Hazard Ranking System Documentation Record

East 67th Street Ground Water Plume
Ector County, Texas
TXN 000606614

REGION VI

Prepared in cooperation with the
U.S. Environmental Protection Agency

September 2006

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1.0 INTRODUCTION

The Hazard Ranking System (HRS) is the principle mechanism the U.S. Environmental Protection Agency (EPA) uses to place sites on the National Priorities List (NPL). The HRS serves as a screening device to evaluate the potential for releases of uncontrolled hazardous substances to cause human health or environmental damage. The HRS provides a measure of relative rather than absolute risk. It is designed so that it can be consistently applied to a wide variety of sites.

2.0 HRS DOCUMENTATION RECORD - REVIEW COVER SHEET

SITE NAME: EAST 67TH STREET GROUND WATER PLUME

CONTACT PERSON:

Documentation: Brenda Cook, USEPA 214/665-7436
Region 6 NPL Coordinator

Pathway, Components, or Threats Not Evaluated

Surface Water Pathway

The Surface Water Pathway was evaluated and not scored due to lack of documentation of a release to surface water.

Soil Exposure Pathway

The Soil Exposure Pathway was evaluated and not scored due to lack of documentation of an area of observed contamination.

Air Migration Pathway

The Air Migration Pathway was evaluated and not scored due to lack of documentation of a release to air.

NOTES TO THE READER

The following rules were used when citing references in the Documentation Record:

1. All references attached to this report have been stamped with a designated page number (example: Ref. 1, p. 10 = 01 010).

2. The State predecessor agencies: Texas Natural Resource Conservation Commission (TNRCC), Texas Water Quality Board (TWQB), Texas Department of Water Resources (TDWR), Texas Water Commission (TWC), and Texas Air Control Board (TACB), referred to throughout this report are now known as the Texas Commission on Environmental Quality (TCEQ). The new agency, TCEQ, became effective September 1, 2002, as mandated under House Bill 2912, Article 18 of the 77th Regular Legislative Session.

2.1 HRS DOCUMENTATION RECORD - OVERVIEW

Name of Site: East 67th Street Ground Water Plume **Date Prepared:** September 2006

CERCLIS Site ID Number: TXN 000606614

Site Specific Identifier: Unidentified Ground Water Plume (Other)

Street Address of Site*: The center of the known ground water plume is located at the intersection of East 67th Street and Stevenson Street (see Figure 2, Site Location Map and the site coordinates below).

City, County, State, Zip Code: Odessa, Ector County, Texas, 79762

General Location in the State:
The East 67th Street Ground Water Plume site is situated in Ector County, adjacent to the City of Odessa. The ground water plume is centered along East 67th Street (see Figure 1, Regional Location Map and Figure 2, Site Location Map).

Topographic Map:US Geological Survey 7.5 Minute Topographic Maps: Odessa NW, Texas Quadrangle. Photorevised 1981 (Ref. 4, p.1) and Odessa NE, Texas Quadrangle, Photorevised 1981 (Ref. 4, p. 2).

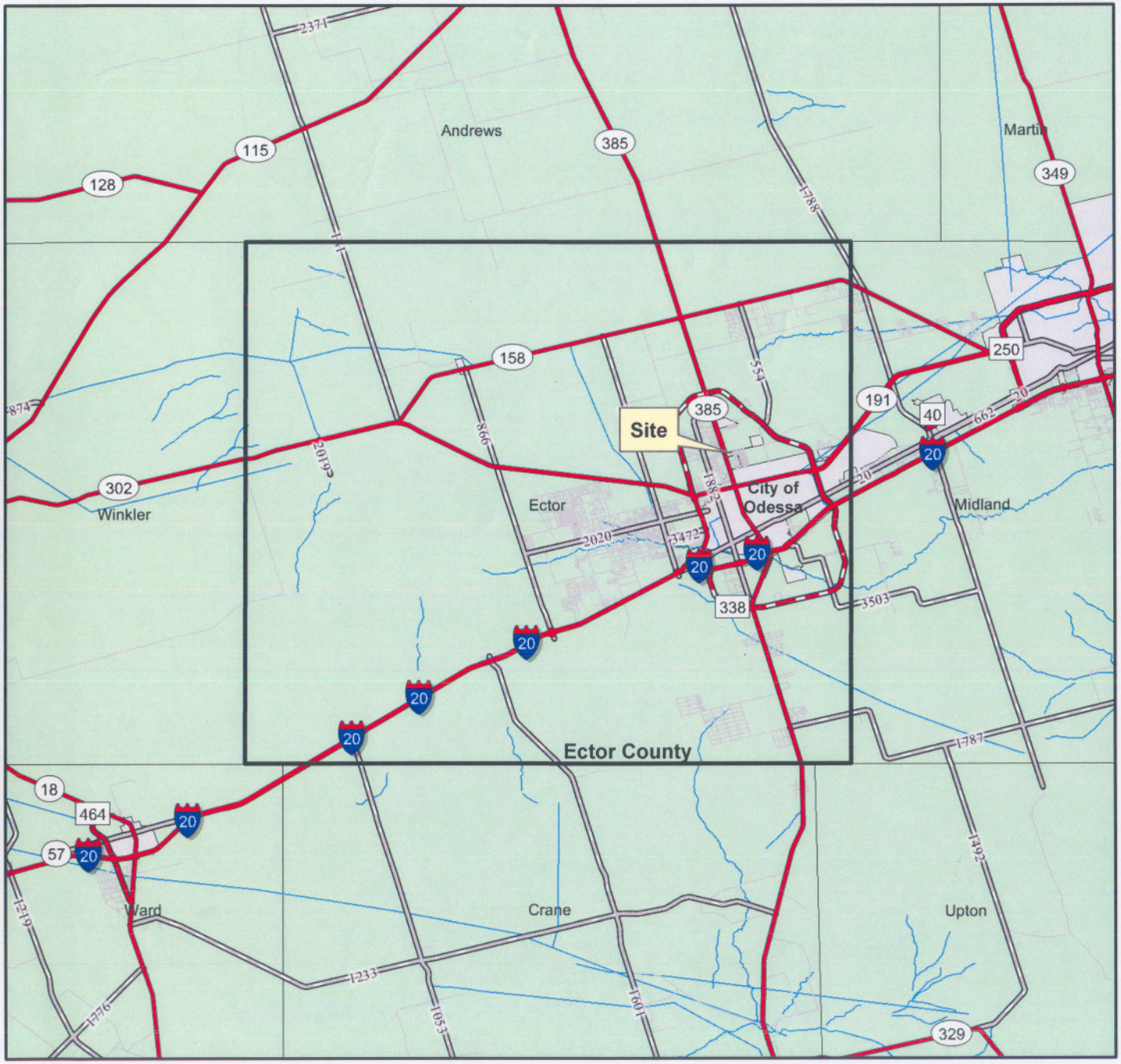
Latitude: 31° 54' 31" North **Longitude:** 102° 23' 9" West
The geographic coordinates represent the center of the ground water plume (Reference 4).

*The street address, coordinates, and contaminant locations presented in this HRS documentation record identify the general area the site is located. They represent one or more locations EPA considers to be part of the site based on the screening information EPA used to evaluate the site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

Pathway Scores:
Ground Water Migration Pathway - 100.00
Surface Water Migration Pathway - NS
Soil Exposure Pathway - NS
Air Migration Pathway - NS
**NS = Not Scored
(**Pathways were evaluated but not scored due to their minimal contribution to the overall site score)

HRS SITE SCORE: 50.00

Figure 1. Regional Location Map



Legend

- Interstate Highways
- Reservoirs
- Rivers of Texas
- Urban Areas
- Counties

N

Figure 1
Regional Location Map

East 67th Street
Ground Water Plume Site
Odessa, Ector County, Texas
TXN000606614

The base map used is from ArcIMS Image Service Internet Server: http://www.tnris.state.tx.us. Coordinate System: GCS_WGS_1984.

Figure 2. Site Location Map

TCEQ

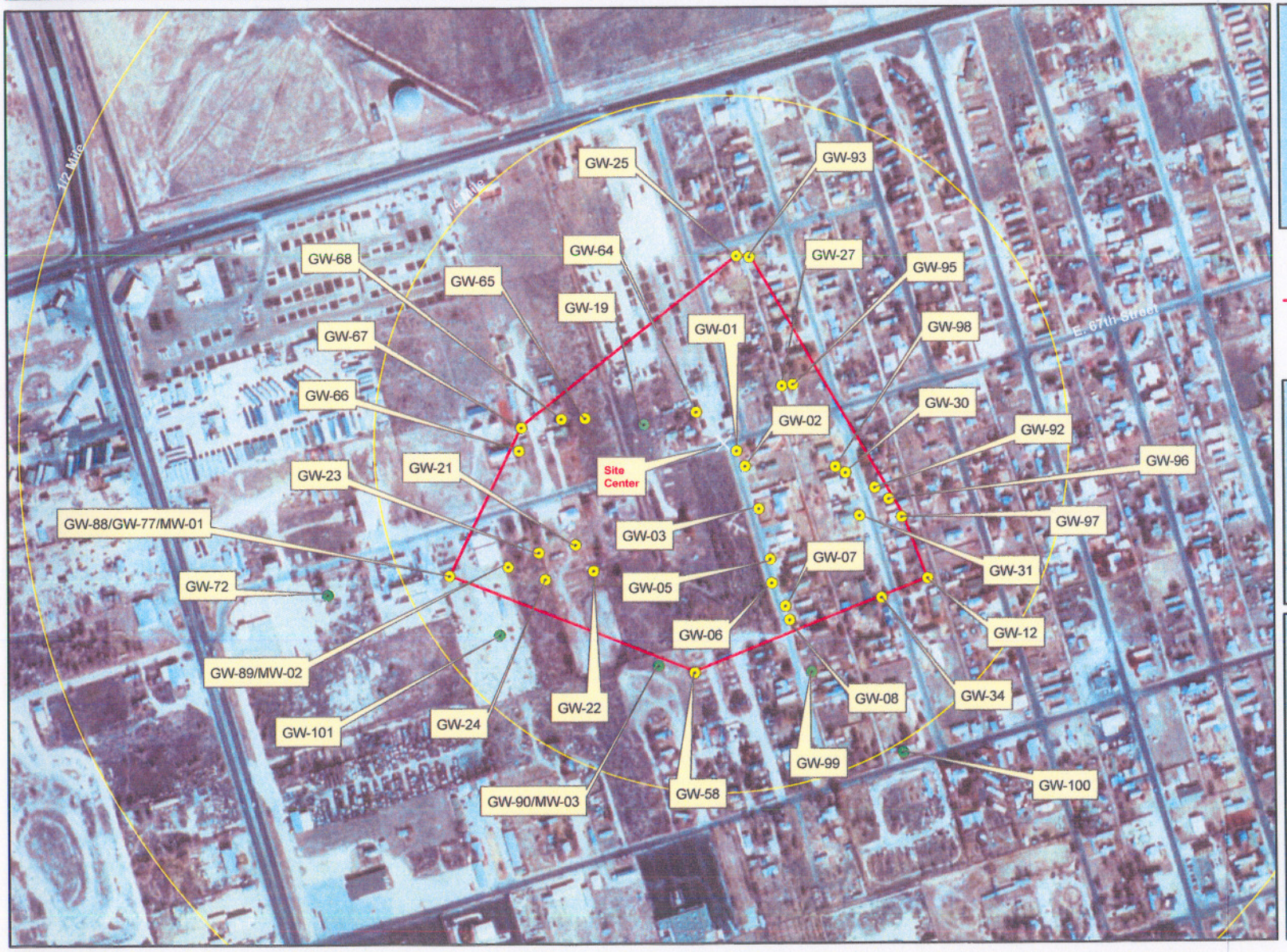
N

Figure 2
Site Location Map

East 67th Street
Ground Water Plume Site
Odessa, Ector County, Texas
TXN000606614

Image 2005 DigitalGlobe
2005 TeleAtlas

Figure 3. Ground Water Plume Map



0 0.15 0.3 Miles

The base data used is the 310205a.sid Digital Orthoquarter Quad (DOQQ), which is a digital version of an aerial photograph. The DOQQ was produced by the TCEQ using USGS guidelines UTM NAD83 Zone 14.

