Five-Year Review

Second Five-Year Review
for the
United Creosoting Company Superfund Site
Conroe, Montgomery County, Texas

September 2005

Region 6
United States Environmental Protection Agency
Dallas, Texas

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SECOND FIVE-YEAR REVIEW MEMORANDUM

United Creosoting Company Superfund Site
EPA ID# TXD980745574
Conroe, Montgomery County, Texas

This U.S. Environmental Protection Agency (EPA) memorandum documents the performance, determinations, and approval of the United Creosoting Company Superfund Site Five Year Review, including the attached Second Five Year Review Report.

Summary of the Second Five Year Review Findings

The remedy completed at the United Creosoting Company site (Site) continues to be protective of human health and the environment. No deficiencies were noted that currently impact the protectiveness of the remedy. Current land use remains consistent with residential and industrial soil target levels at the Site. Although a contaminant plume remains in the shallow zone ground water, the area is within the service area of a municipal water supply, there are no existing private wells within the affected area, and an exposure pathway does not exist for the contaminated ground water.

Actions Needed

Evaluate the application of institutional controls to ensure land use changes in the industrial area of the site are consistent with the soil cleanup where industrial target levels were achieved but residential target levels are exceeded. Institutional controls should also be considered for future well construction within the area of the ground water plume to prevent accidental ingestion and prevent possible vertical migration into the uncontaminated lower aquifers. In addition, the efficacy of the monitored natural attenuation remedy for the contaminated ground water should continue to be evaluated for this Site. Finally, there are eight residential lots that were acquired by the Federal Government during the soil remediation phase that should now be transferred to the State of Texas.

Determinations

I have determined that the remedy for the United Creosoting Company EPA Superfund site is protective of human health and the environment, and will remain so provided the action items identified in the Second Five Year Review Report are addressed as described above.

John R. Hepola, for

Samuel Coleman, P.E.
Director
Superfund Division
U.S. Environmental Protection Agency Region 6

9/23/05
Date

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CONCURRENCES

Second Five-Year Review

United Creosoting Company Superfund Site
EPA ID# TXD980745574

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Five-Year Review Report

Second Five-Year Review Report for the United Creosoting Company Superfund Site Conroe, Montgomery County, Texas

September 2005

Prepared By:

Region 6
United States Environmental Protection Agency
Dallas, Texas

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TABLE OF CONTENTS

Section **Page**

List of Tables

List of Figures

Attachments

List of Acronyms

ARARs	Applicable or Relevant and Appropriate Requirements
BAP	benzo(a)pyrene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFE	Critical Fluid Extraction
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
FR	Federal Register
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
MCLs	Maximum Contaminant Levels
O&M	Operation and Maintenance
OSWER	Office of Solid Waste and Emergency Response
PAHs	polycyclic aromatic hydrocarbons
PCP	pentachlorophenol
ppb	part per billion
ppm	part per million
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SVOC	semi-volatile organic compound
2,3,7,8-TCDD	2,3,7,8-tetrachlorodibenzodioxin
TCEQ	Texas Commission on Environmental Quality
TDWR	Texas Department of Water Resources
TEQ	Toxic Equivalencies
TNRCC	Texas Natural Resource Conservation Commission
TWC	Texas Water Commission
VOC	volatile organic compound

Executive Summary

The second five-year review of the United Creosoting Company Superfund Site (Site) located in Conroe, Montgomery County, Texas, was completed in August 2005. The results of the second five-year review indicate that the final remedial action at the site as set forth in the Records of Decision (ROD), as amended, continues to be protective of human health and the environment. No deficiencies were noted that currently impact the protectiveness of the remedy. Current land use remains consistent with residential and industrial soil target levels at the Site. Although a contaminant plume remains in the shallow zone ground water, the area is within the service area of a municipal water supply, there are no existing private wells within the affected area, and an exposure pathway does not exist for the contaminated ground water.

The remedy selected for the United Creosoting site involved excavation of soil above target action levels set for the residential and commercial properties now present at the site. Monitored natural attenuation was selected as an appropriate remedy for addressing affected shallow groundwater. The first Record of Decision, signed in 1986, provided an interim remedy; removal of soil in the residential area and placement under a temporary cap within the commercial area of the site pending ongoing review and selection of an appropriate treatment/disposal method. The second Record of Decision, signed in 1989, was a complement to the first; it selected Critical Fluid Extraction (CFE) as the treatment method for the affected soil. Remediation at the site began in 1992 with excavation of soil from the residential area (Phase A), and the CFE process was initiated in 1996 (Phase B). The CFE approach proved unsuccessful in treating the affected soils, however, and was terminated in 1998. A Record of Decision Amendment selecting completion of excavation and offsite disposal of affected soil was signed in 1998; this remedy was completed in 1999. All affected soil above applicable target action levels has now been removed from both the residential and commercial portions of the site. The ROD Amendment No. 1 reiterated the requirement for monitoring of the natural attenuation of groundwater.

The Texas Commission on Environmental Quality has conducted ground water monitoring and completed an assessment of the efficacy of the monitored natural attenuation remedy in 2004. This action has addressed an issue identified in the First Five-Year Review completed in September 2000. The findings of the investigation indicated there is insufficient data to evaluate the efficacy of the monitored natural attenuation remedy, and there is the possible presence of a dense non-aqueous phase liquid in the shallow zone aquifer that may prevent the remedy from meeting the long-term remedial goals for the ground water.

Future actions at the Site should include a review and evaluation of the available institutional controls, or other appropriate mechanisms, to ensure land use changes in the

industrial area of the site are consistent with the soil cleanup where industrial target levels were achieved but residential target levels are exceeded. Institutional controls should also be considered for future well construction within the area of the ground water plume to prevent accidental ingestion and prevent possible vertical migration into the uncontaminated lower aquifers. In addition, the efficacy of the monitored natural attenuation remedy for the contaminated ground water should be evaluated for this Site. Finally, there are eight residential lots that were acquired by the Federal Government during the soil remediation phase that should now be transferred to the State of Texas.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name (from WasteLAN): United Creosoting Company

EPA ID (from WasteLAN): TXD980745574

Region: EPA Region 6 | **State:** TX | **City/County:** Conroe/Montgomery

SITE STATUS

NPL Status: : Final 9 Deleted 9 Other (specify):

Remediation status (choose all that apply): 9 Under Construction 9 Operating : Complete

Multiple OUs? 9 Yes : No | **Construction completion date:** May 1999

Has site been put into reuse? : Yes 9 No [residential and commercial]

REVIEW STATUS

Reviewing agency: : EPA 9 State 9 Tribe 9 Other Federal Agency:

Author: EPA Region 6

Review period: February 2005 through August 2005

Date(s) of site inspection: February 16, 2005

Type of review: : Statutory 9 Policy
9 Post-SARA 9 Pre-SARA 9 NPL-Removal only
9 Non-NPL Remedial Action Site
9 NPL State/Tribe-lead 9 Regional Discretion

Review number: 9 1 (first) : 2 (second) 9 3 (third) 9 Other (specify):

Triggering action: 9 Actual RA Onsite Construction 9 Actual RA Start
9 Construction Completion
: Other (specify): Completion date for first 5-Year Review

Triggering action date (from WasteLAN): September 30, 2000

Due date (five years after triggering action date): September 30, 2005

Five-Year Review Summary Form

Issues:

The absence of institutional controls, or other appropriate mechanisms, may affect the continued long-term effectiveness of the soil and ground water remedies at some point in the future if not addressed. Institutional controls were not specified by the RODs (at the time the RODs were signed, no current users of the affected groundwater zone were identified, and the area was determined to be within the service area of a municipal water supply). However, affected groundwater remains in-place beneath residential and industrial areas, and institutional controls should be considered to ensure groundwater use does not occur in the future. Affected soil remains in place in the industrial area of the site below industrial target action levels, but above residential target action levels, and institutional controls should be considered in that area to provide guidance related to potential future land use changes.

The Texas Commission on Environmental Quality has implemented the monitored natural attenuation remedy for the ground water. The findings of the investigation indicate there is insufficient data to evaluate the efficacy of the monitored natural attenuation remedy, and there is the possible presence of a dense non-aqueous phase liquid in the shallow zone aquifer that may prevent the remedy from meeting the long-term remedial goals for the ground water.

Finally, there are eight residential lots that were acquired by the Federal Government during the soil remediation phase that should now be transferred to the State of Texas. The residential lot at 4 Arlington Street has an abandoned house that is in poor condition.

Recommendations and Follow-up Actions:

Identify available institutional controls, or other appropriate mechanisms, to ensure land use changes in the industrial area of the site are consistent with the soil cleanup where industrial target levels were achieved but residential target levels are exceeded. Institutional controls should also be considered for future well construction within the area of the ground water plume to prevent accidental ingestion and prevent possible vertical migration into the uncontaminated lower aquifers.

Continue monitoring the ground water and evaluate the efficacy of the monitored natural attenuation remedy for the contaminated ground water.

Arrange for the title transfer of the eight residential lots to the State of Texas.

Protectiveness Statement(s):

The final remedial action at the site as set forth in the Records of Decision (ROD), as amended, continues to be protective of human health and the environment. No deficiencies were noted that currently impact the protectiveness of the remedy. Current land use remains consistent with residential and industrial soil target levels at the Site. Although a contaminant plume remains in the shallow zone ground water, the area is within the service area of a municipal water supply, there are no existing private wells within the affected area, and an exposure pathway does not exist for the contaminated ground water.

Other Comments:

No other comments.

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Second Five-Year Review Report
for the
United Creosoting Company Superfund Site
Conroe, Montgomery County, Texas

I. Introduction

The United States Environmental Protection Agency Region 6 has conducted a five-year review of the remedial actions implemented at the United Creosoting Company Superfund site (Site) located in Conroe, Montgomery County, Texas. The purpose of a five-year review is to determine whether the remedy at a site remains protective of human health and the environment. The methods, findings, and conclusions of this review are documented in this Second Five-Year Review Report. In addition, this report identifies issues found during the review, if any, and recommendations to address them.

The five-year review for the United Creosoting Company site is required by statute. Statutory reviews are required for sites where, after remedial actions are complete, hazardous substances, pollutants, or contaminants will remain onsite at levels that will not allow for unrestricted use or unrestricted exposure. This requirement is set forth by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Statutory reviews are required only if the ROD was signed on or after the effective date of the Superfund Amendments and Reauthorization Act of 1986 (SARA). The U.S. Environmental Protection Agency (EPA) has conducted this second five year review pursuant to section 121 of the Comprehensive Environmental Response, Compensation & Liability Act (CERCLA), 42 U.S.C. §9621(c), which states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.*

The Agency interpreted this requirement further in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) [40 CFR §300.430(f)(4)(ii)] which states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The triggering action for this statutory review is the signature date of September 30, 2000, for the First Five-Year Review Report, as shown in the EPA's WasteLAN database. Pursuant to CERCLA Section 121(c) and as provided in the current guidance on Five Year Reviews [OSWER Directive 9355.7-03B-P, *Comprehensive Five-Year Review Guidance* (June 2001)], the EPA must conduct a statutory five-year review.

II. Site Chronology

Table 1
Chronology of Site Events

Date	Event
1946 through 1972	Site operated as a wood-treating facility
February 1970	TDWR conducted site inspection and found no offsite discharge of wastewater.
1977	TDWR conducted site inspection and discovered the waste ponds were being backfilled. Redevelopment for commercial and residential use had begun at this time.
1980	Montgomery County used soil from the site for improvements to community roads. Citizens complained of health effects from the soil; samples confirmed PCP content up to 20.3 mg/L in soil leachate. Contaminated soil removed and disposed.
August 1982	TDWR installed three monitoring wells onsite.
1982-1983	Additional monitoring wells installed by EPA and National Center for Groundwater Research. PAH and PCP contamination of shallow groundwater confirmed.
September 1983	Site proposed to the NPL
November 1983-April 1984	Response action completed by Clark Distributing Company -- Ordered by EPA in November 1983 (consisted of regrading, capping contaminated soils, fencing, construction of drainage ditches to control runoff).
March 1984-December 1985	Remedial Investigation conducted by Weston for TWC and EPA.
May 1986	Feasibility Study completed by Weston for TWC and EPA.
September 30, 1986	Record of Decision signed (selected interim remedy, including purchase and demolition of six residences, relocation of homeowners, consolidation of surface soil >100 ppm PAH and/or visibly contaminated, construction of temporary cap over consolidated soil, periodic evaluation of the availability of offsite disposal facilities and emerging alternate technologies, natural attenuation of contaminated shallow groundwater).
September 1989	Feasibility Study Amendment completed by Weston.

Table 1
Chronology of Site Events

Date	Event
September 29, 1989	Record of Decision signed (selected excavation of contaminated soil and treatment with Critical Fluid Extraction with subsequent offsite incineration of liquid residual and onsite burial of treated soils).
1992-1993	Phase A Remediation conducted (consolidation and capping).
May 1996	Focused Remedial Alternative Assessment completed by Weston.
1996-1998	Phase B Remediation conducted (Critical Fluid Extraction).
September 1998	Record of Decision Amendment No. 1 signed, replacing the Critical Fluid Extraction with offsite disposal.
1998-1999	Phase C Remediation conducted (offsite disposal).
September 2000	First Five-Year Review Report completed.
2001 - 2004	Implemented ground water monitoring and evaluated the efficacy of the monitored natural attenuation remedy.
September 2005	Second Five-Year Review completed.

III. Background

Physical Characteristics

The Site is located at the intersection of North First Street and Hilbig Road in Conroe, Montgomery County, Texas, approximately 40 miles north of Houston (Figure 1). The Site is approximately 1 mile east of Interstate Highway 45 and 0.25 mile south of Loop 336. The former United Creosoting property is approximately one hundred acres in size and is bounded on the west and south by Alligator Creek, on the north by Dolores Street, and on the east by the Missouri-Pacific rail lines (Figure 2). The physical characteristics of the Site have been altered by development of the property. Light industrial structures and a portion of Tanglewood East residential subdivision currently occupy the Site. Other residential areas border the Site to the north, south, and west. Industrial, commercial and residential areas are to the east.

Land and Resource Use

When the United Creosoting facility was in operation the adjacent properties to the north, west, and south were undeveloped. The center-eastern portion of the property was used as the manufacturing process area. Features currently found on the eastern portion of the Site include

buildings, fencing, and paved and unpaved areas. The western portion of the property consisted of undeveloped swamp and woodlands until approximately 1977, when the Tanglewood East subdivision was developed. As a result of industrial and residential development, much of the natural soil in the Site vicinity has been disturbed or covered by fill material and various structures. Alligator Creek, which skirts the southwestern portion of the Site, winds beside the residential properties and under subdivision streets in galvanized culverts in a southern direction. 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 Site. Overall Site surface water drainage is 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. Clarke Distributing Properties drain to the south and into a ditch which feeds Alligator Creek. The former capped area over the former waste ponds also drained into this ditch. Runoff from paved areas is directed into the ditch by curbing. There is minimal runoff from Clarke Distributing into the east drainage ditch west of the Missouri-Pacific Railroad. This railroad ditch and the vacant area drainage ditch do not interact.

Ground water is the major source of public and industrial water supplies in Montgomery County, Texas. The ground water in the Chicot and Evangeline aquifers beneath the Site has not been used as a drinking water source. However, at least 60 wells have been reported in frequent use within the Chicot and Evangeline aquifers up to two miles downgradient from the Site. High volume, multiple-user wells such as the city of Conroe municipal supply wells are generally screened in the deeper Evangeline sand; single-user domestic wells are in the Chicot formation. Approximately 13,000 people currently live within two miles of the Site.

