



HAZARD RANKING SYSTEM DOCUMENTATION RECORD

for

**Cass County Treating Company
Linden, Cass County, Texas
TXD008058844; TCEQ SWR# 32765**

Prepared by:

**Texas Commission on Environmental Quality
Superfund Site Discovery and Assessment Program
Austin, Texas**

September 2004



HRS

**DOCUMENTATION
RECORD**

**Cass County Treating Company
Linden, Cass County, Texas**

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SIGNATURE PAGE

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CONTENTS

	Page
HRS Documentation Record Cover Sheet	1
Pathway of Concern	1
Pathways, Components, or Threats Not Evaluated	4
Note to Reader	5
HRS Documentation Record	6
Site Location	6
Site Scoring Summary	6
Site Summary	7
General Description of the site	7
Site History	7
Reference Listings	13
Worksheet for HRS Site Score	16
Groundwater Migration Pathway Scoresheet	17
Groundwater to Surface Water Migration Component Scoresheet	19

FIGURES

Figure 1	Site Location Map	9
Figure 2	Drinking Water Well Sample Location Map	10
Figure 3	Surface Water Pathway Map	11
Figure 4	Sample Location Map	12

HRS DOCUMENTATION RECORD - REVIEW COVER SHEET

Name of Site: Cass County Treating Company

Current Contact Person: Charles Evans c/o Arnold Forest Products (Leasing Operator)

Documentation Record: Gary L. Hazelwood, TCEQ (903) 535-5108

Pathways of Concern: Ground Water and Surface Water Migration Pathways

Groundwater Pathway

Observed releases of hazardous substances to the groundwater pathway are of concern for this site. Sampling events were conducted during the weeks of February 2, 2004, June 14, 2004, and September 8, 2004, by the TCEQ (Ref. 3; 4; 5; 6; and 32). On-site aqueous monitor well sample analysis results documented observed releases of several hazardous substances to the Queen City Sand portion of the Cypress Aquifer (Ref. 6, pp. 06092 - 06108; and 7, pp. 07008, 07010, and 07016). The monitor well samples contained phase separated free product (Ref. 3, Photograph 15). During sample collection the clearer aqueous layer was collected and the product layer was placed in a purge water drum, for disposal. Prior to purging three well volumes in preparation of sampling, each monitor well was measured and ranged between 20.21 and 23.99 feet from the top of the monitor wells. Two of the monitor wells ([MW-02 and duplicate sample MW-03] and MW-04) are located near a buried surface impoundment and the background monitor well (MW-01) is located approximately 290 feet east of the contaminated monitor wells (Ref. 4, p. 29; and Figure 4). The four water bearing units, Queen City Sand, Recklaw Formation, Carrizo Sand, and Wilcox Group, are hydraulically connected and function as a single aquifer, named the Cypress aquifer in Cass County (Ref. 7, p. 07008). The Queen City Sand portion of the Cypress Aquifer was determined to be less than 20.21 feet from the top of the monitor wells in the area of the buried surface impoundment, where two monitor wells were sampled (Ref. 7, pp. 07010, 07015 Figure 11, Well # DB 35-06-101, and 07016). Nearly all shallow wells in Cass County completed before 1940 were dug by hand and the Cypress aquifer was tapped within 50 feet (Ref. 7, p. 07010). The distance from the bottom of the three monitor wells sampled to the Queen City Sand portion of the Cypress aquifer is zero feet. The monitor wells in the area of the buried surface impoundment are reaching the top of the Cypress aquifer, while one monitor well located approximately 150 yards west of the buried surface impoundment area does not reach the aquifer and only contained seventeen inches of water and did not recover overnight after it was bailed dry (Ref. 4, p. 13).