TCEQ

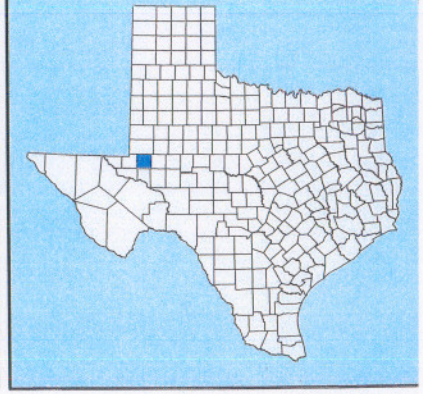
Legend
(References 6, 8 and 32)

- Ground Water Plume
- Wells with No Observed Release
- Wells with an Observed Release

N

Figure 3
Ground Water Plume Map

East 67th Street
Ground Water Plume Site
Odessa, Ector County, Texas
TXN000606614



WORKSHEET FOR COMPUTING HRS SITE SCORE

		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	100	10,000
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	NS	
2b.	Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	NS	
2c.	Surface Water Migration Pathway Score (S_{sw}) Enter the larger of lines 2a and 2b as the pathway score.	NS	
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	NS	
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	NS	
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$	10,000	
6.	**HRS Site Score** Divide the value on line 5 by 4 and take the square root.	50.00	

NS = Not Scored

GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors			Maximum Value	Value Assigned	
Likelihood of Release to an Aquifer					
1.	Observed Release		550	550	
2.	Potential to Release				
	2a.	Containment	10		
	2b.	Net Precipitation	10		
	2c.	Depth to Aquifer	5		
	2d.	Travel Time	35		
	2e.	Potential to Release			
		(Lines 2a(2b + 2c + 2d))	500		
3.	Likelihood of Release				
	(Higher of Line 1 and 2e)		550		550
Waste Characteristics					
4.	Toxicity/Mobility		*	10,000	
5.	Hazardous Waste Quantity		*	100	
6.	Waste Characteristics		100		32
Targets					
7.	Nearest Well		50	50	
8.	Population:				
	8a.	Level I Concentrations	**	918	
	8b.	Level II Concentrations	**	41.36	
	8c.	Potential Contamination	**	NS	
	8d.	Population (Lines 8a + 8b + 8c)	**	959.36	
9.	Resources		5	0	
10.	Wellhead Protection Area		20	0	
11.	Targets (Lines 7 + 8d + 9 + 10)		**		1009.36
Ground Water Migration Score for an Aquifer					
12.	Aquifer Score				
	((Lines 3 x 6 x 11)/82,500)(Max Value is 100)		100		100
Ground Water Migration Pathway Score					
13.	Pathway Score (S_{gw}), (Highest value from Line 12 for all aquifers evaluated)(Max Value is 100)		100		100

REFERENCE LISTING

Reference Number	Description of Reference
1.	U.S. Environmental Protection Agency. Federal Register - 40 CFR Part 300; Hazard Ranking System; Final Rule, Volume 55, No. 241, December 14, 1990. 1 page.
2.	U.S. Environmental Protection Agency. Hazard Ranking System Guidance Manual, EPA 540-R-92-026, OSWER Publication 9345.1-07, November 1992. 1 page.
3.	U. S. Environmental Protection Agency, Superfund Chemical Data Matrix (SCDM), EPA/540/R-96/028, OERR Publication 9345.1-21, January and March 2004. 12 pages.
4.	U.S. Geological Survey. Odessa NW, Texas and Odessa NE, Texas. 7.5 Minute Series Topographic Quadrangle Maps, 1964. Photorevised 1981. 1 sheet each. 2 pages.
5.	Texas Commission on Environmental Quality, Austin, Texas. Screening Site Inspection Report, East 67th Street Ground Water Plume, Odessa, Ector County Texas, TXN 000606614. February 2006.
6.	U.S. Environmental Protection Agency. Contract Laboratory Program Data Review, Case Number 34445. SDG Numbers: MF1PW5 and MF1PR9; August 24, 2005. SDG Numbers: F1PR3, F1PS9, F1PW5, F1PW9, F1PR9, MF1PR3, MF1PS1, MF1PR9, and MF1PSP; August 29, 2005. 917 pages.
7.	Texas Commission on Environmental Quality. PWS Drinking Water Wells that Letters of Notification has been Received By the Superfund Site Discovery and Assessment Program (FY'04). December 16, 2004. Attached: Texas Commission on Environmental Quality Water System Data Sheet Report. December 16, 2004. PWS ID 0680069 DeVilla Mobile Home Park. 6 pages.
8.	Texas Commission on Environmental Quality. Field Operations Division. Prepared by Eagle Construction and Environmental Services, L. P. Water Well Sampling, DeVilla Trailer Park Area, 301 VFW Lane, Odessa, Texas. April 27, 2005. 197 pages.
9.	Texas Commission on Environmental Quality. Data Usability of Samples Collected at the Devilla/East 67th Street Ground Water Plume Site, Odessa, Texas April-May, 2005. September 6, 2005. 37 pages.

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Reference Number	Description of Reference
10.	Texas Commission on Environmental Quality, Investigation Report, Brenntag Southwest, CN01095748. By Ralph Johnson, Inspector. May 24-25, 2005. 12 pages.
11.	Reference Reserved.
12.	Texas Commission on Environmental Quality. Field Log Notes from Diane Poteet. May 10, 2005. 5 pages.
13.	Texas Commission on Environmental Quality. Central Registry (http://www4.tceq.state.tx.us/crpub). Query Results for Regulated Entity: Delta Distributors and Brenntag Southwest. May 5, 2005. 9 pages.
14.	Ector County Health Department (ECHD), Odessa, Texas. ECHD Records for 111 East 67th Street: Ector County Appraisal District Property Records for 108 and 111 East 67th Street and Hand Drawn/Written Applications Depicting the On-Site Sewage Facilities for Delta Distributors at 111 East 67th Street, March 31, 1981 and September 28, 1981. 4 pages.
15.	Texas Commission on Environmental Quality. Field Log Notes from Diane Poteet. July 19, 2005. 7 pages.
16.	Ector County Health Department, Odessa, Texas. Septic System Permits for Permian Tractor Sales, Inc. at 210 East 67th Street: December 13, 1989 and December 5, 1995. 5 pages.
17.	Texas Commission on Environmental Quality. Field Log Notes from Diane Poteet. May 11, 2005. 9 pages.
18.	Texas Commission on Environmental Quality. Field Log Notes from Diane Poteet. May 12, 2005. 6 pages.
19.	Ector County Health Department, Odessa, Texas. Septic System Permits for DeVilla Mobile Trailer Park [*Note: East 63rd Street = VFW Lane*]: at East 63rd Street: March 6, 1963; at 316 East 63rd Street, March 22, 1972; 301 East 63rd Street, August 30, 1974; 301 East 63rd Street, August 7, 1975; and 299 East 63rd Street, August 23, 1982. 7 pages.

REFERENCE LISTING (continued...)

Reference Number	Description of Reference
20.	Texas Commission on Environmental Quality. Quality Assurance Project Plan for Texas Commission on Environmental Quality Preliminary Assessments/Site Inspection Program (FY 2004-2005). November 2003. 113 pages.
21.	United States Environmental Protection Agency. Evaluating Ground Water Plumes Under the Hazard Ranking System, EPA 540-F-95-034, OSWER Publication 9320.8-01 FS, September 1998. 5 pages.
22.	Texas Board of Water Engineers, Bulletin 6107. A Summary of the Occurrence and Development of Ground Water in the Southern High Plains of Texas. Prepared by the United States Geologic Survey with the Cooperation of the Texas Board of Water Engineers. September 1961. 38 pages.
23.	State of Texas Water Well Reports. 13 Private Wells. June 21, 1977 through December 6, 2000. 19 pages.
24.	GEO CAM, Water Well Logging & Video Services. 6 Gamma/Current logs. Prepared for Weston Solutions. August 29, 2005. 6 pages.
25.	United States Geological Survey, Professional Paper 1421-B. Hydrogeologic Framework of the Edwards-Trinity Aquifer System, West Central Texas. By Rene A. Barker and Ann F. Ardis. 1996. 47 pages.
26.	United States Geological Survey, Water-Resources Investigation Report 94-4039. Geologic History and Hydrogeologic Setting of the Edwards-Trinity Aquifer System, West-Central Texas. By Rene A. Barker, Peter W. Bush, and E.T. Barker, Jr. 1994. 47 pages.
27.	Texas Commission on Environmental Quality. Geologic Cross Section and Plan View maps. Geologic interpretation by Diane Poteet, P.G. November 2005. 2 pages.
28.	The University of Texas at Austin. Bureau of Economic Geology. Pecos Sheet, Geologic Atlas of Texas. Johan August Udden Memorial Edition. 1976. 7 pages.
29.	Texas Commission on Environmental Quality. Phone Log Notes from Diane Poteet. November 21, 2005.

REFERENCE LISTING (continued...)

Reference Number	Description of Reference
30.	Texas Commission on Environmental Quality. Field Log Notes from Diane Poteet. September 21, 2005. 3 pages.
31.	LandView 6 - Census 2000, Version 1.0. Census 2000 Profile of General Demographics for Ector County, Texas. 2 pages.
32.	Aerial photographs of northwest Odessa, Texas. 2005. 1 page.
33.	Texas Commission on Environmental Quality, Pre-CERCLIS Field Screening Checklist for Devilla Ground Water Plume (*note: Devilla Ground Water Plume site is the same as East 67th Street Ground Water Plume*). Conducted on May 27, 2005. 40 pages.
34.	Texas Water Development Board, Report No. 314. Hydrogeology of Lower Cretaceous Strata Under the Southern High Plains of Texas and New Mexico. By J.A. Tony Fallin. March 1989. 27 pages.
35.	Texas Commission on Environmental Quality. Correlation Table for GW Numbers for April 2005 Sampling Event and July 2005 Sampling Event. 1 page.
36.	United States Environmental Protection Agency. Contract Laboratory Program. Quick Reference Sheet EPA 540-F-01-013. Low Concentration Organic Analytical Service for Superfund (Water Matrix) (OLC03.2). June 2001. 4 pages.
37.	The Journal of Geology, Vol. 78, No. 3. May 1970. *Origin, Classification, and Geologic History of Caliche on the Southern High Plains, Texas and Eastern New Mexico*. C. C. Reeves, Jr., Texas Tech University, Department of Geosciences. May 1970. 16 pages.
38.	Texas Commission on Environmental Quality. Field Log Notes from Diane Poteet. July 21, 2005. 4 pages.
39.	Texas Commission on Environmental Quality, Austin, Texas. Email to Lily Beckley from Diane Poteet with attachments: Central Registry search results for Cotton Inspection Services. June 14, 2005. 9 pages.
40.	U. S. Environmental Protection Agency Resource Conservation Recovery Act RCRAinfo web query results for Cotton Inspection Services. June 14, 2005. 1 page.

REFERENCE LISTING (continued...)

Reference Number	Description of Reference
41.	Texas Natural Resource Conservation Commission, Austin, Texas. Signed Access Agreement for Devilla Mobile Home Park. March 31, 2005. 1 page.
42.	Ector County Appraisal District, Odessa, Texas. Web print out for 301 VFW Lane/Devilla Mobile Home Park owned by Rick Montilla. June 2006. 1 page.
43.	Agency for Toxic Substances and Disease Registry (ASTDR). ToxAQs for Tetrachloroethylene (PERC) and Trichloroethyethlene (TCE). September 1997. 8 pages.

SOURCE DESCRIPTION

2.2 SOURCE CHARACTERIZATION

2.2.1 Source Identification

Number of the source: 1

Name and description of the source: Ground Water Plume (with no identified source)

In July 2005, the Texas Commission on Environmental Quality (TCEQ) Superfund Site Discovery and Assessment Program (SSDAP) conducted a Screening Site Inspection (SSI) at the East 67th Street Ground Water site under the Preliminary Assessment/Site Inspection (PA/SI) Program for the U.S. Environmental Protection Agency (EPA) Region 6 (Ref. 33, pp. 11-49). One (1) Public Water Supply (PWS) and 48 private drinking water wells were identified within a one- mile radius of the center of the plume. The Devilla Trailer Park PWS System (PWS ID #0680069) identified within one-mile of the center of the plume is a blended system that currently serves 56 people (Ref. 7, p.2). The Devilla PWS well and thirty one (31) of the private drinking water wells within one-mile radius of the center of the plume were documented with an observed release (see Tables 6 and 7).

The results showed that concentrations for tetrachloroethene (PCE) were above the U.S. EPA Maximum Contaminant Level (MCL) of 5.0 ug/L for PCE (Ref. 3, p. 2) in six (6) wells as follows (from highest to lowest): 22.0, 20.0, 18.0, 16.0, 8.0, and 5.4 ug/L (Ref. 6, pp. 314, 317, 320, 640, 308, 625). The concentrations for PCE detected below the MCL ranged from 0.5 to 2.2 ug/L (Ref. 6, pp. 148,157, 169,172,175,178,181, 305, 628, 634, and 679). For trichloroethene (TCE), ten wells had concentrations that were above the EPA's Cancer Risk screening level of 0.21 ug/L (Ref. 3, p. 4). The concentrations of these samples ranged from 0.27 to 0.76 ug/L (Ref. 6, pp. 154, 308, 314, 317, 320, 341, 344, 347, 350, and 640). Low concentrations (below MCLs) of cis-1,2-Dichloroethene (cis-1,2-DCE), 1,-1-Dichloroethene (1,-1-DCE), 1,2-Dichloroethane (1,2-DCA), and 1,1-Dichloroethane (1,1-DCA) were also detected in many of the wells (Ref. 6, pp. 153, 156, 307, 313, 319, 340, 346, 349, 497, 500 & 639).

