30- 44	3	L	Porous peat with 2-5 cm roots and layers of leaves; creosote odor
44- 94		L	Medium brown, clayey peat; faint creo- sote odor
94-128		Ø	Clay-rich peat with lenses of soft, wet clay; scattered large roots
128-150		ø	Brown-gray, hard, stiff clay; no creo- sote

CORE: TO1 DATE: 27 Jan 81 TOTAL CORED DEPTH: 119 cm COMPACTION: Unknown

LOCATION: 70 m upstream of mouth of creek

.

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 5		Ø	Black, reducing, soft fluffy clay,
5- 74		Ø	Soft, fluffy gray clay, with indistinct light and dark banding, sharp basal content
74-114 114-119		Ø Ø	Dark brown clay peat; soft and spongy Light, blue-gray stiff clay

CORE: TO2 DATE: 27 Jan 81 TOTAL CORED DEPTH: 122 cm COMPACTION: Unknown

LOCATION: 150 m upstream of mouth of creek

	CHEMICAL SAMPLE	VISUAL	
DEPTH	INTERVAL	ESTIMATE	
(cm)	(No.)	OF CREOSOTE	DESCRIPTION
0-20		Ø	Medium brown, soft, sticky clay with
			tus. No evidence of creosote. Gradational lower contact.
20-40	20-25 cm (TO2O1)	Ø	Black, reducing porous clay with abundant, fine grained organic detritus.
40-120		Ø	Very soft, saturated gray clay with blue-gray streaks
120-122		Ø	Large piece of wood, filling entire core diameter.

CORE:	TO3				
DATE:	27 Ja	an 81			
TOTAL	CORED	DEPTH:	134	CM	
COMPAC	CTION:	Unknow	m		

LOCATION:	300 m	downstream	from
	mouth	of drainage	canal

DEPTH	CHEMICAL SAMPLE INTERVAL	VISUAL ESTIMATE	
(cm)	(No.)	OF CREOSOTE	DESCRIPTION
0-4	10-20 cm (T0301)	L	Black and brown mottled, organic rich clay, H_2S odor, reducing creosote odor
40-52		L	Banded light and dark gray clay, with scattered large wood chips which have strong creosote odor.
52-70		М	Dark brown, soft, sticky clay with cre- osote odor.
70-74		Н	Layer of detrital matter with heavy creosote
74-86		М	Black, organic-rich clay
86-120	100-110 (T0302)	M	Brown, peaty clay grading into clayey peat. Loosely-packed. Very strong creosote odor.
120-128		М	Light gray, silty firm clay. Strong creosote odor.
128-134		Н	Dark brown clayey peat. Brown films of creosote on surfaces of wood chips.

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0-16		L ?	Very soft, crumbly, black, reducing clay with abun-
ж.			dant fine-grained organic matter. Surface rapidly oxidizes to brown when ex-
16-60		Ø	posed. Dark gray-black, soft, sticky clay with scattered
60-69		Ø	Light gray, very soft, sat- urated clay
69-101		L	Dark brown, peaty clay. Distinct creosote odor.
101-115		L	Gray and black mottled clay with distinct creosote odor.
115-139	120-130 cm (T0401)	М	Dark brown, porous clayey peat. Visible brown stain- ing from creosote and strong odor.
139-150		Ø	Blue-gray silty clay, firm and compacted.

CORE: TO5					
DATE: 27 Jan 81		LOCATION:	700 m do	wnstream i	Erom
TOTAL CORED DEPTH:	188 cm		mouth of	drainage	canal
COMPACTION: None					

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0-28	10-20 cm (T0501)	L?	Very soft, sticky, dark brown clay with organic detritus. Possible light creosote odor.
28-56		Ø	Same as above but more det- ritus.
56-88		ø	Dark brown peaty clay. No creosote apparent.

