United States
Environmental Protection
Agency

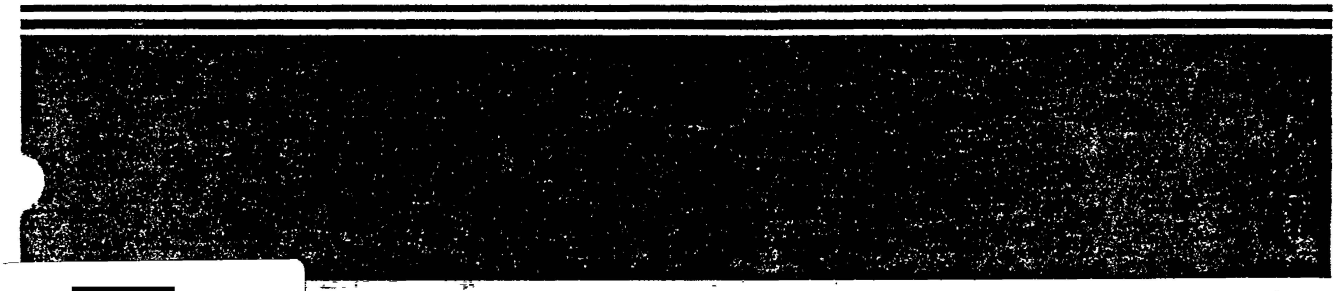
Office of
Emergency and
Remedial Response

EPA/ROD/R06-89/053
September 1989

EPA

Superfund Record of Decision:

United Creosoting, TX



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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The 100-acre United Creosoting site is in Conroe, Montgomery County, Texas. The site currently is occupied by a distributing company, a construction company, and a residential subdivision. From 1946 to 1972, the United Creosoting Company operated a wood preserving facility at the site which used PCPs and creosote in the wood preservation process. PCP and creosote wastes were stored in two waste ponds on the property of the distributing company. During 1980 the county improved area roads using soil and waste pond backfill from the site. Because residents living near the improved roadways experienced health problems, the county sampled and compared leachate composition from the affected roadways and the site and determined that the leachate from both the site and the roadways were contaminated with PCPs. Roadway soil was subsequently removed and disposed of using land farm treatment. In 1983, due to contaminated stormwater runoff from the former waste pond areas, the property owner was directed under terms of an EPA Administrative Order to regrade contaminated soil, divert surface water drainage away from the residential portion of the site, and cap contaminated soil. This Record of Decision (ROD) specifies a final remedy for the contaminated soil and complements a 1986 ROD which determined that no action is necessary to remediate shallow ground water. The primary contaminants of concern affecting the soil are organics including PAHs, PCPs, and dioxins. (See Attached Sheet)

17. Document Analysis a. Descriptors

Record of Decision - United Creosoting, TX
Second Remedial Action - Final
Contaminated Media: soil
Key Contaminants: organics (PAHs, PCPs, dioxins)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 83
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse*

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

. Abstract (continued)

e selected remedial action for this site includes excavation and onsite treatment of
,000 cubic yards of soil containing contaminants which exceed target action levels,
ing critical fluid extraction and recycling or discharging wastewater generated during
e treatment process; incinerating and disposing of the liquid organic concentrate
sidues offsite; spreading treated soil on commercial portion of the site; backfilling
sidential areas with clean fill; and air monitoring. The estimated present worth cost
r this remedial action is $22,000,000 which includes present worth O&M costs of
9,750,000 for 30 years.

RECORD OF DECISION

FOR

UNITED CREOSOTING SITE
CONROE

MONTGOMERY COUNTY, TEXAS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
SEPTEMBER 1989

002444

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DECLARATION
UNITED CREOSOTING COMPANY
RECORD OF DECISION

September 1989

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SITE NAME AND LOCATION

United Creosoting Company
Conroe, Montgomery County, Texas

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the United Creosoting site, in Conroe, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document explains the factual and legal basis for selecting the remedy for this site.

The Texas Water Commission supports the selected remedy. The information supporting this remedial action decision is contained in the administrative record for this site.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The major components of the selected remedy include the following:

- Sample the residential area to better delineate all soils falling above the target soil action levels established in this Record of Decision.
- Excavate all soils from residential and commercial portions of the site that are above the respective human health criteria and treat via Critical Fluid Extraction.
- Dispose of the organic concentrate from the extraction process by off-site incineration.
- As human health criteria and as treatment standards for K001 contaminated soils are met, the treated soils will be reburied on the appropriate portion of the site.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, and it satisfies the statutory preference for remedies that employ treatment that reduce toxicity, mobility, or volume as their principal element.

Because this remedy will not result in hazardous substances remaining on site above health-based levels, the five-year review will not apply to this action.

Robert E. Layton Jr.

Robert E. Layton, Jr., P.E.
Regional Administrator
Environmental Protection Agency, Region 6

9/29/89
Date

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DECISION SUMMARY

DECISION SUMMARY
UNITED CREOSOTING COMPANY
RECORD OF DECISION

September 1989

I. LOCATION AND GENERAL DESCRIPTION

The United Creosoting Company site is located 40 miles north of Houston in the City of Conroe, Montgomery County, Texas [Figure 1]. The site is one fourth mile southwest of the Missouri-Pacific Railroad and Loop 336 intersection. Bound on the west and south by Alligator Creek, on the north by Dolores Street, and on the east by the Missouri-Pacific rail lines, the property is approximately one hundred acres in size. The physical characteristics of the site have been altered by redevelopment of the property, which has resulted in residential and light industrial structures typical of suburban settings.

Approximately 13,000 people currently live within a two-mile radius of the site. The site is now occupied by the Clarke Distributing Company, Conroe Construction Company, and the Tanglewood East Subdivision [Figure 2]. However, other residential areas surround the site to the immediate north, west and south, while industrial and commercial land uses are evident to the east.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

The United Creosoting Company operated as a wood preserving facility from 1946 through the summer of 1972. With the exception of the process building, where timber was debarked and cut to the desired product, the process areas became scarred by an accumulation of the black oily chemicals used for treating the lumber. Historical aerial photographs and analytical data obtained to date have been utilized to describe the process areas as they existed during active operations.

Formed lumber, such as telephone poles and railroad ties, were treated in a two-step process by the pressurized addition of pentachlorophenol [PCP] and creosote. The pressure cylinders were rinsed and the wastewater routed to one of the two process waste ponds located onsite. Segregation of the two waste streams allowed possible reclamation and reuse. The larger pond held mainly the creosote waste and the smaller pond the PCP process waste.

No evidence exists that PCP was produced onsite. However, PCP was stored in one or more of the storage tanks onsite. Creosote was produced via a coal tar distillation unit onsite and stored in lined pits just east of the process waste ponds. Creosote and other distillate fractions of coal tar included polycyclic aromatic hydrocarbons [PAHs] of varying molecular weights. Coal tar pitch, a dark brown to black amorphous residue, was an unusable by-product which was apparently disposed of in the larger process waste pond.

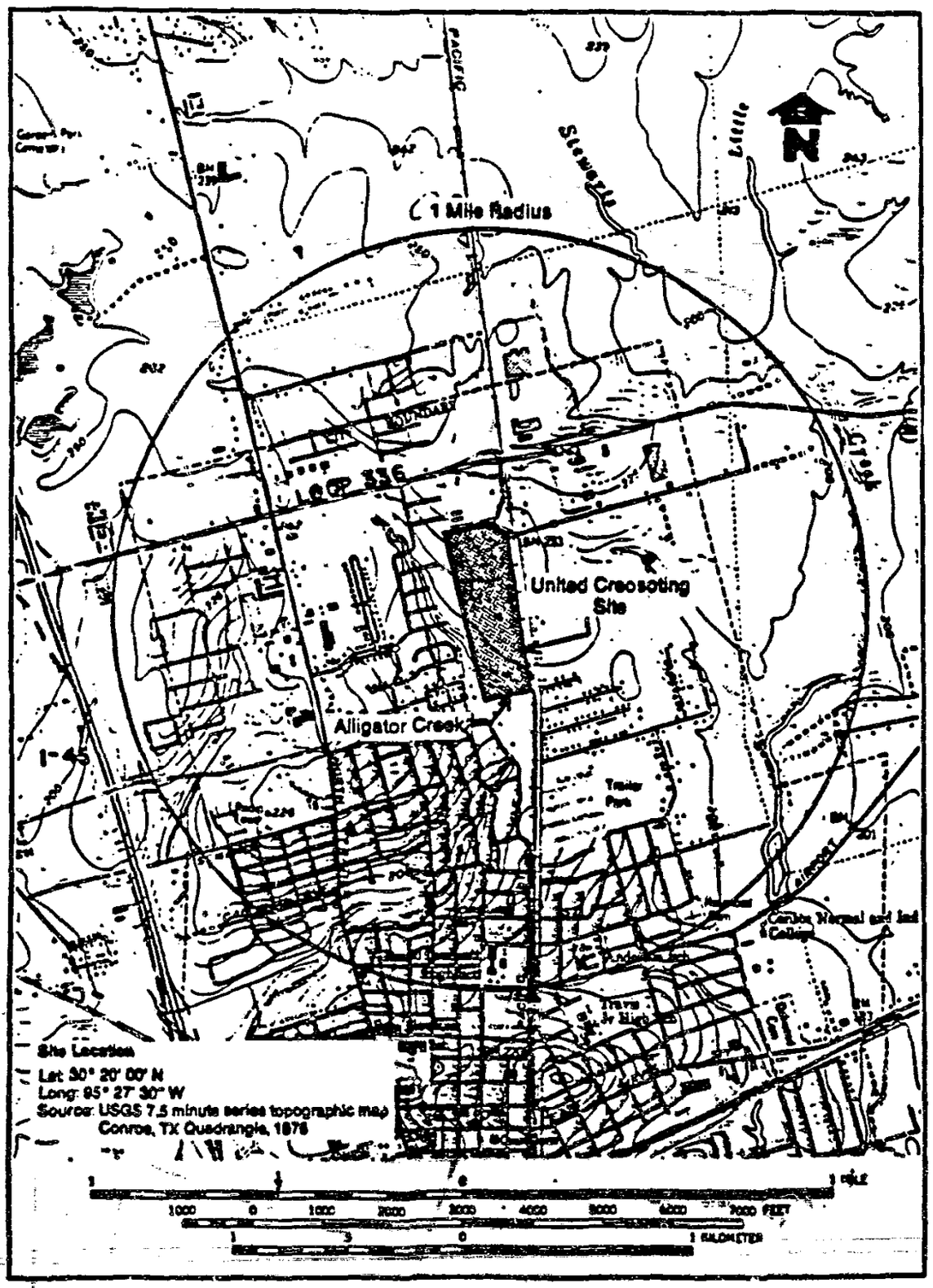

FIGURE 1 LOCATION MAP OF UNITED CREOSOTING

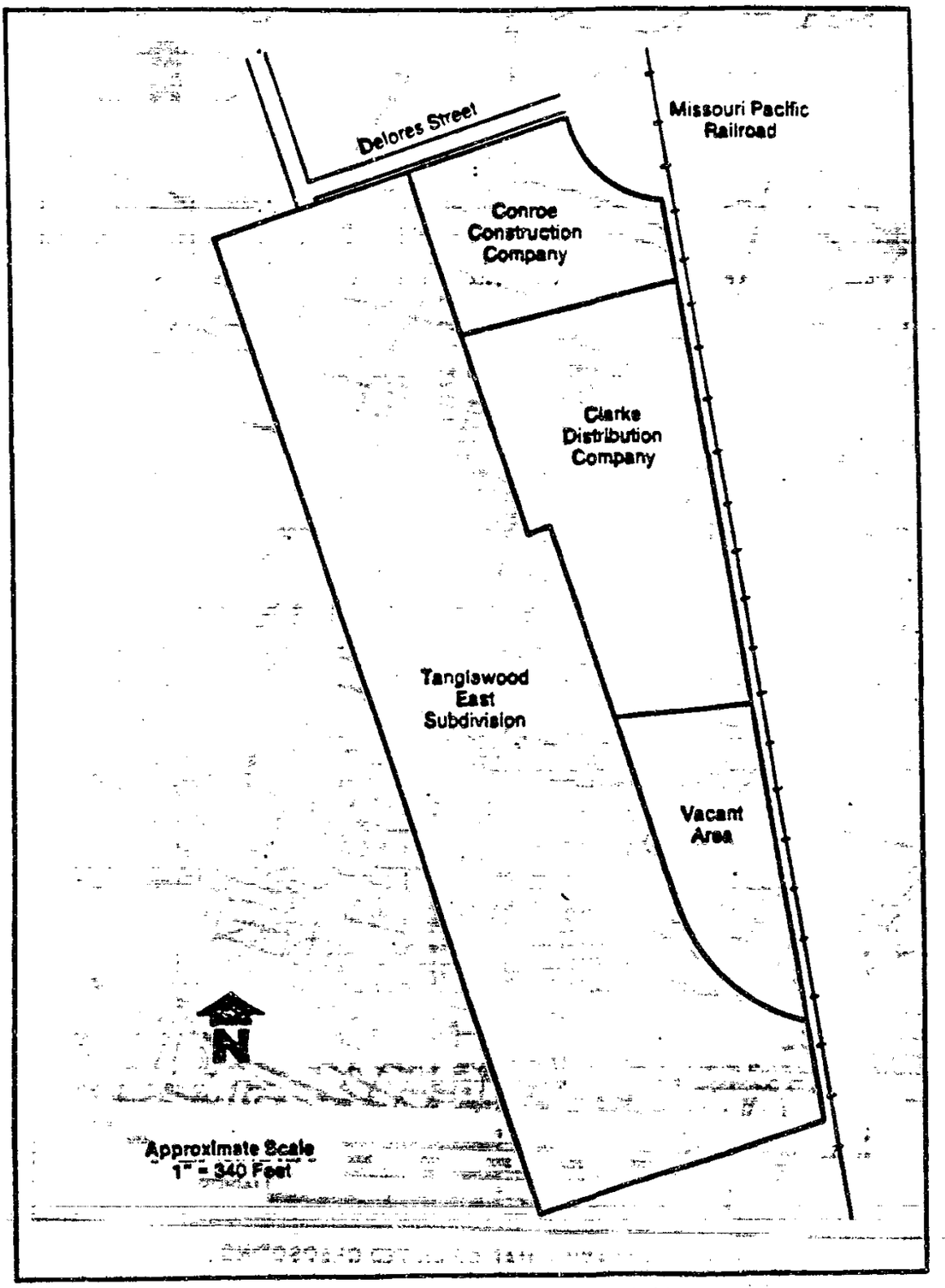

FIGURE 2 SCHEMATIC SITE LAYOUT

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In February 1970, the Texas Water Commission [TWC, at that time the Texas Department of Water Resources, TWC's predecessor agency], conducted a site investigation of United Creosoting and found no discharge of waste water from the site. Abandoned in 1972, the most apparent evidence of the former wood preserving operations was the remnant of the two waste ponds, an office building, and a garage structure. In 1977, the TWC inspected the site and reported that the former waste ponds were being backfilled. Redevelopment of the site had begun at this time.

During the summer of 1980, Montgomery County obtained soils from the United Creosoting site for improvements to Metts Road, Mockingbird Lane, and various roads in the Lake Conroe Forest Subdivision. These soils consisted of surface soils and pond backfill from the Clarke Distributing property. Citizens living along Metts Road complained of headaches, burns, respiratory problems, and damage to vegetation. Samples were collected from the roads and several locations on the Clarke Distributing Company property. Analysis of leachate from these soils indicated PCP concentrations up to 20.3 mg/L. Montgomery County officials removed the contaminated soils from the affected roadways and disposed of the soils by landfarm treatment.

In August 1982, TWC installed three monitoring wells on site. Additional wells were installed by the United States Environmental Protection Agency [EPA] Region 6 Field Investigation Team and by the National Center for Groundwater Research in 1982 and 1983. Analytical results of samples taken from these wells indicated that PAH and PCP contamination existed in the uppermost water bearing zone.

TWC submitted the United Creosoting site as a candidate for cleanup under the Superfund program in August 1982. The immediate concern at that time was contaminated surface water runoff flowing from the former waste ponds area into Tanglewood East Subdivision. The TWC collected additional soil, water and air samples from the site during the remainder of 1982 and into early 1983. In September 1983 the United Creosoting site was included on the proposed National Priorities List by EPA and thus became eligible for remedial funding. [48 Federal Register 40658, September 8, 1983]

In early December 1983, EPA initiated an immediate response action at United Creosoting. Twenty-five surficial soils samples were taken in the vicinity of the former waste ponds and within the Tanglewood East subdivision. The soils were found to be contaminated with PCP and chlorinated dioxins and dibenzofurans, trace byproducts of commercial grade PCP. It was suspected that the source of the contamination might be storm water runoff from former waste pond areas located on the Clarke Distributing property.

Based on the sampling results, Clarke Distributing was directed under the terms of an EPA Administrative Order on Consent to undertake an immediate response action within the area of the former waste ponds. The action was completed in April 1984. Exposed sections of contaminated soils were regraded so that surface water drainage was diverted away from the

subdivision. Areas of contaminated soil were capped with a synthetic membrane and at least 6 inches of compacted clay. Access to the cap area was restricted by the addition of 200 feet of fence, and drainage ditches were constructed to channel cap area runoff to the south through Clarke-owned vacant land.

A Cooperative Agreement for a Remedial Investigation and Feasibility Study (RI/FS) was awarded to the State of Texas in March 1984. Fieldwork for the Remedial Investigation was conducted in two phases, the first in December 1984 and the second in August 1985. The data generated was used to estimate the extent and magnitude of contamination at the United Creosoting site, and to develop and evaluate several remedial alternatives for the Feasibility Study.

This feasibility study was completed in May 1986. Alternatives evaluated in the report included offsite and onsite thermal destruction, offsite and onsite land fill disposal, consolidation and permanent or temporary capping, and no action. In August 1986, EPA proposed a remedy for the site which included:

- o Purchase of seven properties above and adjacent to the former pond area;
- o Consolidation of soils contaminated above health-based levels and visibly contaminated soils in the pond area;
- o Construction of a temporary cap over the pond area;
- o Evaluation of innovative technologies as possible permanent remedies, and;
- o Natural attenuation of the ground water contamination.

EPA also proposed to consider a re-evaluation of this remedy in five years if no innovative technologies became available.

In August 1986, EPA held a public meeting at the Travis Junior High School in Conroe to discuss this proposal and the other alternatives developed with the residents in Conroe. The major comment received from the residents was a request that EPA purchase all of the homes in the Tanglewood East subdivision. However, this was not necessary to implement the remedy and therefore could not be done. The public also expressed concern over the use of incineration near a residential area. A third major comment at the meeting regarded the use of biological treatment as a remedy.