During routine monitoring by the TCEQ, concentrations of PCE, TCE and cis-1,2-DCE, were first detected at one of the four public supply wells at the Devilla Mobile Home Park located on VFW Lane (Ref. 7, pp. 1-6). To ensure protection of the surrounding private drinking water wells in the area, the TCEQ Region 7 office of the Field Operations Division performed a well survey, obtained access agreements, and sampled 15 private drinking water wells in March 2005 (Ref. 8). The TCEQ Field Operations found three private drinking water wells that contained concentrations of PCE (14.2 ug/L, 10.1 ug/L, and 8.92 ug/L (Ref. 8, pp. 68, 70, 73, 78)) above the MCL (Ref. 7, pp. 1-6) and referred the site to the Superfund Site Discovery Team (SSDAT) of the Remediation Division of the TCEQ (Ref. 7, p.1).

The SSDAT installed filtration systems during the week of April 18, 2005, as well as, obtained access agreements and sampled 31 additional private wells (Ref. 5, p.11; Ref. 9). The results of the April 18, 2005 sampling event indicated that 3 additional wells were contaminated with PCE (13.4 ug/L, 6.10 ug/L, and 9.84 ug/L) above the MCL (Ref. 9, pp. 14, 28, 35).

During the week of May 9, 2005, SSDAT also installed three additional filtration systems and sampled 13 additional private wells. No additional filtration systems were needed as a result of the May 9th sampling event (Ref. 5, p.11).

In May 2005, the TCEQ brought the site into the EPA PA/SI Program for investigation. A pre-CERCLIS inspection was conducted on May 12, 2005, identifying the ground water pathway as the primary pathway of concern (Ref. 5, p.11; Ref. 33, pp 1-10).

During the week of July 25, 2005, forty eight (48) private drinking water wells, one (1) PWS well, and three (3) monitoring wells were sampled and analyzed for volatile organic compounds, semi-volatile organic compounds, mercury, cyanide, pesticides/PCBs, and metals under the EPA Contract Laboratory Program(CLP) and PA/SSI program (Ref. 5, p.12).

The source of the contamination is unidentified and the area of contamination is undefined. Adequate documentation attributing the hazardous substances to one or more of the potential source areas has not been identified according to the HRS criteria. Therefore, a ground water plume with no identified source was used for HRS scoring. The ground water plume with no identified source was characterized as the source based on the following:

- The extent of the plume, although undefined, was estimated solely by sampling, using the criteria for an observed release to the Ground Water Migration Pathway (Ref. 5).

- The level of effort to identify the original source(s) of the hazardous substances was equivalent to an Expanded Site Inspection (ESI). In conjunction with the SSI sampling event, the TCEQ conducted additional subsurface investigations and sampling to determine the possible source(s) of the ground water contamination. Also, additional site investigations were conducted after the SSI by the TCEQ through local interviews with citizens and with the Ector County Health Department to gain information about the possible source(s) of the ground water contamination (Ref.5, pp.13-14).

- Response actions for the impacted wells, and the collection of more than 100 ground water samples (Refs. 5, 8, 9) are equivalent to an ESI.

The following businesses are noted to be within the contaminated ground water plume area either by TCEQ file review or by field observation:

- Brenntag is a chemical company that stores and distributes, but does not make, chemicals on-site (Ref.10, p. 1-2). Material Data Sheets (MDS) for TCE and PCE were obtained by the TCEQ from Brenntag on May 10, 2005 during the Pre-CERCLIS field screening event

(Ref.11, p. 1-10; Ref. 12, p.4). According to the May 2005 TCEQ Region 7 Hazardous Waste Generator Inspection Report, Brenntag was reported to have had a release of methyl ethyl keytone or MEK in the 1980s (Ref.10, p.2). The spill had entered the facility's water well and the facility had pumped the well clean to remediate the release (Ref. 10, p. 2). No other wells in the area were tested. The facility well was sampled by the TCEQ Region 7 in April 2005 and the sample results showed non-detect for all volatile organic compounds (Ref. 8, p. 15). TCEQ regulatory databases were searched, but no other relevant information was found (Ref. 13, p. 1-9). The Ector County Health Department provided hand written septic system permits (with property descriptions from the Ector County Appraisal District) (Ref. 14, p. 3). Volatile organic compounds may have also may been disposed of via the septic system, which in turn, would have resulted in a release to ground water.

- As observed during the site visit on July 19, 2005, CASE/Permian Tractor Sales has a rinsing area that has a drain that leads to the subsurface behind its offices (Ref. 15, p. 4; Ref. 16, pp. 1-5). According to the Ector County Health Department, a permit was issued in December 13, 1989 that allowed for their wash rack and a grease trap to be tied onto the septic system and drained into the drain field (Ref. 15, pp. 4-5; Ref. 16, pp. 1-5). The drain-field became clogged and a new drain-field was installed and permitted in December 7, 1995 (Ref. 16, pp.1-5). The clogged drain-field was not removed.

- Cotton Pipe is reported to clean pipes using solvents; however, it is unknown at this time what solvents they use. No drums or tanks of solvents were observed during a site visit on May 11, 2005 (Ref. 17, p. 8). The TCEQ data bases were searched, but no other information has been found (Ref 39, pp. 1-9; Ref. 40, p. 1).

- A private well owner on E. 67th Street, reported that he witnessed a vacuum truck dumping in a field north of Devilla Mobile Home Park and south of 300 E. 67th Street (Ref. 18, p. 3; Ref. 41, pp. 1-2; Ref. 42, p. 1). He had observed a vacuum truck dumping liquid waste water into a pit. A site inspection was made by the TCEQ SSDAT on May 12, 2005, and found a pit where dumping had taken place and a parked vacuum truck just inside of Devilla Mobile Home Park (Ref. 18, p. 3). A corrosive placard was on the truck. A meeting with the Ector County Health officials on June 15, 2005, revealed that the pit was part of a permitted system, but that the disposal into the system should be through a pipe inlet (Ref. 15, pp. 3-4). A capped pipe was observed to exist adjacent to the drain field on July 19, 2005 during an inspection of the area (Ref. 15, pp.3-4). The cap on the pipe was opened and it appeared that the pipe had never been used (Ref. 15, pp.3-4). The Ector County Health Department also provided the permit (dated August 23, 1982) for the system that showed the location of the dumping was not according to the permit (Ref. 19, pp. 1-7).

Location of the source, with reference to a map of the site:

The outer boundaries of the contaminated ground water plume have tentatively been established along East 67th Street, from west to east and along Stevenson, from north to south, with the identification of ground water wells that were non-detect for VOCs along VFW Lane to the south and Alderfer Street to the east. Non-detect wells have also been established on the east side of Andrews Highway and Yukon Street to the north. The plume is centered at the intersection of East 67th Street and Stevenson Street (See Figure 2, Site Location Map).

Source type for HRS evaluation purposes: Ground Water Plume (Other).

Containment

Gas release to air: The air migration pathway was not evaluated; therefore, gas containment was not scored.

Particulate release to air: The air migration pathway was not evaluated; therefore, particulate containment was not scored.

Release to ground water: The Containment Factor Value for the ground water migration pathway was evaluated for "All Sources" for evidence of hazardous substance migration from source area (i.e., source area includes source and any associated containment structures). The applicable containment factor value was determined based on existing analytical evidence of hazardous substance in ground water samples from private wells and one public well (Ref. 5, 6, and 9). Therefore, based on no liner and evidence of a release, the highest Ground Water Migration Pathway Containment Factor Value of 10 was assigned to Source No. 1 as specified in Table 3-2 of the HRS Rule (Ref. 1, Section 3.1.2.1 and Ref. 2, Section 4.1).

Release to surface water overland/flood migration component: The surface water pathway was not scored; therefore, surface water overland/flood migration component containment was not evaluated.

2.2.2 Hazardous Substances Associated With A Source

The ground water plume source hazardous substances are those hazardous substances for which an observed release was established within the Trinity Sands Formation of the Trinity Aquifer for the Ground Water Migration Pathway. The hazardous substances listed below in Table 1 were detected in samples collected by the TCEQ during the SSI sampling event tasked by the U.S. Environmental Protection Agency from July 25, 2005 through July 29, 2005 (Ref.5; and 6) and during the TCEQ's investigation of March - April 2005 (Ref. 8).

Table 1 - Ground Water Plume (with no identified source)
Source Hazardous Substances

Hazardous Substance	Evidence	
	Sample Location/Station Sample Number [Date Sampled]	References
Tetrachloroethene (PCE)	GW-01/F1PR9 [7/27/05]	Ref. 6, pp. 625 and 613.
	GW-02/F1PS0 [7/27/05]	Ref. 6, pp. 628 and 620.
	GW-03/F1PS1 [7/27/05]	Ref. 6, pp. 305 and 303.
	GW-05/F1PS3 [7/27/05]	Ref. 6, pp. 634 and 623.
	GW-06/F1PS4 [7/27/05]	Ref. 6, pp. 637 and 617.
	GW-07/F1PS5 [7/27/05]	Ref. 6, pp. 640 and 618.
	GW-08/F1PS6 [7/27/05]	Ref. 6, pp. 308 and 303.
	GW-12/F1PS9 [7/28/05]	Ref. 6, pp. 148 and 141.
	GW-21 [4/19/05]	Ref. 8, pp. 69 and 70.

Table 1 - Ground Water Plume (with no identified source) Source Hazardous Substances		
Hazardous Substance	**Evidence**	
	Sample Location/Station Sample Number [Date Sampled]	**References**
Tetrachloroethene (PCE) (continued)	GW-22/F1PT6 [7/26/05]	Ref. 6, pp. 314 and 298.
	GW-23/F1PT7 [7/26/05]	Ref. 6, pp. 317 and 299.
	GW-24/F1PT8 [7/26/05]	Ref. 6, pp. 320 and 300.
	GW-25/F1PT9 [7/28/05]	Ref. 6, pp. 151 and 145.
	GW-27/F1PW1 [7/28/05]	Ref. 6, pp. 667 and 622.
	GW-30/F1PW2 [7/28/05]	Ref. 6, pp. 154 and 142.
	GW-31/F1PW3 [7/28/05]	Ref. 6, pp. 670 and 622.
	GW-34/F1PW4 [7/28/05]	Ref. 6, pp. 673 and 621.
	GW-58/F1PW9 [7/29/05]	Ref. 6, pp. 477 and 483.
	GW-64/F1PX4 [7/26/05]	Ref. 6, pp. 338 and 297.
	GW-65/F1PX5 [7/26/05]	Ref. 6, pp. 341 and 302.
	GW-66/F1PX6 [7/26/05]	Ref. 6, pp. 344 and 301.
	GW-67/F1PX7 [7/26/05]	Ref. 6, pp. 347 and 301
	GW-68/F1PX8 [7/26/05]	Ref. 6, pp. 350 and 298.

Table 1 - Ground Water Plume (with no identified source) Source Hazardous Substances		
Hazardous Substance	**Evidence**	
	Sample Location/Station Sample Number [Date Sampled]	**References**
Tetrachloroethene (PCE) (continued)	GW-92/F1PZ3 [7/27/05]	Ref. 6, pp. 679 and 613.
	GW-93/F1PZ4 [7/28/05]	Ref. 6, pp. 169 and 145.
	GW-95/F1PZ6 [7/28/05]	Ref. 6, pp. 172 and 143.
	GW-96/F1PZ7 [7/28/05]	Ref. 6, pp. 175 and 144.
	GW-97/F1PZ8 [7/28/05]	Ref. 6, pp. 178 and 144.
	GW-98/F1PZ9 [7/28/05]	Ref. 6, pp. 181 and 142.

Table 1 - Ground Water Plume (with no identified source) Source Hazardous Substances		
Hazardous Substance	**Evidence**	
	Sample Location/Station Sample Number [Date Sampled]	**References**
Trichloroethene (TCE)	GW-07/F1PS5 [7/27/05]	Ref. 6, pp. 640 and 618.
	GW-08/F1PS6 [7/27/05]	Ref. 6, pp. 308 and 303.
	GW-21 [4/19/05]	Ref. 8, pp. 69 and 70.
	GW-22/F1PT6 [7/26/05]	Ref. 6, pp. 314 and 298.
	GW-23/F1PT7 [7/26/05]	Ref. 6, pp. 317 and 299.
	GW-24/F1PT8 [7/26/05]	Ref. 6, pp. 320 and 300.
	GW-30/F1PW2 [7/28/05]	Ref.6 , pp. 154 and 142.
	GW-65/F1PX5 [7/26/05]	Ref. 6, pp. 341 and 302.
	GW-66/F1PX6 [7/26/05]	Ref. 6, pp. 344 and 301.
	GW-67/F1PX7 [7/26/05]	Ref.6 , pp. 347 and 301.
	GW-68/F1PX8 [7/26/05]	Ref. 6, pp. 350 and 298.