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 with a regional hydraulic gradient of 4 feet per mile and, 5 feet per mile, respectively. The Chicot Aquifer is as shallow as 66 to 76 feet below the ground surface and is recharged by precipitation. The Evangeline sits 825 to 1,190 feet below the 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.

Use of the shallow water bearing zone directly beneath the Site as a domestic water resource is not anticipated due to the extremely low yield. This 25-foot zone comprises 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. The permeability of this layer is approximately 10^{-5} feet per day, indicative of clays which can retard vertical migration.

History of Contamination

The United Creosoting Company operated as a wood preserving facility from 1946 through the summer of 1972. The former facility operations included a coal-tar distillation still, a processing building, tanks, and pressure cylinders, two waste ponds, and several areas where treated lumber was stored. Soil in the process areas was stained by an accumulation of the black oily chemicals used for treating the lumber. Historical aerial photographs and analytical data obtained were used to determine the process areas as they existed during active operations.

In the wood-treating operation, formed lumber, such as telephone poles and railroad ties, was treated in a two-step process by the pressurized addition of creosote and pentachlorophenol (PCP). Following the pressure treatment, 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.

Creosote was produced via an onsite coal tar distillation unit 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 and was apparently disposed of in the larger process waste pond. No evidence exists that PCP was produced onsite. However, PCP was stored in one or more of the onsite storage tanks.

Initial Response

In February 1970, the Texas Department of Water Resources (TDWR), the predecessor agency to the Texas Water Commission and the Texas Commission on Environmental Quality, conducted a site inspection and found no discharge of wastewater from the wood-treatment facility ponds (EPA, 1989). In 1977, the TDWR inspected the site and reported that the former waste ponds were backfilled and redevelopment of the Site had begun.

During the summer of 1980, Montgomery County obtained soil from the Site for improvements to Metts Road, Mockingbird Lane, and various roads in the Lake Conroe Forest Subdivision. This soil consisted of surface soil and pond backfill soil 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. Analyses of leachate from the soil indicated PCP concentrations up to 20.3 mg/L. Montgomery County officials removed the contaminated soil from the affected roadways and disposed of the soil by landfarm treatment (EPA, 1989).

In August 1982, TDWR installed three monitoring wells on the Site. Additional wells were installed by the 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 (EPA, 1989).

The TDWR submitted the United Creosoting Company site as a candidate for cleanup under the Superfund program in August 1982. The immediate concern at the time was that contaminated surface water runoff was flowing from the former waste pond areas into Tanglewood East Subdivision. The TDWR collected additional soil, water, and air samples from the Site during the remainder of 1982 and into early 1983. In September 1983, the Site was included on the proposed National Priorities List (48-Federal Register 40658, September 8, 1983) by the EPA.

In early December 1983, the EPA initiated an immediate response action at the Site. Twenty-five surficial soil samples were taken in the vicinity of the former waste ponds and within the Tanglewood East subdivision. The soil was 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 was the storm water runoff from the former waste pond areas located on the Clarke Distributing property.

Based on information gathered via site inspections and various sampling events, the EPA issued an administrative order in November 1983 to Clarke Distributing requiring the current owner of the property containing the former waste ponds to perform interim response actions within the area of the former waste ponds. This work consisted of regrading exposed soil to divert surface water drainage away from the Tanglewood East subdivision, capping contaminated soil with a synthetic membrane cap and six inches of compacted clay, fencing the capped area, and constructing drainage ditches to channel cap area runoff to the south of the Clarke property (vacant land). This work was completed in April 1984 (EPA, 1986).

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

Basis for Taking Action

Data from the RI indicated the presence of contamination from creosote (PAH compounds), PCP, and chlorinated dioxin isomers in surficial and subsurface soils and PAH compounds and PCP in the shallow ground waters at the Site. Surface soils to a depth of 3 feet in areas of the Site were marked by an accumulation of asphaltic wastes or tar mats, darkened soils, or stressed vegetation. Subsurface soils were contaminated to a depth of 25 feet around the former waste ponds and tank farm. Ground water in the shallow zone was also contaminated with PAH compounds and PCP.

IV. Remedial Actions

Remedy Selection

The Texas Water Commission (TWC), successor to the TDWR, completed the FS 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, the EPA proposed a remedy for the Site which included:

- purchase of seven properties above or adjacent to the former pond areas;
- consolidation of soil contaminated above health-based levels and visibly contaminated soil in the pond areas;
- construction of a temporary cap over the pond areas;
- evaluation of innovative technologies as possible permanent remedies; and,
- natural attenuation of the ground water contamination.

A Record of Decision (ROD) was signed by the EPA in September 1986. This ROD called for purchase of seven residential properties located on and adjacent to the former waste ponds (an eighth property was purchased later), relocation of the homeowners, consolidation in the former waste pond area of surface soil contaminated with greater than 100 ppm of PAH-contaminated soil and visibly-stained soil, construction of a temporary cap over the consolidated soil, periodic evaluation of the availability of offsite disposal facilities and emerging alternate technologies for dealing with the consolidated soil, backfill and restoration of the ground surface of excavated areas, and groundwater attenuation through natural processes.

The ROD specified the following remedial action objectives for the ground water but did not specify numerical criteria as remedial goals:

- no further degradation of shallow ground water quality on- and off-site; and,
- prevent lower ground water degradation.

The ROD did specify that shallow ground water concentrations should not exceed current measured conditions and the lower ground water zone should be maintained at background levels.

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 the Site in March 1989.

The results of these treatability studies were reported in an amended FS in June 1989. These results and a proposed plan to use critical fluid extraction as the remedy for the Site were presented to the public on July 10, 1989.

On July 17, 1989, the EPA proposed a remedy for the Site which included:

- sampling the Site to better delineate all soil contamination levels above the target soil action levels listed in Table 2;
- excavating the residential area soil above ROD established Residential Action Levels, relocating the excavated soil to the industrial area, backfilling the excavations with clean dirt, and landscaping the disturbed area;
- excavating soil in the industrial area contaminated above the established Industrial Action Levels, treating the excavated soil onsite by the Critical Fluid Extraction process, and backfilling the treated soil in the industrial area;
- disposing the organic extract from the Critical Fluid Extraction process by offsite incineration; and,
- natural attenuation of the ground water contamination.

Table 2
Soil Target Action Levels

Contaminants	**Residential**	**Industrial**
Carcinogenic compounds		
total 2,3,7,8-TCDD equivalents (dioxins and furans)	1 ppb	20 ppb
total BAP equivalents (carcinogenic PAHs expressed as benzo(a)pyrene equivalents)	330 ppb	40,000 ppb

Noncarcinogenic compounds		
total pentachlorophenol (PCP)	150 ppm	150 ppm
total non-carcinogenic polycyclic aromatic hydrocarbons (PAHs)	2,000 ppm	2,000 ppm
Note: These target levels apply to a depth equal to the approximate upper surface of groundwater. Remediation of shallow groundwater is by natural attenuation (EPA, 1998).		

In 1989, a new ROD was signed to specify a final remedy for the contaminated soil, as a complement to the 1986 ROD. The 1989 ROD selected the July 1989 proposed remedy as the remedy at this Site.

During the implementation of the Critical Fluid Extraction process, the State determined that the Contractor could not satisfy the contract requirements for performance rate of the system. At a January 13, 1998, public meeting, the State presented the residents with several options including continuing with the existing process, capping the wastes, and offsite disposal. The residents expressed anger about odors and noise associated with the remedial activity and requested that the remaining contaminated soil be taken off the Site. In February 1998, the Texas Natural Resource Conservation commission (TNRCC), successor to the TWC, terminated its contract for the Critical Fluid Extraction process. To continue with the remedy would have added significant time and cost to the project and continued to anger the nearby community.

The EPA conducted a Public Meeting on June 29, 1998, and presented a proposed ROD amendment remedy for the Site that included:

- changing the method of remediation of soil from onsite Critical Fluid Extraction treatment to excavation, removal offsite for any treatment required by the Resource Conservation and Recovery Act (RCRA), and disposal in a permitted, secure hazardous waste disposal facility;
- using the soil successfully treated previously, soil removed from the residential area that is below the Industrial Target Action Levels, and other clean soil as backfill for the excavations in the industrial area;
- keeping all the target soil action levels established in the 1989 ROD;
- addressing the statements and expressed wishes regarding remediation activities from both the residents and Conroe city government officials;
- using natural attenuation of the ground water contamination; and,
- stating that the proposed remedy would be completed within twelve months and at an estimated cost not to exceed eight to twelve million dollars.

The use of EPA's reclassification of the contaminated waste permitted the economical offsite disposal of the contaminated soil. Two revisions of 40 CFR 261 were issued between the publishing the 1989 ROD and preparation of the 1998 ROD Amendment. In 1991, 40 CFR

261.31 listed new classifications of waste that more accurately described the contaminated material at the Site. Consequently, the wastes generated by the former wood treating facility which contaminated Site soil were reclassified as F032 and F034 hazardous waste.

The EPA signed the Amendment to the Record of Decision on October 14, 1998, selecting the June 1998 proposed ROD amendment remedy as the new remedy at this Site. The target action levels and ARARs listed in the 1989 ROD were retained in the ROD amendment, as was monitored natural attenuation of groundwater. The soil target action levels are listed in Table 2.

Remedy Implementation

The remedial action required by the two RODs and the ROD Amendment was implemented in three phases. The Residential Remedial Action Phase, designated Phase A, was initiated in June 1992 and completed in January 1993. This action included remedial activities for 38 residential properties and five vacant lots. Phase B Remediation, the Industrial Remedial Action Phase, was initiated in 1995. This action addressed the requirements set forth in the 1989 ROD, including sampling of the residential area, excavation of soil above residential and industrial action levels in the residential and commercial areas of the site, consolidation of excavated soil onsite, backfill and landscaping of excavated areas, treatment of excavated soil onsite by Critical Fluid Extraction (CFE), disposal of the organic extract from the CFE by offsite incineration, and disposal onsite of treated soil. The Phase C remediation activities were conducted from February 1999 through August 1999, and included excavation and transport and disposal offsite of almost 30,000 tons of contaminated soil, and backfill and grading/restoration of backfilled areas.

Phase A, Residential Area Remediation

In accordance with the 1986 ROD, the EPA entered into an inter-agency agreement (IAG) with the Federal Emergency Management Agency (FEMA) to purchase six residences and one residential lot (4 Brewster Street, 5 Brewster Street, 6 Brewster Street, 7 Brewster Street, 5 Columbia Street, 6 Columbia Street, and 7 Columbia Street; lots 112, 113, 114, 115, 103, 104, and 105, respectively of Tanglewood East). One additional property at 4 Arlington Street was acquired through an IAG with the U.S. Army Corps of Engineers. These properties were located in the former pond areas and the former residents were relocated. In 1990, the TNRCC awarded a contract for the demolition of the houses on these properties. The contractor demolished the houses and removed the debris in 1990. Later, during the remediation of a nearby vacant lot, considerable contamination was uncovered that extended to the adjoining property at 4 Arlington Street (lot 122 of Tanglewood East). On February 25, 1993, the property at 4 Arlington Street was acquired through an IAG with the U.S. Corps of Engineers and the owners relocated. The house was not demolished and the property was remediated in Phase B. The eight residential lots have not been transferred to the State of Texas.

The State contracted for the services of an Engineer to prepare the bid specifications for the remedial action in the residential area. In April 1992, the State awarded a contract to Qualtec, Inc., for the remediation of the residential area and the plugging of 25 monitoring wells. Before residential excavation began, Qualtec sampled additional yards. The project definition for a yard is either a "front yard" or a "back yard." These data, together with data previously collected, were used in the determination of depth of contamination and thus, the depth of excavation.

Residential remediation activities began on September 14, 1992, with the removal of trees, shrubs and fences from properties on Arlington Street after the residents had been temporarily relocated. A typical yard excavation proceeded as follows: Qualtec would excavate down to a predetermined depth. At this point, the TNRCC's Engineer, Weston, would direct the Contractor to sample the yard or continue excavating. The choice between these two directives was based on the visual appearance of the excavation floor. Visible stains prompted additional excavation; non stained prompted sampling. If the sample results exceeded action levels, the Contractor would continue excavation in one foot increments. No yards were excavated deeper than five feet.

Soil was excavated from the yards and loaded into haul trucks. These trucks were loaded while on plastic sheets, dry decontaminated, and the truck bed covered before the trucks left for the stockpile at the industrial portion of the Site. The trucks were also dry decontaminated after unloading at the stockpile and before returning to the yard excavation.

After a yard was excavated and determined to be below action levels, it was backfilled with select fill. This select fill was obtained from a construction Site in Conroe. The State's oversight engineer collected samples and tested this select fill for metals, volatiles, semi-volatiles, and pesticides. The results of these tests were non-detect. After the backfill was in place, with the use of videos, photographs, sketches, and surveys; the yard was restored to pre-excavation condition.

Remediation of 27 front yards and 32 back yards at 38 residential properties and four vacant lots was completed on January 29, 1993. One owner refused remediation of his property. Later, this owner sold the property and the new owners requested remediation. This property and the properties purchased by the Federal Government were remediated during the Phase C. Other than this property, the properties purchased by the Federal Government, and Lot 122 of Tanglewood East, no other residential properties required remedial action.

The main source of Site debris was from the clearing the vacant land and yards. This debris consisted of fences, yard fixtures, bricks, tree sections and shrubs. This debris was considered non-contaminated because it did not contact subsurface soil and was disposed of in an offsite landfill.

In order to build access roads, two existing house foundations were demolished on the federally owned land. The rubble from this activity was decontaminated because the slabs could have come in contact with the soil. This rubble was placed in an offsite landfill.

Soil excavated from the subdivision was transported and disposed of in either the residential stockpile or the industrial stockpile. The residential stockpile was for soil equal to or exceeding residential based action levels, but not exceeding the industrial based action levels. The industrial stockpile was for soil equal to or greater than the industrial based action levels. The stockpile area was located on the southern end of the vacant lot in the industrial area. The stockpile area was considered an exclusion zone.

The Contractor was required to decommission 25 existing monitoring wells no longer used for groundwater testing. Due to lack of an ingress/egress agreement, the Contractor could not decommission one of these wells. One well could not be located. Therefore, only twenty-three wells were decommissioned at this time. Wells were decommissioned in accordance with TWC guidelines. The entire casing was removed for most wells and resulting voids plugged with a cement slurry. All well holes and casings were plugged with cement slurry. The actual work was performed in August and September 1992. Ten monitoring wells were left in place. The final Site inspection was conducted on February 9, 1993.

Phase B, Industrial and Residential Remediation

In early 1995, in accordance with the 1989 ROD, the TNRCC awarded a sole source contract to CF Systems (CFEC), for the remediation of the contaminated soil in the industrial area using the Critical Fluid Extraction process. In August 1995, the TNRCC awarded a competitively bid contract for the civil work to Anderson Columbia Environmental (ACE) to support the CF Systems contract. The State's oversight engineer conducted several supplemental soil investigations from December 1995 to December 1997.

CFEC received a Notice to Proceed from TNRCC on March 9, 1995. CFEC completed the design and procurement phase in June 1996. Facility erection was completed in early September 1996. System checkout activities followed.

During the CFEC construction phase, ACE erected temporary fabric buildings over portions of the industrial area to be excavated, erected the pretreatment building, and completed other activities to support the CFEC system.