EPA signed a Record of Decision on September 30, 1986, selecting the originally proposed alternative as the remedy for United Creosoting.

On October 17, 1986, Superfund was reauthorized with significant changes to the types of alternatives to be evaluated. These changes included the preference for onsite remedies and the use of treatment technologies to reduce the mobility, toxicity, or volume of waste to the maximum extent practicable. In March 1987, two treatability studies were initiated to evaluate innovative technologies as possible remedies for the site. These treatability studies involved biological treatment and critical fluid extraction. A biological treatment bench scale study was conducted from August 1988 to November 1988. Critical fluid extraction was evaluated with a pilot scale unit set up on site in March 1989.

The results of these treatability studies were reported in an amended feasibility study in June 1989. These results, along with a proposed plan to use critical fluid extraction as the remedy for the site, were presented to the public in July 1989.

Implementation of a permanent remedy at this time would preclude the need for the consolidation and temporary capping portion of the remedy selected in the 1986 ROD. EPA will finalize the acquisition of the seven properties in the former pond area. Six of these properties have been purchased; EPA is awaiting the removal of an Internal Revenue Service lien against the seventh property.

During the course of the ongoing investigation, EPA has identified nine Potentially Responsible Parties [PRPs] for this site. Although PRPs have been given the opportunity to participate in all actions that have been taken through the 1986 Record of Decision, no responses have been received to date.

The PRPs will also be offered the opportunity to participate in the implementation of the final selected remedy. If negotiations are still unsuccessful, the cleanup will be Fund financed, and appropriate cost recovery actions will be sought at a later date. Any additional PRPs identified will also be offered the opportunity to voluntarily participate in implementing the selected remedy.

III. COMMUNITY PARTICIPATION

During the 1940's, when United Creosoting began operation, the site was relatively isolated from any significant population concentrations or urban development. Once operations ceased, in 1972, the property remained essentially dormant until redevelopment of the area began in 1977. Residential property owners were basically unaware of the previous land usage and the potential hazards until the site was added to the National Priorities List in September 1983.

An initial property owners' meeting was held on September 6, 1983, to discuss the Superfund program and current site conditions. The vast majority of those in attendance demonstrated a very high level of concern about the long-term effects of continuous exposure to contaminants found onsite. In subsequent meetings they have requested a total buyout of the subdivision.

The press release announcing the public comment period and public meeting for the alternatives presented in this ROD was issued on July 10, 1989. The comment period began on July 17 and ended on August 15, 1989. An open house was held with the area residents on July 15 to outline the alternatives presented in the Feasibility Study Amendment Report. Forty people registered at this open house. The public meeting was held on August 3, 1989, in the St. Marks Lutheran Church Fellowship Hall in Conroe, Texas. Forty-eight people registered at the meeting and six made oral statements or asked questions.

IV. SCOPE AND ROLE OF REMEDIAL ACTION

This Record of Decision specifies the final remedy for contaminated soils at the United Creosoting site. Since contaminants will be removed from these media to health based levels, this ROD complements the 1986 decision that no action is needed to remediate the shallow ground water.

V. SITE CHARACTERIZATION

Topography

The natural topography at the United Creosoting site comprises gently rolling uplands and the natural vegetation consists of virgin forest. As a result of industrial and residential development, much of the natural soils in the site vicinity have been disturbed or covered by fill material and various structures. Alligator Creek, which skirts the southwestern portion of the site, winds through residential properties in a southern direction under subdivision streets in a galvanized culvert. Once offsite, Alligator Creek flows in an improved channel for five miles to the West Fork of the San Jacinto River.

Surface water drainage enters Alligator Creek at various locations on and off the United Creosoting site [Figure 3]. Overall site surface water drainage flows to the south. The subdivision properties drain into the streets of Tanglewood East, and then into Alligator Creek via culverts. Conroe Construction property runoff flows west into the subdivision drainage system at Arlington Street. Clarke Distributing Properties drain to the south and into a ditch which feeds Alligator Creek. The cap area over the former waste ponds also drains into this ditch, and runoff from

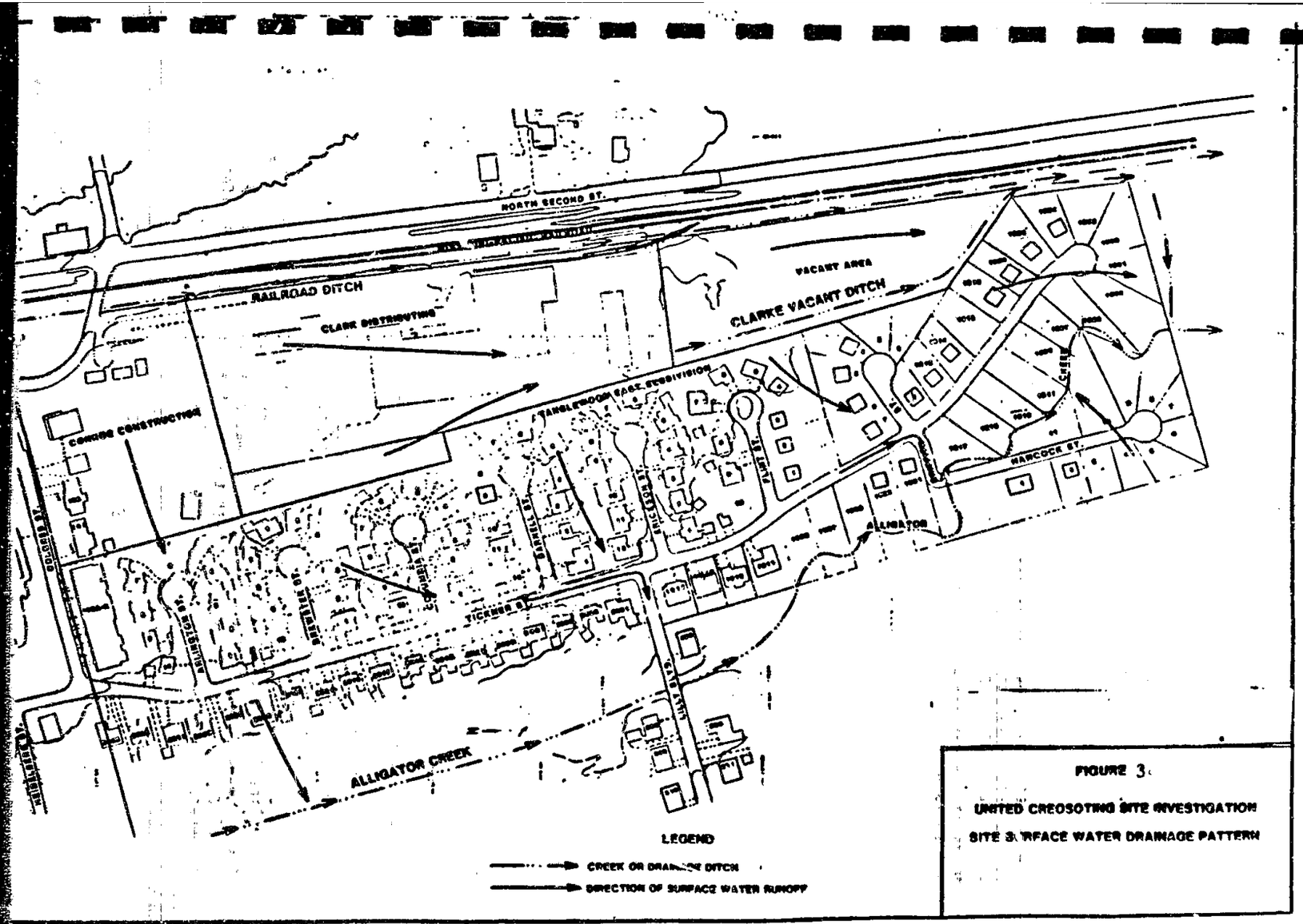

FIGURE 3.

UNITED CREOSOTING SITE INVESTIGATION

SITE SURFACE WATER DRAINAGE PATTERN

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paved areas is forced into the ditch by curbing. There is minimal runoff from Clarke Distributing into the east drainage ditch, just west of the Missouri-Pacific Railroad. This railroad ditch and the vacant area drainage ditch do not interact.

Geology

The United Creosoting site is geographically situated in the West Gulf Coastal Plan Physiographic province of Texas. The natural soils at the site consist of the Conroe and Splendora series. These soils range from gravelly loam to loamy fine sand of nearly level to 5-percent slopes. The soils have moderate available water capacity.

The site is underlain by unconsolidated sand, gravels, and clay in alluvial deposits. These deposits are of Pleistocene Age (3 million to 20 thousand years old) and were formed by high-gradient braided streams that flowed coastward from uplands to the north. The surficial sediments at the site belong to the Willis Sand Formation, the most coarse of the Pleistocene Formations.

The Willis Formation consists largely of clayey sand and gravel, and some localized clay beds. The gravel is fairly coarse, is uniformly sandy, and contains much fossilized or petrified wood. The Willis Formation dips toward the Gulf at about 10 feet per mile and, in the vicinity of the site, is estimated to be approximately 70 feet thick. The approximate elevation of the top of the Willis Formation at the United Creosoting Company site is 230 feet MSL.

Underlying the Willis Formation are the Goliad Sand (Pliocene Age), Fleming Formation (Miocene Age), Catahoula Sandstone (Miocene Age), and the Jackson Group (sandstone and clay members of the Eocene Age). The thickness of these sediments above the top of the Jackson Group is approximately 3,600 feet in the vicinity of the site.

Hydrogeology

Ground water is the major source of public and industrial water supplies in Montgomery County, Texas. At least 60 wells have been reported in frequent use within the Chicot and Evangeline aquifers up to two miles downgradient from the United Creosoting site [Figure 4]. High volume, multiple-user wells such as the City of Conroe municipal supply wells are generally screened in the deeper Evangeline sand and single-user domestic wells are found in the shallow Chicot formation.

In the Conroe area, the Chicot Aquifer consists of the Willis Sand. The Evangeline Aquifer comprises a sequence of alternating sands and clays of the Goliad Sand and part of the Fleming Formation above the Burkeville Aquiclude. The flow direction in both the Chicot and Evangeline Aquifers is generally southward at a hydraulic gradient of 4 feet per mile and

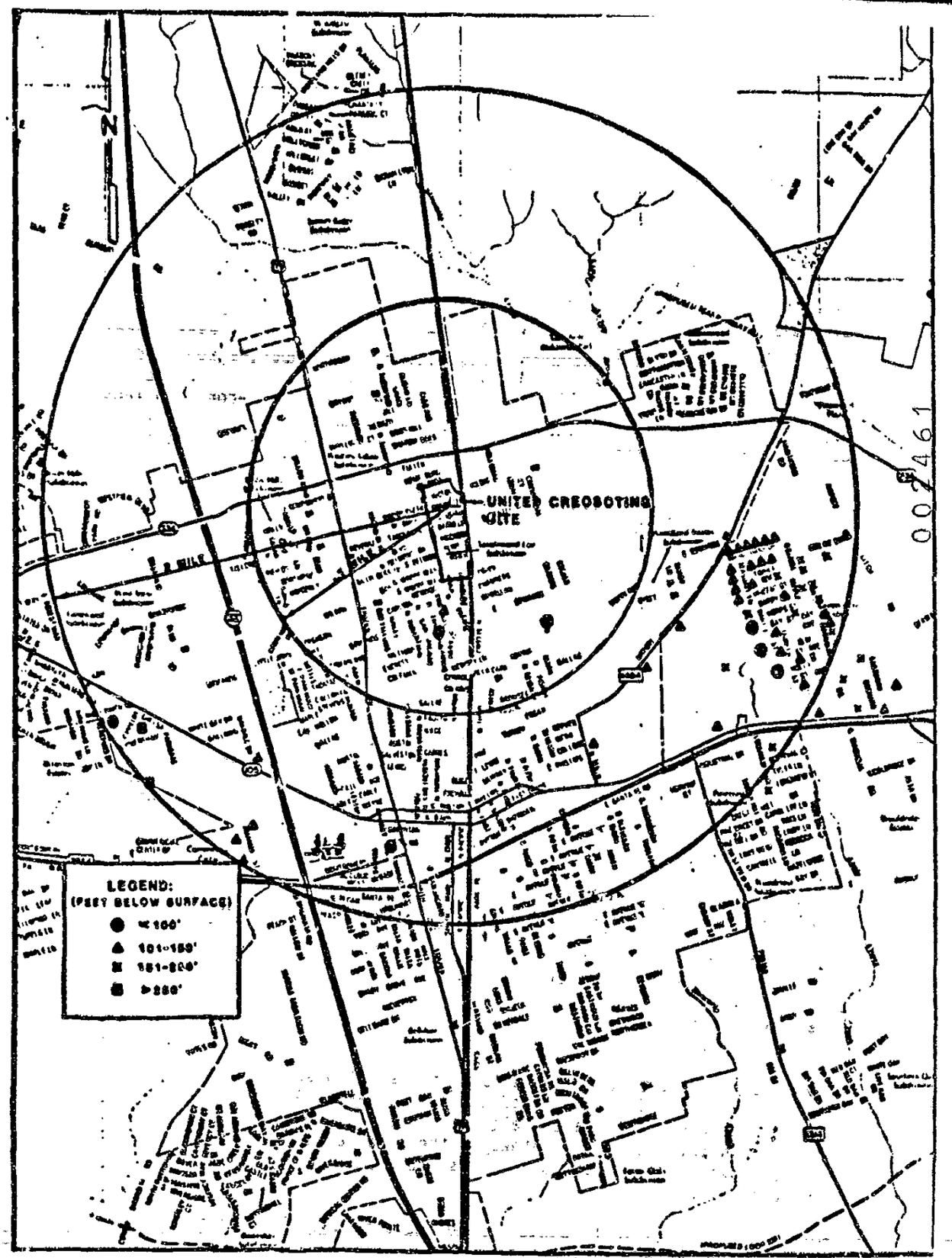

FIGURE 4

EXISTING AREA WELLS DOWN-GRADIENT OF THE UNITED CREOSOTING SITE

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5 feet per mile, respectively. The Chicot Aquifer is as shallow as 66 to 76 feet below ground surface and is recharged by precipitation. The Evangeline sits 825 to 1,190 feet below ground surface and has decreased in water level as much as 10 to 25 feet over the last decade due to withdrawals in the Conroe area.

As a domestic water resource, use of the the shallow water bearing zone directly beneath the site is not anticipated due to the extremely low yield. This 25-foot zone is comprised of two interconnected sand lenses separated intermittently by a thin clay layer. The upper, unconfined lens begins at a depth of 14 to 44 feet below the ground surface and averages approximately 10 feet thick while the lower, semi-confined lens begins at a depth of 26 feet. Ground water movement in this shallow aquifer averages between 5 to 15 feet per year in a southern direction.

A second water bearing zone exists at an approximate depth of 56 to 84 feet below the ground surface and is approximately 20 feet thick. Ground water movement in this deeper zone also averages between 5 to 15 feet per year in a southern direction. However, a clay aquitard separates this zone from the shallow aquifer. The thickness of the aquitard ranges from 22 to 32 feet and the permeability of this layer is approximately 10^{-5} feet per day, indicative of clays which can retard vertical migration.

Nature and Extent of Soils* Contamination

The Remedial Investigation fieldwork at United Creosoting was conducted in December 1984 and August 1985 with the purpose of acquiring site-specific data needed to document the existence of hazardous substances and any threats of releases of hazardous substances at the site. Contaminants of concern in soils* were selected by assessing their toxicity, concentration, and persistence. Background concentrations of some of the contaminants commonly found in suburban settings were used for comparative purposes. The 1985 RI Report confirmed the following:

- The light commercial area contains mainly subsurface soils contamination in the former ponds area down to a depth of 20 to 25 feet [water table]. A total of 40,000 cubic yards is estimated above background concentrations.
- No soil contamination was found in the clays beneath the water table.
- The residential area contains mainly shallow soils contamination to an average depth of 3 feet. Around the former waste ponds area, along the prior processing area, and in prior drainage pathways, the total estimate is approximately 53,000 cubic yards above background concentrations.

*Other media specific findings can be found in the 1986 Record of Decision. (i.e. ground water, air, etc.)

- Visual areas of contamination throughout both the industrial and residential areas in the form of "tar mats" and stressed vegetation include approximately 6,000 cubic yards (included in the above estimates).

Contaminants of concern include polycyclic aromatic hydrocarbons [PAHs], pentachlorophenol [PCP], and chlorinated isomers of dioxin and dibenzofuran. Table 1 lists only the maximum concentrations of these compounds found in different areas of the United Creosoting site. Most of the high concentrations reported in the residential area were reported in the area close to the asphaltic mat of the southwest portion of the commercial area. Average concentrations over the residential area are significantly lower for each contaminant.

During the investigation of options for treating the soils, the site was not re-sampled. A more detailed sampling effort will be required before conducting the remedial design. This was expressed as a concern at the August 3, 1989, public meeting. Therefore, EPA will conduct pre-design sampling in the residential area.

VI. SUMMARY OF SITE RISKS AND REMEDIATION GOALS

In 1985, the Agency for Toxic Substances and Disease Registry [ATSDR] was consulted to establish remedial action criteria for the site. At that time, ATSDR indicated that a criterion of 100 parts per million [ppm] of total PAHs in the soil would adequately protect human health. Since 1985, the methodologies for evaluating risks and remedial action criteria have been refined. The remedial action criteria used in this ROD were developed based on these refined methods published in: Risk Assessment Guidance for Human Health Evaluation Manual, 1989 OSWER Directive 9285.701A and the Superfund Public Health Evaluation Manual, 1986 OSWER Directive 9285.4-1.

The overall goal of the remedial action is to reduce the potential risks posed by the site to between one in ten thousand and one in one million excess cancer risk incidents. The methodologies outlined in the guidance were used to develop site specific criteria for the contaminants at United Creosoting to meet this objective.

Human Health Impacts

The following summary highlights the broad concerns raised as a result of the risk assessment process, but does not present the numerous assumptions and constraints employed in a typical assessment. Only the worst case risk is presented. Conservative assumptions were used to explore the potential for adverse health effects to occur under conditions that tend to overestimate risks. As a result, the risk assessment should not be construed as presenting an absolute estimate of risk to human health. Rather, it is a conservative analysis intended to indicate the potential for adverse health effects to occur.