Table 1 - Ground Water Plume (with no identified source) Source Hazardous Substances		
Hazardous Substance	**Evidence**	
	Sample Location/Station Sample Number [Date Sampled]	**References**
cis-1,2-Dichloroethene (cis-1,2-DCE)	GW-02/F1PS0 [7/27/05]	Ref. 6, pp. 627 and 620.
	GW-07/F1PS5 [7/27/05]	Ref. 6, pp. 639 and 618.
	GW-08/F1PS6 [7/27/05]	Ref. 6, pp. 307 and 303.
	GW-21/ n/a [4/19/05]	Ref. 8, pp. 69 and 70.
	GW-22/F1PT6 [7/26/05]	Ref. 6, pp. 313 and 298.
	GW-23/F1PT7 [7/26/05]	Ref. 6, pp. 316 and 299.
	GW-24/F1PT8 [7/26/05]	Ref. 6, pp. 319 and 300.
	GW-30/F1PW2 [7/28/05]	Ref. 6, pp. 153 and 142.
	GW-64/F1PX4 [7/26/05]	Ref. 6, pp. 337 and 297.
	GW-65/F1PX5 [7/26/05]	Ref. 6, pp. 340 and 302.
	GW-66/F1PX6 [7/26/05]	Ref. 6, pp. 343 and 301.
	GW-67/F1PX7 [7/26/05]	Ref. 6, pp. 346 and 301.
	GW-68/F1PX8 [7/26/05]	Ref. 6, pp. 349 and 298.

Table 1 - Ground Water Plume (with no identified source) Source Hazardous Substances		
Hazardous Substance	**Evidence**	
	Sample Location/Station Sample Number [Date Sampled]	**References**
cis-1,2-Dichloroethene (cis-1,2-DCE) (continued)	GW-77/F1PY3 [7/29/05]	Ref. 6, pp. 491 and 480.
	GW-88/F1PY9 [7/29/05]	Ref. 6, pp. 497 and 479.
	GW-89/F1PZ0 [7/29/05]	Ref. 6, pp. 500 and 477.
	GW-92/F1PZ3 [7/27/05]	Ref. 6, pp. 678 and 613.

Table 1 - Ground Water Plume (with no identified source) Source Hazardous Substances		
Hazardous Substance	**Evidence**	
	Sample Location/Station Sample Number [Date Sampled]	**References**
1,2-Dichloroethane (1,2-DCA)	GW-07/F1PS5 [7/27/05]	Ref. 6, p. 639 and 618.
	GW-08/F1PS6 [7/27/05]	Ref. 6, p. 307 and 303.
	GW-21/ n-a [4/19/05]	Ref. 8, p. 69 and 70.
	GW-22/F1PT6 [7/26/05]	Ref. 6, p. 313 and 298.
	GW-24/F1PT8 [7/26/05]	Ref. 6, p. 319 and 300.
	GW-30/F1PW2 [7/28/05]	Ref. 6, p. 153 and 142.
	GW-65/F1PX5 [7/26/05]	Ref. 6, p. 340 and 302.
	GW-67/F1PX7 [7/26/05]	Ref. 6, p. 346 and 301.
	GW-68/F1PX8 [7/26/05]	Ref. 6, p. 349 and 298.

Table 1 - Ground Water Plume (with no identified source) Source Hazardous Substances		
Hazardous Substance	**Evidence**	
	Sample Location/Station Sample Number [Date Sampled]	**References**
1,1-Dichloroethene (1,1-DCE)	GW-22/F1PT6 [7/26/05]	Ref. 6, p. 313 and 298.

Table 1 - Ground Water Plume (with no identified source) Source Hazardous Substances		
Hazardous Substance	**Evidence**	
	Sample Location/Station Sample Number [Date Sampled]	**References**
1,1-Dichloroethane (1,1-DCA)	GW-07/F1PS5 [7/27/05]	Ref. 6, p. 639 and 718.
	GW-22/F1PT6 [7/26/05]	Ref. 6, p. 313 and 298.
	GW-24/F1PT8 [7/26/05]	Ref. 6, p. 300 and 319.
	GW-67/F1PX7 [7/26/05]	Ref.6 , p. 346 and 301.
	GW-77/F1PY3 [7/29/05]	Ref. 6, p. 491 and 480.
	GW-88/F1PY9 [7/29/05]	Ref. 6, p. 497 and 479.

Five (5) ground water samples were collected during the site sampling investigations to be used as background samples. On July 25, 2005, four ground water samples were collected up gradient of the suspected ground water plume for background levels (Ref. 6, pp. 322-324, 331-333, 352-354, 355-488, & 485-487). Table 2 provides a summary of the background sample descriptions, including the typical well depth that drinking water wells are drilled and screened at in the area (Ref. 38, p. 4). Specific drillers logs were not available for each well; however, depths could be determined from cross sections, available driller's well logs, and geophysical well logs collected in the field (Ref. 23, pp. 1-19; Ref. 24, pp.1-6; and Ref. 27, pp. 1-2). Table 3 provides a summary of the background sample results.

Table 2 - Ground Water Migration Pathway
Background Sample Descriptions

Sample ID/EPA Sample ID	Date Collected	Well Depth/ Screened Interval	References
GW-46/F1PW5	07/25/05	70-150 feet deep/ unknown*	Ref. 6, p. 294 Figure 4 Ref. 38, p. 4
GW-60/F1PX1	07/29/05	70-150 feet deep/ unknown*	Ref. 6, p. 481 Figure 4 Ref. 38, p. 4
GW-61/F1PX2	07/25/05	70-150 feet deep/ unknown*	Ref. 6, p. 295 Figure 4 Ref. 38, p. 4
GW-71/F1PX9	07/25/05	70-150 feet deep/ unknown*	Ref. 6, p. 294 Figure 4 Ref. 38, p. 4
GW-72/F1PY0	07/25/05	70-150 feet deep/ unknown*	Ref. 6, p. 296 Figure 4 Ref. 38, p. 4

**Based on Cross Sections, other well logs, and geophysical well logs (Ref. 23, pp. 1-19; Ref. 24, pp.1-6; and Ref. 27, pp. 1-2).*

Table 3 - Ground Water Plume (with no identified source) Background Sample Results				
Sample Location/Station No. [EPA ID]	**Background Samples**			
	Hazardous Substances	**Sample Concentrations (ug/L)**	**Sample Quantitation Limit (or equivalent) (ug/L)**	**References**
GW-46 [F1PW5]	1,1-Dichloroethane	ND	0.50	Ref. 6, pp. 226-236, 244, 294, 322-324; Ref. 33, p. 21
	1,1-Dichloroethene	ND	0.50	
	1,2-Dichloroethane	ND	0.50	
	cis-1,2-Dichloroethene	ND	0.50	
	Tetrachloroethene	ND	0.50	
	Trichloroethene	ND	0.50	
GW- 60 [F1PX1]	1,1-Dichloroethane	ND	0.50	Ref. 6, pp. 438-448, 451, 485-487, 481, 918-920; Ref. 33, p. 48
	1,1-Dichloroethene	ND	0.50	
	1,2-Dichloroethane	ND	0.50	
	cis-1,2-Dichloroethene	ND	0.50	
	Tetrachloroethene	ND	0.50	
	Trichloroethene	ND	0.50	
GW- 61 [F1PX2]	1,1-Dichloroethane	ND	0.50	Ref. 6, pp. 226-236, 247, 331-333, 295; Ref. 33, p. 36
	1,1-Dichloroethene	ND	0.50	
	1,2-Dichloroethane	ND	0.50	
	cis-1,2-Dichloroethene	ND	0.50	
	Tetrachloroethene	ND	0.50	
	Trichloroethene	ND	0.50	
GW- 71 [F1PX9]	1,1-Dichloroethane	ND	0.50	Ref. 6, pp. 226-236, 254, 294 352-354; Ref. 33, p. 21
	1,1-Dichloroethene	ND	0.50	
	1,2-Dichloroethane	ND	0.50	
	cis-1,2-Dichloroethene	ND	0.50	
	Tetrachloroethene	ND	0.50	
	Trichloroethene	ND	0.50	

Table 3 - Ground Water Plume (with no identified source) Background Sample Results				
Sample Location/Station No. [EPA ID]	**Background Samples**			
	Hazardous Substances	**Sample Concentrations (ug/L)**	**Sample Quantitation Limit (or equivalent) (ug/L)**	**References**
GW- 72 [F1PY0]	1,1-Dichloroethane	ND	0.50	Ref. 6, pp. 226-236, 255, 296, 355-357; Ref. 33, p. 36
	1,1-Dichloroethene	ND	0.50	
	1,2-Dichloroethane	ND	0.50	
	cis-1,2-Dichloroethene	ND	0.50	
	Tetrachloroethene	ND	0.50	
	Trichloroethene	ND	0.50	

Notes: ND = Not Detected at the SQL. [SQL] = Sample Quantitation Limit.

A complete listing of all source characterization sample results is included as References 5, 6, and 8. All samples were collected according to the EPA approved, FY 2004-2005 TCEQ Quality Assurance Project Plan (Ref. 20). Sample Quantitation Limits for Low Concentration Organic Analysis (OLC03.2) can be found in Reference 36.

Figure 4. Background Sample Location Map

TCEQ

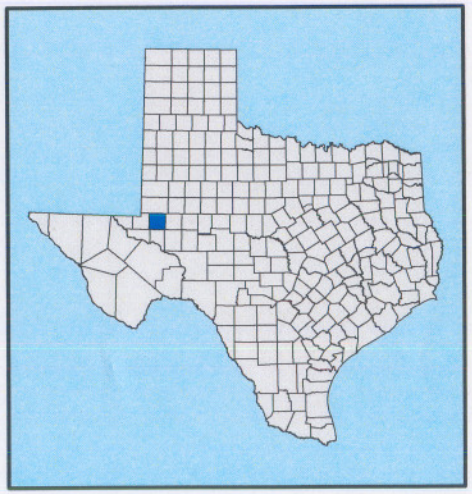
Legend
(References 6 and 32)

Background Wells

N

Figure 4
Background
Sample Location Map

East 67th Street
Ground Water Plume Site
Odessa, Ector County, Texas
TXN000606614



0 0.05 0.1 0.2 Miles

The base data used is the 310205a.sid Digital Orthoquarter Quad (DOQQ), which is a digital version of an aerial photograph. The DOQQ was produced by the TCEQ using USGS guidelines UTM NAD83 Zone 14.

2.2.3 Hazardous Substances Available to a Pathway

Because the containment factor value for Source 1 is greater than 0, the following hazardous substances associated with Source 1 can migrate via the ground water pathway: PCE, TCE, cis-1,2-DCE, 1,1-DCA, 1,1-DCE and 1,2-DCA (Ref. 1, Section 2.2.3).

2.3 LIKELIHOOD OF RELEASE

An observed release to the Ground Water Migration Pathway has been established based on chemical analyses. Ground water samples from the aquifer being evaluated indicate that concentrations of hazardous substances are present at three times greater than the designated background levels and in concentrations greater than the corresponding SQLs (see Tables 6 and 7 for Observed Release Sample Results).

Refer to Section 3.1.1 of this documentation record for specific information related to the observed release to the Ground Water Migration Pathway.

2.4 WASTE CHARACTERISTICS

2.4.1 Selection of Substance Potentially Posing Greatest Threat

The Mobility Factor Value for all hazardous substances that meet the criteria for an observed release by chemical analysis to one or more aquifers underlying the source(s) at the site, regardless of the aquifer being evaluated, is assigned a mobility factor value of 1 (Ref. 1, Section 3.2.1.2).

Contaminant characteristic values for hazardous substances found in an observed release to ground water were derived from SCDM (Ref. 3, pp. 1-12). The hazardous substance with the highest toxicity/mobility factor value available to the ground water migration pathway is TCE (10,000). Therefore, the hazardous substance TCE is the hazardous substance associated with this source posing the greatest threat (Ref. 1, Sections 2.4.1.2, 3.2.1).

Specific factors of the hazardous substances available to the Ground Water Migration Pathway and selection of the hazardous substance with the highest combined factor value (toxicity and mobility), are presented under the Ground Water Migration Pathway section (Section 3.2.1) of this documentation record.

2.4.2. Hazardous Waste Quantity

2.4.2.1 Source Hazardous Waste Quantity

2.4.2.1.1. Hazardous Constituent Quantity (Tier A) - Not Evaluated (NE)

The information available is not sufficient to evaluate Tier A, as required in Section 2.4.2.1.1 of the HRS Rule. As a result, the evaluation of Hazardous Waste Quantity proceeds to the evaluation of Tier B, hazardous waste quantity (Ref. 1, Section 2.4.2.1.1).

2.4.2.1.2. Hazardous Wastestream Quantity (Tier B) - NE

The information available is not sufficient to evaluate Tier B, as required in Section 2.4.2.1.2 of the HRS Rule. As a result the evaluation of Hazardous Waste Quantity proceeds to the evaluation of Tier C, volume (Ref. 1, Section 2.4.2.1.2).

