

**Five-Year Review Report**

**Third Five-Year Review Report**

**Dixie Oil Processors Superfund Site  
Harris County, Texas**

**September 2008**

**PREPARED BY:**

**United States Environmental Protection Agency  
Region 6  
Dallas, Texas**



**857948**

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## List of Acronyms

AER	Annual Effectiveness Report
ARAR	Applicable or Relevant and Appropriate Requirement
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
112 TCA	1,1,2-Trichloroethane
DNAPL	dense non-aqueous phase liquids
DOP	Dixie Oil Processors
EA	Endangerment Assessment
EPA	United States Environmental Protection Agency
FFSZ	Fifty Foot Sand Zone
ICP	Institutional Control Plan
LNAPL	light non-aqueous phase liquid
MCL	Maximum Contaminant Level
MCU	Middle Clay Unit
MGI	Mud Gully Improvements
MOM	Maintenance, Operations, and Monitoring
NCP	National Contingency Plan
NSCZ	Numerous Sand Channel Zone
NPL	National Priorities List
O&M	Operation and Maintenance
PEC	Probable Effects Concentration
RA	Remedial Action
RAO	Remedial Action Objective
RfD	Reference Dose
RD	Remedial Design

RI/FS Remedial Investigation/Feasibility Study  
ROD Record of Decision  
RPM Remedial Project Manager  
SOP Standard Operating Procedure  
1,1,2-TCA 1,1,2-Trichloroethane  
TRRP Texas Risk Reduction Program  
TCEQ Texas Commission on Environmental Quality  
VOC Volatile Organic Compound

## **Executive Summary**

The Dixie Oil Processors (DOP) Site is a former industrial site located approximately 20 miles southeast of Houston, Texas, in Harris County. The Site occupies approximately 26.6 acres and is positioned both north and south of Dixie Farm Road, designated as DOP North and DOP South.

A Record of Decision (ROD) was issued for the DOP Site by the EPA on March 31, 1988. A Unilateral Administrative Order was issued by EPA on July 10, 1991, to the DOP Task Force for implementation of the remedy.

The DOP Task Force notified EPA that remedial activities were completed on March 27, 1993. A Final Closeout Report was issued by EPA on January 18, 1996. The deletion of the DOP Superfund Site from the National Priorities List became effective December 28, 2006.

The trigger for this third five-year review was the September 4, 2003, signature date of the second five-year review.

The assessment of this third five-year review found that the remedy was constructed in accordance with the requirements of the Record of Decision and remains protective, consistent with the remedial action objectives of this response action. Continued implementation of site controls is necessary to ensure the protectiveness of the remedy.

### **Issues:**

As stated in the Second Five-Year Review Report, full implementation of the required institutional controls is necessary to ensure long-term protectiveness. Since the second five-year review was completed, the institutional controls have been filed and are currently in place.

Annual monitoring has shown increasing concentrations of chlorinated organics in one site monitoring well during the five-year review period. The origin of the contaminated ground water is the adjacent Brio Refining site and does not impact the protectiveness of the site remedy.

### **Recommendations and Follow-up Actions:**

None.

## Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name ( <i>from WasteLAN</i> ): Dixie Oil Processors Superfund Site		
EPA ID ( <i>from WasteLAN</i> ): TXD089793046		
Region: 6	State: TX	City/County: Harris County
SITE STATUS		
NPL status: <input type="checkbox"/> Final <input checked="" type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): Under Construction Operating <input checked="" type="checkbox"/> Complete		
Multiple OUs?* <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Construction completion date: <u>06/09/1993</u>	
Has site been put into reuse? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: John Meyer _____		
Author title: Remedial Project Manager	Author affiliation: U.S. EPA, Region 6	
Review period:** <u>9/04/2003</u> to <u>9/04/2008</u>		
Date(s) of site inspection: <u>1/16/2008</u>		
Type of review: <div style="text-align: right; margin-left: 200px;"> <input checked="" type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only  <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead  <input type="checkbox"/> Regional Discretion) </div>		
Review number: <input type="checkbox"/> 1 (first) <input type="checkbox"/> 2 (second) <input checked="" type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
Triggering action: <input type="checkbox"/> Actual RA On-site Construction at OU #__ <input type="checkbox"/> Actual RA Start at OU# <u>NA</u> <input type="checkbox"/> Construction Completion <input checked="" type="checkbox"/> Previous Five-Year Review Report <input type="checkbox"/> Other (specify)		
Triggering action date ( <i>from WasteLAN</i> ): <u>9/04/2003</u>		
Due date ( <i>five years after triggering action date</i> ): <u>9/04/2008</u>		

## Five-Year Review Summary Form, cont'd.

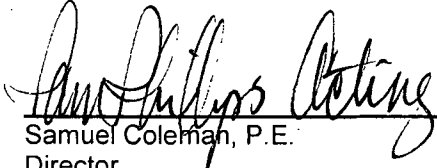
### Determinations:

Based on the information available during this third five-year review, the remedy for the site currently protects human health and the environment. Installation of the remedial alternative has been completed. The action has removed exposure pathways that could have resulted in unacceptable risks by preventing exposure of human receptor populations to contaminated soils or ground water. The implemented actions are functioning as intended and remain protective of human health and the environment.

Long-term protectiveness of the remedial action is being verified by monitoring implemented under the Maintenance, Operations and Monitoring (MOM) Plan to confirm the effectiveness of the site controls. The ROD requires that site control be maintained through the use of fencing and the imposition of deed notices and restrictions. The DOP Task Force currently controls the site, and a fence has been maintained around the perimeter of the site. The Institutional Control Plan, dated February 2, 2006, documents that deed notices and deed restrictions were executed on the site. The expected long term maintenance and operations at the adjacent Brio Refining Superfund site will involve a continual site presence.

Approved by:

Date:

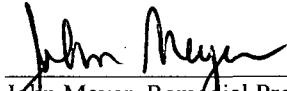


Samuel Coleman, P.E.  
Director  
Superfund Division  
U.S. EPA, Region 6

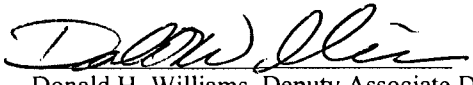
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CONCURRENCES:

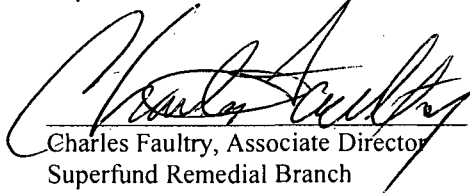
THIRD FIVE-YEAR REVIEW REPORT  
DIXIE OIL PROCESSORS SUPERFUND SITE

  
\_\_\_\_\_  
John Meyer, Remedial Project Manager  
Superfund Remedial Branch

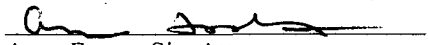
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Donald H. Williams, Deputy Associate Director  
Superfund Remedial Branch