CORE:	T06				LOCATION:	925 m	dov	vnstream	from
DATE:	27 Ja	in 81				mouth	of	drainage	canal
TOTAL	CORED	DEPTH:	250 cm						
COMPAC	TION:	60 cm	(42%)						

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0-34		ø	Black, reducing, fluff mud with scattered large pieces
34-48		Ø	of wood chips and leaves. Banded light and dark gray fluff mud. Bands are 0.5- l cm thick Banidly oxi-
•			dizes to brown when exposed to air.
48-59		Ø	Alternating bands 3 cm thick of dark and light gray fluff mud. Sharp basal contact. Rapidly oxidized to brown
59-104	60-70 cm (T0601)	5 0	when exposed to air. Dark brown peaty clay. Very soft and compacted
104-1,85	120-130 cm (T0602)	L	Dark brown stiff clayey peat, with distinct creosote odor.
185-190		L	Brown sandy and peaty clay.

CORE: TO7LOCATION: 150 m downstream fromDATE: 27 Jan 81drainage canal.TOTAL CORED DEPTH: 136 cm.COMPACTION: Unknown.

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0-20		Н	Dark brown, organic rich clay. Very soft.
20-24		L?	Very soft, fluffy, water- saturated light gray clay.
24-80		Н	Dark brown, soft, sticky
			clay with abundant detrital matter. Heavily soaked with creosote
80-98		М	Brown, soft, sticky clay.
		*	Indistinct thin bands of lighter brown clay.
98-116		Н	Brownish-black clay with abundant wood chips and
			leaves. Sharp basal contact.
116 - 126		М	Brownish-gray clay with scattered organic detrital matter.
126-136		М	Banded dark and light gray clay. Heavy creosote odor.
Composite	sample: To701:	0-5 cm	

50-55 cm 100-105 cm

CORE: Z01 DATE: 9 Jan 81

LOCATION: On western edge of upper floodplain of creek

TOTAL CORED DEPTH: 50 cm (Vibracore) COMPACTION: None

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 3	0-3 cm (Z0101)	ø	Organic-rich soil - humus; leaves on surface; only an earthy odor; no creo-
2 50	20 50	~	sote
3- 50	30-50 cm (Z0102)	Ø	Buff orange, light gray mottled, hard clay; slight plastic; massive; abundant small roots

CORE: Z02 DATE: 9 Jan 81 TOTAL CORED DEPTH: 168 cm (Vibracore) COMPACTION: 40 cm (24%)

LOCATION: On lower floodplain on western side of creek

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 35	10-15 cm (Z0201)	L	Dark brown, silty clay; soft, water- saturated; large pieces of wood, roots,
35- 70	60-62 cm (Z0202)	L	Hard, dark brown, massive clay; few scattered, large roots; a large, greasy "creosote" ball at 60 cm associated
70-130		?	Mottled, light and dark gray, soft, plastic clay; large, dark gray, reduced zone from 90-100 cm at an angle across

core; scattered small roots

CORE: Z03 DATE: 9 Jan 81 LOCATION: On large, swamp floodplain east of creek

.

TOTAL CORED DEPTH: 162 cm (Vibracore) COMPACTION: 30 cm (19%)

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 11		М	Brown, surficial soil with abundant
			large roots; creosote-soaked
11- 20		М	Organic-rich, rooted, brown clay; strong creosote odor
20- 34		Н	Spongy, brown, clayey peat with heavy silvery black sheens of creosote
34- 52	34-46 cm (Z0301)	М	Spongy, brown, clayey peat with brown creosote staining; silvery in places
52- 70		М	Dull brown, creosote-stained, clayey peat; firm and friable due to organic
			content
70- 82		L	Large roots; creosote-stained
82-110	102-106 cm (Z0302)	М	Brown, wet, clay-rich peat with more permeable zones of leaf litter
110-132		М	Very wet, brown, peaty clay with roots and creosote staining

CORE: Z04 DATE: 9 Jan 81 LOCATION: Mid channel of upper creek

TOTAL CORED DEPTH: 165 cm (Vibracore) COMPACTION: 60 cm (36%)

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 32	16-24 cm (Z0401)	Н	Organic detritus; mostly leaves; com- pletely soaked with creosote; silvery black colors
32- 60	н А.	М	Dark brown, clayey silt saturated with creosote; patches of brown sheens appeared at surface of cut
60-105	86-92 cm (Z0402)	L	Soft, plastic, blue-gray clay; brown sheens of creosote appeared at surface of cut; has mottled appearance; two, large, silt-filled root holes