2.4.2.1.3. Volume (Tier C)

Since the hazardous wastestream was not adequately determined under Tier B, the volume will be evaluated under Tier C. For the migration pathways, the source is assigned a value for volume using the appropriate Tier C equation from Table 2-5 (Ref. 1, Section 2.4.2.1.3). The hazardous waste quantity for a plume site with no identified source can be determined by measuring the area within all observed release samples combined with the vertical extent of contamination, to arrive at an estimate of the plume volume (Ref. 21, p. 4).

Since the vertical extent of the ground water plume is unknown, the volume for the ground water plume will be designated as unknown, but greater than zero.

2.4.2.1.4. Area (Tier D) - 0

Area Tier D is not scored for source type "other" (Ref. 1, Table 2-5).

2.4.2.1.5. Source Hazardous Waste Quantity Value

As described in the HRS Rule, the highest value assigned to a source from among the four tiers of hazardous constituent quantity (Tier A), hazardous wastestream quantity (Tier B), volume (Tier C) or area (Tier D) shall be selected as the source hazardous waste quantity value (Ref. 1, Section 2.4.2.1).

Table 4 - Source 1 Ground Water Plume (with no identified source)
Source Hazardous Waste Quantity

Tier Measure	Migration Pathway (Ground Water)
Tier A, Constituent Quantity	NE
Tier B, Wastestream Quantity	NE
Tier C, Volume	Unknown, but > 0
Tier D, Area	0

NE = Not Evaluated

Source 1 - Hazardous Waste Quantity Value: > 0

SITE SUMMARY OF SOURCE DESCRIPTIONS

Table 5
Site Summary of Source Descriptions

Source Number	Source Hazardous Waste Quantity Value	Containment			
		Ground Water	Surface Water	Gas	Air Particulate
1	Unknown, but > 0	10	NS	NS	NS

NS = Not Scored

Source Hazardous Waste Quantity Factor Value: > 0

3.0 GROUND WATER PATHWAY

3.0.1 GENERAL CONSIDERATIONS

The aquifers underlying the ground water plume are interconnected; and thus, are combined into one hydrologic unit for HRS scoring purposes. Aquifer discontinuities are not observed within 1-mile of the study area (Ref. 27, pp. 1-2). The aquifer at the site is not a karst aquifer (Ref. 27, pp.1-2).

To demonstrate the interconnections of the formations as well as establish aquifer boundaries, the following were performed: 1) A geologic cross section of the area was constructed (Ref. 27, pp. 1-2); and 2) Water flow direction for the aquifer being evaluated was established (Ref. 27, p.2).

The overall geologic/hydrogeologic stratigraphy in the area is defined in tables in Ref. 26, p.17 and Ref. 27, pp. 1-2. There is only one useable aquifer, which is the Trinity. Stratigraphically, the Antlers Formation/Trinity Sands (which make up the Trinity Aquifer) is almost always bounded by underlying mudstone sequences in the (Triassic Red Bed) Dockum Group and by the overlying clay or marl beds in the Walnut, Comanche Peak, and Kiamichi Formations (Edwards Group) (Ref. 34, p. 18). When these layers are present, the Trinity is a confined aquifer (Ref. 34, p. 18). However, the Walnut, Comanche Peak, and Kiamichi Formations (Edwards Group) are not present, and the Trinity is overlain uncomformably by the Ogallala Formation (Ref. 27, p.1-2). The Ogallala allows for recharge to the Trinity because it consists of sands that are unconsolidated and a Caprock that consists of caliche cemented with silica, but containing many cracks (Ref. 22, pp. 36-38; Ref. 37, p.13).

Thus, the Trinity aquifer is a water table aquifer because there is no upper confining layer (Ref. 27, pp. 1-2). The overlying geologic beds containing the Ogallala Sands and Caprock, and the overlying Eolian Sands do not yield large amounts of water in the vicinity of the plume but do allow meteoric waters to recharge the Trinity Aquifer (Ref. 34, p. 16, 23). All private or public wells are between 70 feet to 150 feet deep and screened within the same zone based on driller's logs and actual geophysical logs of monitoring wells installed by the state of Texas and private water wells that are no longer in use (Ref. 27, pp. 1-2).

The cross section is derived from driller's logs made from existing wells (Ref 23, pp.1-15) and geophysical logs (gamma and electric logs) run in August 2005 (by the TCEQ's contractor) in three private wells that did not contain pumps and three monitoring wells that the state installed in July 2005 (Ref 24, pp.1-6). Water levels were collected from the six wells that were geophysically logged in August 2005 (Ref 24, pp.1-6). The cross section demonstrates the continuity of the Trinity sands, the interconnections of the Ogallala and Trinity sands, the water level, and where typically water wells are drilled to and installed (Ref 23, pp. 1-19; Ref. 24, pp. 1-6; Ref. 27, pp. 1-2).

3.0.2 Geology and Hydrogeology

The aquifer that has been impacted by the East 67st Street Ground Water Plume is called the Trinity (Ref 25, p.3). Regionally, the plume falls within an area where one major aquifer system ends and another one begins: The High Plains Aquifer system, mainly the Ogallala Formation in the study area, overlies the eroded surface of the Trinity Aquifer, mainly the Trinity Sands/Antlers Formation, which is at the extreme upgradient part of the Edwards-Trinity System (Ref. 34 , p.8; Ref. 27, pp.1-2). Specifically, the Trinity Aquifer consists of Mesozoic (Cretaceous) formations, which are underlain by Paleozoic (Triassic) formations and overlain by Cenozoic (Tertiary and Quaternary) formations. (Ref. 26, p.17).

3.0.2.1 Stratigraphy and Water Bearing Properties

The hydrogeologic or aquifer characteristics of the various formations and the geologic stratum are described below. The stratum, from oldest to youngest, are:

Geologic Stratum 1 - Upper Dockum Formation (Triassic aged)
Hydrogeologic Stratum - Lower Confining Bed

During the late Triassic time, Paleozoic rocks were eroded from the surrounding high ground and redeposited in low-lying fluvial, deltaic, and lacustrine environments as red beds of the Dockum Group. The Upper Dockum Group is comprised of the Trecovas, Santa Rosa, and Chinle formations. (Ref. 22, p.19).

The Chinle formation is considered the upper part of the Dockum Group and it underlies the Trinity Group in the vicinity of the plume. The upper part of the Dockum contains the largest percentages of siltstone and shale (Ref. 22, pp. 18-19). The thickness of Chinle Formation varies from 175 to 1,800 feet (Ref. 22, p. 19). In Ector County, the Chinle or upper part has been reported to be approximately 600 feet thick and dipping toward the west (Ref. 22, p. 20). The formation consists mainly of brick red to maroon and purple shale (Ref. 22, pp.18-19), which is why it is commonly referred to as "Red Beds."

The underlying mudstone sequences in the Dockum Group are considered the lower confining layer to the Trinity aquifer in the study area (Ref. 34, p. 18), and do not yield large quantities of water (Ref. 34, p. 8).

Geologic Stratum 2 - Trinity Formation
Hydrogeologic Stratum - Main Aquifer of Concern.

The Trinity rock record indicated a cyclic pattern of shoreline advance and retreat, superimposed upon an overall pattern of marine transgression. In early Cretaceous times, a broad continental shelf formed nearly around a rifting and subsiding ancestral Gulf of Mexico basin. The Edwards and Trinity strata formed atop and landward of this continental shelf. As the sea level rose and advanced westward, inland alluvial plains deposited clastic materials along shorelines. The

Trinity Sands were formed west of the Llano uplift where "typically it amassed as a sprawling, braided stream deposit atop an eroded surface of the pre-Cretaceous rocks." Shallow offshore environments also promoted the biogenic accumulation of calcium carbonate (Ref. 25, pp. 2, 11, &15).

The Trinity Sand consists of white to purple, loosely, consolidated, fine- to coarse grain well-sorted, unfossiliferous, quartz sandstone containing scattered lenses of quartz gravel. The sandstone can be cemented by silica. Lenses of red clay are scattered throughout (sometimes mistaken for the Upper Dockum - Triassic Red Beds) and a coarse conglomerate about 5 to 10 feet thick, consisting of red and black pebbles of chert and other quartz varieties generally occur at the base of the sandstone. In the Midland area, the Trinity sand has been found to be approximately 80 feet of medium to coarse rounded, white sand, locally ferruginous, weathering to a rust color, and containing white, black, and red pebbles scattered throughout, but particularly abundant at the base (Ref. 22, pp.22-24). This formation is also known as the Antlers formation (Ref. 28, p. 4).

Permeable sands and gravels, and clays make up the Trinity Sands or Antlers Formation. From the northwestern part of the Edwards Plateau, water generally flows southeastward under hydraulic gradients that average about 10 feet/mile. Local exceptions to the regional pattern result from topographic and drainage variations and depressions in the ground water table caused by pumpage. The maximum hydraulic head occurs in northwestern Ector County at about 3,100 feet above sea level. In Ector County, most recharge results from infiltration of precipitation from land surface and most discharge occurs through well withdraws. Water levels in Ector county have dropped 50 feet over last 50 years (Ref. 26, p. 41). Transmissivity values are approximately 5,000 $feet^2$/day (Ref. 25, p. 34).

Geologic Stratum 3 - Ogallala Formation
Hydrogeologic Stratum- Overlying, Unconfining Layer - Allows Recharge

While deposition was occurring in the Gulf of Mexico in post-Cretaceous geologic history, widespread uplift and erosion was occurring in west-central Texas. A large volume of Cretaceous rock was removed from the area where Ector County is located today during late Mesozoic through early Cenozoic time, as the result of structural deformation, salt dissolution, and erosion along what is now the Pecos River Valley. Then, during the Cenozoic Era, a thick succession of off-lapping deltaic deposits built the plains along the coast with detritus eroded from Paleozoic and Mesozoic rocks from the uplifted continental interior (Ref. 25, p. 20-21).

As the ancestral Rocky Mountains were eroded during the Tertiary, southeasterly flowing streams carried and deposited sediments to their present day locations across the Texas High Plains and ending in Ector County. The earliest sediments, mainly gravel and coarse sand, filled the valleys cut in the Cretaceous, Triassic, and Permian surfaces (Ref. 22, p.17). The Ogallala Formation consists of red and yellow clay, silt, fine to coarse gray and buff colored sand, gravel and caliche (Ref. 22, p. 31). The fine to coarse sand, with the fine to medium grades predominate (Ref. 22, p. 32). In the Odessa-Midland area, the Ogallala formation consisted of mostly basal conglomerates of Triassic and Cretaceous fragments locally overlain by fine pink sandstone and/or caliche "Caprock" with a maximum thickness of approximately 20 to 25 feet

(Ref. 22, p. 32). Caprock consists of caliche cemented with silica, but containing many cracks and fractures (Ref. 37, p.13) that allow water to recharge the Trinity. The top portion of the Ogallala Formation are layers of caliche formed by the leaching of calcium carbonate and silica from surface soils during the Plio-Plestocene era. The caliche ranges in thickness from 20 to 35 feet, varies from crumbly to very hard and can be relatively impermeable in local areas. The caliche layer forms the "Caprock" of the Texas High Plains region (Ref. 22, pp. 36-38).

The Ogallala will usually yield moderate to large amounts of water (Ref. 34, p. 8). However, the Ogallala and the Trinity are nearly indistinguishable (Ref. 26, p.6). Recharge to the Trinity occurs indirectly by downward percolation or infiltration from the overlying Ogallala (Ref. 34, p. 27). Cross-formational recharge occurs most readily where saturated sand and gravel beds in the Ogallala Formation abut against, or overlie porous and permeable parts of the Antlers (Ref. 34, p. 23).

Geologic Stratum 5 - Eolian Sands
Hydrogeologic Stratum- Overlying, Unconfining Layer - Allows Recharge

Regionally, the topographic surface of the area is a flat plateau with playas (shallow depressions) dotting its surface. The sediments that form this surface are Quarternary windblown sand and silt, alluvium, and playa lake deposits of silt and clay (Ref. 22, p. 35). Windblown sand exists that is a fine to medium grained quartz, that may include silty, calcareous, caliche nodules, and can have a massive, grayish red color. It is approximately 0 to 15 feet thick (Ref. 22, p.35).

The Eolian Sands yield small amounts of water locally to wells (Ref. 34. P. 8).

3.1 LIKELIHOOD OF RELEASE

3.1.1 Observed Release

Chemical Analysis

An observed release has been documented to the ground water pathway for the site by chemical analysis (see Table 7). Establishing an observed release by chemical analysis requires analytical evidence of a hazardous substance in the media significantly above the background level. If the background concentration is not detected (or is less than the detection limit), an observed release is established when the sample measurement equals or exceeds its own sample quantitation limit and that of the background sample (Ref. 1, Section 2.3, Table 3).

Background Concentration

Five (5) background ground water samples were collected during the sampling investigations to be used as background samples (Ref. 5, p. 22).

PCE, TCE, and their degradation products are not naturally occurring and are not ubiquitous as they were not detected in the background ground water samples (see Table 3) (Ref. 43, pp. 1 and 5).