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Date

  
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Charles Faultry, Associate Director  
Superfund Remedial Branch

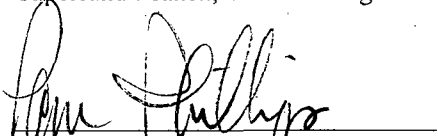
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Anne Foster, Site Attorney  
Superfund Branch, Office of Regional Counsel

9/3/08  
Date

  
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Mark A. Peycke, Chief  
Superfund Branch, Office of Regional Counsel

09/03/08  
Date

  
\_\_\_\_\_  
Pamela Phillips, Deputy Director  
Superfund Division

9/19/08  
Date

**Dixie Oil Processors Superfund Site  
Harris County, Texas  
Third Five-Year Review Report**

**I. Introduction**

The purpose of a five-year review is to evaluate the implementation and performance of the selected remedy in order to determine if the remedy is or will be protective of human health and the environment. Since this will be the third five-year review, it will determine if the remedy continues to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify issues found during the review, if any, and identify recommendations to address them.

The Agency is preparing this Five-Year Review report pursuant to CERCLA § 121 and the National Contingency Plan (NCP). CERCLA § 121 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. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR § 300.430(f)(4)(ii) 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 United States Environmental Protection Agency (EPA), Region 6, conducted the third five-year review of the remedy implemented at the DOP Superfund Site in Harris County, Texas. This review was conducted for the site from January 2008 through July 2008. This report documents the results of the review.

This is the third five-year review for the DOP Site. The triggering action for this statutory review is the completion of the second five-year review on September 4, 2003. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site

above levels that allow for unlimited use and unrestricted exposure.

## II. Site Chronology

**Table 1 - Chronology of Site Events**

<b>Event</b>	<b>Date</b>
Copper recovery and hydrocarbon washing activities began at the site	1969
Final listing on EPA National Priorities List	10/1989
Record of Decision signed	3/31/1988
Unilateral Order issued for RD/RA	7/10/1991
Start of on-site construction	3/25/1992
Preliminary Close Out Report	6/09/1993
First Five-Year Review	9/24/1998
Second Five-Year Review	9/04/2003
Deletion from National Priorities List	8/21/2006

### **III. Background**

#### **Physical Characteristics**

The DOP site is a former industrial site located approximately 20 miles southeast of Houston, Texas, in Harris County. The site occupies approximately 26.6 acres and is positioned both north and south of Dixie Farm Road, designated as DOP North and DOP South. DOP North covers 19.0 acres, and DOP South covers 7.6 acres.

Attachment 1 shows the layout of the DOP site. Mud Gully, a flood control ditch and local tributary of Clear Creek, runs along the eastern boundary of DOP North and the western boundary of DOP South. The Brio Refinery site (Brio) borders DOP to the northeast and a former athletic field borders DOP North to the Southwest. Due north of DOP North is the former Southbend residential subdivision. The Friendswood Oil Field borders the remaining areas.

#### **Land and Resource Use**

The current land use of the surrounding area is residential development to the northeast, across Beamer Road. A buffer of undeveloped properties exists to the north, west and south of the site. The property to the south has been used for the establishment of a wetland habitat and preservation of forest habitat as part of a Natural Resource Restoration Project implemented by the BSTF in conjunction with several state and federal agencies. Residential development is evident approximately 0.5 miles to the west of the site.

#### **History of Contamination**

DOP North was operated as a copper recovery and hydrocarbon washing facility from 1969 through 1978. A total of six surface impoundments (pits) were used to store and treat wastewater containing copper prior to recovery and discharge. The pits were closed and decommissioned during 1975 and 1977. Several operations occurred at DOP South from 1978 through 1986. These include:

- hydrocarbon washing to produce ethylbenzene, toluene, aromatic solvents, and styrene pitch;
- oil recovery; and
- blending and distilling residues from local chemical plants and refineries (mainly phenolic tank bottom tars and glycol cutter stock) to produce various petroleum products including fuel oil, creosote extender, and a molybdenum concentrate catalyst.

Active operations at the site stopped in 1986. Previously closed surface impoundments located on DOP North were not utilized during DOP South operations. Approximately 6,000 cubic yards of contaminated soils were excavated in 1984 and disposed off-site.

## **Basis for Taking Action**

There are approximately 107,351 cubic yards of contaminated soils and subsoils on the site, associated with six different pits. For the pit samples, ethylbenzene had the highest concentration (6.40 mg/kg) of volatile organic compounds; hexachlorobenzene had the highest concentration (674 mg/kg) of base neutral organic compounds; and copper had the highest concentration (72,860 mg/kg) of inorganic compounds. No organic compounds were found in any subsoil samples.

The EPA concluded that the site potentially poses four major risks to human health and the environment. These risks would result from:

- ingestion of on-site soils;
- direct contact with on-site soils;
- inhalation of dust from the site; and,
- ingestion of shallow ground water from the site.

Many of the chemicals found on the site are carcinogens (1,1,2 trichloroethane and methylene chloride) or toxic to the central nervous system, liver, or respiratory system (toluene and chlorobenzene).

## **IV. Remedial Actions**

### **Remedy Selection**

A Record of Decision (ROD) was issued for the DOP site by the EPA on March 31, 1988 selecting limited action and monitoring, including fluids stabilization and a site cover with institutional controls. In accordance with the requirements of the Unilateral Administrative Order, Docket Number 6-23-91, signed by the EPA on July 10, 1991, the DOP Task Force was directed to design and implement the remedial action as specified in the ROD.

### **Summary of Record of Decision**

- a) Affected Materials and Soils - The DOP Endangerment Assessment identified target cleanup levels based on human exposure to site contaminants. However, the site investigation did not identify any contaminated soils on the DOP site that exceeded the action levels discussed in the endangerment assessment.

- b) Mud Gully - The ROD calls for widening the flood control ditch to remove the "bottle neck" that exists as it passes the DOP site.
- c) Storage Tanks and Drums – Demolish any remaining surface tanks or vessels and dispose of their contents.
- d) Site Management -Regrade and vegetate the entire DOP site to promote drainage and minimize surface runoff. Cover all regraded areas with six inches of top-soil, if necessary, to promote vegetative growth.
- e) Site Control - Use permanent site control, impose necessary deed notices and restrictions (if possible), and restrict access to the site by use of a fence or similar barrier.

### **Remedy Implementation**

A Record of Decision (ROD) was issued for the DOP site by the EPA on March 31, 1988, selecting limited action and monitoring including fluids stabilization and a site cover with institutional controls. In accordance with the requirements of the Unilateral Administrative Order, Docket Number 6-23-91, signed by the EPA on July 10, 1991, the DOP Task Force was directed to design and implement the remedial action as specified in the ROD.