Observed releases to the Queen City Sand portion of the Cypress Aquifer of several volatiles, semivolatiles, pesticides, and inorganics are documented by chemical analysis of samples (Ref. 6, pp. 06092 - 06108). In a monitor well located close to the buried surface impoundment, pentachlorophenol was detected at 8,100 µg/L; pentachlorophenol was not detected in the background monitor well (Ref. 6, pp. 06089 and 06106). The hazardous substances with the highest groundwater toxicity values of 10,000 are dieldrin, endrin, cadmium, chromium, lead, and mercury

(Ref. 2). Since hazardous substances meet the criteria for an observed release by chemical analysis to the aquifer at the site, a mobility factor value of one is assigned (Ref. 1, Sec. 3.2.1.2). The resulting groundwater toxicity/mobility factor value is 10,000 (Ref. 1, Table 3-9). The Cass County Treating Company has two sources, the buried surface impoundment and the contaminated soil. The size of the buried surface impoundment is approximately 0.7 acre (Ref. 16, p. 16002). The size of the area of contaminated soil, measured in ARCVIEW based on a minimal number of soil sample locations, resulted in 97,680 square feet (Figure 4). The actual size of the area of contaminated soil has not been delineated and is likely to be much greater than 97,680 square feet.

The City of Linden has four in service drinking water wells (Figure 2). City Well #3 is located within one quarter of a mile from the site. City Well #2 is located between one half and one mile of the site. City Wells #1 and # 5 are located between one and two miles from the site (Figure 2). City Well #4 is no longer in service. A sampling event conducted on March 24, 1993, documented a detection of chromium in City Well #2 (Ref. 33, p. 33021). The City of Linden's drinking water well sample analysis results, from the February 3, 2004 sampling event, indicated observed releases of bis(2-ethylhexyl)phthalate, mercury, antimony, arsenic, chromium, copper, lead, selenium, zinc, and methoxychlor, some in City Well #2 and some in City Well #3 (Ref. 5, pp. 05007, 05011, and 05015). The TCEQ Tyler Region office, conducted a confirmation sampling event on September 8, 2004 (Ref. 32). The September 2004 sampling event did not confirm the detections of any of the previously detected observed releases. Variances existed between the two sampling events. The February 2004 samples were preserved in the field and the September 2004 samples were not preserved until they arrived at the lab the next day and different laboratories were used. An important difference was chlorine was detected in the February 2004 samples and not in the September 2004 samples. The City of Linden's water operator, Robert Luzio, confirmed that the February 2004 samples were collected from the raw water spigots closest to the well heads and prior to chlorination injection points, but in close proximity to the chlorine injection points. During the September 2004 sampling event, the same sample collection points were used as the previous sampling event, but the chlorinators were turned off prior to sampling. Due to apparent back flow from the chlorination point to the raw water spigots, the February 2004 observed releases are not being used to evaluate this site. The site will be evaluated based on potential impact to the City of Linden's public supply wells, based on the September 2004 sample analysis results (Ref. 32).

A total of 2,380 people are supplied by the City of Linden's four active blended public supply wells (Ref. 8, p.1). City Well #3 is located within the zero to 1/4 mile range of the site and supplies 30% or 714 people (Ref. 4, p. 17; 8, p. 08001; and Figure 4). City Well #2 is located within the one half to one mile range of the site and supplies 20% or 476 people (Ref. 4, p. 17; 8, p. 08001; and Figure 4). City Well #4 is abandoned. City Wells #1 and #5 are located within the one and two mile range of the site and supplies 30% and 20% respectively, or 1,190 people (Ref. 4, p. 17; 8, p. 08001; and Figure 4).

Surface Water Pathway

Observed releases of hazardous substances to the surface water pathway is of concern for this site. Both the “Overland/flood migration to surface water” and the “Groundwater to surface water” migration components were evaluated for this site. An observed release of copper is attributable to the site via the overland/flood migration to surface water component (Ref. 6, pp. 06032, 06074, and 06080). Observed releases of both copper and naphthalene are attributable to the site via the groundwater to surface water component. The migration component “Groundwater to surface water migration” yielded the higher score of the two components, and it was selected to be evaluated for the site’s surface water pathway (Ref. 1, Section 4.0.1).

Three probable points of entry (PPE’s) are documented in this report and are indicated in Figure 3. There are two PPE’s to perennial Beach Creek at PPE#1 and PPE#2. The other PPE, #3, is to an unnamed intermittent tributary to Beach Creek. One overland drainage pathway is to the north then east to PPE#1. The other overland drainage pathway is to the south to PPE#3 then east to PPE#2. The groundwater to surface water migration’s closest PPE is PPE#3, to a HRS qualifying PFO1A wetland. The distance to PPE#3 from the site’s source is 520 feet (Figure 3). PPE#3 is fifty feet lower in elevation than the site’s source, see Figure 4 for sample locations and Figure 1 for topography measurements.