TABLE 1: CONTAMINANTS IN SOIL

POLYCYCLIC AROMATIC HYDROCARBON COMPOUNDS (PAHs)	MAXIMUM CONCENTRATIONS (mg/kg)		
	Former Ponds	Commercial Area	Residential Area
Acenaphthene	860 [5]	300 [10]	2,600 [s]
Acenaphthalene	15[cp]	-------	8.9[cp]
Anthracene	280 [2]	240 [5]	970 [s]
† Benzo(A)Anthracene	180 [2]	29# [5]	2,000#[s]
† Benzo(A)Pyrene	3.6 [4]°	6.3 [s]	650 [s]
† Benzo(B)Fluoranthene	51[cp]	-------	268[cp]
† Benzo(G,H,I)Perylene	No Detect	5 [s]	84 [s]
† Benzo(K)Fluoranthene	6.4 [3]	27##[s]	1,700##[s]
† Chrysene	130 [2]	29# [s]	2,000#[s]
† Dibenzo(A,H)Anthracene	370[cp]	-------	724[cp]
Dibenzofuran	930 [5]	330 [5]	15 [3]
Fluoranthene	980 [5]	280 [5]	700 [s]
Fluorene	1,100 [5]	370 [5]	No Detect
Indeno(1,2,3-CD)Pyrene	19[cp]	-------	376[cp]
Naphthalene	1,200 [5]	570 [10]	11 [3]°
Phenanthrene	7,400 [5]	940 [5]	970 [s]
Pyrene	1,600 [5]	430 [5]	2,800 [s]

[redacted]

° The Only Detection for the area given.

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TABLE 1: CONTAMINANTS IN SOIL

OTHER ORGANIC COMPOUNDS OF CONCERN	MAXIMUM CONCENTRATIONS (ug/kg)		
	Former Ponds	Commercial Area	Residential Area
Pentachlorophenol (mg/kg)	1,100 [5]	710 [15]	150 [s]
†Clorinated Dioxins			
Tetra-, total ¶	5.34 [4]°	No Detect	0.36 [s]
Penta-, total	2.1 [2]	No Detect	7.3 [s]
Hexa- , total	2.8 [4]	4.1 [s]	27 [3]
Hepta-, total	48 [4]	180 [s]	720 [s]
Octa- , total	240 [5]	520 [s]	6,000 [s]
†Clorinated Furans			
Tetra-, total	No Detect	No Detect	No Detect
Penta-, total	No Detect	No Detect	No Detect
Hexa- , total	5.1 [5]	6.6 [15]	140 [s]
Hepta-, total	37 [4]	41 [s]	890 [s]
Octa- , total	33 [5]	37 [15,s]	1,500 [s]

† Carcinogenic Compounds: only the 2,3,7,8-disubstituted isomers of dioxin and furan.

° The Only Detection for the area given.

¶ 2,3,7,8-tetrachlorodibenzodioxin was analyzed for, but was not detected on the site.

[ ] Depth of Concentration Represented in feet; "s" represents surficial soils less than 6 inches in depth.

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The United Creosoting site comprises two separate areas, a residential area bordered on the east by a light commercial area. Therefore, a different set of circumstances determine the exposure for residents living onsite versus that for employees working onsite. For instance, workers onsite would spend only a portion of their day in potential contact with contaminants in comparison to residents which live onsite. In addition, this partial exposure would last only for the number of years a person was employed onsite.

Since the residential exposure scenario is the most conservative, potential adverse health impacts were analyzed to develop a "worst case" example. This exposure scenario is based on an individual living on the site for 70 years, from infancy through adulthood. The assumption is made that exposure to the maximum concentration level identified onsite occurs every time exposure occurs over a resident's 70 year lifetime. Table 2A lists other assumptions which were used for this scenario. For comparison, Table 2B lists the assumptions which could be used for an office employee working onsite.

Chemicals onsite which are not cancer-causing [noncarcinogenic] compounds are found mainly in subsurface soils in the former ponds area or in surficial tar mats in the residential area. Current exposure is thus limited. If the areas are disturbed, adverse health effects can result from the levels identified at United Creosoting as established by ATSDR in 1986. For example, after continued exposure, an individual might develop skin irritations from contact with PAHs in soils. However, these symptoms would disappear when exposure is eliminated. PCP is currently considered noncarcinogenic, yet ingestion may result in kidney and liver problems.

One assumption requiring discussion involves the tar mat areas in residential areas which contain high levels of PAHs. As a mat degrades and becomes similar to soil, uptake of contaminants from incidental exposure may increase. The risk of a person developing health problems from ingesting or dermally contacting contaminants in the soil-like material may also increase. However, contaminants in the tar are unlikely to be ingested at the same rate as if ingested in the form of actual soil. Although this scenario is extremely conservative at present, over the long term, the given soil ingestion rate may become more realistic.

PAHs known or suspected to be cancer-causing [carcinogenic] compounds may vary in toxic potency. Coupled with noncarcinogenic effects, the picture of toxicity becomes complex. Therefore, exposure and uptake of these compounds into the body varies not only with the circumstances at United Creosoting, but also with the mixture of PAHs present. For example, current risk assessment methodology assumes the total maximum concentration of all carcinogenic PAHs is essentially all benzo(a)pyrene [BAP], one of the most toxic PAHs onsite. At United Creosoting, BAP represents from [illegible] of the total carcinogenic PAH concentration.

TABLE 2A: RESIDENTIAL EXPOSURE ASSUMPTIONS

AGE CLASS (YEARS)	DURATION OF EXPOSURE (YEARS)	SOIL INGESTION RATE (KG/DAY)	BODY WEIGHT (KG)	FREQUENCY OF EXPOSURE (DAYS/YEAR)
0-1	1	0	10	0
1-6	5	0.0002	17	356
6-12	6	0.0001	30	365
12-18	6	0.0001	55	104
18-70	52	0.0001	70	52

Exposures for each age class are summed to obtain exposure over a person's expected 70 - year lifetime.

TABLE 2B: WORKER EXPOSURE ASSUMPTIONS

AGE CLASS (YEARS)	DURATION OF EXPOSURE (YEARS)*	SOIL INGESTION RATE (KG/DAY)	BODY WEIGHT (KG)	FREQUENCY OF EXPOSURE (DAYS/YEAR)**
18-70	30	0.0001	70	260

*Years employed on the site.

** Frequency of Exposure for Light Commercial Business also assumed only 8 hours/day out of 16 waking hours/day of potential exposure.

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Under the scenario evaluated, a person who is exposed to the maximum concentration of carcinogenic PAHs found in the residential area might have a seventy-four in one thousand chance of developing cancer over his expected seventy year lifetime if no remedial action is taken at the site. However, this is an extremely conservative estimate of the excess cancer risk for PAHs found in soil at the United Creosoting site. First, the high concentration utilized in this risk estimate for exposure to PAH contaminated soils was detected in a tar mat area and a soil ingestion rate was used. Next, the total concentration of carcinogenic PAHs was assumed all BAP. Therefore, the actual excess cancer risk due to carcinogenic PAHs at the site is most probably lower than seventy-four in one thousand and can even be zero.

Some dioxins and furans are also known to be carcinogenic and are present in the soils at United Creosoting. However, EPA has established criteria for dioxins and furans in soils. Guidance used to evaluate the levels present in soils at United Creosoting include Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and -Dibenzofurans, EPA/625/3-87/012, March 1987 and also International Toxicity Equivalency Factor (I-TEF) Method of Risk Assessment for Complex Mixtures of Dioxins and Related Compounds, Report No. 176, August 1988. Although concentrations of these contaminants at United Creosoting do exceed the health criteria for soils in a residential area, exposure is somewhat limited due to grass cover in most yards.

Environmental Impacts

Environmental concerns have been partially addressed in past removal activities and in the 1986 Record of Decision. For example, the source of ground water contamination is mainly PCP and noncarcinogenic PAHs found in the former ponds area. The temporary cap and diking of this area prevented further contaminated surface water runoff. The 1986 Record of Decision specified removal of this source. This Record of Decision includes how these compounds will be addressed in order to alleviate further degradation of groundwater and allow natural attenuation of the aquifer.

Remediation Goals

Remediation goals for the soils at the United Creosoting site involve reducing the potential for adverse human health and environmental impacts. Action levels for soils that were developed in the 1986 Record of Decision [ROD] took into account both human health and environmental impacts. However, these levels can now be expressed in a more definitive manner than possible in the 1986 ROD.

Toxicity information and the methodology for utilizing the information is better defined today than prior to the 1986 ROD. In the past, an entire class of compounds were identified as problematic if carcinogenicity was suspected for one of the individual chemicals. However, individual chemical toxicities of particular groups of compounds are better understood and more easily communicated today. For instance, the 2,3,7,8-dioxin isomers are now known to be the only isomers of dioxin and furan that exhibit carcinogenic characteristics. Another example is apparent with respect to PAHs. Although no criteria have been established for PAHs in soils to date, as for dioxins, a risk assessment methodology has been developed to estimate and better express action levels for these contaminants in soil.

The potential threat to human health posed by chlorinated dioxins and dibenzofurans is based on the established criteria for 2,3,7,8-tetrachlorodibenzodioxin (TCDD). Chlorinated dibenzofurans and all other isomers of dioxins are considered to be less toxic than 2,3,7,8-TCDD and are expressed in toxic equivalents of 2,3,7,8-TCDD. Therefore, although 2,3,7,8-TCDD was not detected at the United Creosoting site and is not typically found with the other dioxin isomers associated with PCP, the target action level for dioxins and furans in soils is expressed in parts per billion (ppb) toxic equivalencies of 2,3,7,8-TCDD:

Target Soil Action Levels for Dioxins and Furans

Residential Soils	1 ppb Total 2,3,7,8-TCDD Equivalents
Industrial Soils	20 ppb Total 2,3,7,8-TCDD Equivalents

These levels are intended to be utilized as criteria in evaluating a representative distribution of contaminants in shallow soils. The difference between residential and industrial soils was derived from the differences in exposure anticipated in a residential setting versus a light commercial area.

Today, most remedial activities are driven by carcinogenic compounds since the action level for carcinogens may be orders of magnitude more stringent than those levels developed for noncarcinogens. However, if carcinogens are not present, noncarcinogenic compounds may also drive a remedial action when concentrations occur at levels of concern to either human health or the environment. Therefore, two sets of criteria for contaminants in soil can be established to effectively remediate a site based upon both carcinogenic and noncarcinogenic action levels.

The contamination at United Creosoting is distributed in such a manner that both carcinogenic and noncarcinogenic contaminants appear in shallow soils throughout the site. However, subsurface soils in the former ponds area contain mainly pentachlorophenol [PCP] and noncarcinogenic PAHs. As specified in the 1986 ROD, these compounds present a threat to human health if disturbed and also present a threat of continued groundwater contamination. Although the 1986 ROD set a clean-up level of 100 parts per million [ppm] for Total PAHs in soils, this ROD presents two sets of action levels for PAHs in soil--carcinogenic and noncarcinogenic PAHs--to ensure effective protection of human health and the environment.

Target soil action levels for the areas where no carcinogens are present were calculated on the basis of noncarcinogenic health effects. These calculations are less complicated than carcinogenic estimates, as described in the same guidance documents previously referenced for calculating excess cancer risk. For example, the most conservative exposure scenario was used: a child who ingests 0.0002 grams of soil per day. Each chemical has a reference dose for acceptable daily intake. The ratio of the calculated intake to the reference intake should not exceed unity.

EPA retains the 1986 ROD action level of 150 ppm for PCP in soils. This level is ten times more protective than the level calculated for human health [1,500 ppm]. Yet this level is appropriate in consideration of removing subsurface contaminants to prevent further impact to the upper water bearing zone. Therefore, the target soil action level calculated for PAHs to be protective of human health [20,000 ppm] was also decreased by a factor of ten to account for the potential impact of subsurface PAHs to the environment:

Target Soil Action Levels for PCP and Noncarcinogenic PAHs

150 ppm Total PCP
2,000 ppm Total Noncarcinogenic PAHs

These levels are intended to be utilized in evaluating a representative distribution of contaminants in subsurface soils. Naphthalene was utilized for evaluating the effects of noncarcinogenic PAHs and for deriving a target soil action level in terms of "Total Noncarcinogenic PAHs".

The potential threat to human health posed by carcinogenic PAHs is based upon the toxic potency of benzo(a)pyrene [BAP]. The current methodology in assessing excess lifetime cancer risk assumes that all carcinogenic PAHs are BAP. For this reason, many RODs have specified target action levels for "Total Carcinogenic PAHs" in soil, assuming 100 percent BAP. However, other carcinogenic PAHs are now known to be toxic relative to BAP. EPA is currently attempting to rank other PAHs against BAP in toxicity equivalents similar to that method used for TCDD.

Since the number which represents "Total Carcinogenic PAHs" is a summation of individual carcinogenic PAHs, the toxicity of the mixture

is not effectively represented. Two samples may show the same total concentration of PAHs and yet the toxicities may be significantly different. An action level, however expressed, actually reflects the BAP concentration calculated from the risk level assumed for remediation of a site. Therefore, this RCD expresses action levels in ppb BAP equivalencies to ensure that the toxicity level of a mixture will be evaluated rather than merely the total concentration of carcinogenic PAHs at the time of remedial action:

Target Soil Action Levels for Carcinogenic PAHs

Residential Soils	330 ppb Total BAP Equivalents
Industrial Soils	40,000 ppb Total BAP Equivalents

These levels are intended to be utilized as the criteria in evaluating a representative distribution of contaminants in surface soils. The difference between residential and industrial soils was derived from the differences in exposure anticipated in a residential setting versus a light commercial area, as previously outlined in Tables 2A and 2B.

The level for residential soils is set at the current detection limit of individual PAHs in order to approach an excess risk level of one in one million. The level expressed for industrial soils corresponds to an excess risk of one in ten thousand. These levels fall within EPA's acceptable range for determining excess lifetime cancer risk.

VII. DESCRIPTION OF ALTERNATIVES

In accordance with the National Contingency Plan [NCP], 40 Code of Federal Regulations Part 300, initial remedial approaches were screened to determine which might be appropriate for the United Creosoting site. The 1986 Feasibility Study describes the details of this screening. The 1989 Feasibility Study Amendment Report revises this screening to account for changes in developing and evaluating remedial alternatives under the Superfund Amendments and Reauthorization Act of 1986 [SARA], Public Law 99-499, 100 Stat. 1613. From the possible remedies developed to address contaminated soils at United Creosoting six alternatives were chosen for detailed analysis. A No Action Alternative is included in the final analysis to comply with the NCP requirements.

Alternatives which involve excavation activities (all except the No Action) take into account the proximity of residences and area businesses during implementation. Potential air emissions during excavation would require intensive air monitoring and dust control. During remedial design, several methods to control these emissions will be developed and evaluated to ensure protection of human health. For example, knock-down spray [water] could be used to control particulates stirred up during excavation. Since contaminants are semi-volatile, the knock-down spray may be combined with the pace of excavation [slower rate] to prevent adverse air emissions. A contingency plan will be developed as part of the remedial design and area residents will be informed of what to expect during this activity.

This plan will describe the physical and work practice measures that will be undertaken to minimize and capture air emissions from the excavation and processing of waste. In addition, it will summarize air quality monitoring that will be performed at the site and in the community. Finally, it will establish the criteria for temporary relocation during construction.

This Record of Decision is based upon soil sampling information obtained in the 1985 Remedial Investigation. Each of the alternatives presented in this ROD were developed on the basis of 72,000 cubic yards of soils targeted for excavation in the 1986 ROD. While this data is adequate to frame the selection of broad remedial approaches possible for United Creosoting, it is not sufficiently detailed to prepare an engineering design for the remedy. Therefore, prior to the design of the remedy, the residential areas will be resampled to accurately map contours of soil contamination. This information will be assessed with the target soil action levels specified in this ROD to clearly delineate areas of surface soils that will be treated by the remedy. EPA will then meet with the community to review and discuss this information. In accordance with established agency policies, any significant difference in the remedy that this data may produce will be addressed in an amendment to this Record of Decision or in an "Explanation of Significant Differences" document.

Soils at United Creosoting are contaminated with a RCRA listed hazardous waste, K001 Wood Preserving Waste [40 CFR 261.32]. Therefore, the Land Disposal Restrictions [LDR] for treatment and disposal of soils containing the K001 listed waste are applicable requirements. For example, Best Demonstrated Available Technology [BDAT] standards for treatment of K001 Nonwastewaters will be used to evaluate placement [reburial] of treated soils at the site, along with target soil action levels based on human health criteria and current land use.

Conversely, PCP was not produced onsite and was not used in a manufacturing process as a reactant, intermediate, etc [40 CFR 261.31]. Therefore, Land Disposal Restrictions for the F021 listed PCP Waste are not applicable for soils contaminated with PCP and trace dioxins/furans. Treatment requirements for F021 wastes have not been promulgated to date. Therefore, health based levels developed in this ROD would be more appropriate for United Creosoting soils. However, other handling and temporary storage requirements are relevant and appropriate for alternatives which treat and dispose of contaminated soils onsite.

Ground water monitoring is included in all of the soil remedial alternatives as part of post closure monitoring to ensure that natural attenuation will occur. Although the time frame for establishing a trend towards natural attenuation is dependent on the type of alternative implemented, the cost for a 30 year period is included in each alternative since the post-closure monitoring was specified in the 1986 ROD. For example, excavation and ultimate destruction of the contaminants in the ponds area may achieve a noticeable trend toward natural attenuation in a more timely manner than consolidation and capping.

Alternative 1: No Action

No remedial action would be conducted for soils at United Creosoting. This alternative would not reduce the potential site hazards and would not provide long-term protection of human health and the environment. Since contaminants would remain onsite above health based levels, annual maintenance and 5-year facility reviews would be required.

This alternative would cost approximately $244,100 in net present worth dollars estimated over a 30 year period.

Alternative 2: Containment Onsite

Two separate caps would be constructed in accordance with minimum technology requirements under the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C.§6901 et seq. One cap would be placed over the former pond area and the other cap would be placed over the tank farm area. Contaminated soil in the residential area would be excavated and consolidated in one of these areas. Residential areas excavated would be backfilled with clean fill and restored to pre-remedial conditions as practical.

This alternative would prevent direct contact with the contaminants as long as the caps are intact. However, future land use could not be effectively restricted to prevent contact with subsurface contamination if the caps are damaged or the area disturbed. Vertical migration of contaminants would be reduced, but the ground water would continue to be impacted by the more mobile contaminants.

Implementation should take about 1 year to complete. Since contaminants would remain onsite above health based levels, annual maintenance and 5-year facility reviews would be required. This alternative would cost approximately $2.4 million in net present worth dollars estimated over a 30 year period.