The EPA issued the Unilateral Administrative Order (UAO) to 12 respondents in July 1991. The UAO contained a detailed Scope of Work for the implementation of the RD/RA. Monsanto Corporation assumed the lead for implementation of the remedial action by settling with the other respondents and managing the DOP Task Force.

The DOP Task Force prepared an RD/RA workplan for the implementation of the UAO and Scope of Work. The EPA approved the Phase I workplan on March 25, 1992. The Phase I activities included:

- Removal of surface contamination;
- Improvement of surface water controls;
- Reconstruction of Mud Gully;
- Revegetation and installation of security fencing.

The Phase II workplan was approved by EPA on August 17, 1992. Phase II activities included:

- Removal and off-site disposal of tank residuals;
- Dismantlement of the process tanks and drums;
- Disposal of process equipment.

The DOP Task Force notified EPA that Phase I and Phase II activities were completed on March 27, 1993. A pre-certification inspection was conducted by EPA on April 20, 1993. The EPA noted minor items that required additional work. The DOP Task Force corrected these items

and in a letter dated April 27, 1993, certified that the Remedial Action was complete. The EPA completed the Preliminary Closeout Report on June 9, 1993.

The DOP Task Force prepared a Remedial Action Report that contained a certification by a Texas Professional Engineer that all the requirements of the Remedial Design were met. The EPA approved the report on August 6, 1993 and issued a Final Closeout Report on January 18, 1996.

## **V. Progress Since the Last Five-Year Review**

The Institutional Control Plan (ICP) was finalized on February 2, 2006, for the DOP Site and provides for institutional controls to reduce the risk to public health and the environment from potential hazards posed by the site. The plan implementation tasks are listed as recordation of institutional control documents and monitoring of site security. Deed restrictions and notices have been filed at the Harris County Clerk's office for the site. Site personnel inspect the perimeter fencing weekly, at a minimum, to evaluate compliance with Institutional Control Documents. The ICP was incorporated into the Maintenance, Operations, and Monitoring Plan as the 3<sup>rd</sup> update May 2006.

### **System Operation/Operation and Maintenance**

In July 1993, the DOP Task Force submitted a Maintenance, Operations and Monitoring (MOM) Plan for the DOP site. The Plan was revised in January 1999 and again in May 2006. The purpose of the MOM Plan is to document procedures to be used to assess the long-term success of the site remedy while minimizing adverse natural or man-made impacts on the DOP site. The Plan requires (i) monthly inspections and maintenance, (ii) a five-year review as required by the EPA, and (iii) semi-annual monitoring of the environmental media (soil, ground water, and air).

#### Monthly Site Inspections

The DOP Task Force conducts monthly site inspections to identify any damage to the site facilities, and monitors the general health and integrity of the soil cover, vegetation, etc. In general, the Task Force conducts the following actions at the site:

- inspect the site cover for potentially detrimental, localized settlements, presence of burrowing animals, erosion, and evidence of cover failures such as discolored soil or debris,
- maintain healthy vegetation in the capped areas,
- clear obstructions from the drainage swales and surface discharge structures to promote free drainage,
- inspect the banks of Mud Gully for incipient erosion,
- landscape for trees,
- monitor integrity of the fenceline for any damages,

- trim trees, as required,
- clear vines out of fence line fabric, as required,
- monitor any trespassing at the property,
- clear trash/debris that accumulates with time,
- fix missing and/or unreadable signs,
- inspect well protective casings and protective pipes for rust, and
- straighten pipeline markers as required.

Monthly inspections also include monitoring upstream erosion of Mud Gully which has the potential to impact the water quality at the site.

Since monitoring began in May 1993, the DOP Task Force has kept records of site activities and submitted them to the EPA on an annual basis. The reports include specific maintenance activities completed during the past year, dates that maintenance activities were performed, names of people and companies performing the maintenance activities, and any replacements or redesigns of deficient materials or equipment.

## **VI. Five-Year Review Process**

### **Administrative Components**

The DOP Task Force and the Texas Commission of Environmental Quality (TCEQ) were notified of the initiation of the five-year review on December 6, 2007. The DOP Third Five-Year Review team was led by John Meyer of EPA, Remedial Project Manager (RPM) for the Site.

### **Community Involvement**

A notice was published in the Houston Chronicle on January 6, 2008 stating that a five-year review was to be conducted for the DOP site. The same notice was published January 10, 2008 in the South Belt-Ellington Leader. No correspondence was received by the EPA as a result of these published notices.

### **Document Review**

This five-year review consisted of a review of relevant documents including the Final Close Out Report, Remedial Action Completion Report, the 1988 Record of Decision, and annual groundwater monitoring reports. See Attachment 2 for documents reviewed for this report.

## Data Review

The data review focused on an evaluation of the current groundwater monitoring data collected as part of the MOM operations. The latest groundwater monitoring report was issued in February 2008 and provides recent groundwater data along with a summary of the monitoring events since 1993. Groundwater samples are currently collected on an annual basis.

The action levels for the ground water at DOP were adopted from the adjacent Brio Refining site per the DOP MOM Plan. The groundwater standards for the NSCZ and FFSZ ground water are listed in Attachment 3.

The groundwater data shows that the levels of chemicals detected have remained stable and in some cases slightly improved over the monitoring period, with the exception of MW35A (see Figure 3). MW35A is located on DOP South and lies outside the soil bentonite slurry wall installed as part of the Brio Refining Site remedy. The levels of 1,1,2-trichloroethane (112-TCA) detected during the annual DOP sampling started to exceed the NSCZ groundwater standards in 2006. Previous assessments of contamination in MW35A have attributed the source of contamination to a groundwater plume that originates on the Brio Site and has migrated toward Mud Gully across the DOP Site. Therefore, the impacted wells on DOP South reflect the groundwater contamination originating from the Brio site and do not provide a reliable indicator of the success of the remedial action at the DOP site.

The Brio Site remedy addresses groundwater contamination outside the soil bentonite slurry wall through the active recovery of ground water from two extraction wells (PO-610 and PO-613). The performance standard for these wells is based on a capture zone to ensure that affected ground water is hydraulically contained and does not discharge to Mud Gully. These two wells were recently sampled as part of an evaluation of operations at the Brio site (see Attachment 4). The levels of 112-TCA in the extraction wells exceed the NSCZ ground water standards and are greater than the corresponding results for MW35A.

The performance standards for the NSCZ ground water are based on the surface water standards for Mud Gully since the gully is a discharge point for the NSCZ. Sampling has been conducted in Mud Gully since 1993 as part of a monitoring program for the Brio Site to measure the effectiveness of the remedy. The April 2008 Five Year Review for the Brio Site, which included a review of this data, found that the performance standards for Mud Gully are currently being met and did not recommend any changes to the remedial approach.