Contaminated Samples

The following samples meet the observed release criteria and are presented below indicating organic hazardous substances with their concentrations and SQLs. These samples were qualified as "releases" based on the criteria in Table 2-3 (Ref. 1, Section 2.3). The well locations can be seen in Figure 3. See Reference 35 for a correlation between sampling locations between the April 2005 Sampling Event (described in Reference 8) and the July 2005 Sampling Event (described in Reference 5). Sample Quantitation Limits for Low Concentration Organic Analysis (OLC03.2) can be found in Reference 36.

Table 6 below presents the typical well depth that drinking water wells are drilled and screened at in the area (Ref. 38, p. 4). Specific driller's logs were not available for each well; however, depths could be determined from cross sections, available driller's well logs, and geophysical well logs collected in the field (Ref. 23, pp. 1-19; Ref. 24, pp.1-6; and Ref. 27, pp. 1-2).

Table 6 - Ground Water Migration Pathway Observed Release Sample Descriptions			
Sample Location/Station No. [EPA ID]	**Date Collected [Well Type]**	**Well Depth (feet) Screened Interval (feet)**	**References**
GW-01 [F1PR9]	07/27/05 [Drinking Water]	Unknown *70 to 150**	Ref. 8, p. 10; Ref. 6, p. 613
GW-02 [F1PS0]	07/27/05 [Drinking Water]	150 *70 to 150**	Ref. 8, pp. 10 &23; Ref. 6, p. 620
GW-03 [F1PS1]	07/27/05 [Drinking Water]	149 *70 to 150 **	Ref. 8 , pp. 10 & 24; Ref. 6, p. 303
GW-05 [F1PS3]	07/27/05 [Drinking Water]	150 *70 to 150**	Ref. 8, p. 10 & 26; Ref. 6, p. 623
GW-06 [F1PS4]	07/27/05 [Drinking Water]	157 *70 to 150**	Ref. 8, pp. 10 & 27; Ref. 6, p. 617
GW-07 [F1PS5]	07/27/05 [Drinking Water]	150 *70 to 150**	Ref. 8, pp. 10 & 28; Ref. 6, p. 618
GW-08 [F1PS6]	07/27/05 [Drinking Water]	Unknown *70 to 150**	Ref. 8, pp. 10 & 29;Ref. 6, p. 303
GW-12 [F1PS9]	07/28/05 [Drinking Water]	110 *70 to 150**	Ref. 8, pp. 10 & 32; Ref. 6, p. 141
GW-21 [N/A]	04/04/05 [Drinking Water]	150 *70 to 150**	Ref. 8, pp. 10, 39, 49-62, 70, 99
GW-22 [F1PT6]	07/26/05 [Drinking Water]	150 *70 to 150**	Ref. 8, pp. 10 ;Ref. 6, p. 298
GW-23 [F1PT7]	07/26/05 [Drinking Water]	Unknown *70 to 150**	Ref. 8, pp. 11 & 40; Ref. 6, p. 299
GW-24 [F1PT8]	07/26/05 [Drinking Water]	Unknown *70 to 150**	Ref. 8, pp. 11 & 40; Ref. 6, p. 300
GW-25 [F1PT9]	07/28/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 145
GW-27 [F1PW1]	07/28/05 [Drinking Water]	Unknown *70 to 150**	Ref.29; Ref. 6, p. 622
GW-30 [F1PW2]	07/28/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 142
GW-31 [F1PW3]	07/28/05 [Drinking Water]	165 *70 to 150**	Ref. 6, p. 621; Ref. 23
GW-34 [F1PW4]	07/28/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 621

Table 6 - Ground Water Migration Pathway Observed Release Sample Descriptions			
GW-58 [F1PW9]	07/29/05 [Public Supply]	Unknown *70 to 150**	Ref. 6, p. 477; Ref. 8, p. 11
GW-64 [F1PX4]	07/26/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 297
GW-65 [F1PX5]	07/26/05 [Drinking Water]	110 *70 to 150**	Ref. 6, p. 302; Ref. 23
GW-66 [F1PX6]	07/26/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 301
GW-67 [F1PX7]	07/26/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 301
GW-77 [F1PY3]	07/26/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 480
GW-68 [F1PX8]	07/26/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 298
GW-88 [F1PY9]	07/29/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 479
GW-89 [F1PZ0]	07/29/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 477
GW-92 [F1PZ3]	07/27/05 [Drinking Water]	106 *70 to 150**	Ref. 6, p. 613; Ref. 24
GW-93 [F1PZ4]	07/28/05 [Drinking Water]	146 *70 to 150**	Ref. 6, p. 145; Ref. 24
GW-95 [F1PZ6]	07/28/05 [Drinking Water]	*160*	Ref. 6, p. 143; Ref.29
GW-96 [F1PZ7]	07/28/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 148
GW-97 [F1PZ8]	07/28/05 [Drinking Water]	146 *70 to 150**	Ref. 6, p. 148; Ref. 23
GW-98 [F1PZ9]	07/28/05 [Drinking Water]	Unknown *70 to 150**	Ref. 6, p. 142

**Based on Cross Sections, other well logs, and geophysical well logs (Ref. 23, pp. 1-19; Ref. 24, pp.1-6; and Ref. 27, pp. 1-2).*

Table 7 - Ground Water Migration Pathway Observed Release Sample Results				
Sample Location/Station No. [EPA ID]	**Contaminated Samples**			
	Hazardous Substances	**Sample Concentrations (ug/L)**	**SQL (or equivalent) (ug/L)**	**References**
GW-01 [F1PR9]	Tetrachloroethene	5.4	0.5	Ref. 6, pp. 544-553, 554, 613, 625; Ref. 33, p. 26
GW-02 [F1PS0]	Tetrachloroethene	1.7	0.5	Ref. 6, pp. 544-553, 555, 620, 628; Ref. 33, p. 39
	cis-1,2-Dichloroethene	0.53	0.5	Ref. 6, pp. 544-553, 555, 620, 627; Ref. 33, p. 39
GW-03 [F1PS1]	Tetrachloroethene	0.64	0.5	Ref. 6, pp. 237, 303, 305, 226-236; Ref. 33, p. 39
GW-05 [F1PS3]	Tetrachloroethene	0.81	0.5	Ref. 6, pp. 557, 623, 544-554, 634; Ref. 33, p.40
GW-06 [F1PS4]	Tetrachloroethene	0.96	0.5	Ref. 6, pp. 544-554, 558, 617, 637; Ref. 33, p. 40
GW-07 [F1PS5]	Tetrachloroethene	16.0	0.5	Ref. 6, pp. 544-554, 559, 618, 640; Ref. 33, p. 27
	Trichloroethene	2.5	0.5	Ref. 6, pp. 544-554, 559, 618, 640; Ref. 33, 27
	cis-1,2-Dichloroethene	7.8	0.5	Ref. 6, pp. 544-554, 559, 618,639; Ref. 33, p. 27
	1,2-Dichloroethane	1.4	0.5	Ref. 6, p. 544-554, 639, 559, 618, 639; Ref. 33, p. 27

Table 7 - Ground Water Migration Pathway Observed Release Sample Results				
Sample Location/Station No. [EPA ID]	**Contaminated Samples**			
	Hazardous Substances	**Sample Concentrations (ug/L)**	**SQL (or equivalent) (ug/L)**	**References**
	1,1-Dichloroethane	0.5	0.5	Ref. 6, pp. 544-554, 559,618,639; Ref. 33, p. 27
GW-08 [F1PS6]	Tetrachloroethene	8.0	0.5	Ref. 6, pp. 226-236, 238, 303, 308; Ref. 33, p. 27
	Trichloroethene	1.4	0.5	Ref. 6, pp. 226-236, 238, 303, 308; Ref. 33, p. 27
	cis-1,2-Dichloroethene	5.2	0.5	Ref. 6, pp. 226-236, 238, 307, 303; Ref. 33, p. 27
	1,2-Dichloroethane	0.99	0.5	Ref. 6, pp. 226-236, 238, 303, 307; Ref. 33, p. 27
GW-12 [F1PS9]	Tetrachloroethene	0.6	0.5	Ref. 6, pp. 98-107, 108,141, 148; Ref. 33, p. 31
GW-21	Tetrachloroethene	10.1	0.2	Ref. 8, pp. 10, 49-62, 70, 99
	Trichloroethene	1.16	0.2	Ref. 8, pp. 10, 49-62, 70, 99
	cis-1,2-Dichloroethene	1.23	0.2	Ref. 8, pp. 10, 49-62, 69, 99
GW-22 [F1PT6]	Tetrachloroethene	22.0	0.5	Ref. 6, pp. 314,240,298,226-236; Ref. 33, p. 24
	Trichloroethene	3.0	0.5	Ref. 6, pp. 226-236, 240,298, 314; Ref. 33, p. 24
	cis-1,2-Dichloroethene	11.0	0.5	132

Table 7 - Ground Water Migration Pathway Observed Release Sample Results				
Sample Location/Station No. [EPA ID]	**Contaminated Samples**			
	Hazardous Substances	**Sample Concentrations (ug/L)**	**SQL (or equivalent) (ug/L)**	**References**
	1,2-Dichloroethane	1.6	0.5	Ref. 6, pp. 226-236, 240,298, 313; Ref. 33, p. 24
	1,1-Dichloroethene	0.51	0.5	Ref. 6, pp. 226-236, 240,298,313; Ref. 33, p. 24
	1,1-Dichloroethane	0.77	0.5	Ref. 6, pp. 226-236, 240,298, 313; Ref. 33, p. 24
GW-23 [F1PT7]	Tetrachloroethene	20.0	0.5	Ref. 6, pp. 226-236, 241,299,317; Ref. 33, p. 37
	Trichloroethene	1.2	0.5	Ref. 6, pp. 226-236, 241,299, 317; Ref. 33, p. 37
	cis-1,2-Dichloroethene	0.98	0.5	Ref. 6, pp. 226-236, 241,299,316; Ref. 33, p. 37
GW-24 [F1PT8]	Tetrachloroethene	18.0	0.5	Ref. 6, pp. 226-236, 242, 300, 320; Ref. 33, p. 24
	Trichloroethene	2.9	0.5	Ref. 6, pp. 226-236, 242, 300, 320; Ref. 33, p. 24
	cis-1,2-Dichloroethene	83.0	0.5	Ref. 6, pp. 226-236, 242, 300, 319; Ref. 33, p. 24
	1,2-Dichloroethane	2.8	0.5	Ref. 6, pp. 226-236, 242, 300, 319; Ref. 33, p. 24
	1,1-Dichloroethane	3.8	0.5	Ref. 6, pp. 226-236, 242, 300, 319; Ref. 33, p. 24
GW-25 [F1PT9]	Tetrachloroethene	0.6	0.5	Ref. 6, pp. 98-107, 109, 145, 151; Ref. 33, p. 30

Table 7 - Ground Water Migration Pathway Observed Release Sample Results				
Sample Location/Station No. [EPA ID]	**Contaminated Samples**			
	Hazardous Substances	**Sample Concentrations (ug/L)**	**SQL (or equivalent) (ug/L)**	**References**
GW-27 [F1PW1]	Tetrachloroethene	1.1	0.5	Ref. 6, pp. 544-553, 568, 622, 667; Ref. 33, p. 30
GW-30 [F1PW2]	Tetrachloroethene	2.9	0.5	Ref. 6, pp. 98-107, 110, 142, 153; Ref. 33, p. 30
	Trichloroethene	0.62	0.5	Ref. 6, pp. 98-107, 110, 142, 153; Ref. 33, p. 30
	cis-1,2-Dichloroethene	1.3	0.5	Ref. 6, pp. 98-107, 110, 142, 154; Ref. 33, p. 30
	1,2-Dichloroethane	0.57	0.5	Ref. 6, pp. 98-107, 110, 142, 154; Ref. 33, p. 30
GW-31 [F1PW3]	Tetrachloroethene	0.89	0.5	Ref. 6, pp. 544-553, 569, 621,670; Ref. 33, p. 43
GW-34 [F1PW4]	Tetrachloroethene	1.1	0.5	Ref. 6, pp. 544-553, 570, 621, 673; Ref. 33, p. 44
GW-58 [F1PW9]	Tetrachloroethene	2.9	0.5	Ref. 6, pp. 438-448, 450, 477, 449; Ref. 33, p. 34
GW-64 [F1PX4]	Tetrachloroethene	2.0	0.5	Ref. 6, pp. 226-236, 249, 297, 338; Ref. 33, p. 38
	cis-1,2-Dichloroethene	0.84	0.5	Ref. 6, pp. 226-236, 249, 297, 337; Ref. 33, p. 38
GW-65 [F1PX5]	Tetrachloroethene	2.9	0.5	Ref. 6, pp. 226-236, 250, 302, 341; Ref. 33, p. 23
	Trichloroethene	0.72	0.5	Ref. 6, pp. 226-236, 250, 302, 341; Ref. 33, p. 23