There are no drinking water intakes documented for this site. The potential impact to the human food chain would minimally increase the site score, but can not be included in this report due to a data gap of supporting evidence that the downstream Iron Ore Lake is actually a fishery. Evidence of observed releases of hazardous substances to the Cypress Aquifer is documented in the preceding groundwater pathway section and in sample analysis results (Ref. 6, pp. 06092 - 06108). The hazardous substance Naphthalene is detected as an observed release to the Cypress aquifer in monitor well samples MW-02 through MW-04, at levels up to eighty times the background monitor well sample. Naphthalene is also detected as an observed release in sediment sample SE-07. Sediment sample SE-07 was collected in the PFO1A wetland along the intermittent tributary to Beach Creek, approximately 0.1 mile downstream of the PPE to the wetland (Figure 4). Since naphthalene was not detected at the PPE to the PFO1A wetland, the wetland is only subject to potential impact rather than a level II.

Since Naphthalene is detected in groundwater, it has a Ground Water Mobility value of 1 (Ref. 1, Sec. 3.2.1.2), Persistence value of 0.4, Bioaccumulation Food Chain value of 50,000, Bioaccumulation Environment Value of 50,000, and an Ecotoxicity value of 1,000 (Ref. 2, Naphthalene).

Two PFO1A wetlands are located along minimal stream surface water body types (Ref. 1, Table 4-14). One wetland is located approximately 520 feet south of the site’s buried surface impoundment and extends approximately 0.2 miles for 0.4 miles of wetland frontage length (Ref. 9; and Figure 4). The other PFO1A wetland is located along Beach Creek and extends approximately two miles for four miles of wetland frontage length (Ref. 9; and Figure 4). The two PFO1A wetlands rating values are combined since they are both minimal streams and result in a value of 125 (Ref. 1, Table

4-24). Potential impact to the Cass County threatened species the Louisiana Black Bear (*Ursus americanus luteolus*) was not included in the site score due to its minimal contribution to the site score (Ref. 10).

Pathways, Components, or Threats Not Evaluated:

Surface Water Pathway - Overland/Flood Migration Component

Both the “Overland/flood migration to surface water” and the “Groundwater to surface water” migration components were evaluated for this site. The migration component “Groundwater to surface water migration” yielded the higher score of the two components, and it was selected to be evaluated for the site’s surface water pathway (Ref. 1, Section 4.0.1).

Soil Exposure Pathway

There are documented observed releases of several hazardous substances to the surface soil, including arsenic and chromium with high levels of toxicity. Access to the site is not restricted by a fence, but there is no evidence of public recreational use. There are two Arnold Forest Products workers on-site, the nearest individual resident is located within 0.25 miles, and the nearby population value equals six. Chad Arnold stated that Arnold Forest Products was about to discontinue operating at the site and another wood treater from Oklahoma was going to startup onsite operations in July of 2004. The Soil Exposure Pathway score was calculated and found not to significantly contribute to the site score, therefore, it is not being evaluated in this HRS report.

Air Migration Pathway

The Air Migration Pathway is not being evaluated since the pathway score does not increase the site score. There is no observed release for the Air Migration Pathway.

(Although evaluation of these pathways is not documented in this report, the TCEQ is concerned for all pathways surrounding the site. However, evaluation of these pathways would not have significantly increased the overall site score.)

NOTE TO READER

The following rule was used when citing references in the HRS Documentation Record:

The State predecessor agencies: Texas Water Quality Board (TWQB), Texas Department of Water Resources (TDWR), Texas Water Commission (TWC), Texas Air Control Board (TACB), and Texas Natural Resource Conservation Commission (TNRCC) 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 State House Bill 2912 of the 77th Regular Legislative Session.