The groundwater data for the FFSZ show that the MCL's are currently being met. The last several years of data have shown non-detects for all monitored chemicals.

## Site Inspection

A site visit was conducted on January 16, 2008, to acquaint the participants with site conditions. Site visit participants included John Meyer (EPA, Region VI), John Danna (DOP Site Task Force), and Lawrence Engle, (URS Corporation). Photo documentation of the visit is included in this report (See Attachment 6). The site inspection checklist completed during the site visit is included as Attachment 5.

Overall, the team noted that the site appeared to be well maintained with no maintenance or operational problems apparent.

## Interviews

Interviews were conducted with key citizens who have the possibility of being impacted by the site. Mrs. Marie Flickenger is an area resident, the publisher of the local newspaper and sits on the Board of Regents for the nearby community college. Ms. Terri Cadoree is a sales representative for a home builder in a housing development less than a mile from the site. Details of these interviews are provided in Attachment 8. No problems regarding the site were identified during the interviews.

## VII. Technical Assessment

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

The review of documents, sampling results, ARARs, risk assumptions, and the results of the site inspection indicate that the remedy is functioning as intended by the ROD. Following the implementation of the remedy, all measures appear to be functioning as designed to control groundwater discharges and air emissions.

Maintenance activities (i.e. site inspections) will maintain the effectiveness of the remedy.

Monitoring activities are being conducted and are adequate to determine the protectiveness and effectiveness of the remedy. Site ground water monitor wells are sampled on an annual basis.

The ROD did not specify discrete actions to address ecological risks, however, the implementation of the remedy has removed or minimized potential exposures to aquatic or terrestrial receptors. A review of the sediment data collected during the RI/FS was conducted to assess the magnitude of aquatic risk that existed prior to implementation of the remedy using current ecological screening values. Specifically, the level of copper found during the RI/FS was compared to the Probable Effect Concentration (PEC). The highest level of copper found in the sediments immediately adjacent to the site was 424 mg/kg which exceeds the PEC of 149 mg/kg. Completion of the Mud Gully construction has removed this pathway of exposure to aquatic receptors through concrete lining of the channel. Site monitoring has verified that no new contaminated sediments are

being transported from the site to the gully.

The implementation of the site-wide cover has minimized the potential for exposure to terrestrial receptors. Site inspections look for the presence of burrowing animals and none have been noted to date.

Since the last five-year review, deed restrictions and notices have been implemented to compliment the existing site controls (fencing and signs). The Institutional Control Plan has been added to the MOM Plan to document these control measures. Chains and locks on gates and outbuildings have been improved to resist tampering and access by trespassers.

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

Since the development of the exposure assumptions, the area surrounding the DOP site has changed dramatically. At the time of the RI, the Southbend Subdivision was located immediately adjacent to the north portion of the site. The subdivision has since been abandoned and demolished, substantially reducing the potential receptors. Also, a new subdivision is currently being developed east of the site. The cleanup levels used to establish the extent of the remedy are still valid, however, since they were based predominantly on a trespasser scenario.

#### Changes in Standards and To Be Considered

The toxicity values used by TCEQ for their Texas Risk Reduction Program (TRRP) have changed for two compounds since the ROD was approved. The Reference Dose (RfD) for chronic oral exposure for 1,1-Dichloroethane was increased from 0.1 mg/kg-day to 0.2 mg/kg-day on March 30, 2007. On March 27, 2003, the RfD for 1,1-Dichloroethene was increased from 0.009 mg/kg-day to 0.05 mg/kg-day, along with the removal of the Oral Slope Factor and Inhalation Unit Risk Factors and the addition of an Inhalation Reference Concentration (0.2 mg/m<sup>3</sup>). The changes for 1,1-Dichloroethene were all made based on toxicity changes made by the EPA in June 2002; however, the same increase in the RfD for 1,1-Dichloroethane has not been made by the EPA. These RfD changes were increases in the toxicity values; therefore, the remedy from the ROD is still more protective than the effects of the RfD changes on risk for these two compounds.

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

There is no other information that calls into question the protectiveness of the remedy.

### Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the amended ROD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy.

**VIII. Issues**

**Table 2 - Issues**

Issue	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
<p>Annual monitoring has shown an increasing concentration of chlorinated organics in DMW-35A during the five year review period.</p> <p>The level of 112-TCA exceeds the NSCZ ground water standard for the site. The origin of the ground water contamination is from the adjacent Brio Refining Superfund site and does not impact the protectiveness of the remedy at the DOP site.</p>	N	N

**IX. Recommendations and Follow-Up Actions**

**Table 3 - Recommendations and Follow-Up Actions**

Issue	Recommendations / Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
Increasing level of contaminants in NSCZ at DMW-35A.	Continue annual groundwater sampling. Ensure that the Brio site Mud Gully sampling program captures any impacts to the stream from discharge of NSCZ ground water.	DOP Task Force/Brio Site Task Force	EPA	Annual Effectiveness Report	N	N