Table 7 - Ground Water Migration Pathway Observed Release Sample Results				
Sample Location/Station No. [EPA ID]	**Contaminated Samples**			
	Hazardous Substances	**Sample Concentrations (ug/L)**	**SQL (or equivalent) (ug/L)**	**References**
	cis-1,2-Dichloroethene	2.5	0.5	Ref. 6, pp. 226-236, 250, 302, 340; Ref. 33, p. 23
	1,2-Dichloroethane	0.8	0.5	Ref. 6, pp. 226-236, 250, 302, 340; Ref. 33, p. 23
GW-66 [F1PX6]	Tetrachloroethene	3.8	0.5	Ref. 6, pp. 226-236, 251, 301, 344; Ref. 33, p. 23
	Trichloroethene	0.56	0.5	Ref. 6, pp. 226-236, 251, 301, 344; Ref. 33, p. 23
	cis-1,2-Dichloroethene	1.2	0.5	Ref. 6, pp. 226-236, 251, 301, 343; Ref. 33, p. 23
GW-67 [F1PX7]	Tetrachloroethene	12.0	0.5	Ref. 6, pp. 226-236, 252, 301, 347; Ref. 33, p. 37
	Trichloroethene	2.9	0.5	Ref. 6, pp. 226-236, 252, 301, 347; Ref. 33, p. 37
	cis-1,2-Dichloroethene	18.0	0.5	Ref. 6, pp. 226-236, 252, 301, 346; Ref. 33, p. 37
	1,2-Dichloroethane	3.1	0.5	Ref. 6, pp. 226-236, 252, 301, 347; Ref. 33, p. 37
	1,1-Dichloroethane	1.5	0.5	Ref. 6, pp. 226-236, 252, 301, 347; Ref. 33, p. 37
GW-68 [F1PX8]	Tetrachloroethene	3.2	0.5	Ref. 6, pp. 226-236, 253, 298, 350; Ref. 33, p. 23
	Trichloroethene	0.76	0.5	Ref. 6, pp. 226-236, 253, 298, 350; Ref. 33, p. 23

Table 7 - Ground Water Migration Pathway Observed Release Sample Results				
Sample Location/Station No. [EPA ID]	**Contaminated Samples**			
	Hazardous Substances	**Sample Concentrations (ug/L)**	**SQL (or equivalent) (ug/L)**	**References**
	cis-1,2-Dichloroethene	2.7	0.5	Ref. 6, pp. 226-236, 253, 298, 349; Ref. 33, p. 23
	1,2-Dichloroethane	0.75	0.5	Ref. 6, pp. 226-236, 253, 298, 349; Ref. 33, p. 23
GW-77 [F1PY3]	cis-1,2-Dichloroethene	12.0	0.5	Ref. 6, pp. 438-448, 453, 480, 491; Ref. 33, p. 34
	1,1-Dichloroethane	0.64	0.5	Ref. 6, pp. 438-448, 453, 480, 491; Ref. 33, p. 34
GW-88 [F1PY9]	cis-1,2-Dichloroethene	12.0	0.5	Ref. 6, pp. 438-448, 455, 479, 497; Ref. 33, p. 34
	1,1-Dichloroethane	0.63	0.5	Ref. 6, pp. 438-448, 455, 479, 497; Ref. 33, p. 34
GW-89 [F1PZ0]	cis-1,2-Dichloroethene	2.0	0.5	Ref. 6, pp. 438-448, 456, 477, 500; Ref. 33, p. 35
GW-92 [F1PZ3]	Tetrachloroethene	2.2	0.5	Ref. 6, pp. 544-553, 572, 613, 679; Ref. 33, p. 26
	cis-1,2-Dichloroethene	0.59	0.5	Ref. 6, pp. 544-553, 572, 613, 678; Ref. 33, p. 26
GW-93 [F1PZ4]	Tetrachloroethene	1.0	0.5	Ref. 6, pp. 98-107, 115, 145, 169; Ref. 33, p. 43
GW-95 [F1PZ6]	Tetrachloroethene	0.54	0.5	Ref. 6, pp. 98-107, 129, 143, 172; Ref. 33, p. 43
GW-96 [F1PZ7]	Tetrachloroethene	0.74	0.5	Ref. 6, pp. 98-107, 117, 148, 175; Ref. 33, p. 31

Table 7 - Ground Water Migration Pathway Observed Release Sample Results				
Sample Location/Station No. [EPA ID]	**Contaminated Samples**			
	Hazardous Substances	**Sample Concentrations (ug/L)**	**SQL (or equivalent) (ug/L)**	**References**
GW-97 [F1PZ8]	Tetrachloroethene	0.5	0.5	Ref. 6, pp. 98-107, 118, 148, 178; Ref. 33, p. 44
GW-98 [F1PZ9]	Tetrachloroethene	0.83	0.5	Ref. 6, p. 98-102, 119, 142, 181; Ref. 33, p.44

Notes: [SQL] = Sample Quantitation Limit.

Attribution:

The site is designated as a contaminated ground water plume originating from unknown source(s) where hazardous substances may have been released and seeped through the ground to the aquifer. When the source itself consists of a ground water plume with no identified source, no separate attribution is required (Ref. 1, Section 3.1.1)

Hazardous Substances Released:

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- cis-1,2-Dichloroethene (DCE)
- 1,1-Dichloroethane (1,1-DCA)
- 1,1-Dichloroethene (1,1-DCE)
- 1,2-Dichloroethane (1,2-DCA)

As specified in the HRS Rule (Ref. 1, Section 3.1.1), an observed release factor value of 550 was assigned to the Trinity Aquifer since an observed release by chemical analysis was established to the aquifer.

The source of the contamination is unidentified and the area of contamination is undefined. Adequate documentation attributing the hazardous substances to one or more of the potential source areas has not been identified according to the HRS criteria. Therefore, a ground water plume with no identified source was used for HRS scoring. The ground water plume with no identified source was characterized as the source based on the following:

- The extent of the plume, although undefined, was estimated solely by sampling, using the criteria for an observed release to the Ground Water Migration Pathway.

- The level of effort to identify the original source(s) of the hazardous substances was equivalent to an Expanded Site Inspection (ESI). In conjunction with the SSI sampling event, the TCEQ conducted additional subsurface investigations and sampling to determine the possible source(s) of the ground water contamination. Also, additional investigations were conducted after the SSI by the TCEQ through local interviews with citizens and with the Ector County Health Department to gain information about the possible source(s) of the ground water contamination (Ref.5, pp. 11-15; Ref. 12, p. 4; Ref. 15, pp. 4-5; Ref. 17, p. 8).

- Response actions for the impacted wells, and the collection of more than 100 ground water samples (Refs. 5, 8, 9) are equivalent to an ESI..

The following businesses are noted to be within the contaminated ground water plume area either by TCEQ file review or by field observation:

- Brenntag is a chemical company that stores and distributes, but does not make, chemicals on-site (Ref.10, p. 1-2). Material Data Sheets (MDS) for TCE and PCE were obtained by the TCEQ from Brenntag on May 10, 2005 during the Pre-CERCLIS field screening event (Ref.11, p. 1-10; Ref. 12, p.4). According to the May 2005 TCEQ Region 7 Hazardous Waste Generator Inspection Report, Brenntag was reported to have had a release of methyl ethyl keytone or MEK in the 1980s (Ref.10, p.2). The spill had entered the facility's water well and the facility had pumped the well clean to remediate the release (Ref. 10, p. 2). No other wells in the area were tested. The facility well was sampled by the TCEQ Region 7 in April 2005 and the sample results showed non-detect for all volatile organic compounds (Ref. 8, p. 15). TCEQ regulatory databases were searched, but no other relevant information was found (Ref. 13, p. 1-9). The Ector County Health Department provided hand written septic system permits (with property descriptions from the Ector County Appraisal District) for 111 E. 67th Street (Ref. 14, p.3). Volatile organic compounds may have also may been disposed of via the septic system, which in turn, would have resulted in a release to ground water.

- As observed during the site visit on July 19, 2005, CASE/Permian Tractor Sales has a rinsing area that has a drain that leads to the subsurface behind its offices (Ref. 15, p. 4; Ref. 16, pp. 1-5). According to the Ector County Health Department, a permit was issued in December 13, 1989 that allowed for their wash rack and a grease trap to be tied onto the septic system and drained into the drain field (Ref. 15, pp. 4-5; Ref. 16, pp. 1-5). The drain-field became clogged and a new drain-field was installed and permitted in December 7, 1995 (Ref. 16, pp.1-5). The clogged drain-field was not removed (Ref. 16, pp.1-5).

- Cotton Pipe is reported to clean pipes using solvents; however, it is unknown at this time what solvents they use. No drums or tanks of solvents were observed during a site visit on May 11, 2005 (Ref. 17, p. 8). The TCEQ data bases were searched, but no other information has been found (Ref 39, pp. 1-9; Ref. 40, p. 1).

- A private well owner on E. 67th Street, reported that he witnessed a vacuum truck dumping in a field north of Devilla Mobile Home Park and south of 300 E. 67th Street (Ref. 18, p. 3;

Ref. 41, pp. 1-2; Ref. 42, p. 1). He had observed a vacuum truck dumping liquid waste water into a pit. A site inspection was made by the TCEQ SSDAT on May 12, 2005, and found a pit where dumping had taken place and a parked vacuum truck just inside of Devilla Mobile Home Park (Ref. 18, p. 3). A corrosive placard was on the truck (Ref. 18, p. 3). A meeting with the Ector County Health officials on July 19, 2005, revealed that the pit was part of a permitted system, but that the disposal into the system should be through a pipe inlet (Ref. 15, pp. 3-4). A capped pipe was observed to exist adjacent to the drain field on July 19, 2005 during an inspection of the area (Ref. 15, pp.3-4). The cap on the pipe was opened and it appeared that the pipe had never been used (Ref. 15, pp.3-4). The Ector County Health Department also provided the permit (dated August 23, 1982) for the system that showed the location of the dumping was not according to the permit (Ref. 19, pp. 1-7).

Observed Release Factor Value: 550

3.1.2 Potential to Release

As specified in the HRS Rule, since an observed release was established for the Trinity Aquifer, the potential to release was not evaluated (Ref. 1, Section 3.1.1).

3.1.3 Likelihood of Release Factor Category Value

As stated in the HRS Rule, if an observed release is established for an aquifer, assign the observed release factor value of 550 as the likelihood of release factor category value for the aquifer (Ref. 1, Section 3.1.3). Since an observed release has been established for the Trinity Aquifer, the Observed Release Factor Value of 550 is assigned as the likelihood of release factor category value.

Likelihood of Release Factor Category: 550

3.2 WASTE CHARACTERISTICS

3.2.1 Toxicity/Mobility

The following toxicity, mobility and combined toxicity/mobility factor values have been assigned to those substances associated with Source No. 1, or present in the observed release, which have a containment value greater than 0.

Table 8 - Waste Characteristic Toxicity/Mobility Factor Values

Hazardous Substance	Toxicity Factor Value	* Mobility Factor Value	Toxicity / Mobility Value	Reference
Tetrachloroethene	100	1	100	Ref. 1, Sections 2.4.1.2, 3.2.1; Ref. 3, pp. 1 -2
Trichloroethene	10,000	1	10,000	Ref. 1, Sections 2.4.1.2, 3.2.1; Ref. 3, pp. 3-4
cis-1,2-Dichloroethene	100	1	100	Ref. 1, Sections 2.4.1.2, 3.2.1; Ref. 3, pp. 5-6
1,1-Dichloroethene	100	1	100	Ref. 1, Sections 2.4.1.2, 3.2.1; Ref. 3, pp. 7-8
1,1-Dichloroethane	10	1	10	Ref. 1, Sections 2.4.1.2, 3.2.1; Ref. 3, pp. 9-10
1,2-Dichloroethane	100	1	100	Ref. 1, Sections 2.4.1.2, 3.2.1; Ref. 3, pp. 11-12

Documentation for Toxicity/Mobility Values:

*The Mobility Factor Value for all hazardous substances that meet the criteria for an observed release by chemical analysis to one or more aquifers underlying the source(s) at the site, regardless of the aquifer being evaluated, is assigned a mobility factor value of 1 (Ref. 1, Section 3.2.1.2).

Contaminant characteristic values for hazardous substances found in an observed release to the Trinity Aquifer were derived from SCDM (Ref. 3). The hazardous substance with the highest toxicity/mobility factor value available to the ground water migration pathway is TCE (10,000).

Toxicity/Mobility Factor Value: 10,000

3.2.2 Hazardous Waste Quantity

Table 9 Source Hazardous Waste Quantity Values		
SOURCE NUMBER	**SOURCE HAZARDOUS WASTE QUANTITY VALUE**	**HAZARDOUS CONSTITUENT QUANTITY DATA COMPLETE?**
1	> 0	NO
Total	> 0*	

* According to Section 2.4.2.2. of the HRS Rule, a hazardous waste quantity factor value of 100 was assigned because the hazardous constituent quantity data are not adequately determined for one or more sources, and targets for the Ground Water Migration Pathway are subject to Level I concentrations (Ref. 1, Section 2.4.2.2).