Alternative 3: Onsite Incineration And Reburial

Soils would be excavated and treated in a mobile unit brought onsite designed specifically for United Creosoting contaminated soils. The unit would be equipped with advanced pollution controls and automatic shutdown devices to ensure that all Federal and State requirements would be met on a continuing basis.

Since incineration is a proven technology for destruction of these contaminants, treated soil could be spread on the commercial portion of the site as target soil action levels and LDR treatment standards are met. Residential areas excavated would be backfilled with clean fill and restored to pre-remedial conditions as practical.

The mobile treatment unit would be removed from the site once treatment of United Creosoting soils is completed. Implementation should take approximately 2 years. Maintenance and monitoring of the site would be necessary for the following year to ensure effectiveness of the remedy. However, since contaminants would be destroyed, 5-year reviews would not be necessary for soils. This alternative would cost approximately $46 million in net present worth dollars estimated over a 2 year period.

Alternative 4: Onsite Biological Degradation And Reburial

Soils would be excavated and treated onsite utilizing an enclosed biological treatment process.

A biological treatment pilot study was conducted with contaminated soils from United Creosoting site during the Feasibility Study. This experiment showed that biological treatment would:

(1) effectively reduce creosote compounds in soils to acceptable levels, but

(2) eight years of treatment would be required to accomplish this reduction, and

(3) the net toxicity of dioxin compounds was not reduced although concentrations of some isomers were reduced.

Treated soil reburied on the commercial portion of the site might need a cap similar to that described in Alternative 2 since target action levels could not be met. Although a 15 percent volume increase is anticipated, excess treated soil could not be placed in the residential area. Residential areas that were excavated would be backfilled with clean fill and restored to pre-remedial conditions as practical.

Implementation would take from 8 to 10 years to complete. Since contaminants would remain onsite above health based levels, annual maintenance and 5-year facility reviews would be required. This alternative would cost approximately $7 million in net present worth dollars estimated over a 30 year period. If a cap were included, this cost estimate would increase by about $2 million and implementation would take an extra year to complete.

Alternative 5: Onsite Critical Fluid Extraction And Reburial

Soils would be excavated and treated onsite utilizing critical fluid extraction. Contaminants would be removed from the soils and concentrated in liquid form. The organic concentrate would be taken offsite for destruction and disposal at a commercially available incinerator. Although no facilities are currently permitted to burn dioxin contaminants, a few facilities have applied for certification and should be available in the near future.

Water generated from the process would be recycled or discharged as necessary. Appropriate testing would be performed to ensure water quality is adequate for the ultimate discharge destination.

A pilot scale treatability study using propane as the extracting medium was conducted at United Creosoting during the Feasibility Study. This study found:

(1) that organic compounds could be extracted from the soils sufficiently to meet the health based concentration action levels for industrial and commercial exposure,

(2) that processing soils onsite would take approximately two years.

These results show that treated soil could be spread on the commercial portion of the site as target soil action levels and LDR treatment standards are met. Residential areas excavated would be backfilled with clean fill and restored to pre-remedial conditions as practical.

The mobile treatment unit would be removed from the site upon completion of the remedy. Implementation should take about 2 years from the date the unit is moved on site. Maintenance and monitoring of the site would be necessary for the following year to ensure effectiveness of the remedy. However, since contaminants would be removed and destroyed, 5-year reviews would not be necessary for soils. This alternative would cost approximately $22 million in net present worth dollars estimated over a 2 year period.

Alternative 6: Off-Site Incineration And Disposal of Contaminated Soils

Soils would be excavated and taken offsite for incineration and disposal in a commercially available facility. Although no facilities are currently permitted to burn dioxin contaminants, a few facilities have applied for certification and should be available in the near future.

Implementation should take approximately 2 years. Maintenance and monitoring of the site would be necessary for the following year to ensure effectiveness of the remedy. However, since contaminants would be removed and destroyed, 5-year reviews would not be necessary for soils. This alternative would cost approximately $190 million in net present worth dollars estimated over a 2 year period.

VIII. EVALUATION OF ALTERNATIVES

This section provides an analysis of the remedial alternatives considered for soils remediation at the United Creosoting site. The no action alternative [1] is not protective of human health or the environment, but is utilized as a point of comparison with the other alternatives. No further consideration is warranted for this alternative since the excess cancer risk posed by the site is greater than EPA's action level of one in ten thousand and the groundwater would continue to be impacted by contaminated soils in the former pond area.

Protection of Human Health and the Environment

Incineration alternatives [3 and 6] and critical fluid extraction with incineration of the concentrate [5] would provide adequate protection of human health and the environment by eliminating or preventing risk of exposure through removal and destruction of contaminants in soils. The biological treatment alternative [4] would not adequately address the dioxin contaminated soils, although the human health risks would be reduced to some extent from the degradation of PAHs. The capping alternative [2] would prevent the direct contact threat and provide a barrier to any off-site migration of contaminants via rainfall runoff, airborne dust, and to some extent vertical leaching. However, capping alone is not a preferred form of protection to the environment since the ground water would possibly continue to be impacted by contaminated soils remaining in the former pond area.

Applicable or Relevant and Appropriate Requirements [ARARS]

All action alternatives can be designed to meet all potential applicable or relevant and appropriate requirements of federal and state environmental laws. Those requirements identified for each remedial action alternative at the United Creosoting site are included in Appendix A, as taken from the Feasibility Study Amendment Report Table 4-2.

Since chemical-specific ARARs do not exist for the contaminants in soil at United Creosoting, target soil action levels have been established through current risk assessment methodology. All of the treatment alternatives meet the target soil action levels except for the biological alternative [4], which does not meet the dioxin target action level set in this ROD.

Long-term Effectiveness and Permanence

Incineration alternatives [3 and 6] and critical fluid extraction with incineration of the concentrate [5] would achieve long-term effectiveness and permanence by destroying the contaminants of concern. Although biological treatment [4] would permanently reduce the health and environmental impacts from PAHs and PCP, impacts from dioxins would not be significantly affected. Capping alone [2] would not achieve the same level of long-term effectiveness and permanence as the treatment alternatives since the caps would have to be maintained to prevent human health impacts and since the ground water would possibly continue to be impacted from contaminants in the former ponds area.

Reduction in Toxicity, Mobility, and Volume

Incineration alternatives [3 and 6] and critical fluid extraction with incineration of the concentrate [5] would achieve the greatest reduction in toxicity due to ultimate destruction of the contaminants of concern. Biological treatment [4] would not significantly affect the toxicity of dioxins, although some reduction in toxicity of PAHs would occur. The capping alternative [2] would not affect the toxicity of any of the contaminants of concern.

Incineration alternatives [3 and 6] and critical fluid extraction with incineration of the concentrate [5] would achieve the greatest reduction in mobility through ultimate destruction of contaminants. Biological treatment [4] would not significantly affect the already low mobility of dioxins, although some reduction in mobility of PAHs would occur through destruction. Capping [2] would reduce the mobility of contaminants, although not to the same degree as the treatment alternatives.

Incineration alternatives [3 and 6] and critical fluid extraction with incineration of the concentrate [5] would achieve the greatest reduction in volume due to ultimate destruction of contaminants. Biological treatment [4] would result in a volume decrease through destruction of PAHs. However, the volume of soils containing dioxin above human health levels would actually increase. Capping [2] would not affect the volume of contaminants.

Short-term Effectiveness

Incineration [3 and 6], critical fluid extraction with incineration of the concentrate [5], and capping [2] would yield comparable short-term effectiveness in reducing the human health and environmental risks currently identified at the United Creosoting site.

Off-site incineration and disposal [6] would increase short-term health risks due to increased handling and off-site transport of a high volume of contaminated material. Biological treatment [4] would increase short-term health risks due to increased handling of excavated material over a prolonged implementation period, possibly 10 years.

Implementability

The capping alternative [2] would be relatively easy to implement in a short timeframe. Incineration alternatives [3 and 6] and critical fluid extraction with incineration of the concentrate [5] would not be difficult to implement and could be implemented in approximately two years time. The off-site incineration alternative [6] would prove impossible to implement if commercial facilities refuse to accept contaminated soils from Superfund sites due to space limitations. Residual ash from incineration of soils would not be significantly less than the original

volume of soil requiring treatment. The biological alternative [4] would prove difficult to implement due to space constraints and would take eight to ten years to complete.

Cost

Table 3 lists the comparison of each treatment alternative in terms of capital, operational, post closure monitoring and maintenance, and overall present worth costs. Onsite critical solvent extraction followed by incineration of the organic concentrate [5] is less costly than incineration of soils [3] in both capital and operation cost. Site maintenance and monitoring costs for the year after implementation are comparable. The off-site incineration alternative [6] achieves the same level of protection in a similar timeframe, yet costs nine times more than the onsite alternatives. The biological treatment alternative [4] does not achieve the same level of protection as the other treatment alternatives although the operational and present worth costs are much less costly. This alternative would have to be supplemented with one of the other alternatives to account for dioxins.

The capping alternative [2] is less expensive than treatment alternatives. Cost estimates are based on a 30 year maintenance and monitoring plan whereas the actual maintenance would be required indefinitely. In addition, 5 year facility reviews would possibly find this alternative in need of a replacement cap or alternate technology due to failure.

State and Community Acceptance

No written comments or questions were received during the public comment period. Verbal questions and concerns raised at the open house and at the public meeting on the alternatives presented by EPA focussed mainly on three topics:

- o how implementation of a remedial alternative would affect daily lives of residents,
- o how EPA could better communicate with residents throughout the duration of the project [design and implementation],
- o a total buyout of the subdivision.

EPA and the Texas Water Commission have concerns about the contractual difficulties associated with a sole source contract since the critical fluid extraction technology is currently a patented process. This portion of the alternative could possibly be considered for a sole source contract. EPA has authority to approve a contract sole source. However, several options exist for contracting out the remedial alternative in a competitive manner. These will be explored thoroughly during remedial design.

TABLE 3 REMEDIAL ALTERNATIVES
COST COMPARISON SUMMARY
UNITED CREOSOTING

ALTERNATIVE	CAPITAL COST	OPERATION COST	POST CLOSURE MONITORING AND MAINTENANCE COST	TOTAL* TPRESENT WORTH	IMPLEMENTATION CONSTRUCTION TIME (YEARS)
No Action	56,100	N/A	$188,000	$ 244,100	N/A
Clay Caps	$1,760,000	N/A	$590,000	$ 2,400,000	0.5
On-Site Incineration	$3,300,000	$ 42,800,000	$200,000	$ 46,000,000	2
Biological Treatment	$3,960,000	$ 2,300,000	$360,000	$ 7,000,000	8-10
Solvent Extraction	$2,200,000	$ 19,600,000	$150,000	$ 22,000,000	2
Off-site Incineration	$4,300,000	$185,900,000	$140,000	$190,000,000	1-2

*Present worth calculated over monitoring and maintenance period required for each alternative includes a 10% discount rate.

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IX. SELECTED REMEDY

Onsite Critical Fluid Extraction, Offsite Disposal of Wastes, and Reburial of Treated Soil

All soils exceeding the established target action levels as listed in Table 4 will be excavated and treated utilizing critical fluid extraction. Carcinogenic action levels are intended to be utilized as criteria in evaluating a representative distribution of contaminants in shallow soils. The difference between residential and industrial soils was derived from the differences in exposure anticipated in a residential setting versus a light commercial area. Noncarcinogenic levels are intended to be utilized in evaluating a representative distribution of contaminants in subsurface soils. Environmental concerns have been incorporated into these levels; significant removal of subsurface contaminants in the former pond area should prevent further groundwater degradation. See Remediation Goals, Section V., for a detailed explanation of these numbers.

Excavation will proceed as necessary to prepare feed material for the critical fluid extraction process. This activity will require intensive monitoring to ensure that air emissions are suppressed to levels which will not create a potential health impact to residents or workers in the vicinity of the site. Although costs are not included for temporary relocations, this option should be included and costs adjusted on the basis of the pre-remedial sampling effort [Description of Alternatives, Section VII] and circumstances at the time of remedial design. Care would be taken to keep the residents and area businesses aware of the activities to take place so as to minimize short-term potential health impacts.

All soils excavated would be treated onsite utilizing critical fluid extraction. Treatment activities will occur on the commercial side of the site, in a manner which minimizes disturbance of and impact to the community. As contaminants are removed from soils and concentrated in liquid form, appropriate precautions will be taken for temporary storage of the concentrate onsite. Similarly, appropriate precautions will be taken for the storage of propane or other solvent to be used in the treatment process. As soon as practicable, i.e., sufficient quantity for transport, the concentrate will be transported to an off-site disposal facility. If no permitted incinerator facility is available to accept the concentrate for destruction, an off-site temporary storage facility is preferred to long-term onsite temporary storage of the concentrate.

Results of a pilot scale treatability study using soil from the United Creosoting site show significant removal efficiencies of all contaminants of concern. Confirmatory sampling should show that health levels are met and that treatment standards for K001 contaminated soils are met

Table 4: Target Action Levels for Contaminants in Soils
United Creosoting Site - Conroe, Texas

Target Soil Action Levels for Carcinogenic Compounds	
Polycyclic Aromatic Hydrocarbons	
Residential Soils	330 ppb Total BAP Equivalents
Industrial Soils	40,000 ppb Total BAP Equivalents
Dioxins and Furans	
Residential Soils	1 ppb Total 2,3,7,8-TCDD Equivalents
Industrial Soils	20 ppb Total 2,3,7,8-TCDD Equivalents
Target Soil Action Levels for Noncarcinogenic Compounds	
Total Noncarcinogenic PAHs	2,000 ppm
Total PCP	150 ppm

prior to reburial. Air emissions due to treatment would not occur since the process is a closed process. Water generated from the process would be recycled or discharged as necessary. Appropriate testing would be performed to ensure water quality is adequate for the ultimate discharge destination.

Optimization of the process is feasible to obtain the target soil action levels specified in this ROD for industrial land use. Therefore, treated soil could be spread on the commercial portion of the site as target soil action levels and LDR treatment standards for K001 contaminated soils are met. Residential areas excavated would be backfilled with clean fill and restored to pre-remedy condition as practical. If the volume of soil is excessive for placement on the commercial property, the remedy will be clarified by an "Explanation of Significant Differences".

The mobile treatment unit would be removed from the site after treatment of contaminated soils are complete. Groundwater monitoring wells not to be utilized as part of post-closure monitoring will be decommissioned and the area restored to pre-remedial condition as practical. To the extent legally feasible, a notice will be recorded in the real property records of any property physically impacted by the remedial action. Each notice should include a statement of the concentration of contaminants remaining on site.

Implementation should take about 2 years. Maintenance and monitoring of the site would be necessary for the following year to ensure effectiveness of the remedy. However, since contaminants would be removed and destroyed, 5-year reviews would not be necessary for soils. Costs for this alternative were presented previously in Table 3.

Statutory Determination

Onsite critical fluid extraction of soils and off-site incineration of the liquid concentrate is protective of human health and the environment. All requirements for this remedy that are Applicable or Relevant and Appropriate [ARARs] can be met through adequate design and planning. ARARs for this remedy are listed on Table 5 and Table 4-2 of Appendix A. Table 4-2 contains additional detail for most of the ARARs specified in Table 5. Table 5 summarizes and includes the ARAR for air emissions during excavation activities.

Long-term effectiveness is achieved through removal and ultimate destruction of the contaminants of concern. In addition, treatment is utilized to the maximum extent practical in this alternative. Contaminants are removed from soils onsite and concentrated in liquid form. The volume of contaminants for off-site transport is thus reduced to a minimum. Ultimate destruction of contaminants through incineration of the concentrate leaves behind minimum residue, if any. In comparison to other alternatives which require excavation for treatment of contaminants, implementation of this remedy

TABLE 5: APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS
FOR THE SELECTED REMEDY
UNITED CREOSOTING SITE

FEDERAL REQUIREMENT	State of Texas Requirement	Comment
Clean Air Act 42 U.S.C. 7401, 7410		
National Ambient Air Quality Standards 40 CFR Part 50	State Implementation Plan (Federally-approved Texas Air Control Board Rules and Regulations)	Ambient Air Quality Standards will be met during th remedial action.
Clean Water Act 33 U.S.C. 1251 - 1376		
Effluent Guidelines and Standards for the Point Source Category 40 C.F.R. Part 122.44	Water Quality Standards 40 CFR Part 131	Criteria for water quality are set as based on toxicity to aquatic organisms and human health--State standards take into account a particular stream, i.e. Alligator Creek.
National Pollutant Discharge Elimination System 40 C.F.R Part 125		Best Management Practices are necessary for a discharge into waters of the United States during the response action.
National Pretreatment Standards 40 C.F.R. Part 403		Requirement for a discharge into a publicly owned treatment works [POTW] since standards to control pollutants which pass through or interfere with treatment processes in POTWs, or which may contaminate sewage sludge must be met.

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Table 5 Continued

FEDERAL REQUIREMENTS	STATE OF TEXAS REQUIREMENT	COMMENT
Hazardous Materials Transportation Act 40 U.S.C. 1801 - 1813		
Hazardous Materials Transportation Regulations 49 C.F.R. Parts 107, 171-177		Requirement for the transportation of hazardous materials.
Occupational Safety and Health Act 29 U.S.C. 651-678		Requirement which regulates workers' health and safety.
Rivers and Harbors Act of 1899 33 U.S.C. 403		
Executive Order on Floodplain Management, Exec Order No 11988		Consideration for activities taken in the 100-year floodplain or for areas near the 100-year floodplain boundary.

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Table 5 Continued

FEDERAL REQUIREMENT	State of Texas Requirement	Comment
Solid Waste Disposal Act 42 U.S.C. 6901 - 6987	Texas Solid Waste Disposal Act	
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities 40 C.F.R. Part 264, 265		Minimum national standards for the acceptable management of hazardous wastes for owners and operators of facilitie which treat, store or dispose of hazardous wastes which must be considered during the remedial action.
Standards Applicable to Transporters of Hazardous Waste 40 C.F.R. Part 262, 263		Standards which apply to transporters of hazardous waste within the U.S.
Use and Management of Containers: Subpart I 40 C.F.R. 264.171 - 264.178		Requirement for temporary storage of RCRA hazardous waste.
Tanks: Subpart J 40 C.F.R. 264.190 - 264.197		Requirement for temporary storage of RCRA hazardous waste.
Waste Piles: Subpart L 40 C.F.R. 264.251		Requirement for non-containerized accumulation of solid, nonflamable hazardous waste that is used for treatment or storage.
Land Disposal Restrictions 40 C.F.R. Part 268		Requirement for the treatment of soils containing K001 listed woodpreserving wastes.