**X. Protectiveness Statement**

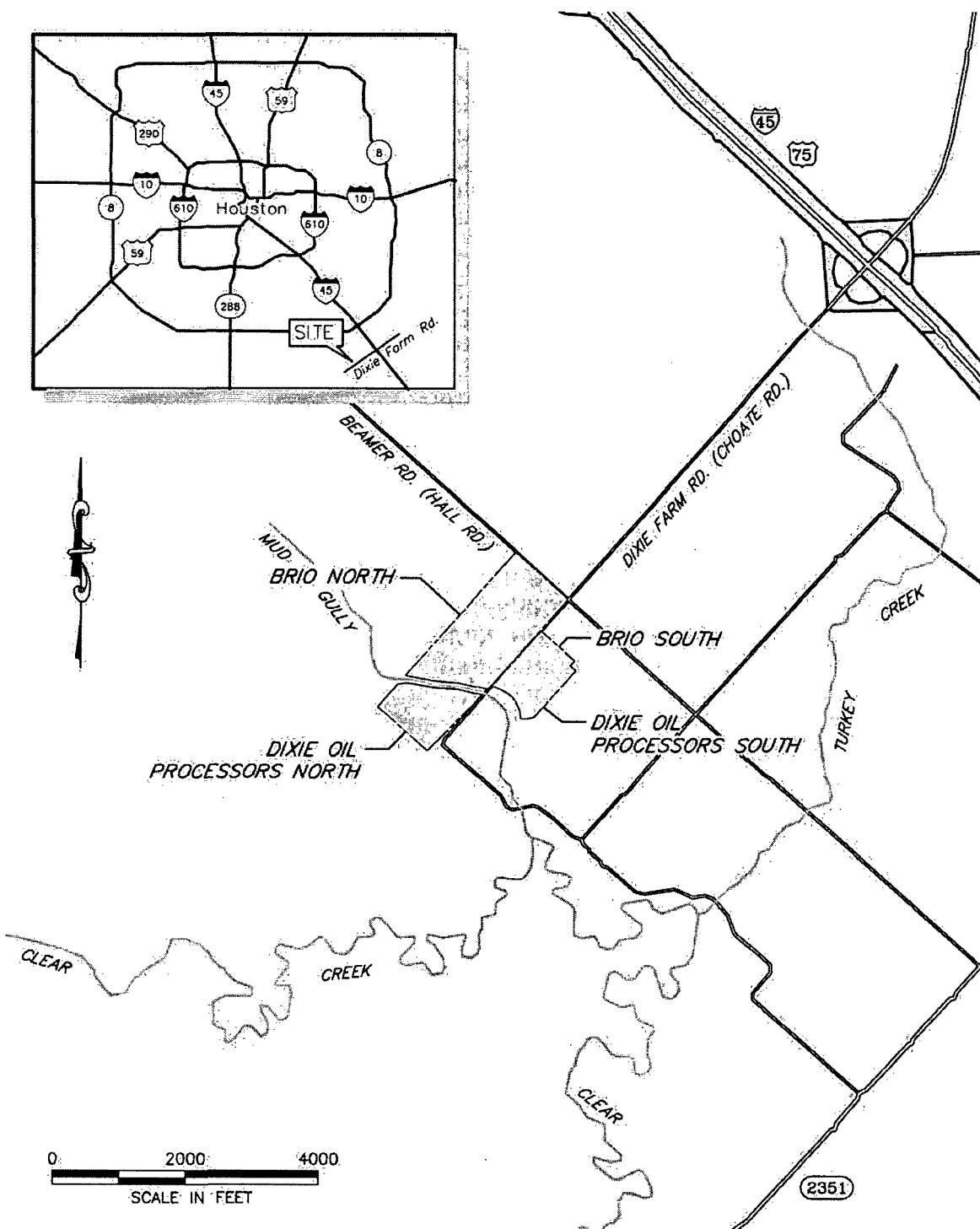
The remedy at the DOP site is currently protective of human health and the environment.

**XI. Next Review**

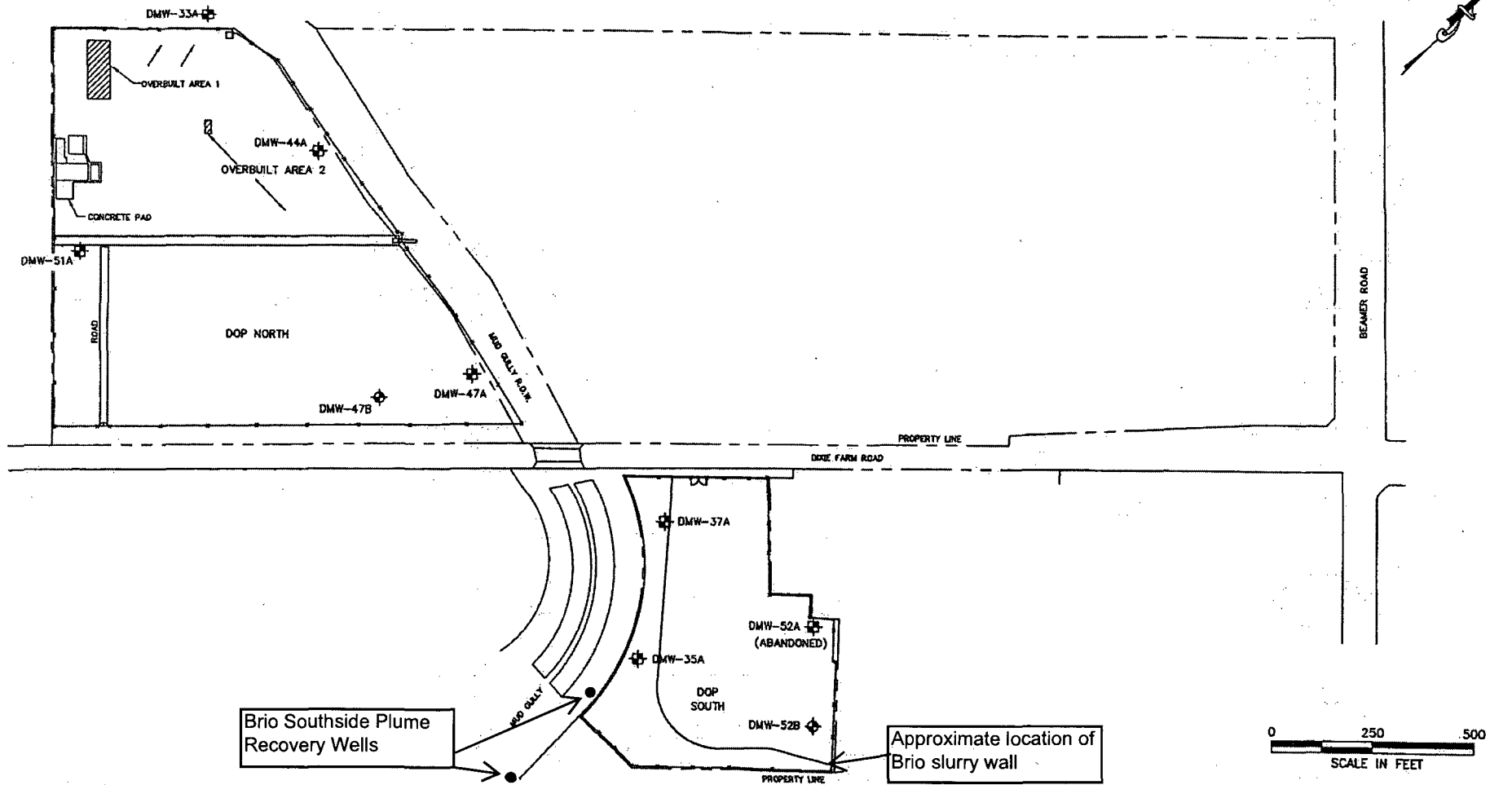
The next five-year review for the DOP Superfund Site is required by August 2013, five years from the date of this review.