The TNRCC contract required CFEC to perform a clean soil test before processing contaminated soil. After failing the first test, CFEC made substantial modifications to its equipment and successfully passed the 72-hour test on March 29, 1997. The contract required CFEC to pass a 7-day test processing contaminated soil. This test required that the system successfully treat 1,589 tons of contaminated soil within seven consecutive days. The 7-day

contaminated soil test was attempted in May 1997. The CFEC shut down the system after six days. The CFEC was able to successfully treat only 690 tons during this time period. The test was not successful.

During the next nine months CFEC attempted to correct mechanical and process problems in order to treat the contaminated soil at the rate required by contract. The TNRCC issued several contract amendments extending the 65-day startup. At a January 13, 1998, public meeting conducted by the TNRCC, the residents expressed strong concerns about the remedial activities and complained about noise and odor. Since CFEC failed to meet the contract soil processing rate, TNRCC terminated its contract on February 6, 1998, for substantial failure to achieve contract requirements. To continue with CFEC would have added significant time and cost to the project. On February 8, 1998, TNRCC notified ACE of TNRCC's intent to terminate its contact. CFEC did successfully treat a total of 8,717 tons of contaminated soil during its attempt to satisfy the requirements of the contract. ACE had excavated contaminated soil from Lot 122 of Tanglewood East and a portion of the industrial area for treatment. The Lot 122 of Tanglewood East was backfilled with clean imported fill. A portion of the treated soil was used as backfill in the industrial area; the rest of the treated soil was placed in the pretreatment building for disposal by a future contractor. ACE covered the treated soil and graded the Site.

The final inspection of the Site for the CFEC contract was conducted on April 7, 1998. On April 8, 1998, TNRCC issued the Certificate of Substantial Completion to CFEC for demobilization activities. The final inspections of the Site for the ACE contract were conducted on May 6, 1998 and June 5, 1998. On June 8, 1998, TNRCC issued the Certificate of Substantial Completion to ACE.

Phase C, Industrial and Residential Remediation

Phase C Remediation Site activities began in February 1999 after TNRCC issued the Notice to Mobilize. ReCon erected two fabric structures (one 88.5ft by 210ft and one 88.5ft by 228ft) to cover the excavation activities on the industrial area. The two structures were equipped with air handling facilities that operated at a negative pressure for fugitive emission control. Air from the air handling facilities was routed through filters and carbon beds. Offsite disposal of the contaminated soil was completed on April 29, 1999. A total of 29,754 tons of contaminated soil was excavated, transported in 1,407 trucks and disposed of at Chemical Waste Management facilities in Carlyss, Louisiana. The pre-final inspection of the Site occurred in June 1999. All requirements of the Amended ROD and the Design Specifications are satisfied except for the failure of the grass in the seeded areas to grow. The Certificate of Substantial Completion was issued to ReCon on June 21, 1999.

Systems Operations and Maintenance

Because the soil remaining onsite is below target residential or industrial action levels, no operations and maintenance (O&M) procedures are required for the soil remedy. The other remaining component of the remedial action is the natural attenuation of ground water. The primary O&M activity is monitoring the ground water. The Texas Commission on Environmental Quality (TCEQ) has conducted ground water monitoring and evaluated the efficacy of the monitored natural attenuation remedy. The results of a supplemental investigation and ground water sampling are summarized in the Remedial Action Investigation Report dated December 2, 2004. This action addresses a deficiency noted in the 2000 First Five Year Review Report for the Site.

V. Progress Since the Last Five Year Review

First Five-Year Review Protectiveness Statements

In the First Five-Year Review Report (September, 2000) prepared for the Site, the remedial actions were determined to be protective of human health and the environment. The protectiveness determination was based on the attainment of the soil target action levels for residential and industrial use in the residential and commercial areas of the site, respectively. The remediation completed in the residential areas of the site allowed for unlimited use under a residential scenario, and the remediation completed in the commercial areas of the site allowed for unlimited use under an industrial scenario.

Although shallow ground water at the site is contaminated, and a monitoring program to verify that natural attenuation was occurring had not been implemented in 2000, the remedy was determined to be currently protective of human health and the environment. This determination was based on the existing data that the contaminated ground water is not currently used as a drinking water source, and the contamination had not migrated to lower aquifers that are used for drinking water.

Status of First Five-Year Review Recommendations

The recommended actions from the First Five-Year Review are listed in Table 3 along with the actions taken since 2000.

Table 3
Recommendations from the First Five-Year Review

Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken	Date of Action
Prepare and implement long-term groundwater monitoring plan, to monitor the natural attenuation of affected shallow ground water.	TCEQ	2001	Implemented further delineation of the dissolved contaminant plume and the efficacy of the natural attenuation remedy.	2001 - 2004
Consider institutional controls related to potential future use of affected groundwater zone and potential land use changes in the industrial area of the site (where target remediation levels for soil were set for industrial exposure).	TCEQ and EPA	2002	Institutional controls have not been implemented.	pending

Results of Implemented Actions

Further investigation of the shallow zone ground water has not been able to fully delineate the extent of contamination. In addition, the insufficient number of shallow zone wells and the limited number of sampling events prevents a determination of whether water quality has improved or degraded, or if the contaminant plume has expanded since completion of the soils remedy. The sample data indicates the presence of pentachlorophenol above the Maximum Contaminant Level of 1 Fg/L established under the Safe Drinking Water Act and the possible presence of a dense non-aqueous phase liquid (DNAPL).

VI. Five Year Review Process

Administrative Components

The Five Year Review was conducted by Vincent Malott, EPA Remedial Project Manager for the Site. Diane Poteet and Luda Voskov of the TCEQ assisted in the review as the lead agency responsible for implementing the monitored natural attenuation remedy for the ground water. The notice of the September 2005 due date for the Second Five-Year Review was posted on the EPA Region 6 website under the Superfund Site Status Summary for the United Creosoting Site.

Community Involvement

Interested parties have contacted the EPA and TCEQ during the second Five-Year Review with questions concerning prospective residential purchases in the Tanglewood East subdivision as well as whether the seven vacant lots are available for re-development. A notice of the

completed Second Five-Year Review will be published in the Conroe newspaper and paper copies will be made available at the information repository located at the Montgomery County Public Library in Conroe, Texas. An electronic copy of the Second Five-Year Review will be posted on the EPA Region 6 website.

Document Review

The second five-year review consisted of a review of the recent ground water data contained in the Remedial Action Investigation report (December 2004) prepared for the TCEQ, the Record of Decisions and Amendments, and the Preliminary Closeout Report. These and other relevant documents are listed in Attachment 1.

Data Review

Ground Water Monitoring

The TCEQ conducted ground water monitoring activities between December 2002 and June 2004. In March 2003, TCEQ installed 12 additional monitor wells at the Site to better delineate the extent of contamination. Three wells were completed within the fenced boundary of the former United Creosoting property and nine wells were installed in the Tanglewood East subdivision west of the former facility. Seven of the wells were completed at depths between 29 and 44 feet below ground surface (SW 10 - 13, and 15 - 17). Five of the wells were completed at depths between 115 and 145 feet below ground surface (DW 4R, 11, 12, 14, and 15). All monitoring well locations are shown on Figure 3. There are two nearby water supply wells located south of the Site (Figure 3). One of the wells is a Conroe municipal well screened in the Evangeline aquifer from 825 to 1,190 feet bgs. The second well is a private supply well screened from 89 to 97 feet bgs. Groundwater is the major source of drinking water supply for Montgomery County, but from deeper sands in the Willis formation (the Chicot aquifer) and deeper formations (the Evangeline Aquifer).

The shallow and deep zones at the Site are composed of fine sands and silts of the regional Chicot aquifer. The base of the shallow zone ranges from 25 to 45 feet bgs and the water table is at approximately 20 feet bgs. Ground water in the shallow zone does not apparently discharge to the nearby Alligator Creek. The shallow zone is separated from the deep zone by a low-permeability zone of silty clay and clay between 45 and 70 feet bgs. The deep zone is encountered from 65 to 100 feet bgs and the base is present from 110 to 140 feet bgs. The shallow and deep zones are illustrated in Figure 4.

Ground water flow during 2003 and 2004 was generally to the south in the shallow zone with a hydraulic gradient of 0.005 to 0.01 (figures 5 and 7) and an estimated seepage velocity of 10 - 44 feet/year. Ground water flow in the deeper zone was generally to the southeast with a hydraulic gradient 0.005 to 0.01 (figures 6 and 8) and an estimated seepage velocity of 11

feet/year. The potentiometric head in the shallow zone is approximately 20 feet higher than in the deep zone indicating little flow between the two zones beneath the Site.

Ground water sampling was conducted in April 2003 and June 2004 and samples were analyzed for PAHs, PCP, volatile organic compounds (VOCs), and dioxin/furans. The results of the sampling are illustrated in Figures 9 - 12. The elongated contaminant plume in the shallow zone is orientated parallel to the known ground water flow direction. The dissolved PCP concentrations in the shallow zone has not been delineated to the south of well SW-10 where an estimated concentration of 0.052 mg/L (52 ppb) was detected. A comparison of the April 2003 and June 2004 monitoring data indicates that the lateral distribution of dissolved PCP in the shallow zone is generally unchanged.

Prior to the 2003 and 2004 ground water sampling events, the last groundwater monitoring event at the site was conducted in December 1997/January 1998 (Weston 1998a). Before this sampling event, the monitoring wells had last been sampled during the RI in 1985. Most of the wells installed previously were removed during the various removal actions, leaving nine existing wells: SW1, SW4, SW5, SW8 (shallow unconfined water-bearing unit wells), DW4 (shallow semi-confined water-bearing unit well), DW3, DW6, DW8, and DW10 (lower water-bearing unit wells). A tenth well, DW1, was sampled during the December 1997/January 1998 event, but it was removed during the Phase C remediation (it was located at the corner of the former Sisco Construction property, north of the former waste ponds).

In the December 1997/January 1998 sampling event, several semi-volatile organic compounds (SVOCs) were reported in DW4 (including naphthalene, acenaphylene, phenanthrene, dibenzofuran, and PCP). At 0.013 mg/L, the PCP detection was above the maximum contaminant level (MCL) of 0.001 mg/L PCP (Weston, 1998a). No other SVOCs were detected in any other monitoring wells. The sampling event also indicated the presence of octachlorinated dibenzodioxin (OCDD) and octachlorinated dibenzofuran (OCDF) above the MCL in seven of the ten wells sampled (SW4, SW5, SW8, DW1, DW3, DW4, and DW10) (Weston, 1998a). In the 1985 sampling events, SVOCs were detected in wells screened in the shallow unconfined water-bearing unit, and chlorinated dioxin isomers were detected in shallow groundwater near the former waste ponds. One former well, RU-30, contained an oily sludge which, when analyzed, revealed the presence of SVOCs, but no dioxin/furan compounds. The 1985 results are inconclusive, however, because the method detection limits were not as sensitive as those used in the later sampling event, nor was the analyte list as thorough.

The ground water objectives for the Site are no further degradation of water quality in the shallow zone (15 - 50 feet bgs) and prevention of degradation in the deep zone (Chicot aquifer approximately 65 feet bgs). The success of the natural attenuation remedy in meeting these objectives was predicted to be dependent on the removal of the source area around the former ponds and the elimination of further contaminant loading to the ground water. Contaminant concentrations would then decrease through dilution, adsorption, and possible degradation in the

ground water. The contaminant plume was predicted to continue migrating a total distance of ½ to ¾ mile during a natural attenuation period of 400 years. The efficacy of the monitored natural attenuation remedy was evaluated against the environmental indicators that are recommended in the *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites* (OSWER Directive No. 9200.4-17P, April 21, 1999). The indicators are:

- Demonstrate that natural attenuation is occurring according to expectations;
- Detect changes in environmental conditions that may reduce the efficacy of the natural attenuation processes;
- Identify any potentially toxic or mobile transformation products;
- Verify that the plume is not expanding either downgradient, laterally, or vertically;
- Verify no unacceptable impact to downgradient receptors;
- Detect new releases of contaminants to the environment that could impact the effectiveness of the natural attenuation remedy;
- Demonstrate the efficacy of institutional controls that were put in place to protect potential receptors; and
- Verify attainment of remediation objectives.

A determination that natural attenuation is occurring according to expectations is not possible due to an insufficient number of shallow zone wells and the limited number of sampling events (1997/1998 and 2003/2004). The existing data does indicate that plume expansion has not occurred in the lateral (east-west) direction or vertically to the deeper Chicot aquifer. While a comparison of the 1986 and 2004 contaminant plume maps indicates a downgradient (southward) expansion of the plume, the limited data does not allow a determination if the expansion is consistent with the predicted migration rate of 5 to 10 feet/year. In addition, the trend of PCP concentrations between the 2003 and 2004 sampling events do not show any significant changes. While there are no predicted transformation products within the contaminant plume, the presence of low concentrations of benzene (13 ppb) is a new contaminant unrelated to the existing PAHs and PCP detected in the ground water.

Environmental data on conditions that may affect the efficacy of the natural attenuation remedy have not been collected for the Site. Since the success of the natural attenuation processes is predicted to be dependent primarily on dilution and adsorption, such monitoring data may not be necessary. A review of the site conditions does not indicate any new pumping stresses on the shallow zone that would affect the direction or rate of contaminant migration. Sampling of known exposure points downgradient from the Site also continue to remain non-detect for the contaminants. Finally, the use of institutional controls to prevent the potential future use of the affected groundwater zone was recommended for consideration in the first Five-Year Review but has not been implemented as of this second Five-Year Review.

Based on the existing monitoring data, the ground water objective of no further degradation of water quality in the shallow zone (15 - 50 feet bgs) within an estimated distance of ½ to ¾ mile of the 1986 plume boundary appears to be currently satisfied by the natural attenuation processes. However, additional monitoring data in the downgradient direction of the plume movement is needed to determine the current migration rate. Also, there does not appear to be any degradation of the deeper zone (Chicot aquifer) based on the monitoring data. The presence of contamination in the deeper zone well DW-4R is likely the result of contaminants being dragged downward from the shallow zone during well installation, and not the result of contaminant migration through the intervening silts and clays between the two zones.

Soil Cleanup

No further soil sampling efforts have been conducted at the Site following completion of the soil cleanup in 1999.

Site Inspection

A site inspection was conducted at the site on February 16, 2005. The completed site inspection checklist is provided in Attachment 3. The site appears well-maintained with the notable exception of the residential lot located at No. 4 Arlington Street. This residential lot was acquired by the Federal Government through the Corps of Engineers during the soil remediation phase. This lot still has a house which is unoccupied and in poor condition. While the house and lot have a fence around it with a lock on the gate, the gate was open during the site inspection of February 16, 2005.

Interviews

Interviews were conducted with representatives from the TCEQ, City of Conroe, Lone Star Groundwater Conservation District, and the property owner for the former United Creosoting facility. Interview Record Forms which document the issues discussed during these interviews are provided in Attachment 2. The TCEQ representative concluded that monitored natural attention is not a good remedy for creosote constituents because they will not attenuate in a reasonable amount of time. The remaining interviews focused on anticipated future land use and institutional controls related to potential future use of affected ground water zone and potential land use changes in the industrial area of the site (where target remediation levels for soil were set for industrial exposure).

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

The soil remedy selected in the 1998 ROD Amendment is effective and functioning as designed. Operation and maintenance procedures specific to the soil remedy are not required. The site has been returned to use as commercial and residential property. The remedy was chosen to remove the principal health threats that presented excess lifetime cancer risk, and prevent further actual or threatened releases of hazardous substances from the site.