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is judged to be reliable and should not pose short term risk to the community and area businesses.

This remedy is cost effective in comparison to other treatment alternatives. The total cost of the selected remedy is estimated to be $22 million net present worth dollars (+50% or -30%) over a 2 year period. Five-year facility reviews will not be necessary for the soils since contaminants will not remain onsite above health based levels.

Community and state acceptance is favorable to this remedy in comparison to other alternatives presented during public comment. The community has requested more involvement in the remaining phase of the project. EPA and TWC will incorporate this concern into the Community Relations Plan as practical.

In comparison to the selected remedy, the other alternatives were rejected for the following reasons:

No Action - inadequate protection of human health and the environment.

Capping - if the caps are damaged or not maintained properly, risk from potential exposure to the untreated contaminants beneath the caps could be equivalent to the current risk estimate; inadequate protection of the environment [groundwater].

Biological Treatment and Reburial - the toxicity of dioxins and furans were not significantly affected by this treatment process [treatability study].

Onsite Incineration and Reburial - although same level of protection is achieved for human health and the environment, this alternative was not favored by the community; costs are higher for this alternative than the selected remedy.

Off-Site Incineration and Disposal - although same level of protection is achieved for human health and the environment, transport and increased handling of the high volume of contaminated soils creates short-term risk considerations during implementation due to the close proximity of residents. In addition, the costs for this alternative were nearly one order of magnitude greater than those of the selected remedy.

Documentation of No Significant Change

The Proposed Plan for the United Creosoting site was released for public comment in July 1989. The Proposed Plan identified Alternative 5, Critical Fluid Extraction with Incineration of the Organic Concentrate, as the preferred alternative. EPA reviewed all comments obtained during the public comment period and determined that no changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY
UNITED CREOSOTING COMPANY
RECORD OF DECISION

September 1989

This Community Relations Responsiveness Summary is divided into the following sections:

Section I - Background of Community Involvement and Concerns. This section provides a brief history of community interest and concerns raised during remedial planning activities at the United Creosoting sites from the time the site was proposed for inclusion on the National Priorities List.

Section II - Summary of Comments Received During the Public Comment Period. Comments are paraphrased and EPA's responses are provided.

I. BACKGROUND ON COMMUNITY INVOLVEMENT

During the 1940's, when United Creosoting began operation, the site was relatively isolated from any significant population concentrations or urban development. By the time operations ceased in 1972, some development had occurred in the general area. The property remained essentially dormant until redevelopment of the area began in 1977.

Residential property owners were basically unaware of the previous land usage and the potential hazards until the site was added to the National Priorities List in September 1983. Summarized below are significant events in community involvement following the proposed inclusion of this site on the National Priorities List:

1983

SEPTEMBER - An initial property owners' meeting was held on September 6, 1983, to discuss the Superfund program and current site conditions. The vast majority of those in attendance demonstrated a very high level of concern.

DECEMBER - On December 8, 1983, a homeowners meeting with EPA was held to discuss a proposed "Immediate Response Action" to place a temporary cap over the buried sludge pits on the property of Clarke Distributing and to review plans to recontour portions of this commercial property to prevent runoff of contaminants. Initial sampling plans associated with this action were also reviewed.

1984

FEBRUARY - On February 28, 1984, the results of the initial sampling effort associated with the Immediate Response Action were discussed with homeowners. While low levels of organic contaminants were found in soils, no immediate health risks were detected. The initial set of samples were used to frame a more intensive Remedial Investigation sampling effort.

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MARCH - An EPA fact sheet was published announcing the funding of the Remedial Investigation in March 1985.

1986

JANUARY - On January 27, 1986 a homeowners meeting was held to discuss the results of the Remedial Investigation sampling effort. The meeting was jointly conducted by ATSDR, TWC, and EPA staff. Citizens were extremely concerned that property values had been adversely affected by the designation of United Creosoting as a Superfund site, and were concerned about the safety of living in close proximity to hazardous waste.

JULY - On July 1986, the Feasibility Study for the site was released along with EPA's proposed remedy. Based on an evaluation of available technologies, EPA proposed onsite incineration of contaminated soils.

AUGUST - Two community workshops were held on August 20 and 26 and a general public meeting was held on August 26. People living in the community were intensely opposed to incineration and instead wanted a complete buy out of the subdivision. Because contaminants in surface soils were below concentrations recommended by ATSDR, no short term health threat was presented. Therefore EPA explained that it lacked the authority to buy out homes. Properties immediately over or adjacent to buried waste were, however, eligible for purchase by the government since all actions to treat or consolidate wastes would require excavation. Much of the community wanted EPA to investigate innovative remedies such as biological treatment.

SEPTEMBER - On September 30, 1986, the first Record of Decision for United Creosoting was signed. As outlined in more detail elsewhere in this document, it provided for:

- o Purchase of the 7 properties immediately adjacent to, or over, buried waste;
- o Demolition of residences over the former waste ponds;
- o Consolidation of the waste under a temporary cap;
- o Research by EPA into innovative treatment technologies other than incineration; and
- o Re-evaluation of remedial options within five years.

OCTOBER - Fact sheets describing the remedy were mailed to the residents. On October 16, 1989, the Superfund Amendments and Reauthorization Act of 1986 was signed, replacing the existing Superfund law.

1987

MARCH - EPA mailed a newsletter to residents explaining the status of implementation of the ROD and the impact of the new law.

JUNE - An updated newsletter was mailed indicating that funding had been obtained to begin implementing the ROD.

1988

JANUARY - "SITE" program fact sheets were issued announcing a period from February to March 1988 for EPA to receive comments on a proposed pilot treatment study using the Detox Industries' biological treatment techniques. (This experiment was never conducted due to difficulties experienced by the vendor. Instead, biological treatment was investigated by the Texas Water Commission, independent of the SITE program.)

APRIL - EPA mailed a progress report to the residents.

MAY - On May 12, 1988 EPA and TWC conducted an open house to review design plans for the temporary cap.

JUNE - EPA mailed a progress report to the residents.

SEPTEMBER - EPA mailed a progress report to the residents.

1989

FEBRUARY - Notice that the SITE program demonstration with DETOX was replaced by a TWC evaluation was mailed to the community.

APRIL - TWC issued a notice to community residents announcing the pilot demonstration of the critical fluid extraction process on site.

JULY - The press release announcing the public comment period and public meeting was issued on July 10, 1989. An open house was held with the area residents on July 15 to outline the alternatives presented in the Feasibility Study Amendment Report and to discuss the upcoming public comment period on these alternatives. Forty people registered at this open house.

II. SUMMARY OF PUBLIC COMMENT

The comment period began on July 17 and ended on August 15, 1989. The public meeting was held August 3, 1989, in the St. Marks Lutheran Church Fellowship Hall in Conroe, Texas. Forty-eight people registered at the meeting and six made oral statements or asked questions. Although no written comments or questions were received, the following concerns were expressed at the Public Meeting:

Comment No. 1: In a neighborhood situation, why won't EPA and TWC buy out the homeowners and put them in a safe situation.

Response No. 1: Under Section 104 [Response Authorities] and 111 [Use of Funds] of Title I - Provisions Relating Primarily to Response and Liability of the Superfund Amendments and Reauthorization Act of 1986 [SARA], the acquisition of property is authorized when a short or long term health threat exists and purchase is necessary to physically execute a remedy.

The purchase of six homes and one vacant property was deemed necessary in the 1986 ROD in order to excavate the former ponds area and remove the source of contamination. EPA believes that there is no immediate health threat for residents of the neighborhood and intends to conduct more detailed sampling to characterize existing soil contamination. These data will be evaluated using the cleanup criteria specified in this ROD and the results shared with residents of the community.

Comment No. 2: People that work on a Superfund site, such as United Creosoting, are in very self-contained clothes that protect them from any harm that might come from fumes out of the ground. And yet we have little children playing out here barefoot without any breathing apparatus that will continue to do so during this cleanup period.

Response No. 2: EPA and TWC field staff who work on hazardous waste sites as an occupation are potentially exposed to a wide spectrum of chemical contamination from many different places. EPA requires them to wear protective clothes because of the cumulative exposures they may experience. Security at the site during construction will prevent children and adults from trespassing in the excavation areas.

Comment No. 3: The previous ROD (1986) said that there is no danger from the contaminated ground water--once the contaminants are removed and the ground water clears itself. However, the 400 years required for this to occur is a long time.

Response No. 3: The model used to estimate the 400-year attenuation period is based upon contaminant dispersion. Natural attenuation of the aquifer also involves absorption and possible degradation of contaminants. Whatever the time necessary for concentrations to decrease to background levels, use of the shallow aquifer is not anticipated due to low yield of the aquifer.

Comment No. 4: I am not comfortable with the extent of past sampling performed in yards of the neighborhood to believe that we [the residents] are adequately protected.

Response No. 4: EPA agrees that more detailed sampling is required. The sampling conducted in 1985 was intended to provide the basis for evaluating broad remedial options; it was not sufficiently detailed to prepare design plans. Before the Remedial Design is commenced, EPA will conduct a more intensive sampling campaign in the community to identify contours of surface and subsurface contamination. The results of this survey will be shared with residents.

Comment No. 5: One commentor cited the Congressional Office of Technology Assessment (OTA) Report as being critical of EPA's implementation of Superfund. Examples that the commentor raised were the Compass Industries site in Oklahoma (where OTA asserted that EPA made no commitment to clean up ground water needing remediation) and the site the State of Washington (where OTA contended that EPA selected a remedy without treatability studies).

Response No. 5: EPA disagrees with much of OTA's report and has responded with a rather extensive rebuttal. For example, the Record of Decision for the Compass site did commit EPA to pumping and treating groundwater if needed. The main component of the remedy - a hazardous waste cap over an abandoned industrial dump - was expected to prevent the generation of contaminated ground water due to the unique geo-physical features of the site. With respect to treatability studies, it is true that under the original 1980 statute there was limited use of treatability studies. Due to the changes to the law in 1986, treatability studies are now basic components of remedy selection as evidenced by the two studies conducted at the United Creosoting.

Comment No. 6: One commentor indicated that people felt left out and recommended that EPA recognize a committee of homeowners with whom the agency would regularly communicate during design and construction activities.

Response No. 6: There are several facets of EPA's response to this comment:
(A) Regarding past community relations efforts - As shown at the beginning of this Responsiveness Summary, EPA and the TWC have kept citizens informed through a variety of techniques. EPA has given citizen concerns an important weight in decision making (e.g. the 1986 decision to seek other innovative technologies rather than incineration). While the agency's record in this regard has been adequate, EPA agrees that more intensive efforts will need to be made in the future in terms of presence at the site and opportunities for public review. To this end, EPA will revise the site's Community Relations Plan to provide greater and more regular contact.

(B) Regarding special status of a community group - EPA recognizes the impact that remedial activities will have on the Tanglewood East subdivision and understands the need to increase communication with the homeowners during these activities. Comments received through this communication will be addressed based on their technical, scientific, and legal content as well as how they reflect upon the wishes of the community as a whole.

(C) Technical Assistance Grants - Groups of citizens are eligible to receive grants of up to $50,000 (one per Superfund site) to secure assistance in reviewing the technical merits of EPA plans and data. Announcements and Workshops for interested citizens have been issued and conducted by EPA in the Houston area in the past. EPA representatives at the meeting offered to return to Conroe to provide more information to any interested group. Receipt of a Technical Assistance Grant does not center special status to the receiving citizens group in terms of how their comments or recommendations are received by EPA as explained above.

Comment No. 7: How much propane is going to be brought out to implement the supercritical process? Isn't propane flammable?

Response No. 7: The conceptual design estimate is approximately 160 lbs/hour propane as fresh make-up per process unit. With two units proposed, a tank eight feet in diameter and sixteen feet long would be required. State and local fire regulations would be followed in the placement of propane supply at the site. In addition, each extraction unit would be equipped with combustible gas detectors and emergency relief systems designed to protect the health and safety of the operators and local residents.

Comment No. 8: How many times has supercritical fluid extraction been implemented successfully? Where?

Response No. 8: Several pilot scale tests have been performed favorable at various places around the country. As a full scale remedy under the Superfund Program, the technology has not yet been utilized. However, the technology is currently being used on a full scale basis at a petrochemical plant here in Texas.

Comment No. 9: If you are going to concentrate the contaminants in the soil into a supertoxin, how much of that stuff is going to be able to accumulate here before it is moved away?

Response No. 9: EPA's preference is to accumulate only enough concentrate to transport out safely and economically for disposal. However, if no off-site incineration facilities become available, an off-site temporary storage facility will be necessary. The least preferred option would be to store this concentrate onsite. However, any drums stored onsite (even for a short period of time) would be secured on the commercial portion of the site. A site safety plan and periodic inspections, as well as 24-hour security, would be part of the remedy implementation.

Comment No. 10: Is EPA going to purchase, or lease, the vacant area in Jack Clarke's property where the treatment process is proposed to occur?

Response No. 10: No.

Comment No. 11: I don't feel comfortable to have my family at home during the remedial action implementation. Will temporary relocations still be offered?

Response No. 11: Yes. The criteria by abating possible fugitive air pollutants, work shutdowns, and temporary relocation will be developed as a component of the design and shared with the community for review and comment.

Comment No. 12: How will we know if air emissions reach a dangerous level? Will alarms go off? Will you go door-to-door to notify us?

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Response No. 12: The contingency plan described above will deal with these specifics. EPA's aim in developing this plan is to prevent exposure, to measure possible pollutants at the source as well as in the community, and to provide a system of reporting this information to residents. The contingency would be designed to avoid any acute problems.

Comment No. 13: In reference to previous sites that EPA has cleaned up [OTA Report], a problem was identified as the extreme youth of some of the people that you used in making decisions; the short time that they are out of college. Is this the situation on this project?

Response No. 13: No. The level of review, at both EPA and TWC, provides a great level of expertise prior to selecting a remedial action for the United Creosoting site. In fact, recommendations by both junior and senior level staff are weighed by several tiers of upper management at EPA prior to the final selection of a remedial action at any Superfund site. While staff level project managers have changed, EPA supervisors and managers reviewing this Record of Decision also evaluated the 1986 Record of Decision.

Comment No. 14: At the last meeting, in 1984 or 1986, EPA told us that we shouldn't be digging in our yards over 2 feet, that it was a danger. Now it isn't a danger?

Response No. 14: Residents of the houses located directly over the buried waste deposits (since purchased by EPA) were advised not to dig in their yards--this did not extend to all residents of the community. Highly concentrated waste deposits are not expected to be buried elsewhere in the community. However, should such pockets be found, EPA or the Texas Water Commission should be notified. For example, EPA is currently sampling and analyzing soil from one resident's yard because water pooled in a hole contained an oily sheen.

EPA does not believe that the surface soils represent an acute threat. In the 1986 ROD and in this decision, EPA plans to consolidate soils that are contaminated. The extent of this effort will not be known until the pre-design sampling campaign is completed.

Comment No. 15: You have all but told most of us that there is nothing in our yards or properties that is going to be cleaned up other than the six homes that you have bought. However, you cannot predict what is under my home. If 10 years from now, my neighbor's home is knocked down--I am not the expert--but what if the pond is exposed right there next to my house? Who will take care of that? We will still have the same problem we have today.

Response No. 15: EPA has developed cleanup criteria for this ROD which indicate the need for careful sampling of some of the residential area not previously targeted for cleanup. This will ensure that if significant contamination exists beneath a home, EPA will be able to identify the problem prior to initiation of the remedial action.

With this additional information, EPA can be extremely accurate about predicting any contamination beneath a home. However, if a house is ever knocked down, and you feel concern about the soil being contaminated, please contact the EPA Region 6 office. EPA will address your concerns based upon the circumstances and information available then.

Comment No. 16: Have you considered air slides--like a mining operation, pulling the dirt up completely enclosed -- into the treatment unit?

Response No. 16: That is a design criteria and may be considered during remedial design.

Comment No. 17: If you have information for the homeowners, the public library is not that convenient. We are the only ones interested anyway.

Response No. 17: The public library is the closest repository to the site and was chosen as one of the repositories for this reason.

Comment No. 18: The map provided in the handout, Figure 2, is confusing. You have a site that looks like two or three sites. Where do you draw the line?

Response No. 18: EPA agrees. A new figure has been provided in this ROD, Figure 2 on page 3 of the Decision Summary, which shows the current land uses of the site as a whole.

APPENDIX A: TABLE 4-2

TABLE 4-2

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Capping	Placement of a cap over waste (e.g., closing a landfill, or closing a surface impoundment or waste pile as a landfill, or similar action) requires a cover designed and constructed to: o Provide long-term minimization or migration of liquids through the capped area; o Function with minimum maintenance; o Promote drainage and minimize erosion or abrasion of the cover; o Accommodate settling and subsidence so that the cover's integrity is maintained; and o Have a permeability less than or equal to the permeability of any bottom liner system or natural sub-soils present.	RCRA hazardous waste placed at site after the effective date of the requirements, or placement of hazardous waste into another unit will make requirements applicable when the waste is being covered with a cap for the purpose of leaving it behind after the remedy is completed. Capping without such placement will not make requirements applicable. d/	40 CFR 264.228(a) (Surface Impoundments) 40 CFR 264.258(b)(Waste Piles) 40 CFR 264.310(a) (Landfills)
	Eliminate free liquids, stabilize wastes before capping (surface impoundments).		40 CFR 264.228(a)
	Restrict post-closure use of property as necessary to prevent damage to the cover.		40 CFR 264.117(c)
	Prevent run-on and run-off from damaging cover.		40 CFR 264.228(b) 40 CFR 264.310(b)
	Protect and maintain surveyed benchmarks used to locate waste cells (landfills, waste piles.		40 CFR 264.310(b)

a/ Currently only RCRA, CWA, and SDWA requirements are included. Additional action-specific requirements will be added as additional statutes are analyzed.

b/ Action alternatives from ROD keyword index, FY1986 Record of Decision Annual Report, January 1987, Hazardous Site Control Division, EPA.

c/ Requirements have been proposed but not promulgated for air stripping, hybrid closure, gas collection and miscellaneous unit treatment. When these regulations are promulgated, they will be included in the matrix.

d/ Some action-specific requirements listed may be relevant and appropriate even if RCRA definitions of storage, disposal, or hazardous waste are not met, or if the waste at the site is similar to but not identifiable as a RCRA hazardous waste. See Chapter 2 for information on relevant and appropriate RCRA requirements.