## **Attachments**

**Attachment 1**  
**Figures**



**Figure 1**

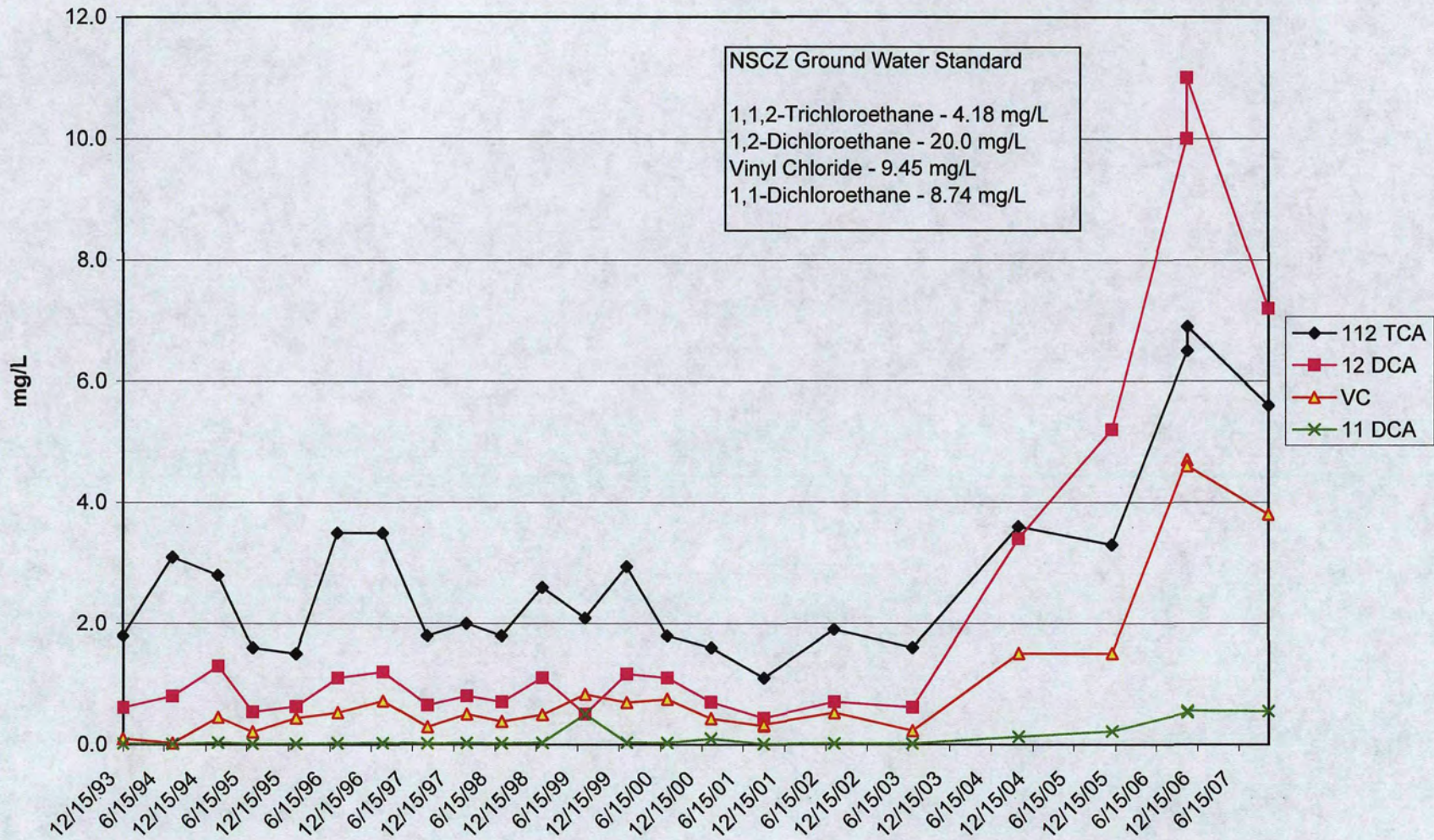


LEGEND	
⊕	NSCZ MONITORING WELL
⊕	FFSZ MONITORING WELL
—+—+—	FENCE

**DIXIE OIL  
PROCESSORS SITE  
HOUSTON, TEXAS**

**FIGURE 2  
LOCATION OF NSCZ AND  
FFSZ MONITORING WELLS**

**Figure 3**  
**DOP NSCZ Groundwater Well MW 35A**



## **Attachment 2**

### **List of Documents Reviewed**

Dixie Oil Processors Site Record of Decision, March 31, 1988

Dixie Oil Processors Site Second Five Year Review, September 2003

Dixie Oil Processors Site Twenty-second (2007) Annual Groundwater Monitoring Report, February 2008

Dixie Oil Processors Site Post Closure Monitoring, Operations and Maintenance Plan, May 2006

Dixie Oil Processors Site Final Closeout Report, January 1996

Brio Refining Site Amended Record of Decision, July 2, 1997

Brio Site Task Force Third Annual Effectiveness Report, June 2007

Brio Refining Site Third Five Year Review, April 2008

Brio Refining Site Ground Water Results for South Plume Wells, email correspondence from John Danna, May 2008

## Attachment 3

### NSCZ Groundwater Performance Standards

PARAMETER	CRITERIA*
	(mg/l)
1,1,2-Trichloroethane	4.18
1,2-Dichloroethane	20.00
1,1-Dichloroethane	8.74
Vinyl Chloride	9.45

\* - Criteria is adopted from the Brio Refining Site NSCZ Groundwater Performance Standards (Table 5 of the Brio MOM Plan) per the Dixie Oil Processors MOM Plan (A5.1.1 Post Closure SAP)

## Attachment 4

### Brio Refining South Side Plume Recovery Wells Compared To DOP NSCZ well

PARAMETER	Brio PO-610 (mg/L)	Brio PO-613 (mg/L)	DOP MW35A (mg/L)
Date collected	5/13/2008	5/13/2008	10/24/2007
1,1,2- Trichloroethane	13.5*	15.8*	5.6*
1,2-Dichloroethane	41.8**	29.4**	7.2
1,1-Dichloroethane	1.9	1.6	3.8
Vinyl Chloride	3.0	8.6	.5

\* - Exceeds the NSCZ Ground Water Standard of 4.18 mg/L

\*\* - Exceeds the NSCZ Ground Water Standard of 20 mg/L

**Attachment 5**  
**Site Inspection Checklist**





III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	<b>O&amp;M Documents</b> <input type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs Remarks _____	<input checked="" type="checkbox"/> Readily available  <input checked="" type="checkbox"/> Readily available  <input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date  <input checked="" type="checkbox"/> Up to date  <input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A  <input type="checkbox"/> N/A  <input type="checkbox"/> N/A
2.	<b>Site-Specific Health and Safety Plan</b> <input type="checkbox"/> Contingency plan/emergency response plan Remarks _____	<input checked="" type="checkbox"/> Readily available  <input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date  <input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A  <input type="checkbox"/> N/A
3.	<b>O&amp;M and OSHA Training Records</b> Remarks _____	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
4.	<b>Permits and Service Agreements</b> <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available  <input type="checkbox"/> Readily available  <input checked="" type="checkbox"/> Readily available  <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date  <input checked="" type="checkbox"/> Up to date  <input type="checkbox"/> Up to date  <input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A  <input type="checkbox"/> N/A  <input checked="" type="checkbox"/> N/A  <input checked="" type="checkbox"/> N/A
5.	<b>Gas Generation Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
6.	<b>Settlement Monument Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
7.	<b>Groundwater Monitoring Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
8.	<b>Leachate Extraction Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
9.	<b>Discharge Compliance Records</b> <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available  <input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date  <input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A  <input type="checkbox"/> N/A
10.	<b>Daily Access/Security Logs</b> Remarks _____	<input type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A