Shallow ground water at the site is contaminated, and a monitoring program has been implemented to determine if natural attenuation is occurring. The contaminated ground water is not currently used as a drinking water source, and the contamination has not migrated to lower aquifers that are used for drinking water. The Safe Drinking Water Act and the MCLs were not mentioned in the RODs or Amendment No. 1. These should be considered in the future if groundwater uses change and/or it is determined that the contamination has migrated into a source of drinking water.

The RODs did not specify institutional controls for the Site since no current users of the affected groundwater zone were identified, and the area was determined to be within the service area of a municipal water supply. However, affected groundwater remains in-place beneath residential and industrial areas, and until data is collected to demonstrate the completion of natural attenuation, institutional controls should be considered to ensure groundwater use does not occur at the Site. In addition, affected soil remains in place in the industrial area of the site below industrial target action levels, but above residential target action levels, and institutional controls should be considered in that area to provide guidance relative to potential future land use changes.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

Applicable or Relevant and Appropriate Requirements (ARARs) for this site were identified in two RODs, dated September 30, 1986, and September 29, 1989. Amendment No. 1 to the first ROD was signed on October 14, 1998, but no new ARARs were addressed in this amendment. The five-year review for this site included identification of and evaluation of changes in the ROD-specified ARARs to determine whether such changes may affect the protectiveness of the selected remedy.

Changes in Standards and "To Be Considereds"

Although 2,3,7,8-TCDD dioxin 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 was expressed in parts per billion (ppb) toxic equivalencies (TEQ) of 2,3,7,8-TCDD. The target action levels of 1 ppb total 2,3,7,8-TCDD for residential soil and 20 ppb total 2,3,7,8-TCDD for commercial/industrial soil listed in the 1989 ROD remains consistent with the current EPA policy directive. The EPA recommended range for dioxin concentrations in surface soil in commercial industrial settings is 5 to 20 ppb TEQ and 1 ppb in residential settings (OSWER Directive 9200.4-26: Approach for Addressing Dioxin in Soil for CERCLA and RCRA sites). The target soil action levels for carcinogenic PAHs were measured as benzo(a) pyrene (BaP) equivalents. The target action levels of 330 ppb total BaP equivalents in residential surface soil and 40,000 ppb total BaP equivalents in industrial soils is within the acceptable risk range of 10^{-4} to 10^{-6} for carcinogenic exposure based on the existing Region 6 media screening levels posted on the EPA Region 6 website. Therefore, there are no new standards which call into question the protectiveness of the completed soil remedial action.

Numerical cleanup standards were not set for the ground water at the Site. The contaminated ground water is not currently used as a drinking water source, and the contamination has not migrated into the lower aquifers that are used for drinking water. The Safe Drinking Water Act and the MCLs were not mentioned in the 1986 or 1989 RODs. These should be considered in the future if groundwater use changes and/or it is determined that the contamination has migrated into a source of drinking water. The relevant MCLs under the SDWA includes 1Fg/L for pentachlorophenol and 5 Fg/L for benzene. Since there is no current usage of the Site ground water and the Site is within the municipal service area for the City of Conroe, there is no projected usage of the ground water. The absence of numerical standard does not currently call into question the protectiveness of the ongoing ground water remedial action.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The exposure assumptions used to develop the human health risk assessment for the Site utilized both residential and industrial exposure scenarios because the Site is comprised of a separate residential and light commercial areas. The conservative exposure assumptions remain valid for this Site since there has not been any change between the residential and light commercial areas. There have been no changes in the toxicity factors for the contaminants of concern that would change the remedial goals for the soil cleanup. There has not been a change in the risk assessment methodology that could affect the protectiveness of the completed remedial actions.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

The remedial action completed for this site remains protective of human health and the environment. The lack of specific institutional controls related to affected groundwater use and the industrial area soil (above residential target levels) may lead to remedy failure if groundwater

use or well installation occurs in the vicinity or the zoning of the industrial area is at some point changed to residential.

Technical Assessment Summary

Based on the data review, site inspection, and the site interviews, the remedy appears to be functioning as intended by the RODs, as amended. The assumptions used at the time of the remedy selection are still valid, and no additional information has been identified that would call into question the protectiveness of the final remedy. The efficacy of the natural attenuation remedy for the affected shallow ground water should continue to be evaluated for this Site. In addition, institutional controls related to the use of groundwater in the affected zone and related to potential future land use changes in the industrial area should be considered to ensure continued protectiveness.

VIII. Issues

- The absence of institutional controls or other mechanisms to address future land use changes that might be inconsistent with the current industrial area soil target levels. This issues does not affect the current protectiveness but may affect the future protectiveness of the remedial action.
- The absence of institutional controls or other appropriate mechanisms related to future well installation and construction within the affected area. This issues does not affect the current protectiveness but may affect the future protectiveness of the remedial action.
- The success of the monitored natural attenuation ground water remedy cannot be determined with the existing data. In addition, the possible presence of a DNAPL in the shallow ground water zone may prevent the monitored natural attenuation remedy from attaining the remedial objectives for the ground water. This issue does not affect the current protectiveness but may affect the future protectiveness of the remedial action.
- The eight residential lots acquired for the EPA through IAGs with the FEMA and U.S. Army Corps of Engineers during the soil remediation phase should be transferred to the State of Texas. The residential lot at 4 Arlington Street still has a house which is in poor condition. Even though the lot has a fence around it with a lock on the gate, the gate was not locked during the last site visit on February 16, 2005. This issue does not affect the current or long-term protectiveness of the soil or ground water remedial action.

IX. Recommendations and Follow-up Actions

Table 4
Recommendations and Follow-up Actions

Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Protectiveness (Y/N)
Consider institutional controls or other appropriate mechanisms related to potential future well installation and construction within the affected ground water area and potential land use changes in the industrial area of the site (where target remediation levels for soil were set for industrial exposure).	TCEQ and EPA	EPA	2006	Y (potentially)
Evaluate the efficacy of the monitored natural attenuation remedy for the shallow ground water.	TCEQ and EPA	EPA	2007	Y (potentially)
The eight residential lots acquired for the EPA during the soil remediation phase should be transferred to the State of Texas.	EPA and TCEQ	EPA	2007	N

X. Protectiveness Statement

The completed soil remedial action currently protects human health and the environment because the soil remediation at the Site has been completed for the target action levels for residential and industrial use in the residential and commercial areas of the site, respectively. The remediation completed in the residential areas of the Site allows for unlimited use under a residential scenario, and the remediation completed in the commercial areas of the site allows for unlimited use under an industrial scenario. Future land use changes in the area of the site cleaned to industrial target action levels will need to take into account the assumed use scenario. In order for the completed soil remedial action to be protective in the long-term, institutional controls or other appropriate mechanisms related to future land use in the industrial areas of the site should be considered.

The ongoing ground water remedial action currently protects human health and the environment because the area was determined to be within the service area of a municipal water supply, there are no existing private wells within the affected area, and an exposure pathway does

not exist for the contaminated ground water. However, the success of the monitored natural attenuation ground water remedy cannot be determined with the existing data. In addition, the possible presence of a DNAPL in the shallow zone may prevent the monitored natural attenuation remedy from attaining the remedial objectives for the ground water. In order for the ongoing ground water remedial action to be protective in the long-term, institutional controls or other appropriate mechanisms related to future well installation and construction within the affected area should be considered.

XI. Next Review

The Third Five Year Review for the Site is required by September 2010, five years from the date of this review.

Figures

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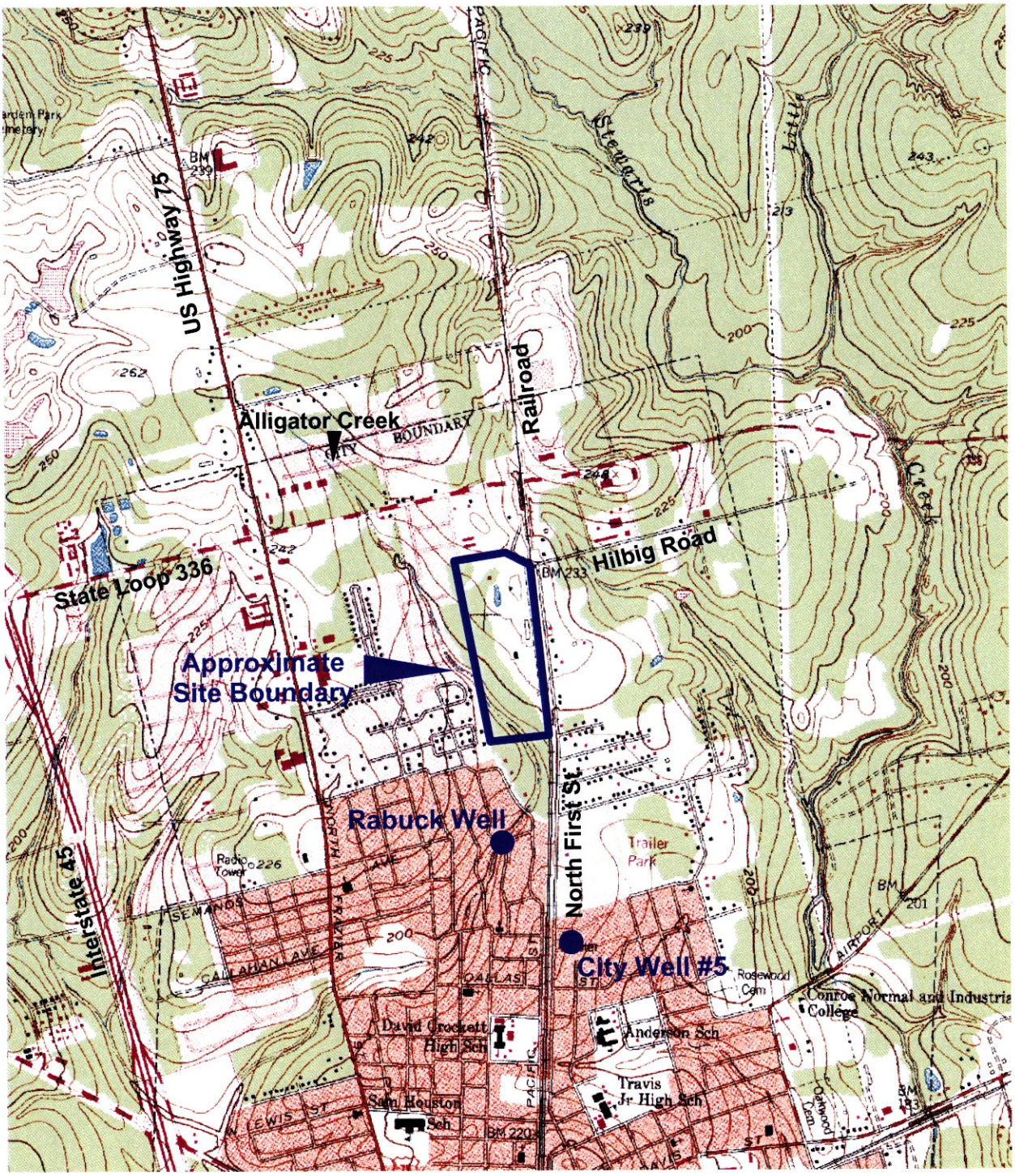

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Source: Modified from Conroe, TX 7.5 minute USGS topographic map, photorevised 1976.

UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS

Site Location

Daniel B. Stephens & Associates, Inc.
8-30-04
JN ES03.0164

Figure 1

S:\Projects\ES03.0164.04_United Creosoting\Drawings\UCSS Topo Map with private_municipal well locations.tcw

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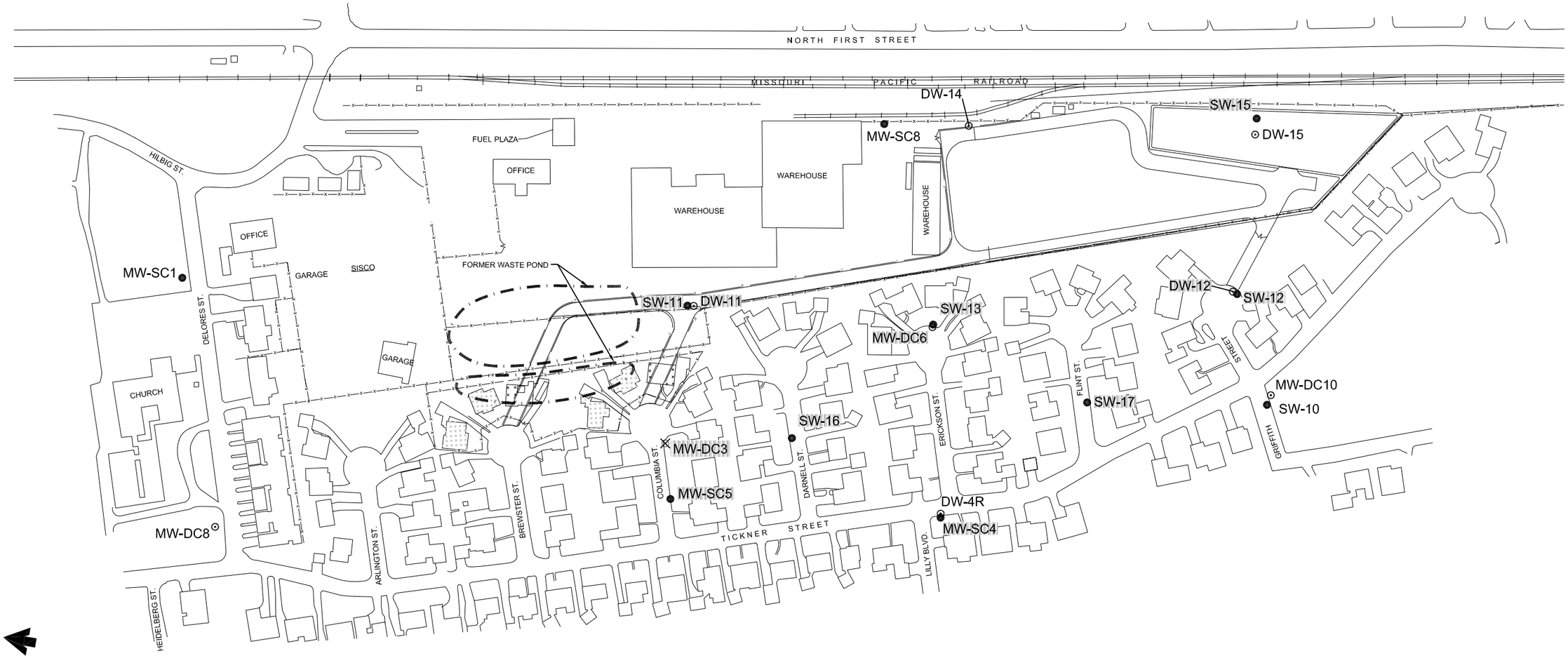

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8-31-04
JN ES03.0164

UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS

Site Plan

Figure 2

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UNITED CREOSOTING

Well Locations

Daniel B. Stephens & Associates, Inc.