002497

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Closure of Land Treatment Units	Maximize degradation, transformation, immobilization of hazardous constituents within the treatment zone, minimize runoff of constituents, maintain run-on control system and run-off management system, control wind dispersal of hazardous waste, maintain unsaturated zone monitoring, establish vegetative cover, and establish background soil values to determine consistency with permit values.	Closure of land treatment units.	40 CFR 264.280
Consolidation between Units	With respect to the waste that is moved, see requirements in the following sections: Capping, Closure with Waste in Place.	Movement of hazardous waste and placement into another unit.	See Capping, Closure with Waste in Place
Container Storage	Containers of RCRA hazardous waste must be:	Storage of RCRA hazardous waste (listed or characteristic) not meeting small quantity generator criteria held for a temporary period greater than 90 days before treatment, disposal or storage elsewhere (40 CFR 264.10), in a container (i.e. any portable device in which a material is stored, transported, disposed of, or handled). A generator who accumulates or stores hazardous waste on-site for 90 days or less in compliance with 40 CFR 262.34 (a)(1-4) is not subject to full RCRA storage requirements. Small quantity generators are not subject to the 90 day limit (40 CFR 262.34(c),(d), and (e)).	
	o Maintained in good condition;		40 CFR 264.171
	o Compatible with hazardous waste to be stored; and		40 CFR 264.172
	o Closed during storage (except to add or remove waste).		40 CFR 264.173
	Inspect container storage areas weekly for deterioration.		40 CFR 264.174
	Place containers on a sloped, crack-free base, and protect from contact with accumulated liquid. Provide containment system with a capacity of 10 percent of the volume of containers of free liquids. Remove spilled or leaked waste in a timely manner to prevent overflow of the containment system.		

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Container Storage (continued)	Keep containers of ignitable or reactive waste at least 50 feet form the facility's property line.		40 CRF 264.176
	Keep incompatible materials separate. Separate incompatible materials stored near each other by a dike or other barrier.		40 CFR 264.177
	At closure, remove all hazardous waste and residues from the containment systems, and decontaminate or remove all containers, liners.		40 CFR 265.178
	Storage of banned wastes must be in accordance with 40 CFR 268. When such storage occurs beyond one year, the owner/operator bears the burden or proving that such storage is solely for the purpose of accumulating sufficient quantities to allow for proper recovery, treatment, and disposal.		40 CFR 268.50
Discharge of Treatment System Effluent	Best Available Technology:		
	Use of best available technology (BAT) economically achievable is required to control toxic and nonconventional pollutants. Use of best conventional pollutant control technology (BCT) is required to control conventional pollutants. Technology-based limitations may be determined on a case-by-case basis.	Point source discharge to waters of the United States. e/ f/	40 CFR 122.44(a)
	Water Quality Standards:		
	Applicable Federally approved State water quality standards must be complied with. These standards may be in addition to or more stringent than other Federal standards under the CWA. g/		40 CFR 122.44 and States regulations approved under 40 CFR 131
	Discharge limitations must be established at more stringent levels than technology-based standards for toxic pollutants.		40 CFR 122.44(e)

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TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Discharge of Treatment System Effluent (continued)	Best Management Practices:		
	Develop and implement a Best Management Practices program to prevent the release of toxic constituents to surface waters.		40 CFR 125.100
	The Best Management Practice program must: o Establish specific procedures for the control of toxic and hazardous pollutant spills. o Include a prediction of direction, rate of flow, and total quantity of toxic pollutants where experience indicates a reasonable potential for equipment failure. o Assure proper management of solid and hazardous waste in accordance with regulations promulgated under RCRA.	Discharge to waters of the U.S. e/	40 CFR 125.104
	Monitoring Requirements:		
	Discharge must be monitored to assure compliance. Discharge will monitor: o The mass of each pollutant o The volume of effluent o Frequency of discharge and other measurements as appropriate		40 CFR 122.41(j)

a/ Regional administrator may revise length of post-closure care period (40 CFR 264.117).

b/ Landfill units meeting the requirements of 40 CFR 264.301(f) are not subject to RCRA minimum technology requirements.

c/ "Waters of the U.S." is defined broadly in 40 CFR 122.2 and includes essentially any water body and wetland.

d/ Section 121 of SARA exempts on-site CERCLA activities from obtaining permits. However, the substantive requirements of a law or regulation must be met. In particular, on-site discharges to surface waters are exempt from procedural NPDES permit requirements. Off-site dischargers would be required to apply for and obtain an NPDES permit.

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TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Discharge of Treatment System Effluent (continued)	Approved test methods for waste constituent to be monitored must be followed. Detailed requirements for analytical procedures and quality controls are provided.		40 CFR 136.1-136.4
	Sample preservation procedures, container materials, and maximum allowable holding times are prescribed.		
	Comply with additional substantive conditions such as:		40 CFR 122.41(i)
	o Duty to mitigate any adverse effects of any discharge; and		
	o Proper operation and maintenance of treatment systems.		
Discharge of Publicly Owned Treatment Works (POTW) (off-site activity, see footnote a/)	Discharge of pollutants that pass-through the POTW without treatment, interfere with POTW operation, contaminate POTW sludge, or endanger health/safety of POTW workers, is prohibited.	Indirect discharge to a POTW.	40 CFR 403.5
	Specific prohibitions preclude the discharge of pollutants to POTWs that:		

a/ "Waters of the U.S." is defined broadly in 40 CFR 122.2 and includes essentially any water body and wetland.

b/ Section 121 of SARA exempts on-site CERCLA activities from obtaining permits. However, the substantive requirements of a law or regulation must be met. In particular, on-site discharges to surface waters are exempt from procedural NPDES permit requirements. Off-site dischargers would be required to apply for and obtain an NPDES permit.

c/ Federal Water Quality Criteria may be relevant and appropriate depending on the designated or potential use of the water, the media affected, the purposes of the criteria, and current information. (CERCLA 121(d)(2)(B)(i)) Federal Water Quality Criteria for the protection of aquatic life will be relevant and appropriate when environmental factors (e.g., protection of aquatic organisms) are being considered. (50 FR July 29, 1985)).

002501

TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Discharge of Publicity Owned Treatment Works (POTW) (off-site activity, see footnote m/) (continued)	o Create a fire or explosion hazard in the POTW; o Will cause corrosive structural change to POTW; o Obstruct flow resulting in interference; o Are discharged at a flow rate and/or concentration that will result in interference; and o Increase the temperature of wastewater entering the treatment plant that would result in interference, but in no case raise the POTW influent temperature above 104°F (40°C).		
	o Discharge must comply with local POTW pretreatment program, including POTW-specific pollutants, spill prevention program requirements, and reporting and monitoring requirements.		40 CFR 403.5 and local POTW regulations
	o RCRA permit-by-rule requirements (including corrective action where the NPDES permit was issued after November 8, 1984) must be complied with for discharges of RCRA hazardous wastes to POTWs.	Transport of RCRA hazardous wastes to POTWs by truck, rail, or dedicated pipe (i.e., pipe solely dedicated for hazardous waste (as defined in 40 CFR 264) which discharges from within the boundaries of the CERCLA site to within the boundaries of the POTW).	40 CFR 270.60
Excavation	Movement of excavated materials to new location and placement in or on land will trigger land disposal restrictions	Materials containing RCRA hazardous wastes subject to land disposal restrictions are placed in another unit.	40 CFR 268 (Subpart D)
	Area from which materials are excavated may require cleanup to levels established by closure requirements.	RCRA hazardous waste placed at site after the effective date of the requirements	See Closure in this Exhibit.

1/ Section 121 of SARA exempts on-site CERCLA activities from obtaining permits. However, the substantive requirements of a law or regulation must be met. In particular, on-site discharges to surface waters are exempt from procedural NPDES permit requirements. Off-site dischargers would be required to apply for and obtain an NPDES permit.

002502

TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Incineration	Analyze the waste feed.	RCRA hazardous waste	40 CFR 264.341
	Dispose of all hazardous waste and residues, including ash, scrubber water, and scrubber sludge.		40 CFR 264.351
	No further requirements apply to incinerators that only burn wastes that are listed as hazardous solely by virtue of combination with other wastes, and if the waste analysis demonstrates that no Appendix VII constituent is present that might reasonably be expected to be presented.		40 CFR 264.340
	Performance standards for incinerators:	RCRA hazardous waste.	40 CFR 264.343
	o Achieve a destruction and removal efficiency of 99.99 percent for each principal organic hazardous constituent in the waste feed and 99.9999 percent for dioxins:		
	o Reduce hydrogen chloride emissions to 1.8 kg/hr or 1 percent of the HCl in the stack gases before entering any pollution control devices; and		40 CFR 264.342
	o Not release particulate in excess of 180 mg/dscm corrected for amount of oxygen in stack gas.		40 CFR 264.343
	Monitoring of various parameters during operation of the incinerator is required. These parameters include:		40 CFR 264.343
	o Combustion temperature; o Waste feed rate; o An indicator of combustion gas velocity; and o Carbon monoxide.		

a/ Discharge to POTWs is considered an off-site activity (see p. 3-21 or discussion of requirements); therefore, requirements related to discharge to a POTW are not ARARs, but are included in this exhibit for reference. Off-site actions must comply with all legally applicable requirements, both substantive and administrative. The concept of "relevant and appropriate" is not available for off-site actions.

002503

TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Incineration (continued)	Control fugitive emissions either by: o Keeping combustion zone sealed or o Maintaining combustion-zone pressure lower than atmospheric pressure Utilize automatic cutoff system to stop waste feed when operating conditions deviate.		40 CFR 264.345
	Special performance standard for incineration of PCBs: o Achieve a destruction and removal efficiency of 99.9999 percent; o Either 2 second dwell time at 1200 degrees C° (±100) and 3 percent excess oxygen in stack gas; or 1.5 second dwell time at 1600 degrees C. and 2 percent excess oxygen in stack gas; and o For non-liquid PCBs, mass air emissions from the incinerator shall be no greater than 0.001 g. KB per kg of the PCBs entering the incinerator.	Liquid or non-liquid PCBs at concentrations of 50 ppm or greater.	40 CFR 761.70
	Demonstrate that hazardous constituents for each waste can be completely degraded, transformed, or immobilized in the treatment zone.		40 CFR 264.271
Land Treatment	Prior to land treatment, the waste must be treated to BDAT levels or meet a no migration standard.	RCRA hazardous waste being treated or placed into another unit.	
	Ensure that hazardous constituents are degraded, transformed, or immobilized within the treatment zone.		40 CFR 264.271
	Maximum depth of treatment zone must be no more than 1.5 meters (5 feet) from the initial soil surface and more than 1 meter (3 feet) above the seasonal high water table.		40 CFR 264.271

a/ An underground source of drinking water (USDW) is a non-exempted aquifer or its portion which: (1) supplies any public water system, or (2) which contains a sufficient quantity of groundwater to supply a public water system and supplies drinking water for human consumption or contains fewer than 10,000 mg/l total dissolved solids. (40 CFR 144.3)

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002504

TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Land Treatment (continued)	Minimize run-off of hazardous constituents.		40 CFR 264.273
	Maintain run-on/run-off control and management system.		40 CFR 264.273
	Special application conditions if food-chain crops are grown in or on treatment zone.		40 CFR 264.276
	Unsaturated zone monitoring.		40 CFR 264.278
	Special requirements for ignitable reactive waste.		40 CFR 264.276
	Special requirements for incompatible wastes.		40 CFR 264.282
	Special testing and location requirements for certain hazardous wastes.	RCRA waste #s F020, F021, F022, F023, F026, F027 (dioxin-containing wastes)	40 CFR 283
Operation and Maintenance (O&M)	30-year post-closure care to insure that site is maintained and monitored.	Land disposal closure.	40 CFR 264.310
Placement of Waste in Land Disposal Unit	Land Disposal Restrictions:		
	Attain land disposal "treatment standards" before putting waste into landfill in order to comply with land disposal restrictions. A treatment standard can be either: (1) a concentration level to be achieved (performance-based) or (2) a specified technology that must be used (technology-based). If the standard is performance-based, any technology can be used to achieve the standard. (See Treatment when Waste will be Land Disposed.)	Placement of RCRA hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave.	40 CFR 268 (Subpart D)

002505

TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Surface Water Control	Prevent run-on and control and collect run-off from a 24-hour storm (waste piles, land treatment facilities, landfills).	RCRA hazardous waste treated, stored, or disposed after the effective date of the requirements.	40 CFR 264.251 (c).(d) 40 CFR 264.273(c).(d) 40 CFR 264.301(c).(d)
	Prevent over-topping of surface impoundments.		40 CFR 264.221(c)
Tank Storage (On-Site)	Tanks must have sufficient structural strength to ensure that they do not collapse, rupture, or fail.	Storage of RCRA hazardous waste (limited or characteristic) not meeting small quantity generator criteria held for a temporary period greater than 90 days before treatment, disposal or storage elsewhere (40 CFR 264.10), in a tank (i.e., any portable device in which a material is stored, transported, disposed of, or handled). A generator who accumulates or stores hazardous waste on-site for 90 days or less in compliance with 40 CFR 262.34(a)(1-4) is not subject to full RCRA storage requirements Small quantity generators are not subject to the 90 day limit (40 CFR 262.34(c),(d), and (e)).	40 CFR 264.190
	Waste must not be incompatible with the tank material unless the tank is protected by a liner or by other means		40 CFR 264.191
	Tanks must be provided with secondary containment and controls to prevent overfilling, and sufficient freeboard maintained in open tanks to prevent overtopping by wave action or precipitation.		40 CFR 264.193-194
	Inspect the following: overfilling control, control equipment, monitoring data, waste level (for uncovered tanks), tank condition, above-ground portions of tanks (to assess their structural integrity), and the area surrounding the tank (to identify signs of leakage).		40 CFR 264.195
	Repair any corrosion, crack, or leak.		40 CFR 264.196
	At closure, remove all hazardous waste and hazardous waste residues from tanks, discharge control equipment, and discharge confinement structures.		40 CFR 264.197
	Store ignitable and reactive waste so as to prevent the waste from igniting or reacting. Ignitable or reactive wastes in covered tanks must comply with buffer zone requirements in "Flammable and Combustible Liquids Code," Tables 2-1 through 2-6 (National Fire Protection Association, 1976 or 1981).		

TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Tank Storage (On-Site) (continued)	Storage Prohibitions: Storage of banned wastes must be in accordance with 40 CFR 268. When such storage occurs beyond one year, the owner/operator bears the burden of proving that such storage is solely for the purpose of accumulating sufficient quantities to allow for proper recovery, treatment and disposal.		40 CFR 268.50
Treatment (in a unit)	Design and operating standards for unit in which hazardous waste is treated. (See citations at right for design and operating requirements for specific unit.)	Treatment of hazardous waste in a unit.	40 CFR 264.190-264.192 (Tanks) 40 CFR 264.221 (Surface Impoundments) 40 CFR 264.251 (Waste Piles) 40 CFR 264.273 (Land Treatment Unit) 40 CFR 264.343-345 (Incinerators) 40 CFR 264.601 (Miscellaneous treatment Units) 40 CFR 265.373 (Thermal Treatment Units)
Treatment (when Waste will be Land Disposed)	Treatment of waste subject to ban on land disposal must attain levels best demonstrated available treatment technologies (BDAT) for each hazardous constituent in each listed waste, if residual is to be land disposed. If residual is to be further treated, initial treatment and any subsequent treatment that produces residual to be treated need not be BDAT, if it does not exceed value in CCWE (Constituent Concentration in Waste Extract) Table for each applicable water. (See 51 FR 40642, November 6, 1986.)	Disposal of contaminated soil and debris resulting from CERCLA response actions or RCRA corrective actions is not subject to land disposal prohibitions and/or treatment standards for solvents, dioxins, or California list wastes until November 8, 1990 (and for certain first third wastes until August 8, 1990). All wastes listed as hazardous in 40 CFR Part 261 as of November 8, 1984, except for spent solvent wastes and dioxin-containing wastes have been ranked with respect to volume and intrinsic hazards, and are scheduled for land disposal prohibition and/or treatment standard determination as follows: Solvents and dioxins — Nov. 8, 1986 California list Wastes — July 8, 1987 One-third of all ranked hazardous wastes — Aug. 8, 1988	40 CFR 268.10 40 CFR 268.11 40 CFR 268.12 40 CFR 268.41 40 CFR 268 (Subpart D) 51 FR 40641 52 FR 25760

TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Treatment (when waste will be Land Disposed) (continued)		Underground injection of solvents and dioxins and California list wastes: Aug. 8, 1988 CERCLA response action and RCRA corrective action soil and debris: Nov. 8, 1988 Two-thirds of all ranked and listed hazardous wastes: July 8, 1989 All remaining ranked and listed hazardous wastes identified by characteristic under RCRA section 3001: May 8, 1990 Any hazardous waste listed or identified under RCRA section 3001 after November 8, 1984: Within 6 mos. of the date of identification or listing.	
	BDAT standards for spent solvent wastes and dioxin-containing wastes are based on one of four technologies or combinations: for waste waters, (1) stem stripping (2) biological treatment, or (3) carbon absorption alone or in combination with (1) or (2)]; and for all other wastes. (4) incineration. Any technology may be used, however, if it will achieve the concentration levels specified.		40 CFR 268.30 RCRA Sections 3004(d)(3), (e)(3) 42 U.S.C. 6924(d)(3), (e)(3)
Underground Injection of Wastes and Treated Ground Water	UIC program prohibits:	Approved UIC program is required in States listed under SDWA section	
	o Injection activities that allow movement of contaminants into underground sources of drinking water which may result in violations of MCLs or adversely affects health.	have been listed). Class I wells and Class IV wells are the relevant classifications for CERCLA sites. Class I wells are used to inject hazardous waste, beneath the lowermost formation containing, within one quarter mile, an underground source of drinking water (USDW). n/	40 CFR 144.12
	o Construction of new Class IV wells, and operation and maintenance of existing wells.	Class IV wells are used to inject hazardous or radioactive waste into or above a formation which contains, within one quarter mile of the well, an underground source of drinking water.	40 CFR 144.13

002508

TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Underground Injection of Wastes and Treated Ground Water (continued)	Class IV wells are banned except for reinjection of treated groundwater into the same formation from which it was withdrawn, as part of a CERCLA cleanup or RCRA corrective action.		40 CFR 144.13(c)
	The Director of the UIC program in a state may lessen the stringency of 40 CFR 144.52 construction, operations, and manifesting requirements for a well if injection does not occur into,		40 CFR 144.16
	through, or above a USDW or if the radius of endangering influence (see 40 CFR 146.06(c)) is less than or equal to the radius of the well.		
	o Report non-compliance orally within 24 hours.	Class I wells.	40 CFR 144.28(b) 40 CFR 144.51(b)
	o Prepare, maintain, and comply with plugging and abandonment plan.		
	Monitor Class I wells by:	Class I wells are used to inject hazardous waste, beneath the lowermost formation containing, within one quarter mile, an underground source of drinking water (USDW).	40 CFR 144.28(g)(1)
	o frequent analysis of injection fluids;		
	o continuous monitoring of injection pressure, flow rate, and volume, and		
	o installation and monitoring of groundwater monitoring wells.		
	Applicants for Class I permits must:		40 CFR 144.55
	o Identify all injection wells within the area of review.		
	o Task action as necessary to ensure that such well are properly sealed, completed, or abandoned to prevent contamination of USDW.		