<b>C. Institutional Controls (ICs)</b>				
1.	<b>Implementation and enforcement</b>			
	Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
	Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
	Type of monitoring (e.g., self-reporting, drive by)	Self reporting		
	Frequency	weekly		
	Responsible party/agency	DOP Site Task Force		
	Contact	John Danna	site manager	1/16/2008 281-922-1054
		Name	Title	Date Phone no.
	Reporting is up-to-date	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Reports are verified by the lead agency	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Specific requirements in deed or decision documents have been met	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Violations have been reported	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
	Other problems or suggestions:	<input type="checkbox"/> Report attached		
2.	<b>Adequacy</b>	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A
	Remarks	Deed restrictions or notices have been executed for the site.		
<b>D. General</b>				
1.	<b>Vandalism/trespassing</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident	
	Remarks			
2.	<b>Land use changes on site</b>	<input type="checkbox"/> N/A		
	Remarks	No land use changes since last review.		
3.	<b>Land use changes off site</b>	<input type="checkbox"/> N/A		
	Remarks	Residential development continues west of the site. Dixie Farm Road is undergoing Improvement by TXDOT.		
<b>VI. GENERAL SITE CONDITIONS</b>				
<b>A. Roads</b>				
		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A	
1.	<b>Roads damaged</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Roads adequate	<input type="checkbox"/> N/A
	Remarks			

<b>B. Other Site Conditions</b>			
Remarks _____ _____ _____ _____ _____			
<b>VII. LANDFILL COVERS</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
<b>A. Landfill Surface</b>			
1.	<b>Settlement (Low spots)</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Depth _____	<input checked="" type="checkbox"/> Settlement not evident
2.	<b>Cracks</b> Lengths _____    Widths _____    Depths _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Cracking not evident
3.	<b>Erosion</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Depth _____	<input checked="" type="checkbox"/> Erosion not evident
4.	<b>Holes</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Depth _____	<input checked="" type="checkbox"/> Holes not evident
5.	<b>Vegetative Cover</b> <input checked="" type="checkbox"/> Grass <input checked="" type="checkbox"/> Cover properly established <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks _____		<input checked="" type="checkbox"/> No signs of stress
6.	<b>Alternative Cover (armored rock, concrete, etc.)</b> Remarks _____		<input checked="" type="checkbox"/> N/A
7.	<b>Bulges</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Height _____	<input checked="" type="checkbox"/> Bulges not evident

8.	<b>Wet Areas/Water Damage</b> <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input checked="" type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map	Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____
9.	<b>Slope Instability</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of slope instability
<b>B. Benches</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (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.)			
1.	<b>Flows Bypass Bench</b> Remarks _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
2.	<b>Bench Breached</b> Remarks _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
3.	<b>Bench Overtopped</b> Remarks _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
<b>C. Letdown Channels</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A (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.)			
1.	<b>Settlement</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Depth _____	<input checked="" type="checkbox"/> No evidence of settlement
2.	<b>Material Degradation</b> Material type _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Areal extent _____	<input checked="" type="checkbox"/> No evidence of degradation
3.	<b>Erosion</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Depth _____	<input checked="" type="checkbox"/> No evidence of erosion

4.	<b>Undercutting</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	<b>Obstructions</b> Type _____	<input checked="" type="checkbox"/> No obstructions	
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	<b>Excessive Vegetative Growth</b>	Type _____	
	<input type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Remarks _____		
<b>D. Cover Penetrations</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	<b>Gas Vents</b>	<input type="checkbox"/> Active <input type="checkbox"/> Passive	
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance	
	<input checked="" type="checkbox"/> N/A		
	Remarks _____		
2.	<b>Gas Monitoring Probes</b>	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition	
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
3.	<b>Monitoring Wells (within surface area of landfill)</b>		
	<input checked="" type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A	
	Remarks _____		
4.	<b>Leachate Extraction Wells</b>	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition	
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
5.	<b>Settlement Monuments</b>	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A
	Remarks _____		

<b>E. Gas Collection and Treatment</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	<b>Gas Treatment Facilities</b> <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
2.	<b>Gas Collection Wells, Manifolds and Piping</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
3.	<b>Gas Monitoring Facilities</b> ( <i>e.g.</i> , gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____	
<b>F. Cover Drainage Layer</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	<b>Outlet Pipes Inspected</b> <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	
2.	<b>Outlet Rock Inspected</b> <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	
<b>G. Detention/Sedimentation Ponds</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	<b>Siltation</b> Areal extent _____      Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____ _____	
2.	<b>Erosion</b> Areal extent _____      Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____ _____	
3.	<b>Outlet Works</b> <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	
4.	<b>Dam</b> <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	

<b>H. Retaining Walls</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	<b>Deformations</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement _____	Vertical displacement _____	
	Rotational displacement _____		
	Remarks _____		
2.	<b>Degradation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
	Remarks _____		
<b>I. Perimeter Ditches/Off-Site Discharge</b>		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Siltation</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Siltation not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	<b>Vegetative Growth</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Vegetation does not impede flow		
	Areal extent _____	Type _____	
	Remarks _____		
3.	<b>Erosion</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
	Areal extent _____	Depth _____	
	Remarks _____		
4.	<b>Discharge Structure</b>	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks _____		
<b>VIII. VERTICAL BARRIER WALLS</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	<b>Settlement</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	<b>Performance Monitoring</b>	Type of monitoring _____	
	<input type="checkbox"/> Performance not monitored		
	Frequency _____	<input type="checkbox"/> Evidence of breaching	
	Head differential _____		
	Remarks _____		

<b>IX. GROUNDWATER/SURFACE WATER REMEDIES</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
<b>A. Groundwater Extraction Wells, Pumps, and Pipelines</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	<b>Pumps, Wellhead Plumbing, and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____
2.	<b>Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3.	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____
<b>B. Surface Water Collection Structures, Pumps, and Pipelines</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	<b>Collection Structures, Pumps, and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
2.	<b>Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3.	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____

<b>C. Treatment System</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	<b>Treatment Train</b> (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____		
2.	<b>Electrical Enclosures and Panels</b> (properly rated and functional) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		
3.	<b>Tanks, Vaults, Storage Vessels</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____		
4.	<b>Discharge Structure and Appurtenances</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		
5.	<b>Treatment Building(s)</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____		
6.	<b>Monitoring Wells</b> (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____		
<b>D. Monitoring Data</b>			
1.	Monitoring Data <input type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality		
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining		

<b>D. Monitored Natural Attenuation</b>			
1.	<b>Monitoring Wells</b> (natural attenuation remedy)		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled
	<input type="checkbox"/> All required wells located	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Good condition
	Remarks _____		✓ N/A
<b>X. OTHER REMEDIES</b>			
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.			
<b>XI. OVERALL OBSERVATIONS</b>			
<b>A.</b>	<b>Implementation of the Remedy</b>		
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 selected remedy for the site is No Action/Limited Action. The remedy relies heavily on site controls to limit exposure and meet the remedial action objectives. The completion of the limited action, including engineering controls to prevent exposure, appears to be functioning as designed. The completion of the Institutional Controls should ensure the long-term effectiveness of the engineering controls.			
<b>B.</b>	<b>Adequacy of O&amp;M</b>		
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.			
The operation and maintenance of the remedy is minimal and is addressed in the EPA approved Maintenance, Operations and Monitoring Plan. The current plan is being complied with and is ensuring the long-term protectiveness of the remedy.			