HRS DOCUMENTATION RECORD

NAME OF SITE: Cass County Treating Company

DATE PREPARED: 09/2004

CERCLIS SITE ID NUMBER: TXD008058844

TCEQ ID#: 32765

SITE LOCATION: 304 Hall Street (see Figure 1, Site Location Map).
Linden, Cass County, Texas 75563

TOPOGRAPHIC MAP: US Geological Survey 7.5 Minute Topographic Map, Linden,
Tex. (Figure 1).
Latitude: 33^o 00' 10" North
Longitude: 94^o 21' 02" West

TCEQ REGION: 5

SITE CONTACTS:

Owner: Cass County Treating Company
Mr. Charles Evans (903) 756-5840
P.O. Drawer C
Linden, Texas 75563

Operator: Mr. Casey Cogburn (580) 271-0734
Julian Lumber Company
304 Hall Street
Linden, Texas 75563

SITE SCORING SUMMARY:

Pathway Scores:

Groundwater Migration Pathway - 25.17
Surface Water Migration Pathway - 8.33
Soil Exposure Pathway - NE
Air Migration Pathway - NE
NE - Not Evaluated

HRS SITE SCORE: 13.25

SITE SUMMARY

General Description of the Site:

Cass County Treating Company is a 17.07 acre site within the southeastern city limits of Linden, in Cass County (Ref. 11; and Figure 1). The site is located at Latitude 33° 00' 10" North and Longitude 94° 21' 02" West, at 304 Hall Street, Linden, Texas. The site is bordered by residential areas to the west and north and undeveloped wooded areas to the south and east (Figure 1). The facility is unsecured, it does not have a perimeter fence or gates to limit access. No warning signs are posted at the buried surface impoundments or the site's perimeter.

Site History:

The Cass County Treating Company (CCTC) began preserving wood with pentachlorophenol in the 1960's (Ref. 12, p. 2). In 1976, CCTC backfilled three surface impoundments which had been used for the disposal of PCP-contaminated wastewater (Ref. 13, p. 2). In 1984 the facility switched from pentachlorophenol to chromated copper arsenate (CCA) for preserving wood (Ref. 13, p. 5). In 1986, a TWC sampling inspection documented PCP releases into a drainage ditch and spring water leaving the site (Ref. 13, pp. 6, 9, 24, 25, 28, 29, 30, and 31).

On November 25, 1986, the TWC issued a Notice of Violation letter to Mr. Charles Evans which included five violations and request for written response to cited requirements (Ref. 14). On February 10, 1987, the TWC issued a Notice of Violation letter to Mr. Charles Evans, CCTC President, which included five violations (Ref. 15).

On June 8, 1987, four monitor wells were installed at CCTC and the cap on the buried surface impoundments was determined to be unsuitable (Ref. 16, pp. 16001 and 16002). The size of the buried surface impoundment area was noted to be 0.7 acres (Ref. 16, p. 16002). On February 2, 1988, the TWC issued a letter to Jones and Neuse, Inc. that the construction specifications for the dike reconstruction and cap installation appeared to be sufficient and agreed that quarterly groundwater monitoring should be conducted (Ref. 17).

On June 20, 1989, the TWC issued a Notification of Contamination of Usable Ground Water to Cass County officials and Cass County Treating Company (Ref. 18).

In 1988, Jones and Neuse, contractor for CCTC conducted four quarterly groundwater sampling events. During each groundwater sampling event, all three down gradient monitor wells showed evidence of phenolic organic contamination (Ref. 19, p. 6).

On January 16, 1992, the TWC issued a Notice of Violation Letter to Mr. Charles Evans, President of CCTC, concerning the presence of pentachlorophenol compounds in the ground water at his facility (Ref. 20). On November 14, 1996, the TNRCC's Enforcement Division issued a Notice of Solid Waste Violations letter to CCTC (Ref. 21). On February 10, 1997, the TNRCC issued Mr.

Chuck Evans a proposed Agreed Order with an administrative penalty of \$36,760.00 and a Notice of Enforcement Action For Settlement Purposes Only (Ref. 22). On March 6, 1997, a Settlement Conference was held. The Cass County Treating Company stated they would comply with Ordering Provision #2 concerning groundwater assessment and remediation and assessing the surface water drainage, but they were financially unable to pay the assessed penalty (Ref. 23).

On May 2, 1997, the TNRCC issued a response letter to a complainant regarding pentachlorophenol seeping from the buried surface impoundment at CCTC. Two of the three surface water samples collected indicated detections of pentachlorophenol (Ref. 24).