3.2.3 Waste Characteristics Factor Category Value

As specified in the HRS Rule (Ref. 1, Section 3.2.3), the Hazardous Waste Quantity Factor Value of 100 was multiplied by the highest Toxicity/Mobility Value of 10,000, resulting in a product of 1,000,000 (1.0E+06). Based on this product, a Waste Characteristics Factor Value of 32 was assigned from Table 2-7 of the HRS Rule (Ref. 1, Section 2.4.3.1).

Hazardous Waste Quantity Factor Value: 100

Hazardous Waste Quantity X Toxicity X Mobility = 1.0E+06

Waste Characteristics Factor Category Value: 32

3.3 Ground Water Pathway Targets

The aquifer being evaluated for ground water pathway targets is the Trinity. The ground water pathway targets for this aquifer identified within an one (1) mile radius from the center of the plume include:

- 1 Public Water Supply (PWS) Well from the Devilla Trailer Park (Ref. 5, 6, 7 and 8),
- and, 48 private drinking water wells (Ref. 5, 6, and 8).

The public and private drinking water wells identified within one- mile of the center of the plume draw ground water from the Trinity Aquifer. The Devilla Trailer Park PWS System (PWS ID #0680069) identified within one-mile of the center of the plume is a blended system that currently serves 56 people (Ref. 7, p.2). The Devilla PWS well and thirty one (31) of the private drinking water wells within one-mile have been documented with an observed release (see Tables 6 and 7). The number of targets and levels of contamination are shown in Table 10.

The approximate screened interval for the contaminated drinking water wells sampled ranges from 70 to 150 feet deep (see Table 6), The regional direction of ground water flow is generally in an easterly to southeasterly direction as measured on August 8, 2005 (Ref. 27, p. 2; Ref. 24, pp. 1-6).

The results from TCEQ Region 7 office of the Field Operations Division March 2005 sampling of 15 wells indicated that three private wells contained concentrations of PCE (14.2 ug/L, 10.1 ug/L, and 8.92 ug/L) above the MCL (Ref. 8, pp. 3, 68, 70, and 78) and referred the site to the Superfund Site Discovery Team (SSDAT) of the Remediation Division of the TCEQ (Ref. 7, p.1).

The results of the July 2005 sampling event indicated that two additional wells had concentrations above MCLs for PCE, and two additional filtration systems were added in September 2005 (Ref. 30). Concentrations above the MCL for PCE were as follows (from highest to lowest): 22.0, 20.0, 18.0, 16.0, 8.0, and 5.4 ug/L (Ref. 6, pp. 314, 317, 320, 640, 308, 625). The concentrations for PCE that were below the MCL ranged from 0.5 to 2.2 ug/L (Ref. 6, pp. 148,157, 169,172,175,178,181, 305, 628, 634, & 679). For TCE, ten wells had concentrations that were above the EPA's Cancer Risk screening level of 0.21 ug/L (Ref. 3, p. 4). The concentrations of these samples ranged from 0.27 to 0.76 ug/L (Ref. 6, pp. 154, 308, 314, 317, 320, 341, 344, 347, 350, & 640). Low concentrations (below MCLs) of cis-1,2-DCE, 1,-1-DCE, 1,2-DCA, and 1,1-DCA were also detected in many of the wells (Ref. 6, pp. 153, 156, 307, 313, 319, 340, 346, 349, 497, 500 & 639).

These results indicated that there were 16 wells with Level I concentrations that affected a population of 91.76 people and 16 wells with Level II concentrations that affected a total population of 41.36 within four-miles of the center of the plume. (see Table 7).

3.3.1 Nearest Well

According to Section 3.3.1 of the HRS Rule, if one or more drinking water wells is subject to Level I concentrations, a Nearest Well Factor value of 50 is assigned. Level I concentrations have been documented at 16 wells within the ground water plume (see Section 3.3.2.2 of this HRS Documentation Record).

Level of Contamination (I, II, or potential): Level I

Location of Well: Level I concentrations have been documented at 16 drinking water wells within the ground water plume. Well location descriptions are identified in Table 6, Section 3.3.2.2 of this HRS documentation record (see Tables 7 and 10 for the identified wells).

For a well with Level I concentrations, a Nearest Well Factor Value of 50 is assigned (Ref. 1, Section 3.3.1).

Nearest Well Factor Value: 50

3.3.2 Population

3.3.2.1 Level of Contamination

3.3.2.2 Level I Concentrations

Fifteen (15) private wells and one (1) public supply well within a four-mile radius of the center of the plume contained Level I concentrations (see Table 10). All wells draw water from the Trinity Aquifer (see Table 7).

The estimated number of people served by a private drinking water well was calculated by using the United States Census Bureau 2000 profile of general demographic characteristics for Ector County, Texas to determine the average number of persons per residence. The average number of persons per residence is 2.72 (Ref. 31, p. 2).

The concentrations of hazardous substances shown below include detections in drinking water wells that meet or exceed their corresponding benchmark concentrations (Ref. 3, SCDM). An observed release to the Ground Water Migration Pathway has been established based on the detection of these compounds found in the below drinking water wells; thus, these wells are associated with Level I concentrations (Ref. 1, Section 3.3.2.1, 3.3.2.2).

As specified in the HRS Rule, (Ref. 1, Section 3.3.2.2), the number of people served by drinking water from points of withdrawal subject to Level I concentrations were summed. The total population counted from the 16 wells is $(2 + 2 + 2 + 3 + 1 + 1 + 3 + 56 + (2.72 \times 8)) = 91.76$. The total of 91.76 was multiplied by 10 and rounded to the nearest integer, for a product of 918 (Ref. 1, Section 3.3.2.2).

Table 10 - Ground Water Migration Pathway Drinking Water Wells with Level I Concentrations of PCE						
Sample Location/Station No. [EPA ID]	**PCE Concentrations (ug/L)** **(see Table No. 7 for references)**	**PCE Benchmark Concentrations (Ref. 3, p. 4)**			**Population Served**	
		MCL/ MCLG (ug/L)	**Cancer Risk Conc. (ug/L)**	**Non Cancer Risk Conc. (ug/L)**	**People**	**Reference**
GW-01 [F1PR9]	5.4	5	1.6	360	2	Ref. 29, p.1
GW-02	1.7				2	Ref. 29, p. 1
GW-07 [F1PS5]	16.0				2	Ref. 8 , p.28
GW-08 [F1PS6]	8.0				3	Ref. 8, p. 29
GW-21	10.1				1	Ref. 8, p. 39
GW-22 [F1PT6]	22.0				1	Ref. 8, p. 39
GW-23 [F1PT7]	20.0				3	Ref. 8, p. 40
GW-24 [F1PT8]	18.0				2.72	Ref. 31, p.2
GW-58 [F1PW9]	2.9				56	Ref. 7, p.2
GW-64 [F1PX4]	2.0				2.72	Ref. 31, p.2
GW-67 [F1PX7]	12.0				2.72	Ref. 31, p.2
GW-92 [F1PZ3]	2.2				2.72	Ref. 31, p.2

Table 10 Cont. - Ground Water Migration Pathway Drinking Water Wells with Level I Concentrations of TCE						
Sample Location/Station No. [EPA ID]	**TCE Concentrations (ug/L)** **(see Table No. 7 for references)**	**TCE Benchmark Concentrations (Ref. 3, p. 4)**			**Population Served**	
		MCL/ MCL G (ug/L)	**Cancer Risk Conc. (ug/L)**	**Non Cancer Risk Conc. (ug/L)**	**People**	**Reference**
GW-30 [F1PW2]	0.62	5.0	0.21	11.0	2.72	Ref. 31, p.2
GW-65 [F1PX5]	0.72				2.72	Ref. 31, p.2
GW-66 [F1PX6]	0.56				2.72	Ref. 31, p.2
GW-68 [F1PX8]	0.76				2.72	Ref. 31, p.2

Population Served by Level I Wells: 91.76

Level I Concentration Factor Value: 918

3.3.2.3 Level II Concentrations

Sixteen (16) of the private wells within a four-mile radius of the center of the plume contained Level II concentrations. (See Table 11). All wells draw water from the Trinity Aquifer (see Table 7).

As specified in the HRS Rule, (Ref. 1, Section 3.3.2.2), the number of people served by drinking water from points of withdrawal subject to Level II concentrations were summed. The total population counted from the 16 wells is 41.36 [2 + 3 + 1 + (13 X 2.72)] = 41.36). The total of 41.36 is not multiplied by any factor. (Ref. 1, Section 3.3.2.2).

Table 11 - Ground Water Migration Pathway
Drinking Water Wells with Level II Concentrations of PCE

Sample Location/Station No. [EPA ID]	PCE Concentrations (ug/L) (see Table No. 7 for references)	Benchmark Concentrations (Ref. 3, p. 6)			Population Served	
		MCL/ MCL G (ug/L)	Cancer Risk Conc. (ug/L)	Non Cancer Risk Conc. (ug/L)	People	Reference
GW-03 [F1PS1]	0.64	5.0	1.6	360.0	2	Ref. 8, p. 24
GW-05 [F1PS1]	0.81				3	Ref. 8, p. 26
GW-06 [F1PS4]	0.96				1	Ref. 8, p. 27
GW-12 [F1PS9]	0.6				2.72	Ref. 31, p.2
GW-25 [F1PT9]	0.6				2.72	Ref. 31, p.2
GW-27 [F1PW1]	1.1				2.72	Ref. 31, p.2
GW-31 [F1PW3]	0.89				2.72	Ref. 31, p.2
GW-34 [F1PW4]	1.1				2.72	Ref. 31, p.2
GW-93 [F1PZ4]	1.0				2.72	Ref. 31, p.2
GW-95 [F1PZ6]	0.54				2.72	Ref. 31, p.2
GW-96 [F1PZ7]	0.74				2.72	Ref. 31, p.2
GW-97 [F1PZ8]	0.5				2.72	Ref. 31, p.2
GW-98 [F1PZ9]	0.83				2.72	Ref. 31, p.2

Table 11 Cont. - Ground Water Migration Pathway
Drinking Water Wells with Level II Concentrations of cis-1,2-DCE

Sample Location/Station No. [EPA ID]	cis-1,2-DCE Concentrations (ug/L) (see Table No. 7 for references)	cis-1,2-DCE Benchmark Concentrations (Ref. 3, p. 6)			Population Served	
		MCL/ MCLG (ug/L)	Cancer Risk Conc. (ug/L)	Non Cancer Risk Conc. (ug/L)	People	Reference
GW-77 [F1PY3]	12.0	70.0	NA	360.0	2.75	Ref. 31, p.2
GW-88 [F1PY9]	12.0				2.72	Ref. 31, p.2
GW-89 [F1PZ0]	2.0				2.72	Ref. 31, p.2

Population Served by Level II Wells: 41.36

Level II Concentration Factor Value: 41.36

3.3.2.4 Potential Contamination

The potential contamination factor was evaluated and not scored because a maximum score for the ground water migration pathway was achieved in scoring the Level I and Level II contaminations. Although not scored in this document, the TCEQ and the USEPA are concerned about populations that are potentially exposed to contamination.

Potential Contamination Factor Value: NS

3.3.3 Resources

No resource, as defined in HRS Section 3.3.3, was documented for the aquifer (Ref. 1).

Resources Factor Value: 0

3.3.4 Wellhead Protection Area

According to Section 3.3.4 of the HRS Rule, if a Wellhead Protection Area (WHPA) is located either partially or fully within an area of observed ground water contamination attributable to the source(s) at the site, assign a value of 20 as the Wellhead Protection Area Factor Value.

There is no Wellhead Protection Area at the site where the ground water contamination exists.

Wellhead Protection Area Factor Value: 0

3.3.5 Calculation of Targets Factor Category Value

The target factor category value is calculated by determining the sum of the factor values for the nearest well (50), population (959.36 = 918 + 41.36), resources (0), and Wellhead Protection Area (0) (Ref. 1, Section 3.3.5).

Calculations: 50 + 959.36 + 0 + 0 = 1009.36

3.4 Ground Water Migration Score for an Aquifer

The ground water migration score for an aquifer is calculated by multiplying the factor category values for likelihood of release (550), waste characteristics (32), and targets (1009.36). Divide by 82,500, the resulting value of 100 is assigned as the ground water migration pathway score (Ref.1, Section 3.4).

Calculations: (550 x 32 x 1009.36) ÷ 82,500 = 215.25 (100 maximum)

3.5 Calculation of Ground Water Migration Pathway Score

The Ground Water Migration Pathway Score is calculated by assigning 100 as the ground water migration score for the Trinity Formation Aquifer.

Ground Water Migration Pathway Score: 100

4.0 Surface Water Migration Pathway

The Surface Water Pathway was evaluated and not scored due to lack of documentation of a release to surface water.

5.0 Soil Exposure Pathway

The Soil Exposure Pathway was evaluated and not scored due to lack of documentation of an area of observed contamination.

6.0 Air Migration Pathway

The Air Migration Pathway was evaluated and not scored due to lack of documentation of a release to air.