**C. Early Indicators of Potential Remedy Problems**

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

**D. Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None

**Attachment 6**  
**Site Inspection Photos**



Picture 1: Locked gate at entrance to DOP North



Picture 2: Center drainage swale on DOP North



Picture 3: South collection drain on DOP North



Picture 4: North collection drain on DOP North



Picture 5: DOP North from Dixie Farm Road



Picture 6: Monitor well on DOP North



Picture 7: Mud Gully along DOP South

## Attachment 7

### Applicable or Relevant and Appropriate Requirements (ARARs)

Medium/Authority	ARAR	Status	Requirement Synopsis	Action to be taken to Attain ARAR
Ground water/ SDWA	Federal – SDWA – Maximum Contaminant Levels (MCLs) (40 CFR part 141)	Relevant and Appropriate	Standards have been adopted as enforceable standards for public drinking water systems. Appendix C of the 1988 ROD states that MCLs are relevant and appropriate for the FFSZ.	Ground water in the FFSZ is currently meeting the MCLs. Groundwater will continue to be monitored on an annual basis.

**Attachment 8**  
**Site Interviews**

## INTERVIEW RECORD

<b>Site Name: Dixie Oil Processors Superfund Site</b>		<b>EPA ID No.: TXD089793046</b>	
<b>Subject: Third Five Year Review</b>		<b>Time: 9:30 am</b>	<b>Date: 1/17/2008</b>
<b>Type:</b> <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other		<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
<b>Location of Visit: South Belt</b>			
<b>Contact Made By:</b>			
<b>Name: John Meyer</b>	<b>Title: RPM</b>	<b>Organization: EPA</b>	
<b>Individual Contacted:</b>			
<b>Name: Ms. Marie Flickenger</b>	<b>Title: Owner/operator</b>	<b>Organization: South Belt-Ellington Leader</b>	
<b>Telephone No: 281-481-5656</b>		<b>Street Address:</b>	
<b>Fax No: 281-481-5730</b>		<b>City, State, Zip:</b>	
<b>E-Mail Address:</b>			
<b>Summary Of Conversation</b>			
<p>Introduced 5-yr review team (John Meyer/EPA; Cliff Murray, Frank Roepke/COE, Tulsa) and explained that a 5 yr review was being conducted at the DOP site and that interviewing members of the community was part of the process.</p> <p>Ms Flickenger was asked if she receives inquiries regarding the DOP site. She said that she most often receives calls from people interested in buying homes in the area. The prospective buyers express concern over health issues related to the site. She said that she normally tells them that much work has been done at the site to prevent exposure to the gases from the site and that air monitoring around the site has shown that there is no detectable contamination leaving the site.</p> <p>Ms. Flickenger expressed satisfaction that the final remedy was the best option for the site. She asked if the institutional controls were in place.</p>			

## INTERVIEW RECORD

<b>Site Name: DOP Superfund Site</b>		<b>EPA ID No.: TXD089793046</b>	
<b>Subject: Third Five Year Review</b>		<b>Time: 10:30 am</b>	<b>Date: 1/17/2008</b>
<b>Type:</b> <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other		<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
<b>Location of Visit: Perry Homes Ashley Pointe model home</b>			
<b>Contact Made By:</b>			
<b>Name: John Meyer</b>		<b>Title: RPM</b>	<b>Organization: EPA</b>
<b>Individual Contacted:</b>			
<b>Name: Ms. Terri Cadoree</b>		<b>Title: Sales Representative</b>	<b>Organization: Perry Homes</b>
<b>Telephone No: 281-481-1980</b>		<b>Street Address:</b>	
<b>Fax No: 281-481-1965</b>		<b>City, State, Zip:</b>	
<b>E-Mail Address: <a href="mailto:cadoreet@perryhomes.net">cadoreet@perryhomes.net</a></b>			
<b>Summary Of Conversation</b>			
<p>Introduced 5-yr review team (John Meyer/EPA; Cliff Murray, Frank Roepke/COE, Tulsa) and explained that a 5 yr review was being conducted at the Brio site and that interviewing members of the community was part of the process.</p> <p>Ms. Cadoree is a sales representative for Perry Homes in the Ashley Pointe development. The meeting took place in the Perry Homes model home on Mt Andrew Dr at the intersection of Kimberly Loch and Mt Andrew Dr, immediately west of Blackhawk Boulevard in the Ashley Pointe development. The model home is approximately ¼ mile west of the Brio Site.</p> <p>Ms. Cadoree often receives questions about the Brio Site from prospective home buyers. She refers interested parties to Ms. Marie Flickenger, the editor of South Belt-Ellington Leader, a local newspaper. She produced a laminated newspaper article written during the installation of the sheet pile wall. The final sentence of the article is highlighted and states that soil investigations have been conducted showing offsetting areas to be safe for development.</p> <p>Ms. Cadoree provided copies of attachments to the Perry Homes sales contract. One attachment is a disclosure form for prospective home buyers. Attached to the disclosure form is a copy of the deletion notice from the Federal Register (12/28/06) and a press release from Toby Stark Public Relations dated 1/8/07 related to the deletion. Ms. Cadoree stated that this disclosure had been revised recently and was less severe than it had been previously. The contract attachments are attached to this interview form.</p> <p>An extended discussion ensued regarding the amount of work that had been done at the site and possible results of failure of the containment system. Mr. Meyer explained that a breach in the barrier wall could result in a groundwater flow that would be intercepted by Mud Gully.</p> <p>Ms. Cadoree produced the development plat and asked where Brio and DOP were in relation to the housing development. Her map did not include Brio or Mud Gully. Mr Meyer showed some aerial photos on his computer. Ms. Cadoree requested a map showing Brio and DOP and Mr. Meyer stated that he would provide a map or aerial photo at a later date.</p> <p>Ms. Cadoree was very appreciative of the visit and the information that was provided. She appeared to be relieved to learn of the condition of the site and it's distance from the housing development.</p>			