On April 22, 1997, the TNRCC issued a certified letter to CCTC. The 60 day deadline had expired and the offer to settle the case was withdrawn. The file is now in the Litigation Support Division (Ref. 25). On August 22, 1997, the TNRCC Litigation Support Division referred the CCTC enforcement action to the State Office of Administrative Hearings (SOAH) (Ref. 26). On March 23, 1998, the State Office of Administrative Hearings issued an Order of Dismissal for SOAH Docket No. 582-97-1706. The Order was issued based on CCTC's financial inability to pay for remediation costs or administrative penalties (Ref. 27). On April 20, 1998, the TNRCC Enforcement Division referred the CCTC site to the TNRCC Site Assessment Section of the Pollution Cleanup Division (Ref. 28). In June 1997, CCTC ceased doing business and leased the facility and equipment to Arnold Forest Products for ten years with an option to buy the land (Ref. 28, p. 2).

On June 17, 1998, the TNRCC Superfund Site Discovery and Assessment Program completed a Screening Report for the Cass County Treating Company Site (Ref 31). A deed search was conducted on October 24, 2002 (Ref. 29 and 30). The Cass County Appraisal Office records indicate the owner of the site is listed as Cass County Treating Company C/O Arnold Forest Products (Ref. 29). Cass County records indicate Cass County Treating Company (CCTC) is the owner of the site and no taxes have been paid since 1997 (Ref. 30). As of October 2002, CCTC owed Cass County property taxes totaling \$8,819.26 (Ref. 30). Even though CCTC is the legal owner of the site, Charles Evans has continued to lease the site, since CCTC ceased operations in 1997. Arnold Forest Products purchased and used the storage tanks for CCA solution and the pressure vessel to treat posts. Arnold Forest Products sold all the treating equipment to Julian Lumber Company, Inc. Julian Lumber Company, Inc. began leasing the site from Charles Evans and operating the treating plant, during July 2004.

During January 2004, a State HRS sample plan was approved and URS Corporation was selected to conduct the sampling event which was completed during the week of February 2, 2004 (Ref. 3; and 4). The analytical data for the soil, sediment, and monitor well samples was rejected by the TCEQ and the sampling event was rescheduled and conducted the week of June 14, 2004 (Ref 3; and 4). The City of Linden's public supply wells were resampled on September 8, 2004, due to the February 2004 detection of bis(2-ethylhexyl)phthalate in excess of its Maximum Contaminant Level (MCL). The analytical results of the samples collected from the City of Linden's public supply wells, on September 8, 2004, were received by the TCEQ on September 22, 2004 (Ref. 32).

REFERENCES

- | <u>Reference Number</u> | <u>Description of the Reference</u> |
|-------------------------|---|
| 1. | U.S. Environmental Protection Agency, 40CFR Part 300, <i>Hazard Ranking System</i> , Appendix A, 55 FR 51583, December 1990. |
| 2. | U. S. Environmental Protection Agency, <i>Superfund Chemical Data Matrix (SCDM)</i> . January 28, 2004. |
| 3. | Hazelwood, Gary, Superfund Site Discovery and Assessment Program, Texas Commission on Environmental Quality, Photographs, February 3, 2004 and June 14-16, 2004. 10 pages. |
| 4. | Hazelwood, Gary, Superfund Site Discovery and Assessment Program, Texas Commission on Environmental Quality, Sampling Event Field Notes. February 3, 2004 and June 14-16, 2004 . 8 pages. |
| 5. | LCRA Environmental Laboratory Services, Case Narrative and Final Analysis Report for Drinking Water Samples Collected February 3, 2004. February 11, 2004. 45 pages. |
| 6. | E-Lab Analytical, Inc. Work Order 0406155 Analytical Data Package for Monitor Well, <u>Soil, and Sediment</u> Samples, Collected the week of June 14, 2004. June 29, 2004. 111 pages. |
| 7. | Texas Water Development Board, <u>Ground-Water Resources of Cass and Marion Counties, Texas, Report 135</u> . October 1971. 16 pages. |
| 8. | Texas Commission on Environmental Quality, Water System Data Sheet. October 17, 2002. 4 pages. |
| 9. | U.S. Department of the Interior. National Wetland Inventory Maps, Linden and Lanier, Tex., 7.5 Minute Topographic Quadrangles. 1979. 2 pages. |
| 10. | U.S. Fish and Wildlife Service, Threatened and Endangered Species of Texas. August 1992. 3 pages. |
| 11. | Cass County Records, Plat Map. Undated document. 1 page. |
| 12. | Arceneaux, Lisa and Annette Ponds, Engineering-Science, Inc., Inspection Report. July 8, 1986. 4 pages. |
| 13. | Anderson, Keith, Texas Water Commission, Solid Waste Compliance Monitoring Inspection Report. October 27, 1986. 31 pages. |
| 14. | Witherspoon, John, Texas Water Commission District 5 Manager, to Mr Charles Evans, |