10-6-04 10:08AM JN ES03.0164

Figure 3

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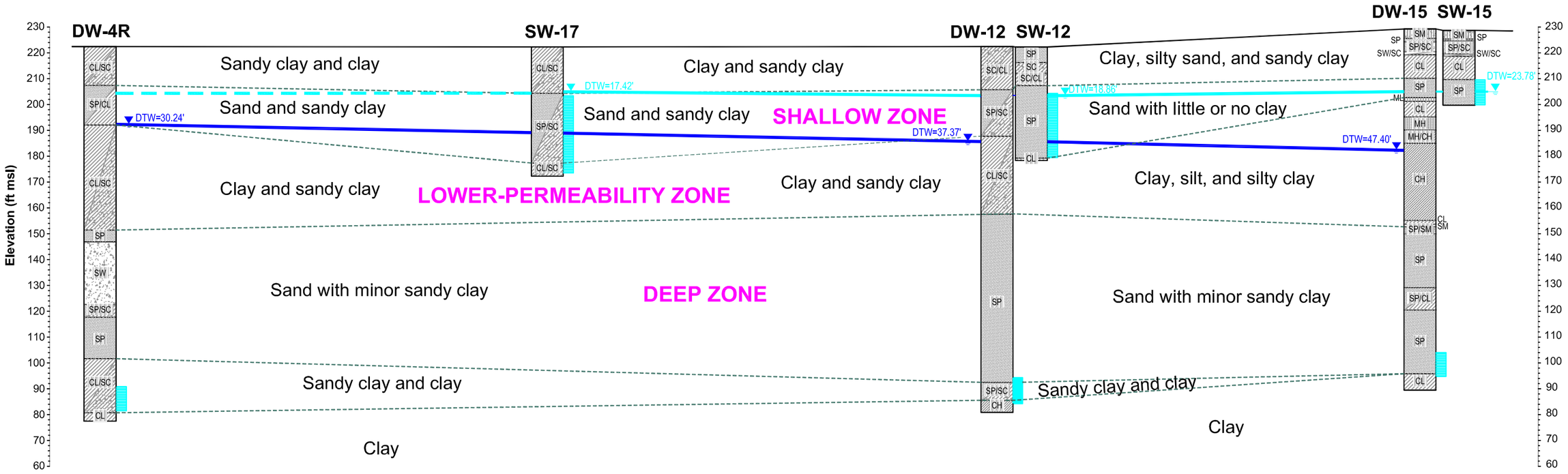


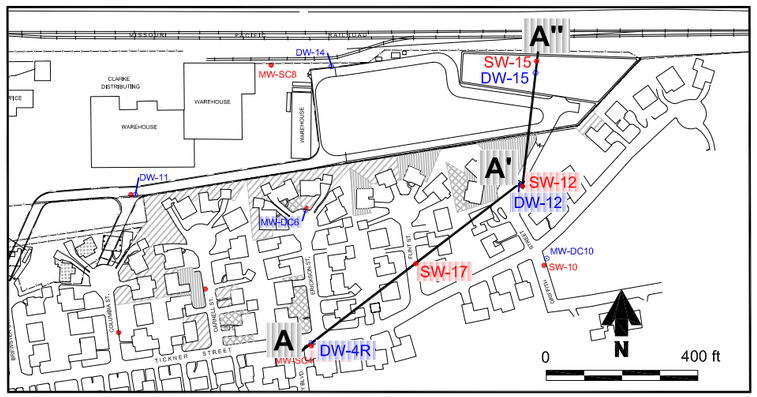
Note: ASTM soil classifications for deep wells are inferred from observations made during mud rotary drilling.

0 80 ft

Vertical exaggeration = 2X

Explanation

- Geologic contact
- Potentiometric surface of shallow wells (dashed where inferred)
- Potentiometric surface of deep wells
- Well screen



UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS

Hydrogeologic Cross Section A - A' - A"

Daniel B. Stephens & Associates, Inc.
8-31-04 JN LT02.0035

Figure 4

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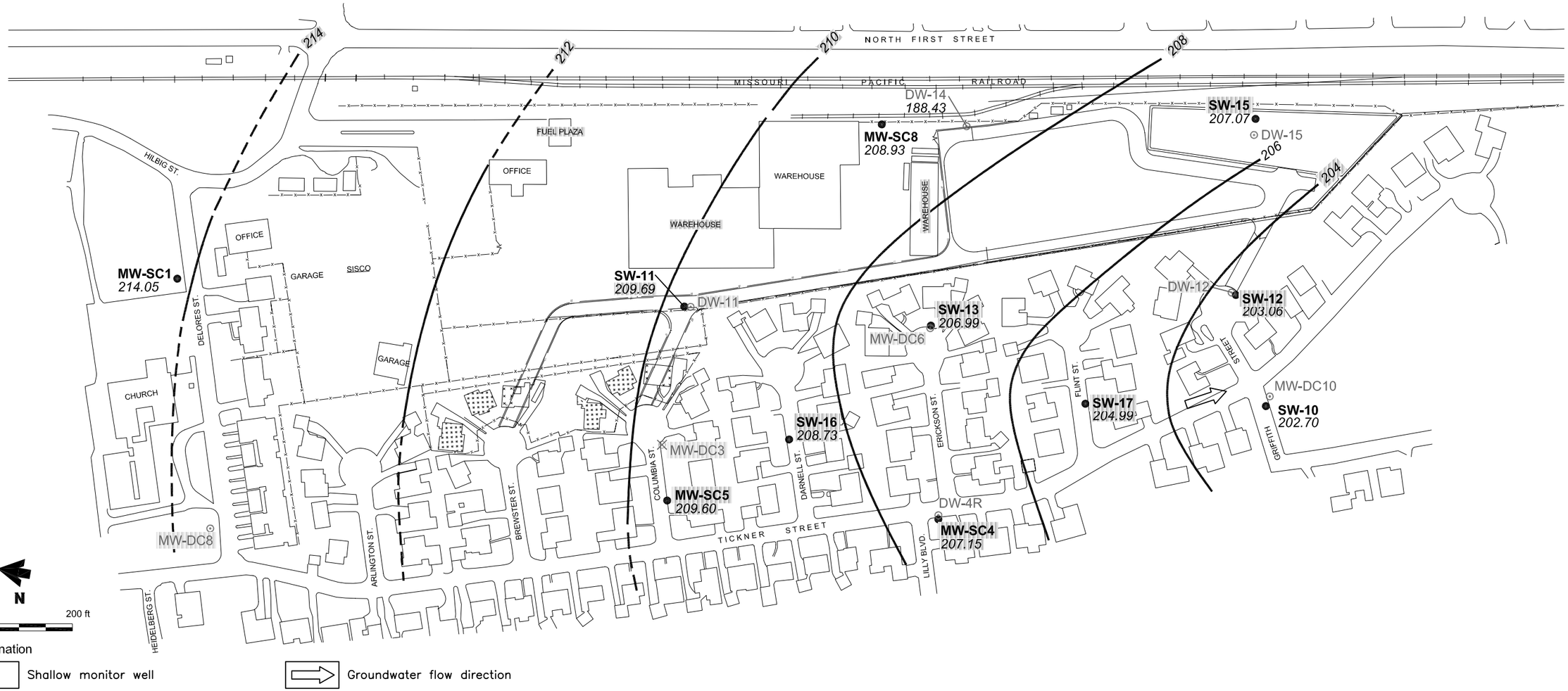

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10-05-04 JN ES03.0164

UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS
Shallow Zone Groundwater Elevations
April 22, 2003

Figure 5

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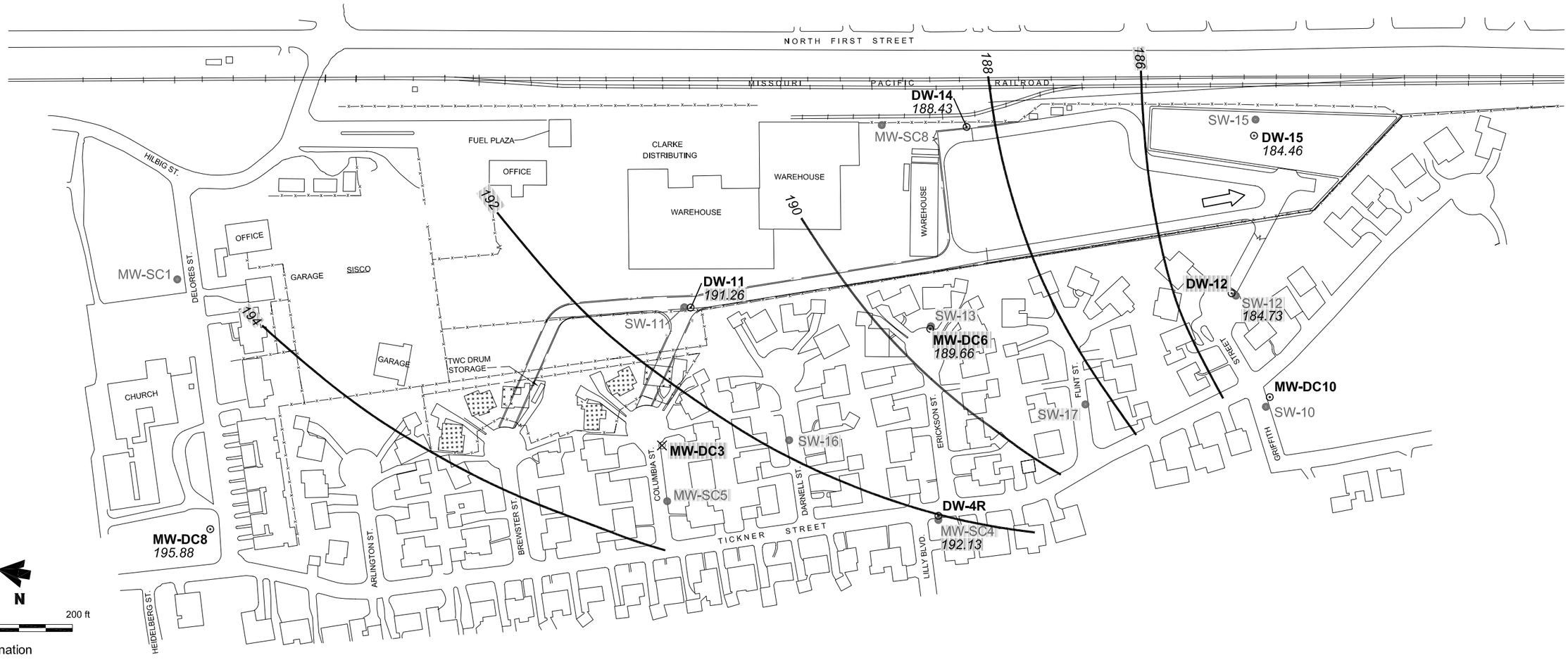

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Daniel B. Stephens & Associates, Inc.
10-05-04 JN ES03.0164

UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS

Deep Zone Groundwater Elevations
April 22, 2003

Figure 6

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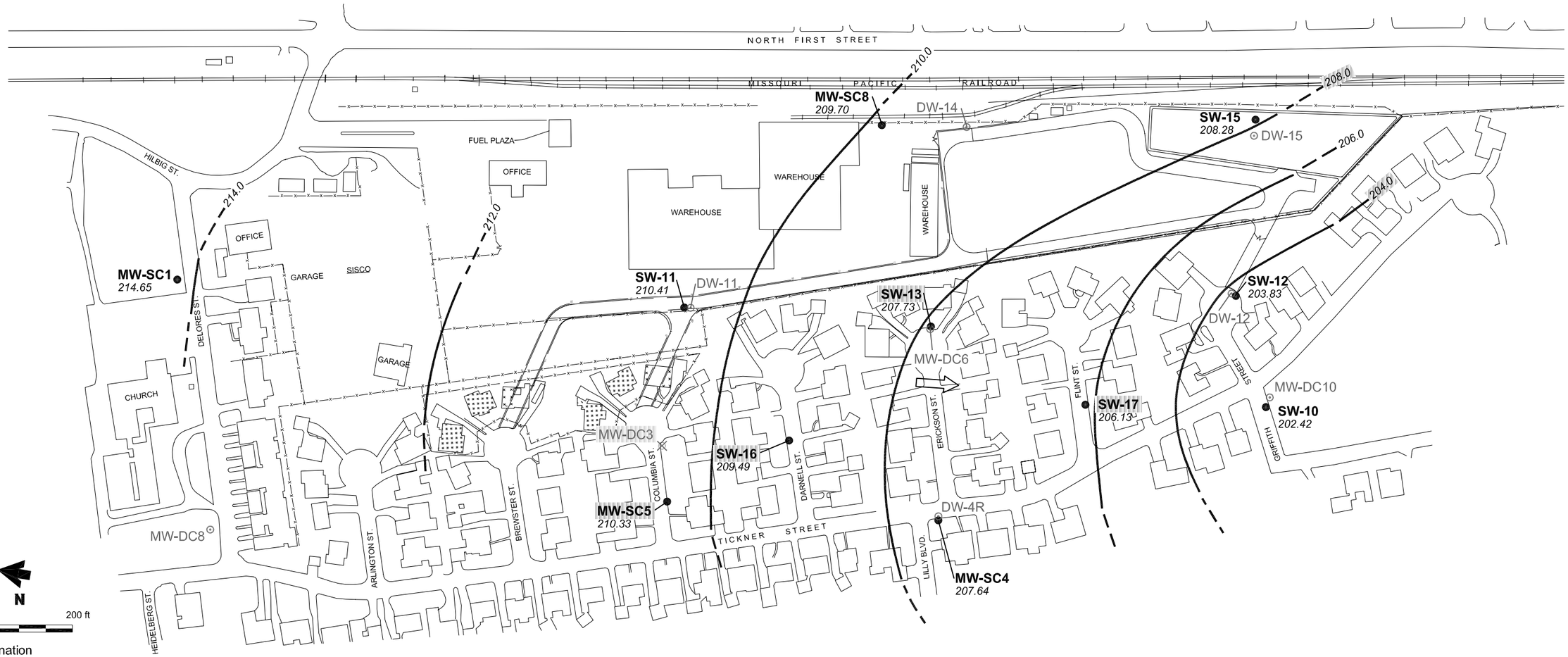

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UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS

Shallow Zone Groundwater Elevations
June 6, 2004

Figure 7

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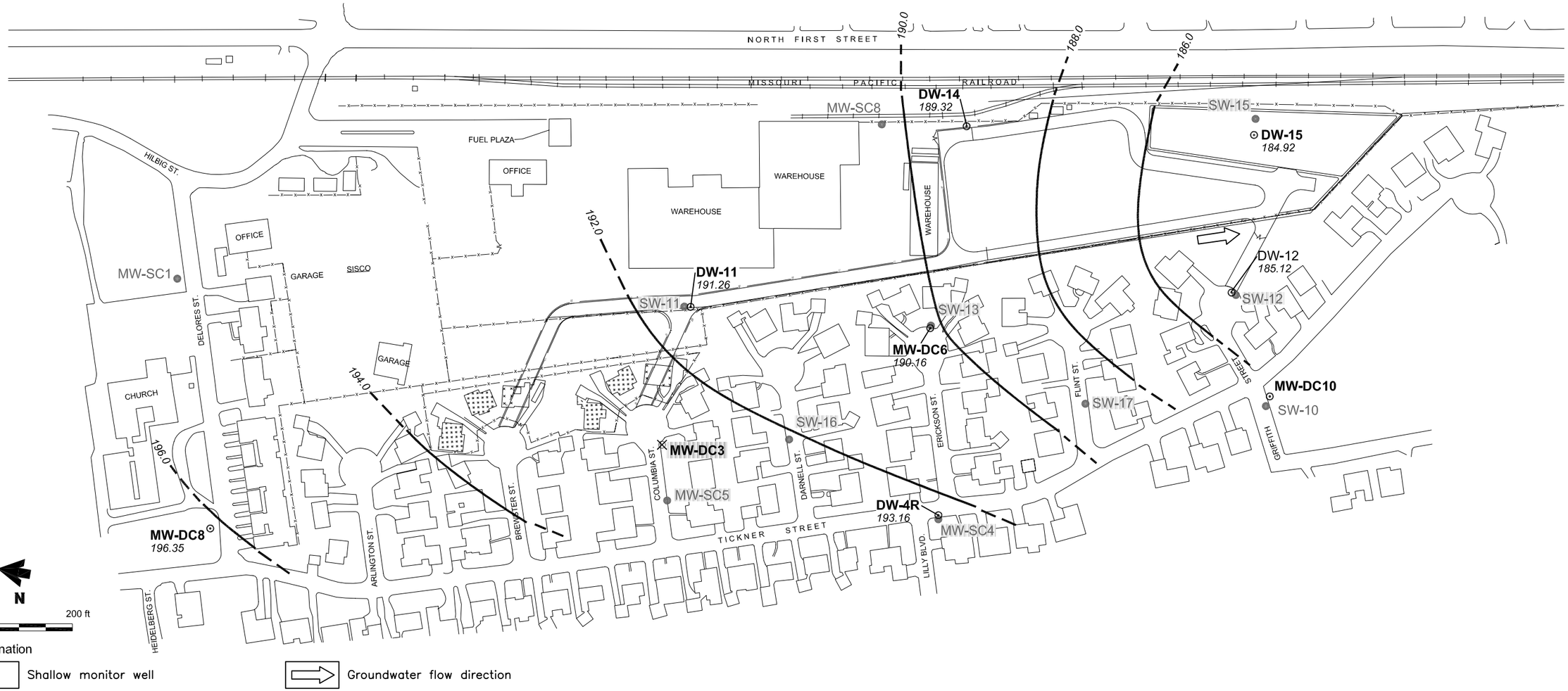