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TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Underground Injection of Wastes and Treated Ground Water (continued)	Criteria for determining whether an aquifer may be determined to be an exempted aquifer include current and future use, yield, and water quality characteristics.		40 CFR 146.4
	Case and cement all Class I wells to prevent movement of fluids into USDW, taking into consideration well depth, injection pressure, hole size, composition of injected waste, and other factors.	(See above)	40 CFR 144.28(e)(1)
	Conduct appropriate geologic drilling logs and other tests during construction.		40 CFR 146.12(d)
	Injection pressure may not exceed a maximum level designed to ensure that injection does not initiate new fractures or propagate existing ones and cause the movement of fluids into a USDW.		40 CFR 146.13
	Continuous monitoring of injection pressure, flow rate, and volume, and annual pressure, if required.		
	Demonstration of mechanical integrity if required every 5 years.		
	Groundwater monitoring may also be required.		
	Comply with State underground injection requirements.		40 CFR 147
	Hazardous waste to be injected is subject to land ban regulations. (See section 4.2.2.1 of this manual). Treated groundwater that meets the definition of hazardous waste and is to be injected also is subject to land ban regulations.		40 CFR 268.2

TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Action-Specific a/

Actions b/	Requirements	Prerequisites for Applicability c/, d/	Citation
Waste Pile	Use a single liner and leachate collection system.	RCRA hazardous waste, non-containerized accumulation of solid, nonflammable hazardous waste that is used for treatment or storage.	40 CFR 264.251
	Waste put into waste pile subject to land ban regulations (see Appendix of this manual).		40 CFR 268.2

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TABLE 4-2 (continued)
POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Location-Specific

Location	Requirements	Prerequisites for Applicability c/, d/	Citation
Within 100-year floodplain	Facility must be designed, constructed, operated, and maintained to avoid washout	RCRA hazardous waste; treatment, storage, or disposal	40 CFR 264.18 x/
Within floodplain x/	Action to avoid adverse effects, minimize potential harm, restore and preserve natural and beneficial values	Action that will occur in a floodplain, i.e., lowlands, and relatively flat areas adjoining inland and coastal waters and other flood prone areas	Protection of floodplains, x/(40 CFR 6, Appendix A); Fish and Wildlife Coordination Act (16 USC 661 et seq.) 40 CFR 6.302

x/ 40 CFR Part 6 Subpart A sets forth EPA policy for carrying out the provisions of Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands). Executive orders are binding in the level (e.g., Federal, State) of government for which they are issued.

APPENDIX B: TWC LETTER OF SUPPORT

TEXAS WATER COMMISSION

Mr. Robert E. Layton, Jr., P.E.
Regional Administrator
U. S. Environmental Protection Agency
Region VI
1445 Ross Avenue
Dallas, Texas 75202-2733

Re: Draft Record of Decision
United Creosoting Superfund Site

Dear Mr. Layton:

We have reviewed the draft Record of Decision (ROD) and responsiveness summary for the United Creosoting Superfund Site. We feel that the use of the target action levels (TAL) proposed in the draft ROD represent a considerable improvement over the action levels set in the 1986 ROD by more accurately defining the risks posed by the contaminants present. At the same time however we are concerned that the adoption of these TAL's presents some uncertainties which cannot be addressed at the present time.

The additional sampling proposed in the residential area will fill currently existing data gaps as to the extent of contamination. Furthermore the methodology used to convert empirical data to risk based equivalents has only recently been developed as EPA guidance and is still being refined. In light of this the limits of contamination and the scope of the remedy could change considerably. We are concerned that the public and the Texas Water Commission lack all the data necessary to fully evaluate the proposed remedy at this time.

For the reasons stated above TWC concurs with EPA's proposed Record of Decision on the condition that upon completion of the proposed additional sampling and data evaluation, EPA will, in addition to any other administrative requirement, make this information available to the public and reopen the Administrative Record to allow a formal public comment period, conduct a public meeting and issue a Responsiveness Summary. The proposed remedy upon which we conditionally concur includes:

- Sampling of the residential area to better delineate all soils falling above the target soil action levels established in this Record of Decision.
- Excavation of all soils from residential and commercial portions of the site that are above the respective human health criteria and treatment via critical fluid extraction.
- Treatment of contaminated soils to human health criteria and reburial on the appropriate portion of the site.
- Disposal of the organic concentrate from the extraction process by off-site incineration.

On a related matter, we would like to comment on the obligation of State monies for a period of 30 years after the remedial construction activities are complete. Such a commitment by the State of Texas may be a violation of Article VIII, Section 6 of the Texas Constitution which addresses the appropriation of money beyond a two year period.

Sincerely yours,

Allen Beinke

Allen Beinke
Executive Director

APPENDIX C: ADMINISTRATIVE RECORD INDEX

D ument Number: 08-0001 Date: 09/30/80

Document Title : Application of PCP Contaminated Soil to Roads in Montgomery Co., Texas

Type: Memorandum
D ument Qualifiers(s): Original/Duplicate of Original,

Author: James S. Halliday, Environmental Biologist
Houston Branch, USEPA

R..ipient: William Librizzi, Director
Surveillance and Analysis Div., USEPA Region 6

T al Pages: 6

Document Number: 08-0002 Date: 10/01/80

D ument Title : Complaint by area resident concerning Metts Rd. Montgomery Co., Texas

T e: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

A hor: Tom Kearns, Field Representative
Texas Dept. Water Resources

K ipient: Gary Schroeder, Chief
Texas Dept. of Water Resources

T-tal Pages: 4

D._ument Number: 08-0003 Date: 07/27/81

D ument Title : Potential Hazardous Waste Site Identification

Tume: Miscellaneous
D ument Qualifiers(s): Original/Duplicate of Original,

Author: Bill Hupp

Recipient: United Creosoting Co. Site File
USEPA Region 6

Total Pages: 1

002517

Document Number: 06-0004 Date: 06/30/82

Document Title : Potential Hazardous Waste Site - Site Inspection Report

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author: Chris Lippe, Enforcement
Texas Dept. of Water Resources

Recipient: United Creosoting Co. Site File
USEPA Region 6

Total Pages: 21

Document Number: 08-0005 Date: 04/12/83

Document Title : Hazardous Ranking System Package (includes worksheet and documentation records)

Type:
Document Qualifiers(s): Original/Duplicate of Original,

Author: Timothy J. Wolterink
Texas Dept. of Water Resources

Recipient: United Creosoting Co. site file
USEPA Region 6

Total Pages: 55

Document Number: 08-0006 Date: 06/29/83

Document Title : EPA HQ review of Mitre Rankings results in revised ranking and lower score.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Russell Bartley, Engineer, Operation Section.
USEPA Region 6

Recipient: Rod Kimbro
Texas Dept. of Water Resources

Total Pages: 1

002518

D ument Number: 08-0007 Date: 10/31/83

Document Title : Request by the State of Texas for initial remedial measures, with the Texas Dept. of Water Resources as the lead agency.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Charles E. Nemir, Executive Director
Texas Dept. of Water Resources

R ipient: Dick Whittington, Regional Administrator
USEPA Region 6

T al Pages: 4

Document Number: 08-0008 Date: 11/21/83

D ument Title : Response to Representative Phil Gramm's inquiry o' behalf of State Representative Rodney Tow's office. (Communication is attached).

T e: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

A hor: Dick Whittington, Regional Administrator
USEPA Region 6

R··ipient: Phil Gramm
United States House of Representatives

Total Pages: 4

D· ment Number: 08-0009 Date: 12/15/83

D··ument Title : Comments on potential public health problems at United Creosoting Site

Type: Memorandum
D ument Qualifiers(s): Original/Duplicate of Original,

Author: George Buynoski, Public Health Advisor
Centers for Disease Control

Recipient: Frank Gorry, On Scene Coordinator
Emergency Response Branch

Total Pages: 3

002519

Document Number: 08-0010 Date: 12/23/83

Document Title : Notice letter re: immediate removal action

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: William B. Hathaway, Deputy Director
Air and Waste Management Division, USEPA Region 6

Recipient: Thomas E. Byer
Homeowner in Tanglewood East

Total Pages: 2

002520

Document Number: 08-0011 Date: 12/27/83

Document Title : Administrative Order on Consent, United Creosoting Co. Site

Topic: Miscellaneous
Document Qualifiers(s): Original/Duplicate of Original,

Author: Dick Whittington, Regional Administrator
USEPA Region 6

Recipient: Clark Bottling Co., Respondent

Total Pages: 8

Document Number: 08-0012 Date: 12/28/83

Document Title : EPA Environmental News - press release announcing immediate clean-up of surface contamination on Clarke Bottling Co. land.

Type: Newspaper/Journal Article
Document Qualifiers(s): Original/Duplicate of Original,

Author: Roger Meacham
Office of Public Awareness, USEPA Region 6

Recipient: Public

Total Pages: 2

Document Number: 08-0013 Date: 01/10/84

Document Title : Information request letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
Air and Waste Management Div., USEPA Region 6

Recipient: Mr. Higgins
Higgins Investment Co.

Total Pages: 2

Document Number: 08-0014 Date: 01/16/84

Document Title : Memo re: meeting held Dec. 18, 1983, to inform Tanglewood East Homeowners Assoc. of proposed immediate response action. Fact sheet attached.

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Carlene L. Chambers
Policy and Design Section, USEPA Region 6

Recipient: Samuel L. Nott, Chief
Superfund Branch, USEPA Region 6

Total Pages: 3

Document Number: 08-0015 Date: 01/19/84

Document Title : Response to information request letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Russell F. Wiggins
Wiggins Enterprises

Recipient: Mr. Steve Phillips
USEPA Region 6

Total Pages: 1

002521

Document Number: 08-0016 Date: 01/20/84

Document Title : Information request letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
Air and Waste Management Div., USEPA Region 6

Recipient: Ernest Coker, Jr

Total Pages: 2

Document Number: 08-0017 Date: 01/20/84

Document Title : Information request letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
Air and Waste Management Div., USEPA Region 6

Recipient: Pat George

Total Pages: 2

Document Number: 08-0018 Date: 01/27/84

Document Title : Response to information request letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Ernest Coker, Jr. (former property owner)

Recipient: Mr. Steve Phillips
USEPA Region 6

Total Pages: 2

002522

D ument Number: 08-0019 Date: 02/13/84

Document Title : Response to information request letter.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Patrick D. George

Recipient: Superfund Enforcement
USEPA Region 6

Total Pages: 1

Document Number: 06-0020 Date: 02/15/84

D ument Title : Information request letter

Type: Letter
Document Qualifiers(s):

Author: Allyn M. Davis, Director
Air and Waste Management Div., USEPA Region 6

Recipient: Buddy Wilkenfeld

Total Pages: 3

D ument Number: 08-0021 Date: 03/09/84

Document Title : Information request letter

Type: Letter
D ument Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
Air and Waste Management Div., USEPA Region 6

Recipient: General Manager
Houston Shell and Concrete Co.

Total Pages: 2

002523

Document Number: 08-0022 Date: 03/20/84

Document Title : Response to information request letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: L.A. Douthitt, Vice President
Houston Shell and Concrete Co.

Recipient: Mr. Steve Phillips
USEPA Region 6

Total Pages: 4

002552

Document Number: 08-0023 Date: 03/28/84

Document Title : Co-operative Agreement between USEPA and Texas Dept. of Water Resources, Scope of Work attached.

Type: Miscellaneous
Document Qualifiers(s): Original/Duplicate of Original,

Author:
USEPA / TDWR

Recipient: United Creosoting Co. Site File
USEPA Region 6

Total Pages: 9

Document Number: 08-0024 Date: 04/10/84

Document Title : Information request letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
Air and Waste Management Division, USEPA Region 6

Recipient: General Manager
McDonough Company

Total Pages: 2

Document Number: 08-0025 Date: 04/18/84

Document Title : Information request letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
Air and Waste Management Div., USEPA Region 6

Recipient: Mrs. Aileen Tiras

Total Pages: 2

Document Number: 08-0026 Date: 04/30/84

Document Title : Community Relations Plan - Remedial Action

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author:
Texas Dept. of Water Resources

Recipient: United Creosoting Co. Site File
USEPA Region 6

Total Pages: 44

Document Number: 03-0027 Date: 05/01/84

Document Title : Emergency Action Work Report (as built drawing and waste shipping control tickets available in site file available for review at USEPA Region 6)

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author: Staff
Resource Engineering

Recipient: United Creosoting Site File
USEPA, Region 6

Total Pages: 9

002525

Document Number: 08-0028 Date: 05/24/84

Document Title : Review of soil samples and household dust samples

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: George Buynoski, Public Health Advisor
Centers for Disease Control

Recipient: Frank Gorry, On Scene coordinator
Emergency Response Branch

Total Pages: 1

Document Number: 08-0029 Date: 05/24/84

Document Title : Response to information request letter by attorney for McDonough Co.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Thomas M. O'Brien, Attorney

Recipient: Mr. Steve Phillips
USEPA Region 6

Total Pages: 1

Document Number: 08-0030 Date: 08/01/84

Document Title : Scope of Services - taken from Contract for Services, between Weston, Inc. and Texas Dept. Water Resources, for Investigation and Feasibility Study

Type: Miscellaneous
Document Qualifiers(s): Original/Duplicate of Original, Incomplete,

Author:
TDWR

Recipient:
USEPA Region 6

Total Pages: 31

002526

Document Number: 08-0031 Date: 09/11/84

Document Title : EPA approval of Emergency Action Work Report

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Samuel Nott, Chief
Superfund Branch, USEPA Region 6

Recipient: Jack Clarke, III
Clark Bottling Co., Conroe, Texas

Total Pages: 1

Document Number: 08-0032 Date: 11/28/84

Document Title : Work Plan for Site Investigation, United Creosoting Superfund Site

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author: Staff
Weston

Recipient: Texas Dept. of Water Resources

Total Pages: 119

Document Number: 08-0033 Date: 12/21/84

Document Title : Letter outlining adjustments to the Work Plan.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Bryan W. Dixon, Chief
Solid Waste and Spill Response, Texas Dept. of Water Resouce

Recipient: Sam Nott
USEPA Region 6

Total Pages: 1

002527

Document Number: 08-0034 Date: 03/11/85

Document Title : Comments on results of off - site surface soil samples

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Georgi A. Jones, Chief, Superfund Implementation Group
Center for Disease Control

Recipient: George C. Buynoski, Public Health Advis.
USEPA Region 6

Total Pages: 1

002528

Document Number: 08-0035 Date: 10/08/85

Document Title : Letter requesting clarification of issues raised by Center for Disease Control's July 31, 1985 Memorandum. (Memorandum is attached) Note: TWC succeeded TDWR on 9/1/85

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Charles R. Faulds, Chief Superfund Section
Hazardous and Solid Waste Div., Texas Water Commission

Recipient: Carl Edlund, Chief
Superfund Program Branch, USEPA Region 6

Total Pages: 9

Document Number: 08-0036 Date: 10/17/85

Document Title : Conference call between EPA, CDC & TWC staff to discuss issues related to CDC's July 31, 1985 memo

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Don Williams
Texas Remedial Section, USEPA Region 6

Recipient: Carl Edlund et al.
Addressees listed on page two

Total Pages: 2

Document Number: 06-0037 Date: 11/30/85

Document Title : Site Investigation, United Creosoting Site, Volume I

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author:
Roy F. Weston, Inc.

Recipient:
Texas Water Commission; USEPA

Total Pages: 229

Document Number: 06-0038 Date: 11/30/85

Document Title : Site Investigation, United Creosoting Site, Volume II Appendices

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author:
Roy F. Weston, Inc.

Recipient:
Texas Water Commission; USEPA

Total Pages: 278

Document Number: 08-0039 Date: 01/01/86

Document Title : Public Meeting Notice and Agenda for meeting Jan. 27, 1986 in Conroe, Texas, to provide area residents with information about the remedial investigation.

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author: William E. Colbert, Director
Office of Public Information, Texas Water Commission

Recipient: Public

Total Pages: 4

002529

Document Number: 08-0040 Date: 04/30/86

Document Title : Feasibility Study, United Creosoting Company Site, Volume 1

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author:
Weston, Inc.

Recipient:
Texas Water Commission, USEPA Region 6

Total Pages: 181

Document Number: 08-0041 Date: 04/30/86

Document Title : Feasibility Study, United Creosoting Company Site, Volume 2 Appendices

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author:
Weston, Inc.

Recipient:
Texas Water Commission, USEPA Region 6

Total Pages: 242

Document Number: 08-0042 Date: 06/25/86

Document Title : Congressional Staff Briefing

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Don Williams, Environmental Engineer
Texas Remedial Section, USEPA Region 6

Recipient: Stan Hitt, Chief
Texas Remedial Section, USEPA Region 6

Total Pages: 2

002530

Document Number: 08-0043 Date: 07/31/86

Document Title : Notice of Public Meeting, August 20, 1986 in Conroe, Texas

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author: Community Relations Staff
USEPA Region 6

Recipient: Public
Community relations mailing list

Total Pages: 1

Document Number: 08-0044 Date: 08/01/86

Document Title : Superfund program project update - United Creosoting Site, Feasibility Study

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author: Community Relations Staff
USEPA Region 6

Recipient: Public

Total Pages: 4

Document Number: 08-0045 Date: 08/14/86

Document Title : EPA Environmental News - press release announcing public meeting to be held 8-28-86, and public comment period

Type: Newspaper/Journal Article
Document Qualifiers(s): Original/Duplicate of Original,

Author: Karen L. Brown
Office of Public Awareness, USEPA Region 6

Recipient: Public

Total Pages: 2

002531

Document Number: 08-0046 Date: 08/14/86

Document Title : Letter inviting addressees to briefing on August 20, 1986. Agenda, project update, list of addressees attached

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Dick Whittington, Regional Administrator
USEPA, Region 6

Recipient: Multiple addressees listed

Total Pages: 14

Document Number: 08-0047 Date: 08/20/86

Document Title : Transcript of United Creosoting Site public meeting, held on August 20, 1986 in Conroe, Texas

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author:
International Litigation Services, Inc.