CORE: Z05 DATE: 9 Jan 81

LOCATION: On upper floodplain, western side of creek

TOTAL CORED DEPTH: 202 cm (Vibracore) COMPACTION: 12 cm (6%)

DEPTH	CHEMICAL SAMPLE INTERVAL	VISUAL ESTIMATE	
(Cm)	(No.)	OF CREOSOTE	DESCRIPTION
0- 10		Ø	Surficial soil layer; dark brown, soft, moist clay with small roots
10- 50		Ø	Dark brown, peaty clay; hard, sticky, and crumbly
50- 90		Ø	Very hard, dark brown, peaty clay
90-102		Ø	Medium brown, silty, peaty clay; hard and crumbly
102-150	110-120 cm (Z0501)	Ø?	Brownish, light gray clay with orange mottling; possible faint creosote odor
150-194		Ø	Light gray, stiff clay with orange mottling

CORE: Z06 DATE: 9 Jan 81

CORE: Z07

LOCATION: On eastern channel of creek on a small, clayey slump block

TOTAL CORED DEPTH: 132 cm (Vibracore) COMPACTION: 24 cm (18%)

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 8		Н	Coarse, gravelly sand and dark brown clay with heavy creosote content
8- 12		Н	Leaf detritus zone; flat, compacted leaves; very heavily soaked with creo- sote
12- 18		Н	Coarse sand with heavy creosote content
18- 20		Н	Leaf detritus zone with heavy creosote
20- 24		Н	Coarse sand with heavy creosote
24- 38	28-32 cm (Z0602)	Н	Soft, black, fluff mud with few leaves; very heavy creosote
38- 46		Н	Coarse sand with heavy creosote; irreg- ular, scoured, basal contact
96-108	54-64 cm (Z0601)	L	Blue-gray clay with turquoise, yellow, and light purple mottling which is very
			faint; very stiff and plastic; faint
			creosote odor at 54 cm near creosote-
			covered stick; visible discoloration in

CORE: Z	07	2	LOCATION:	On lower	floodplain	west of
DATE: 1	0 Jan 81			creek		
TOTAL CO	RED DEPTH:	70 cm (Hand au	iger)			
COMPACTI	ON: None					
	CHEMICAL					
	SAMPLE	VISUAL				
DEPTH	INTERVAL	ESTIMATE				
(cm)	(No.)	OF CREOSOTE	DESCRIPTION			
0- 10	0-10 cm	Ø	Black, orga	nic-rich	soil with a	bundant
	(Z0701)		roots and s	mall worm:	S	
10- 60		Ø	Wet, dark g	ray and b	rown, claye	y peat
60- 70		Ø	Dark gray,	plastic c	lay	

Dark gray, plastic clay

greasy patches of core

CORE: Z08 LOCATION: 10 x 17 m pile of creosote DATE: 10 Jan 81 30 m east of creek TOTAL CORED DEPTH: 85 cm (Hand auger) COMPACTION: None

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF CREOSOTE	DESCRIPTION
0- 45	0-15 cm (Z0802)	Н	Pure creosote; surface has a hardened, asphalt-like skin
45- 85	75-85 cm (Z0801)	Н	Soft clay saturated with creosote, which decreases slightly with depth

CORE: Z09 DATE: 10 Jan 81

LOCATION: On small swamp on southern side of Bayou Bonfouca directly across from drainage canal

TOTAL CORED DEPTH: 309 cm (Vibracore) COMPACTION: 73 cm (24%)

DEPTH (cm)	CHEMICAL SAMPLE INTERVAL (No.)	VISUAL ESTIMATE OF_CREOSOTE	DESCRIPTION
0- 16	0-10 cm (20901)	Ø	Medium brown, clayey peat with abundant roots; strong H_2S odor; very wet, soft in patches; no detectable creosote
16- 40		Ø	Medium brrown, clayey peat; scattered roots; very wet; lenses of almost pure clay
90-160		ø	Dark brown, more compact, clayey peat
160-206		Ø	Dark brown, more compact, clayey peat with scattered 2-4 cm roots
206-216		Ø	Dark brown, peaty clay; very soft and and wet
216-236		Ø	Light gray, soft, sticky clay