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UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS

Deep Zone Groundwater Elevations
June 6, 2004

Figure 8

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MW-SC1	December 1997	mg/L
PCP		<0.002U
Naphthalene		<0.002U
April 2003		
PCP		5.8x10⁻⁴J
Naphthalene		0.00042
June 2004		
PCP		<0.0003U
Naphthalene		<0.00016U

SW-11	April 2003	mg/L
PCP		0.34
Naphthalene		0.46
June 2004		
PCP		0.088
Naphthalene		0.24

MW-SC8	January 1998	mg/L
PCP		<0.002U
Naphthalene		<0.002U
April 2003		
PCP		<0.00016U
Naphthalene		<0.000065U
June 2004		
PCP		<0.00029U
Naphthalene		<0.00034U

SW-15	April 2003	mg/L
PCP		<0.00016U
Naphthalene		<0.00006U
June 2004		
PCP		<0.00029
Naphthalene		<0.000086

SW-12	April 2003	mg/L
PCP		<0.00016U
Naphthalene		0.00011
June 2004		
PCP		<0.00032U
Naphthalene		<0.000091U

NORTH FIRST STREET

MISSOURI PACIFIC RAILROAD

HILBIG ST.

FUEL PLAZA

OFFICE

WAREHOUSE

WAREHOUSE

DW-14

DW-15

PCP in groundwater is greater than the MCL of 1 mg/L

OFFICE

GARAGE

SISCO

DW-11

DW-12

DELORES ST.

GARAGE

CHURCH

MW-DC6

MW-DC10

FLINT ST.

ERICKSON ST.

GRIFFITH STREET

MW-DC3

COLUMBIA ST.

DARNELL ST.

MW-DC8

ARLINGTON ST.

BREWSTER ST.

TICKNER STREET

DW-4R

LILLY BLVD.

HEIDELBERG ST.

SW-10	April 2003	mg/L
PCP		0.052J
Naphthalene		<0.0012U
June 2004		
PCP		0.048
Naphthalene		1.2
2-methylnaphth		0.17
Acenaphthene		0.016

SW-13	April 2003	mg/L
PCP		0.13J
Naphthalene		<0.00006U
June 2004		
PCP		0.0037
Naphthalene		<0.0016U

SW-17	April 2003	mg/L
PCP		0.041J
Naphthalene		4.0
2-methylnaphth		0.39
Acenaphthene		0.12
June 2004		
PCP		0.052
Naphthalene		2.0
2-methylnaphth		0.33
Acenaphthene		0.11

MW-SC4	January 1998	mg/L
PCP		<0.002U
Naphthalene		<0.002U
April 2003		
PCP		0.00034J
Naphthalene		<0.003U
June 2004		
PCP		<0.00032U
Naphthalene		<0.00023U

SW-16	April 2003	mg/L
PCP		0.2J
Naphthalene		8.1
1-methylnaphth		0.44
2-methylnaphth		0.75
Acenaphthene		0.24
Phenanthrene		0.13
June 2004		
PCP		0.24
Naphthalene		8.8
1-methylnaphth		0.51
2-methylnaphth		0.96
Acenaphthene		0.28
Phenanthrene		0.13

MW-SC5	August 1985	mg/L
PCP		ND
Naphthalene		0.013
January 1998		
PCP		<0.002U
Naphthalene		<0.002U
April 2003		
PCP		<0.0003U
Naphthalene		<0.0078U
June 2004		
PCP		<0.0003U
Naphthalene		<0.00012U

Notes:

Refer to Table 6 for screening levels

NS = Not sampled

PCP = Pentachlorophenol

U = Not detected

J = Concentration estimated

N

0 200 ft

Explanation

- Shallow monitor well
- Deep monitor well
- Monitor well plugged and abandoned
- Demolished houses

Location	Date	Units
Contaminant		Value

Groundwater contaminant concentrations

Groundwater flow direction

UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS

PAH and PCP Concentrations in Shallow Zone

Daniel B. Stephens & Associates, Inc.
10-20-04
JN ES03.0164

Figure 9

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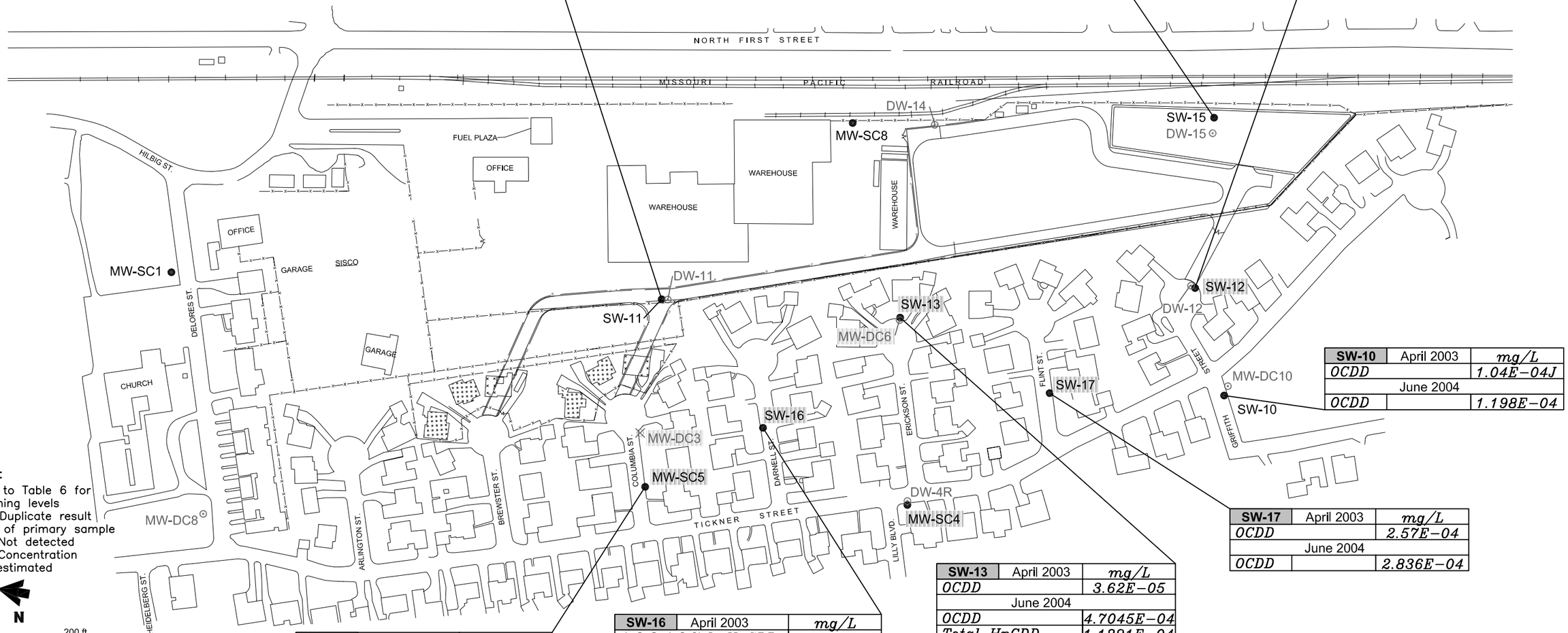
SW-11	April 2003	mg/L
OCDD		4.96E−05J
June 2004		
OCDD		1.255E−04

SW-15	April 2003	mg/L
OCDD		1.78E−05J
Total HpCDD*		1.38E−06
Total HxCDF*		7.46E−07

SW-12	April 2003	mg/L
OCDD		1.52E−05J
OCDF		1.16E−05J
June 2004		
OCDD		1.761E−04



SW-10	April 2003	mg/L
OCDD		1.04E−04J
June 2004		
OCDD		1.198E−04

SW-17	April 2003	mg/L
OCDD		2.57E−04
June 2004		
OCDD		2.836E−04

SW-13	April 2003	mg/L
OCDD		3.62E−05
June 2004		
OCDD		4.7045E−04
Total HpCDD		1.1891E−04
Total HpCDF		2.304E−05

SW-16	April 2003	mg/L
1,2,3,4,6,7,8−HpCDD		4.73E−06J
1,2,3,4,6,7,8−HpCDF*		4.36E−06J
OCDD*		8.24E−04
OCDF*		2.11E−05J
Total HpCDD*		5.50E−05
Total HpCDF*		1.37E−05
June 2004		
OCDD		1.241E−04

MW-SC5	April 2003	mg/L
1,2,3,4,6,7,8−HpCDD		1.26E−05J
1,2,3,4,6,7,8−HpCDF		5.29E−06J
OCDD		1.24E−03
OCDF		2.44E−05J
Total HpCDD		4.41E−05
Total HpCDF		1.37E−05
June 2004		
1,2,3,4,6,7,8−HpCDD		3.993E−06J
OCDD		3.49E−04
Total HpCDD		1.313E−05

Notes:
Refer to Table 6 for screening levels
* = Duplicate result of primary sample
U = Not detected
J = Concentration estimated

N

0 200 ft

Explanation

- Shallow monitor well
- Deep monitor well
- Monitor well plugged and abandoned
- Demolished houses

Location	Date	Units
Contaminant		Value

Groundwater contaminant concentrations

Daniel B. Stephens & Associates, Inc.
10−05−04
JN ES03.0164

UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS

Dioxin/Furans Concentrations in Shallow Zone

Figure 10

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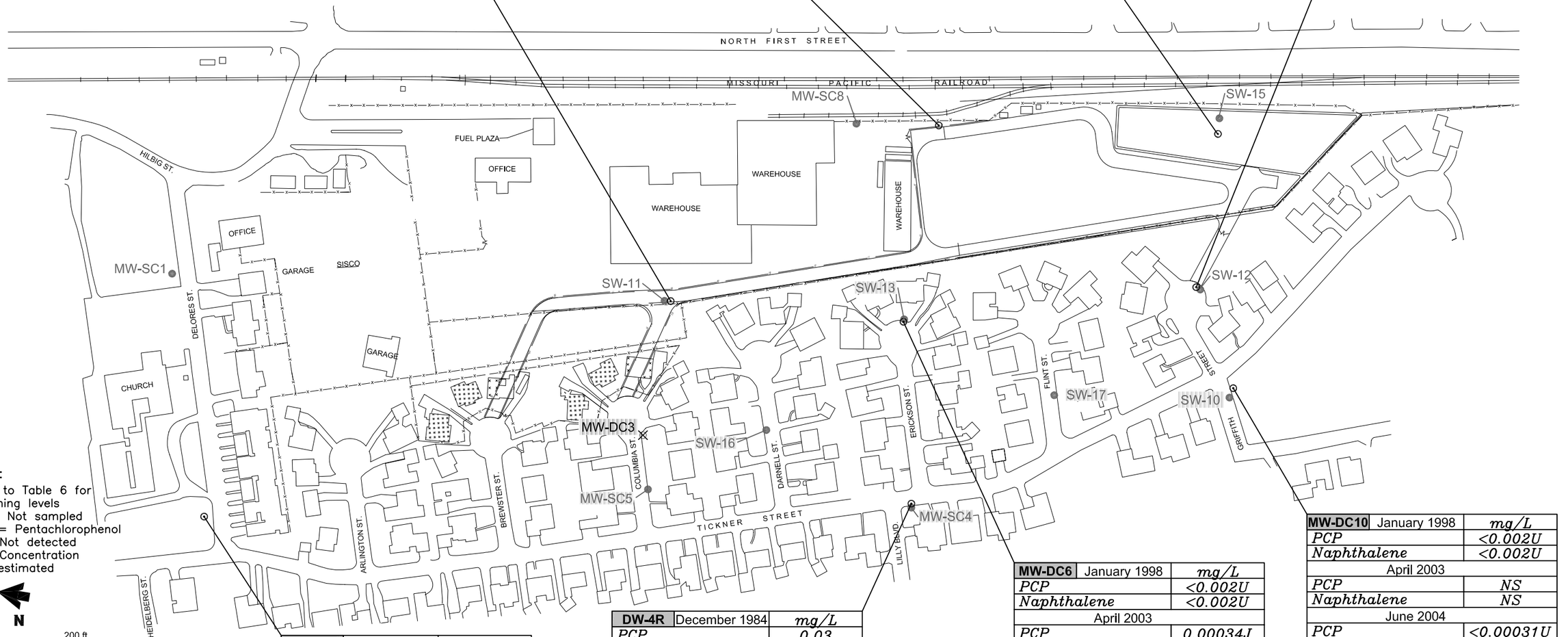
DW-11	April 2003	mg/L
PCP		0.0027
Naphthalene		0.00079
June 2004		
PCP		<0.00038
Naphthalene		<0.0016

DW-14	April 2003	mg/L
PCP		<0.00017U
Naphthalene		<0.000061U
June 2004		
PCP		<0.00028U
Naphthalene		<0.000044U

DW-15	April 2003	mg/L
PCP		0.00016J
Naphthalene		<0.00006U
June 2004		
PCP		<0.00028U
Naphthalene		<0.0001U

DW-12	April 2003	mg/L
PCP		0.00058J
Naphthalene		0.0014
June 2004		
PCP		<0.00032U
Naphthalene		<0.00019U



Notes:
Refer to Table 6 for screening levels
NS = Not sampled
PCP = Pentachlorophenol
U = Not detected
J = Concentration estimated

N

0 200 ft

Explanation

- Shallow monitor well
- Deep monitor well
- Monitor well plugged and abandoned
- Demolished houses

Location	Date	Units
Contaminant		Value

Groundwater contaminant concentrations

MW-DC8	December 1997	mg/L
PCP		<0.002U
Naphthalene		<0.002U
April 2003		
PCP		<0.00016U
Naphthalene		<0.00006U
June 2004		
PCP		<0.00028U
Naphthalene		<0.000044U

DW-4R	December 1984	mg/L
PCP		0.03
Naphthalene		0.71
August 1985		
Naphthalene		0.57
January 1998		
PCP		0.013
Naphthalene		0.431
April 2003		
PCP		0.098J
Naphthalene		4.5
June 2004		
PCP		0.1
Naphthalene		3.6

MW-DC6	January 1998	mg/L
PCP		<0.002U
Naphthalene		<0.002U
April 2003		
PCP		0.00034J
Naphthalene		<0.00006U
June 2004		
PCP		<0.00029U
Naphthalene		<0.000044U

MW-DC10	January 1998	mg/L
PCP		<0.002U
Naphthalene		<0.002U
April 2003		
PCP		NS
Naphthalene		NS
June 2004		
PCP		<0.00031U
Naphthalene		<0.0017U

UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS

PAH and PCP Concentrations in Deep Zone

Daniel B. Stephens & Associates, Inc.
10-20-04 JN ES03.0164

Figure 11

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DW-11	April 2003	mg/L
1,2,3,4,6,7,8-HpCDD		1.92E-05J
1,2,3,4,6,7,8-HpCDF		3.06E-06J
OCDD		2.68E-04J
OCDF		1.55E-05J
Total HpCDD		6.94E-05
Total HpCDF		1.15E-05
Total HxCDF		1.93E-06
June 2004		
OCDD		4.06E-05J

DW-14	April 2003	mg/L
1,2,3,4,6,7,8-HpCDD		1.79E-05J
1,2,3,4,6,7,8-HpCDF		2.60E-06J
OCDD		1.93E-04J
OCDF		1.30E-05J
Total HpCDD		3.41E-05J
Total HpCDF		6.41E-06J
June 2004		
OCDD		7.49E-05

DW-15	April 2003	mg/L
1,2,3,4,6,7,8-HpCDD		1.26E-05J
1,2,3,4,6,7,8-HpCDF		1.87E-06J
OCDD		1.32E-04
OCDF		7.94E-06J
Total HpCDD		3.82E-05
Total HpCDF		7.97E-06
June 2004		
OCDD		2.77E-04
Total HpCDD		6.933E-05

DW-12	April 2003	mg/L
OCDD		1.25E-05J

NORTH FIRST STREET

MISSOURI PACIFIC RAILROAD

HILBIG ST.