Recipient: United Creosoting Site File
USEPA Region 6

Total Pages: 121

Document Number: 08-0048 Date: 08/25/86

Document Title : Notice letter to potential y responsible parties, 2 addressees listed on attached sheet.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
Hazardous Waste Management Div., USEPA Region 6

Recipient: Jack Clark, Clark Bottling Co:
Herbert Sisco, Conroe Construction Co.

Total Pages: 5

002532

D ument Number: 08-0049 Date: 08/28/86

Document Title : Transcript of United Creosoting Site Public Meeting, held on August 28, 1986 in Conroe, Texas

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author:
International Litigation Services, Inc.

R ipient: United Creosoting Site File
USEPA Region 6

T al Pages: 177

Document Number: 08-0050 Date: 08/29/86

D ument Title : Comment on closure methods under consideration, suggestion that a liquid solid biodegradation digestion process be considered for the United Creosoting Co. Site

T e: Letter
Document Qualifiers(s): Original/Duplicate of Original,

A hor: H.D. Miller
Ecotech, Inc.

R--ipient: Carl Edlund, Chief
Superfund Branch, USEPA, Region 6

Total Pages: 3

D ument Number: 08-0051 Date: 08/29/86

D--ument Title : Inquiry on behalf of Mr. & Mrs. Claytor of Conroe, Tx.

Type: Letter with Attachments
D ument Qualifiers(s): Original/Duplicate of Original,

Author: Senator Lloyd Bentsen of Texas
United States Senate

Recipient: Dick Whittington, Regional Administrator
USEPA Region 6

Total Pages: 2

Document Number: 08-0052 Date: 09/08/86

Document Title : Comments on permanent relocation of Tanglewood East residents.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Craig B. Ball
Abraham, Watkins et al, Attorneys

Recipient: Carl E. Edlund, Chief
Superfund Program Branch, USEPA

Total Pages: 3

Document Number: 08-0053 Date: 09/09/86

Document Title : Memo and attached position statement re: Reimbursement for Economic Damages under CERCLA

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Dick Whittington, Regional Administrator
USEPA Region 6

Recipient: J. Winston Porter
Office of Solid Waste and Emergency Response, EPA

Total Pages: 5

Document Number: 08-0054 Date: 09/09/86

Document Title : Record of Phone Conversation with Raymond Walston, City Councilman, Conroe, TX. Re: complete buyout of subdivision; on site incineration.

Type: ROC
Document Qualifiers(s): Original/Duplicate of Original,

Author: Carl Edlund
USEPA Region 6

Recipient: United Creosoting Co. Site File
USEPA, Region 6

Total Pages: 1

002534

Document Number: 08-0055 Date: 09/09/86

Document Title : Response to notice letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Jack Clark III
Clark Bottling Co.

Recipient: Ms. Kim Turnpaugh
Superfund Compliance Section, USEPA

Total Pages: 1

Document Number: 08-0056 Date: 09/10/86

Document Title : Comments on alternatives under consideration for United Creosoting Site and suggestion that the Detox Ind. biodegradation process be used.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Thomas A. Dardas, President
Detox Industries, Inc.

Recipient: Carl E. Edlund, Chief
Superfund Program Branch, USEPA, Region 6

Total Pages: 2

Document Number: 08-0057 Date: 09/12/86

Document Title : 9 written comments received during public comment period. (Public comment period was from 8/22/86 - 9/12/86).

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Tanglewood East property owners

Recipient: United Creosoting Co. Site File
USEPA Region 6

Total Pages: 15

002535

Document Number: 08-0058 Date: 09/15/86

Document Title : Agency Position on Reimbursement for Economic Losses Under CERCLA

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Henry L. Longest II, Director
Office of Emergency and Remedial Response, USEPA

Recipient: Dick Whittington, Regional Administrator
USEPA Region 6

Total Pages: 1

Document Number: 08-0059 Date: 09/16/86

Document Title : Comments from property owner concerning on site incineration

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Jack Clark, III
Clark Bottling Company

Recipient: Carl E. Edlund, Chief
Superfund Program Branch, USEPA, Region 6

Total Pages: 1

Document Number: 08-0060 Date: 09/17/86

Document Title : Inquiry on behalf of homeowners in Tanglewood East Subdivision in Conroe, Tx. Homeowner's petition is attached.

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Senator Lloyd Bentsen of Texas
United States Senate

Recipient: Dick Whittington, Regional Administrator
USEPA, Region 6

Total Pages: 4

002536

Document Number: 08-0061 Date: 09/23/86

Document Title : Response to Senator Bentsen's letter dated Aug. 29, 1986 on behalf of Mr. & Mrs. Claytor of Conroe, Texas.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Dick Whittington, Regional Administrator
USEPA Region 6

Recipient: Senator Lloyd Bentsen
United States Senate

Total Pages: 3

Document Number: 08-0062 Date: 09/23/86

Document Title : Response to notice letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Robert C. Floyd, Attorney for Conroe Construction Co.
Floyd, Taylor and Riley, Attorneys

Recipient: Ms. Kim L. Turnbaugh
Superfund Compliance Section, USEPA Region 6

Total Pages: 1

Document Number: 08-0063 Date: 09/25/86

Document Title : Response to letter from Bruce M. King, a Tanglewood East property owner, dated Sept. 2, 1986 (correspondence attached).

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Carl E. Edlund, Chief
Superfund Program Branch, USEPA Region 6

Recipient: Bruce King
Tanglewood East property owner

Total Pages: 5

002537

Document Number: 08-0064 Date: 09/29/86

Document Title : Information request letter sent to multiple addressees

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
Hazardous Waste Management Division, USEPA Region 6

Recipient: Charles C. Palmer et al.,
Other addressees listed on attached sheet.

Total Pages: 5

Document Number: 08-0065 Date: 09/30/86

Document Title : Record of Decision, Remedial Alternative Selection (Interim Remedy), United Creosoting Company

Type: Guidance/Policy
Document Qualifiers(s): Original/Duplicate of Original,

Author: Signed by Myron O. Knudsen for Frances E. Phillips
USEPA Region 6

Recipient: United Creosoting Site File
USEPA Region 6

Total Pages: 68

Document Number: 08-0066 Date: 10/01/86

Document Title : Superfund program project update - United Creosoting, Remedial Action Decision

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author: Community Relations Staff
USEPA Region 6

Recipient: Public

Total Pages: 3

002538

Document Number: 08-0067 Date: 10/08/86

Document Title : Response to Senator Bentsen's letter dated Sept. 17, 1986 on behalf of homeowners the Tanglewood East Subdivision, Conroe, Texas

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Franci E. Phillips
USEPA, Region 6

Recipient: Senator Lloyd Bentsen
United States Senator

Total Pages: 2

Document Number: 08-0068 Date: 10/15/86

Document Title : Review comments on the final Feasibility Study and Report by state and regional agencies

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Herschel S. Meriwether, II, Deputy Asst. for Program
Office of the Governor, State of Texas

Recipient: Larry R. Soward, Executive Director
Texas Water Commission

Total Pages: 10

Document Number: 08-0069 Date: 10/24/86

Document Title : Inquiry on behalf of J.C. Tatum, III, attorney for Mr. & Mrs. Marvin J. Schaeffer of Conroe, Tx.

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Senator Lloyd Bentsen of Texas
United States Senate

Recipient: Frances E. Phillips,
USEPA, Region 6

Total Pages: 4

002539

Document Number: 08-0070 Date: 11/17/86

Document Title : Response to Senator Bentsen's letter dated Oct. 24, 1986 on behalf of J.C. Tatum III,

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Frances E. Phillips, Acting Regional Administrator
USEPA Region 6

Recipient: Senator Lloyd Bentsen of Texas
United States Senate

Total Pages: 3

Document Number: 08-0071 Date: 12/01/86

Document Title : Response to information request letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Carol Palmer
Charles + Thomas, Inc.

Recipient: Ms. Kim Turnpaugh
Superfund Compliance Section, USEPA Region 6

Total Pages: 3

Document Number: 08-0072 Date: 01/28/87

Document Title : Notice Letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
Hazardous Waste Management Div., USEPA Region 6

Recipient: Mr. Sam P. Evans, et al.
Other addressees listed on attached sheet

Total Pages: 3

002540

Document Number: 08-0073 Date: 02/03/67

Document Title : Response to notice letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Ernest Coker, Jr.
Coker, Durst and Wood, Attorneys

Recipient: Ms. Kim Turnpaugh
Superfund Enforcement Section, USEPA Region 6

Total Pages: 1

Document Number: 08-0074 Date: 05/01/87

Document Title : State of Texas gives assurance that it will take title to real properties after construction of clay cap.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: William P. Clements, Jr., Governor
State of Texas

Recipient: Robert E. Layton, Jr., Regional Admin.
USEPA Region 6

Total Pages: 1

Document Number: 08-0075 Date: 05/14/87

Document Title : Response to notice letter.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: R. Keith Hopson, Attorney for First Federal Savings & Loan of Conroe
Brown Maroney Rose Barber & Dye, Attorneys

Recipient: Ms. Kim L. Turnpaugh
Superfund Enforcement Section, USEPA Region 6

Total Pages: 2

002541

Document Number: 08-0076 Date: 05/19/87

Document Title : Information request letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Robert E. Hanesschlager, Chief
Superfund Enforcement Branch, USEPA Region 6

Recipient: Mrs. Aileen Tiras

Total Pages: 3

Document Number: 08-0077 Date: 05/22/87

Document Title : Letter and attached affidavit given in response to information request letter.

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Aileen Tiras

Recipient: Ms. Kim Turnpaugh
Superfund Compliance Section, USEPA Region 6

Total Pages: 3

Document Number: 08-0078 Date: 06/18/87

Document Title : Notice letter

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis
Hazardous Waste Management Div., USEPA Region 6

Recipient: John McKirahan, Marmac Corp.
Patrick George

Total Pages: 3

002542

Document Number: 08-0079 Date: 06/26/87

Document Title : Transfer of Title of Property at United Creosoting

Type: Memorandum
Document Qualifiers(s): -Original/Duplicate of Original,

Author: Evan L. Pearson, Asst. Regional Counsel
USEPA Region 6

Recipient: Carl Edlund, Chief
Superfund Program Branch, USEPA Region 6

Total Pages: 3

Document Number: 08-0080 Date: 07/01/87

Document Title : Superfund program project description - United Creosoting Site

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author: Community Relations Staff
USEPA Region 6

Recipient: Public

Total Pages. 2

Document Number: 08-0081 Date: 09/25/87

Document Title : Status of Relocation Negotiations, and attached letter to Gov. Clements clarifying issues.

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Robert E. Layton, Jr., Regional Administrator
USEPA Region 6

Recipient: J. Winston Porter, Ass't. Administrator
Solid Waste and Emergency Response, USEPA

Total Pages: 3

002543

Document Number: 08-0082 Date: 10/28/87

Document Title : Letter stating that USEPA will assume title to properties involved during construction of temporary remedy

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, director
Hazardous Waste Management Div., USEPA Region 6

Recipient: Larry Soward, Executive Director
Texas Water Commission

Total Pages: 1

Document Number: 08-0083 Date: 11/13/87

Document Title : Response to inquiry from Senator Gramm on behalf of his constituent (correspondence attached)

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Robert E. Layton, Jr., Regional Administrator
USEPA Region 6

Recipient: Senator Phil Gramm of Texas
United States Senate

Total Pages: 4

Document Number: 08-0084 Date: 11/20/87

Document Title : United States will take temporary title to properties until construction of cap is complete, then transfer title to the state of Texas.

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: J. Winston Porter, Ass't. Administrator
USEPA

Recipient: Robert E. Layton, Regional Administrator
USEPA Region 6

Total Pages: 1

002544

Document Number: 08-0085 Date: 11/23/87

Document Title : United Creosoting Phase I Treatability Study - Work Plan, Health and Safety Plan, Quality Control / Quality Assurance Plan

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author: Staff
Weston, Inc.

Recipient: Texas Water Commission

Total Pages: 93

Document Number: 08-0086 Date: 11/30/87

Document Title : United Creosoting Phase II Treatability Study - Work Plan, Health and Safety Plan, Quality Assurance Plan

Type: Report/Study
Document Qualifiers(s): Draft,

Author: Staff
Weston, Inc.

Recipient:
Texas Water Commission

Total Pages: 56

Document Number: 08-0087 Date: 01/29/88

Document Title : Amendment No. II to Contract for Services modifies Scope of Services

Type: Miscellaneous
Document Qualifiers(s): Original/Duplicate of Original, Incomplete,

Author: Staff
Texas Water Commission, E.P.A

Recipient: United Creosoting Co. Site File
USEPA Region 6

Total Pages: 7

002545

Document Number: 08-0088 Date: 03/31/88

Document Title : Amendment No. 12 to Contract for Services modifies Scope of Services

Type: Miscellaneous
Document Qualifiers(s): Original/Duplicate of Original, Incomplete,

Author:
Texas Water Commission, E.P.A.

Recipient: United Creosoting Co. Site File
USEPA Region 6

Total Pages: 6

Document Number: 08-0089 Date: 08/26/88

Document Title : Proposed scope of work for Phase II Treatability Study focusing on fluid extraction.

Type : Letter
Document Qualifiers(s): Incomplete,

Author: Calvin L. Spencer, Project Manager
Roy F. Weston, Inc.

Recipient: Louis Rogers
Texas Water Commission

Total Pages: 7

Document Number: 08-0090 Date: 09/30/88

Document Title : Amendmend No. 14 to Contract for Services modifies Scope of services

Type: Miscellaneous
Document Qualifiers(s): Original/Duplicate of Original, Incomplete,

Author:
Texas Water Commission, E.P.A.

Recipient: United Creosoting Co. Site File
USEPA Region 6

Total Pages: 6

002546

Document Number: 08-0091 Date: 09/30/88

Document Title : Comments after review of proposed scope of work for Phase II Treatability Study.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Don Williams, Remedial Project Manager
USEPA Region 6

Recipient: Louis Rogers
Texas Water Commission

Total Pages: 2

Document Number: 08-0092 Date: 10/11/88

Document Title : Letter outlining revisions to the scope of work for the Phase II Treatability Study

Type: Letter
Document Qualifiers(s): Incomplete,

Author: Phillip deBlanc, Engineer
Roy F. Weston, Inc.

Recipient: Louis Rogers
Texas Water Commission

Total Pages: 10

Document Number: 08-0093 Date: 10/31/88

Document Title : Approval of technical scope of work for Phase II Treatability Study.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Donald H. Williams, Leader RI/FS Unit
USEPA Region 6

Recipient: Louis Rogers
Texas Water Commission

Total Pages: 1

002547

Document Number: 08-0094 Date: 11/08/88

Document Title : EPA proposes a phased implementation of the interim remedy.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis
Hazardous Waste Management Div., USEPA Region 6

Recipient: Allen Beinke, Executive Director
Texas Water Commission

Total Pages: 2

002548

Document Number: 08-0095 Date: 11/21/88

Document Title : TWC supports EPA's suggested alternative of phased implementation of remedial action at United Creosoting Site

Type: Letter
Document Qualifiers(s):

Author: Allen P. Beinke, Executive Director
Texas Water Commission

Recipient: Allyn M. Davis, Director
Hazardous Waste Management Div., USEPA Region 6

Total Pages: 1

Document Number: 08-0096 Date: 02/01/89

Document Title : Public Notice announcing that a technical assistance grant is available for the United Creosoting Site.

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author: Shannon Doss
USEPA Region 6

Recipient: Public

Total Pages: 1

Document Number: 08-0097 Date: 06/16/89

Document Title : EPA'S Comments on draft Feasibility Study Amendment

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Cynthia J. Kaleri, Remedial Project Manager
Texas Remedy Section, USEPA Region 6

Recipient: Louis Rogers
Remedial Contract Activities Section, TWC

Total Pages: 10

Document Number: 08-0098 Date: 07/01/89

Document Title : Feasibility Study Amendment - Preferred Alternatives Analysis

Type: Report/Study
Document Qualifiers(s): Draft,

Author: Staff
Weston, Inc.

Recipient: Texas Water Commission

Total Pages: 153

Document Number: 08-0099 Date: 07/01/89

Document Title : Superfund Project Update - United Creosoting

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author: Community Relations Staff
USEPA Region 6

Recipient: Public

Total Pages: 10

002549

Document Number: 08-0100 Date: 07/05/89

Document Title : Letter informs interested parties that an Open House will be held on 7/15/89 in Conroe, studies are complete and related documents will be available for public review.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Peggy Ryan composed and signed letter in Ellen Greeney's absence.
Community Relations Staff, USEPA Region 6

Recipient: Community relations mailing list

Total Pages: 1

Document Number: 08-0101 Date: 08/03/89

Document Title : Transcript of public meeting held August 3, 1989 in Conroe, Texas re: proposed plan for United Creosoting Site.

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author: Roxanne Shirvan, Transcriber
On the Record Reporting, Inc.

Recipient: United Creosoting site file
USEPA Region 6

Total Pages: 108

Document Number: 08-0102 Date: 08/29/89

Document Title : EPA gives conditional approval of the revised Feasibility Study Amendment Report (See attached comments).

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Robin Gelston - Waste, Texas Superfund Coordinator
USEPA Region 6

Recipient: James Feeley, Acting Chief
Contract Remedial Activities Section, TWC

Total Pages: 2

002550

Document Number: 08-0103 Date: 09/01/89

Document Title : Feasibility Study Amendment Preferred Alternatives Analysis (Final - includes revisions made to July, 1989 report)

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author: Staff
Weston, Inc.

Recipient: Texas Water Commission

Total Pages: 153

Document Number: 08-0104 Date: 09/08/89

Document Title : Memo re: United Creosoting ROD and Interim Final ROD Guidance

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Cynthia J. Kaleri, Remedial Project Manager
Texas Remedy Section, USEPA Region 6

Recipient: Donald Williams, Section Chief
Texas Remedy Section, USEPA Region 6

Total Pages: 1

Document Number: 08-0105 Date: 09/29/89

Document Title : Record of Decision

Type: Miscellaneous
Document Qualifiers(s): Original/Duplicate of Original,

Author: Robert E. Layton, Jr., Regional Administrator
USEPA Region 6

Recipient: United Creosoting site file
USEPA Region 6

Total Pages: 109

002551