FUEL PLAZA

OFFICE

WAREHOUSE

WAREHOUSE

WAREHOUSE

MW-SC8

SW-15

OFFICE

GARAGE

SISCO

MW-SC1

SW-11

SW-13

SW-12

DELORES ST.

GARAGE

CHURCH

MW-DC3

SW-16

SW-17

SW-10

MW-DC10

FLINT ST.

STREET

ERICKSON ST.

DARNELL ST.

COLUMBIA ST.

BREWSTER ST.

ARLINGTON ST.

HEIDELBERG ST.

MW-SC5

TICKNER STREET

MW-SC4

LILLY BLVD.

GRIFFITH

MW-DC6	April 2003	mg/L
OCDD		4.04E-05J

DW-4R	April 2003	mg/L
OCDD		4.12E-05J

MW-DC8	April 2003	mg/L
OCDD		5.6572E-05

Notes:

Refer to Table 6 for screening levels

N

0 200 ft

Explanation

- Shallow monitor well
- Deep monitor well
- Monitor well plugged and abandoned
- Demolished houses

Location	Date	Units
Contaminant		Value

Groundwater contaminant concentrations

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Daniel B. Stephens & Associates, Inc.
10-05-04 JN ES03.0164

UNITED CREOSOTING COMPANY
CERCLIS ID NO. TXD980745574
CONROE, MONTGOMERY COUNTY, TEXAS

Dioxin/Furans Concentrations in Deep Zone

Figure 12

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Attachment 1
Documents Reviewed

Attachment 1
Documents Reviewed

Daniel B. Stephens & Associates, 2004. Remedial Action Investigation Report, United Creosoting Company Site, Conroe, Texas. December 2004

U. S. Environmental Protection Agency (EPA), 1986. Superfund Record of Decision: United Creosoting, Texas. EPA/ROD/R06-86/014. Final, September 1986.

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Weston, 1989. Feasibility Study Amendment, Preferred Alternatives Analysis. September 1989.

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Weston, 1996. Focused Remediation Alternative Assessment (FRAA), United Creosoting Superfund Site, Conroe, Texas. August 1996.

Weston, 1998a. Final December 1997/January 1998 Groundwater Monitoring Report, United Creosoting Superfund Site, Conroe, Montgomery County, Texas. May 1998.

Weston, 1998b. Remedial Action Report, United Creosoting Superfund Site, Phase B Industrial Remdiation, Conroe, Montgomery County, Texas. July 1998.

Weston, 1999. Draft Phase C Remediation Final Report, United Creosoting Superfund Site, Conroe, Texas. August 1999.

Attachment 2
Interview Record Forms

Five-Year Review Interview Record United Creosoting Site Conroe, Texas			**Interviewee: Diane Poteet/TCEQ** Phone: 512-239-2502 email: dpoteet@tceq.state.tx.us	
Site Name		**EPA ID No.**	**Date of Interview**	**Interview Method**
United Creosoting Superfund Site		EPA ID# TXD980745574	3/28/ 2005	via email
Interview Contacts	**Organization**	**Phone**	**Email**	**Address**
Vince Malott	EPA Region 6	214-665-8313	malott.vincent @epa.gov	1445 Ross Ave Dallas, Texas 75204

Interview Questions

19. What is your overall impression of the work conducted at the site? (general sentiment)

Response: "As the Texas Commission on Environmental Quality (TCEQ) project manager for the site, I have only been involved with the groundwater Remedial Action (RA); wherein federal funds were granted and the state's contractor installed additional new wells and sampled the new and old wells in order to monitored for natural attenuation of the contaminants of concerned (as per the Record of Decision or ROD). In addition to creosote being found in the aquifer during the installation of one of the new monitoring wells during the RA, it has been concluded that monitored natural attention is not a good remedy for creosote constituents because they will not attenuate in a reasonable amount of time."

20. From your perspective, what effect have remedial operations at the site had on the surrounding community?

Response: "The residential community has been very cooperative with the state and their contractor as we installed and sampled the monitoring wells. In fact, our contractor was complimented during the well installations as to how considerate and neat they were. In obtaining an access with the City of Conroe, the city was found to be cooperative, too."

21. Are you aware of any ongoing community concerns regarding the site or its operation and administration? Please provide details.

Response: "One property owner (Mr. John Sisco) has filed lawsuits against several of TCEQ's contractors regarding the remediation; the TCEQ is not aware of any other concerns and is not involved in the Sisco suit to date."

22. Are you aware of any significant events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities? If so, please give details.

Response: "Property that was acquired by the U.S. Environmental Protection Agency during the soil remediation phase needs to be transferred to the state. One lot still has a house on it (4 Arlington) and it is in very bad condition. The neighbors would like to see the house torn down because kids can still get inside the yard even though it has a fence around it with a lock on the gate (which was not locked during the last site visit on February 16, 2005). "

23. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please describe purpose and results.

Response: "As the lead agency for the groundwater RA and subsequent Operations and Maintenance (O & M) phase, the TCEQ conducted site visits during the installation and monitoring of the wells in order to oversee the state's contractor's work. In addition, TCEQ conducted a site visit with Vince Malott on February 16, 2005 as part of the 2005 5-year review."

24. Have there been any complaints, violations, or other incidents related to the site that required a response by your office? If so, please give summarize the events and results of the responses.

Response: "None other than conducting the RA at the site."

25. Were any problems or difficulties encountered after the initiation of remedial action which impacted construction progress and implementability? Please briefly summarize the problems/difficulties.

Response: "For the groundwater RA, creosote was encountered in the aquifer, which can be technically infeasible to completely remove, and thus, will prevent natural attenuation of the creosote constituents from ever occurring."

26. Were or have any problems been encountered at either site which required or will require changes in the Record of Decision or remedial action performed? (Brief summary)

Response: "Yes, as discussed above, the ROD for the groundwater needs to be changed to address the problem with monitored natural attenuation."

27. Have there been any significant changes in the site status or maintenance requirements since completion of remedial action? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: "Yes. The effectiveness of monitored natural attenuation is questionable since creosote was found in the aquifer. "

28. Have there been opportunities to optimize the operation, maintenance, or sampling efforts at the site since the start of the remedial action? Please describe changes and the resultant or desired cost savings or improved efficiency

Response: "Yes. Sampling of the groundwater does not need to be performed on a quarterly basis since there has been little change in the groundwater plume since the TCEQ has started monitoring."

29. What is the status of groundwater monitoring plan preparation?

Response: "The TCEQ has been monitoring groundwater since June 2004. The RA report for the groundwater portion was completed in December 2004. TCEQ has taken over O & M operations and plans to sample again in the near future."

30. Do you feel well-informed about the site's activities and progress?

Response: "Yes."

31. Do you have any comments, suggestions, or recommendations regarding the site?

Response: "The regulatory agencies could consider more rigorous institutional controls (deed notice) in regard to land use constraints in the industrial remediation area and groundwater contamination in all areas of the site."

Five-Year Review Interview Record United Creosoting Site Conroe, Texas			**Interviewee:** Jerry McGuire, City Administrator City of Conroe	
Site Name		**EPA ID No.**	**Date of Interview**	**Interview Method**
United Creosoting Superfund Site		EPA ID# TXD980745574	8/04/2005	via phone
Interviewee Contact Information			Jerry McGuire Conroe, Texas 77305 phone: 936-760-4600	
Interviewer	**Organization**	**Phone**	**Email**	**Address**
Vincent Malott	EPA Region 6	214-665-8313	malott.vincent @epa.gov	1445 Ross Ave Dallas, Texas 75204

Summary of Conversation

The purpose of the interview was to provide an update on the land use restrictions associated with the former United Creosoting facility and determine if the City of Conroe can assist with notifications and/or permitting for new private supply wells within the groundwater contaminant plume area.

Mr. Jerry McGuire indicated that the city may be able to provide some assistance through new building permits since the city does not issue well permits. However, Mr. McGuire recommended the Lone Star Groundwater Conservation District as a possible authority to deal with new well installations within the area of ground water contamination.

I indicated that the current and future planned usage of the former United Creosoting property would remain for industrial use. I explained that EPA and/or TCEQ would work with the City of Conroe to ensure any future planned developments of the property would remain for industrial use, consistent with the industrial soil target action levels for the property. A copy of the 2000 and 2005 Five-Year Review reports along with the 2004 Remedial Action Investigation report prepared by the TCEQ will be sent to Mr. McGuire.

Five-Year Review Interview Record United Creosoting Site Conroe, Texas			**Interviewee:** Kathy Jones, General Manager Lone Star Groundwater Conservation District	
Site Name		**EPA ID No.**	**Date of Interview**	**Interview Method**
United Creosoting Superfund Site		EPA ID# TXD980745574	8/04/2005	via phone
Interviewee Contact Information			Kathy Jones P.O. Box 2467 Conroe, Texas 77305 phone: 936-494-3436 kjones@lonestargcd.org	
Interviewer	**Organization**	**Phone**	**Email**	**Address**
Vincent Malott	EPA Region 6	214-665-8313	malott.vincent@epa.gov	1445 Ross Ave Dallas, Texas 75204

Summary of Conversation

The purpose of the interview was to determine if the Lone Start Groundwater Conservation District can assist with notifications and/or permitting for new private supply wells within the groundwater contaminant plume area.

Ms. Kathy Jones indicated that the Lone Star Groundwater Conservation District can provide notifications to the well drilling companies of the presence of the contaminant plume and can enter the lat. and long. of the contaminant plume in the Lonestar GCD database so that permit applications for new wells will trigger a potential warning.

Five-Year Review Interview Record United Creosoting Site Conroe, Texas			**Interviewee:** Jack Clarke, III, owner of the former United Creosoting property	
Site Name		**EPA ID No.**	**Date of Interview**	**Interview Method**
United Creosoting Superfund Site		EPA ID# TXD980745574	8/10/2005	via phone
Interviewee Contact Information			Jack Clarke, III phone: 830-377-8093 (cell) P.O. Box 270 Mountain Home, Texas 78058	
Interviewer	**Organization**	**Phone**	**Email**	**Address**
Vincent Malott	EPA Region 6	214-665-8313	malott.vincent @epa.gov	1445 Ross Ave Dallas, Texas 75204

Summary of Conversation

The purpose of the interview was to determine the status of any past notifications to the current property owner Jack Clarke, III from either EPA or TCEQ concerning property use restrictions, determine the current and planned future use of the former United Creosoting property, and determine what additional information should be provided by EPA or TCEQ to the property owner in order to provide an update on the current site activities.

Mr. Jack Clarke, III, indicated that he was aware that the former United Creosoting property was restricted to an industrial use scenario and that he had received a letter from TCEQ explaining that the property usage was restricted to an industrial use scenario.

Mr. Clarke indicated that the current and future planned usage of the property would remain for industrial use. I explained that EPA and/or TCEQ would work with the City of Conroe to ensure any future planned developments of the property would remain for industrial use, consistent with the industrial soil target action levels for the property.

Mr. Clarke indicated that he had not received any further updates on the work performed by TCEQ at the site in 2004. Mr. Clarke also questioned why his property had to be used for the staging of equipment and supplies during the work performed by the TCEQ in 2004. A copy of the 2000 and 2005 Five-Year Review reports along with the 2004 Remedial Action Investigation report prepared by the TCEQ will be sent to Mr. Clarke.

Attachment 3
Site Inspection Checklist

United Creosoting Company
Five-Year Review Site Inspection Checklist

N/A means "not applicable."

I. SITE INFORMATION	
Site Name: United Creosoting Company Site	**EPA ID:** TXD980745574
City/State: Conroe, Montgomery County, Texas	**Date of Inspection:** February 16, 2005
Agency Completing 5 Year Review: EPA Region 6	**Weather/temperature:** Cloudy, warm

Remedy Includes: (Check all that apply)
- 9 Landfill cover/containment
- 9 Access controls
- 9 Institutional controls
- 9 Groundwater pump and treatment
- 9 Surface water collection and treatment
- : Other: long-term groundwater monitoring

Attachments: 9 Inspection team roster attached 9 Site map attached

II. INTERVIEWS (Check all that apply)

32. O&M site manager:
Name: Diane Poteet
Title: TCEQ
Date: February 16, 2005
Interviewed: : at site 9 at office 9 by phone : by email
Problems, suggestions: : Additional report attached (see Attachment 2).
For the groundwater RA, creosote was encountered in the aquifer, which can be technically infeasible to completely remove, and thus, will prevent natural attenuation of the creosote constituents from ever occurring.

33. O&M staff:
Name:
Title:
Date:
Interviewed: 9 at site 9 at office 9 by phone
Problems, suggestions: 9 Additional report attached (if additional space required).

34. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency: City of Conroe
Contact:
Name: Jerry McGuire
Title: City Administrator
Date: 8/04/2005
Phone Number: 936-760-4600
Problems, suggestions: : Additional report attached (if additional space required).

Agency: Lone Star Groundwater Conservation District
Contact:
Name: Kathy Jones
Title: General Manager
Date: 8/04/2005
Phone Number: 936-494-3436
Problems, suggestions: : Additional report attached (if additional space required).

Agency:
Contact:
Name:
Title:
Date:
Phone Number:
Problems, suggestions: 9 Additional report attached (if additional space required).

Agency:
Contact:
Name:
Title:
Date:
Phone Number:
Problems, suggestions: 9 Additional report attached (if additional space required).

35. Other interviews (optional) 9 N/A : Additional report attached (if additional space required).

Jack Clarke, III, son of property owner, Clarke Distributing Company (see Attachment 2)

III. ONSITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
A. O&M Documents				
9 O&M Manual	9 Readily available	9 Up to date	: N/A	
: As-Built Drawings	: Readily available	: Up to date	9 N/A	
9 Maintenance Logs	9 Readily available	9 Up to date	: N/A	
Remarks: Note, there are no onsite documents. As-built drawings are readily available in the TCEQ Central Records system in Austin, Texas.				
B. Health and Safety Plan Documents				
9 Site-Specific Health and Safety Plan	9 Readily available	9 Up to date	: N/A	
9 Contingency plan/emergency response plan	9 Readily available	9 Up to date	: N/A	
Remarks: There are no site conditions that would restrict normal emergency response				
C. O&M and OSHA Training Records	9 Readily available	9 Up to date	: N/A	
Remarks:				
D. Permits and Service Agreements				
9 Air discharge permit	9 Readily available	9 Up to date	: N/A	
9 Effluent discharge	9 Readily available	9 Up to date	: N/A	
9 Waste disposal, POTW	9 Readily available	9 Up to date	: N/A	
9 Other permits	9 Readily available	9 Up to date	: N/A	
Remarks:				
E. Gas Generation Records	9 Readily available	9 Up to date	: N/A	
Remarks:				
F. Settlement Monument Records	9 Readily available	9 Up to date	: N/A	
Remarks:				
G. Groundwater Monitoring Records	: Readily available	: Up to date	9 N/A	
Remarks: Note, there are no onsite documents. The current reports are readily available in the TCEQ Central Records system in Austin, Texas.				
H. Leachate Extraction Records	9 Readily available	9 Up to date	: N/A	
Remarks:				
I. Discharge Compliance Records	9 Readily available	9 Up to date	: N/A	
Remarks:				

J. Daily Access/Security Logs 9 Readily available 9 Up to date : N/A
Remarks:

IV. O&M Costs : Applicable 9 N/A

9 **O&M Organization**
: State in-house : Contractor for State
9 PRP in-house 9 Contractor for PRP
9 Other:

9 **O&M Cost Records**
9 Readily available 9 Up to date 9 Funding mechanism/agreement in place

9 Breakdown attached : N/A

From (Date):	To (Date):	Total cost:	9 Breakdown attached
From (Date):	To (Date):	Total cost:	9 Breakdown attached
From (Date):	To (Date):	Total cost:	9 Breakdown attached
From (Date):	To (Date):	Total cost:	9 Breakdown attached
From (Date):	To (Date):	Total cost:	9 Breakdown attached

9 **Unanticipated or Unusually High O&M Costs During Review Period** : N/A
Describe costs and reasons:

V. ACCESS AND INSTITUTIONAL CONTROLS 9 Applicable : N/A

6.01 Fencing

1. Fencing damaged 9 Location shown on site map 9 Gates secured : N/A
Remarks: Note: a property fence separates the residential area of the Tanglewood East subdivision from the light commercial operations to the east.

2. Other Access Restrictions

9 **Signs and other security measures** 9 Location shown on site map 9 N/A
Remarks:

C. Institutional Controls

9 Implementation and enforcement

Site conditions imply ICs not properly implemented: 9 Yes 9 No 9 N/A
Site conditions imply ICs not being fully enforced: 9 Yes 9 No 9 N/A
Type of monitoring (e.g, self-reporting, drive by): none in-place
Frequency:
Responsible party/agency:
Contact:
Name:
Title:
Date:
Phone Number:
Reporting is up-to-date: 9 Yes 9 No 9 N/A
Reports are verified by the lead agency: 9 Yes 9 No 9 N/A
Specific requirements in deed or decision documents have been met: 9 Yes 9 No 9 N/A
Violations have been reported: 9 Yes 9 No 9 N/A
Other problems or suggestions: 9 Additional report attached (if additional space required).

9 Adequacy 9 ICs are adequate 9 ICs are inadequate : N/A
Remarks:

9 General

1. Vandalism/trespassing 9 Location shown on site map 9 No vandalism evident
Remarks:

2. Land use changes onsite 9 N/A
Remarks:

3. Land use changes offsite 9 N/A
Remarks:

VI. GENERAL SITE CONDITIONS

1. Roads 9 Applicable : N/A

1. Roads damaged 9 Location shown on site map 9 Roads adequate 9 N/A
Remarks:

2. Other Site Conditions

Remarks:

VII. LANDFILL COVERS				9 Applicable : N/A
1. Landfill Surface				
1. Settlement (Low spots) Areal extent: Depth: Remarks:	9 Location shown on site map			9 Settlement not evident
2. Cracks Lengths: Widths: Depths: Remarks:	9 Location shown on site map			9 Cracking not evident
3. Erosion Areal extent: Depth: Remarks:	9 Location shown on site map			9 Erosion not evident
4. Holes Areal extent: Depth: Remarks:	9 Location shown on site map			9 Holes not evident
5. Vegetative Cover 9 Cover properly established Remarks:	9 No signs of stress	9 Grass		9 Trees/Shrubs
6. Alternative Cover (armored rock, concrete, etc.) Remarks:				9 N/A
7. Bulges Areal extent: Height: Remarks:	9 Location shown on site map			9 Bulges not evident
8. Wet Areas/Water Damage				9 Wet areas/water damage not evident
9 Wet areas	9 Location shown on site map	Areal extent:		
9 Ponding	9 Location shown on site map	Areal extent:		
9 Seeps	9 Location shown on site map	Areal extent:		
9 Soft subgrade Remarks:	9 Location shown on site map	Areal extent:		
9. Slope Instability Areal extent: Remarks:	9 Slides	9 Location shown on site map		9 No evidence of slope instability

2.	**Benches** (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		9 Applicable 9 N/A
•	**Flows Bypass Bench** Remarks:	9 Location shown on site map	9 N/A or okay
•	**Bench Breached** Remarks:	9 Location shown on site map	9 N/A or okay
•	**Bench Overtopped** Remarks:	9 Location shown on site map	9 N/A or okay
C.	**Letdown Channels** (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		9 Applicable 9 N/A
1.	**Settlement** Areal extent: Remarks:	9 Location shown on site map Depth:	9 No evidence of settlement
2.	**Material Degradation** Material type: Remarks:	9 Location shown on site map Areal extent:	9 No evidence of degradation
3.	**Erosion** Areal extent: Remarks:	9 Location shown on site map Depth:	9 No evidence of erosion
4.	**Undercutting** Areal extent: Remarks:	9 Location shown on site map Depth:	9 No evidence of undercutting
5.	**Obstructions** Type: Areal extent: Remarks:	9 Location shown on site map Height:	9 N/A
6.	**Excessive Vegetative Growth** 9 Evidence of excessive growth 9 Location shown on site map Remarks:	9 No evidence of excessive growth 9 Vegetation in channels but does not obstruct flow Areal extent:	

D.	**Cover Penetrations**		9 Applicable	9 N/A
1.	**Gas Vents**			9 N/A
	9 Active	9 Passive	9 Routinely sampled	
	9 Properly secured/locked		9 Functioning	9 Good condition
	9 Evidence of leakage at penetration		9 Needs O& M	
	Remarks:			
2.	**Gas Monitoring Probes**			9 N/A
	9 Routinely sampled			
	9 Properly secured/locked		9 Functioning	9 Good condition
	9 Evidence of leakage at penetration		9 Needs O&M	
	Remarks:			
3.	**Monitoring Wells** (within surface area of landfill)			9 N/A
	9 Routinely sampled			
	9 Properly secured/locked		9 Functioning	9 Good condition
	9 Evidence of leakage at penetration		9 Needs O&M	
	Remarks:			
4.	**Leachate Extraction Wells**			9 N/A
	9 Routinely sampled			
	9 Properly secured/locked		9 Functioning	9 Good condition
	9 Evidence of leakage at penetration		9 Needs O&M	
	Remarks:			
5.	**Settlement Monuments**	9 Located	9 Routinely surveyed	9 N/A
	Remarks:			
E.	**Gas Collection and Treatment**		9 Applicable	9 N/A
1.	**Gas Treatment Facilities**			9 N/A
	9 Flaring	9 Thermal destruction	9 Collection for reuse	
	9 Good condition	9 Needs O& M		
	Remarks:			
2.	**Gas Collection Wells, Manifolds and Piping**			9 N/A
	9 Good condition	9 Needs O& M		
	Remarks:			
3.	**Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)			9 N/A
	9 Good condition	9 Needs O& M		
	Remarks:			

F.	**Cover Drainage Layer**		9 Applicable	9 N/A
1.	**Outlet Pipes Inspected** Remarks:	9 Functioning		9 N/A
2.	**Outlet Rock Inspected** Remarks:	9 Functioning		9 N/A
G.	**Detention/Sedimentation Ponds**		9 Applicable	9 N/A
1.	**Siltation** Areal extent: Remarks: Not built as part of remedy but simply to provide stormwater runoff control. Normally dry	9 Siltation evident Depth:		9 N/A
2.	**Erosion** Areal extent: Remarks:	9 Erosion evident Depth:		9 N/A
3.	**Outlet Works** Remarks:	9 Functioning		9 N/A
4.	**Dam** Remarks:	9 Functioning		9 N/A
H.	**Retaining Walls**		9 Applicable	9 N/A
1.	**Deformations** Horizontal displacement: Remarks:	9 Location shown on site map Vertical displacement:	9 Deformation not evident Rotational displacement:	
2.	**Degradation** Remarks:	9 Location shown on site map	9 Degradation not evident	
I.	**Perimeter Ditches/Off-site discharge**		9 Applicable	9 N/A
1.	**Siltation** Areal extent: Remarks:	9 Location shown on site map Depth:	9 Siltation not evident	
2.	**Vegetative Growth** Areal extent: Remarks:	9 Location shown on site map Type:	9 Vegetation does not impede flow	

3.	**Erosion** Areal extent: Remarks:	9 Location shown on site map Depth:	9 Erosion not evident
4.	**Discharge Structure** 9 Functioning Remarks: No discharge structure, drainage managed by site grading.	9 Location shown on site map 9 Good Condition	9 N/A

VIII. VERTICAL BARRIER WALLS — 9 Applicable : N/A

1.	**Settlement** Areal extent: Remarks:	9 Location shown on site map Depth:	9 Settlement not evident
2.	**Performance Monitoring** 9 Performance not monitored 9 Performance monitored 9 Evidence of breaching Remarks:	Frequency: Head differential:	9 N/A

IX. GROUNDWATER/SURFACE WATER REMEDIES — : Applicable 9 N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines — 9 Applicable : N/A

1.	**Pumps, Wellhead Plumbing, and Electrical** 9 All required wells located Remarks:	9 Good condition	9 Needs O& M	: N/A
2.	**Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances** 9 System located Remarks:	9 Good condition	9 Needs O& M	: N/A
3.	**Spare Parts and Equipment** 9 Readily available 9 Requires Upgrade Remarks:	9 Good condition 9 Needs to be provided		: N/A

B. Surface Water Collection Structures, Pumps, and Pipelines — 9 Applicable : N/A

1.	**Collection Structures, Pumps, and Electrical** 9 Good condition Remarks:	9 Needs O& M		9 N/A

2.	**Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances** 9 Good condition 9 Needs O& M Remarks:	9 N/A
3.	**Spare Parts and Equipment** 9 Readily available 9 Good condition 9 Requires Upgrade 9 Needs to be provided Remarks:	9 N/A
C.	**Treatment System** 9 Applicable	: N/A
1.	**Treatment Train** (Check components that apply) 9 Metals removal 9 Oil/water separation 9 Bioremediation 9 Air stripping 9 Carbon adsorbers 9 Filters (list type): 9 Additive (list type, e.g., chelation agent, flocculent) 9 Others (list): 9 Good condition 9 Needs O&M 9 Sampling ports properly marked and functional 9 Sampling/maintenance log displayed and up to date 9 Equipment properly identified 9 Quantity of groundwater treated annually (list volume): 9 Quantity of surface water treated annually (list volume): Remarks:	
2.	**Electrical Enclosures and Panels** (properly rated and functional) 9 Good condition 9 Needs O& M Remarks:	9 N/A
3.	**Tanks, Vaults, Storage Vessels** 9 Good condition 9 Proper secondary containment 9 Needs O&M Remarks:	9 N/A
4.	**Discharge Structure and Appurtenances** 9 Good condition 9 Needs O& M Remarks:	9 N/A
5.	**Treatment Building(s)** 9 Good condition (esp. roof and doorways) 9 Needs Repair 9 Chemicals and equipment properly stored Remarks:	9 N/A

6. Monitoring Wells (pump and treatment remedy) 9 N/A

9 All required wells located 9 Properly secured/locked 9 Functioning 9 Routinely sampled
9 Good condition 9 Needs O&M
Remarks:

D. Monitored Natural Attenuation : Applicable 9 N/A

1. Monitoring Wells (natural attenuation remedy) 9 N/A

: All required wells located : Properly secured/locked : Functioning 9 Routinely sampled
9 Good condition 9 Needs O&M
Remarks: The TCEQ has completed installation of new monitoring wells at the Site in 2003. Groundwater monitoring was conducted in 2003 and 2004.

X. OTHER REMEDIES 9 Applicable : N/A

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.)

The current remedy is effective and functioning as designed. The remedy was chosen to remove the principal health threats that presented excess lifetime cancer risk, and prevent further actual or threatened releases of hazardous substances from the site. As stated in ROD Amendment No. 1, monitoring of the natural attenuation of affected shallow groundwater is required. The TCEQ has implemented a ground water monitoring plan in 2003 and 2004 to further delineate the dissolved plume and evaluate the efficacy of the natural attenuation process. Institutional controls were not specified by the RODs (at the time the RODs were signed, no current users of the affected groundwater zone were identified, and the area was determined to be within the service area of a municipal water supply). However, affected groundwater remains in-place beneath residential and industrial areas, until data is collected to demonstrate the completion of natural attenuation, and institutional controls to ensure groundwater use does not occur should be considered. Affected soil remains in place in the industrial area of the site below industrial target action levels, but above residential target action levels, and institutional controls should be considered in that area to provide guidance relative to potential future land use changes.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

O&M procedures specific to the soil remedy are not required. The site has been returned to use as commercial and residential property. Groundwater monitoring was conducted in 2003 and 2004 by the TCEQ.

C. Early Indicators of Potential Remedy Failure
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. None currently observed. The lack of specific institutional controls related to affected groundwater use and the industrial area soil (above residential target levels) may lead to remedy failure if groundwater use occurs in the vicinity or the zoning of the industrial area is at some point changed to residential.
D. Opportunities for Optimization
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. Not applicable.

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Attachment 4
Public Notice in the Conroe Courier

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United Creosoting Company Superfund Site
U.S. EPA Region 6
Conducts Second Five-Year Review of Site Remedy
August 2005

The U.S. Environmental Protection Agency (EPA) is conducting the second five-year review for the United Creosoting Company Superfund site located in Conroe, Texas. This review will determine whether the soil and ground water remedies at the site remain protective of human health and the environment. The soil cleanup was completed in 1999, and monitoring of the ground water cleanup through natural attenuation processes is ongoing. The first five-year review for the site was completed in September 2000.

The United Creosoting Company operated as a wood preserving facility from 1946 to 1972. The site is approximately 1 mile east of Interstate Highway 45 and 0.25 miles south of Loop 336. The former United Creosoting property is approximately one hundred acres in size and is bounded 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 physical characteristics of the Site have been altered by development of the property. Light industrial structures and a portion of Tanglewood East residential subdivision currently occupy the site.

The second five-year review is scheduled for completion in September 2005. Results of the five-year review will be made available to the public at the following information repository:

Montgomery County Public Library
104 I-45 North
Conroe, Texas 77301
(936) 539-7814

For more information, please contact Vincent Malott, U.S. EPA Region 6 remedial project manager, at 1-800-533-3508 (toll free) or 214-665-8313.

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CH2M HILL/Bernard Hodes 972-980-2170

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