- Notice of Violation Letter. November 25, 1986. 2 pages.
15. Pole, Samuel, Texas Water Commission Hazardous and Solid Waste Enforcement Section Chief, to Mr. Charles Evans, Notice of Violation Letter. February 10, 1987. 2 pages.
 16. Dick, Michael, Jones and Neuse, Inc. Project Manager, to David Buchanan, Texas Water Commission, Letter. June 30, 1987. 3 pages.
 17. Pole, Samuel, Texas Water Commission Hazardous and Solid Waste Enforcement Section Chief, to Mr. Fred Dalbey, Jones and Neuse, Inc. Project Manager, Letter. February 2, 1988. 2 pages.
 18. Eden, Daniel, Texas Water Commission Hazardous and Solid Waste Division Director, to The Honorable Tommy E. Kessler and Dr. R. Bruce Legrow, M.D., Notification of Contamination of Usable Ground Water Letter. June 20, 1989. 2 pages.
 19. Dalbey, Fred, Jones and Neuse, Inc. Senior Project Manager, to Anne Dobbs, Texas Water Commission Hazardous and Solid Waste Division Enforcement Section Chief, Revised Ground-Water Monitoring Summary. July 8, 1991. 28 pages.
 20. Dobbs, Anne, Texas Water Commission Enforcement Section Manager to Mr. Charles Evans, Cass County Treating Company President, Notice of Violation Letter. January 16, 1992. 2 pages.
 21. Rodriguez, Juan, Texas Natural Resource Conservation Commission Industrial and Hazardous Waste Section Team Supervisor, to Mr. Chuck Evans, Notice of Violation Letter. November 14, 1996. 6 pages.
 22. Rodriguez, Juan, Texas Natural Resource Conservation Commission Industrial and Hazardous Waste Section Team Supervisor, to Mr. Chuck Evans, Notice of Enforcement Action Letter. February 10, 1997. 9 pages.
 23. Magourik, Deborah, Texas Natural Resource Conservation Commission Enforcement Coordinator, Settlement Conference Notes to Files. March 18, 1997. 2 pages.
 24. Brashear, Mike, Texas Natural Resource Conservation Commission Region 5 Waste Program Manager to Mr. Robert Hamm, Complaint Number 059700433 Response Letter. May 2, 1997. 2 pages.
 25. Rodriguez, Juan, Texas Natural Resource Conservation Commission Industrial and Hazardous Waste Section Team Supervisor, to Mr. Charles Evans, Enforcement Action Letter. April 22, 1997. 1 page.
 26. Harrison, Tracy, Texas Natural Resource Conservation Commission Litigation Support

- Division Attorney, to Eugenia K. Brumm, Ph.D, Texas Natural Resource Conservation Commission Chief Docket Clerk. Enforcement Referral to the State Office of Administrative Hearings. August 22, 1997. 6 pages.
27. Ehret, Bill, State Office of Administrative Hearings Administrative Law Judge, Order of Dismissal. March 23, 1998. 2 pages.
 28. Nyffenegger, Anne, Texas Natural Resource Conservation Commission Waste Section Enforcement Coordinator, to Stennie Meadours, Texas Natural Resource Conservation Commission Site Assessment Section Manager. Interoffice Memorandum. April 20, 1998. 3 pages.
 29. Cass County Appraisal Office, Parcel View for Cass County Treating Company. October 24, 2002. 1 page.
 30. Cass County Tax Collector, Statement of All Taxes Due for Cass County Treating Company. October 24, 2002. 1 page.
 31. Texas Natural Resource Conservation Commission, Preliminary Hazard Assessment Report. June 17, 1998. 6 pages.
 32. Texas Department of Health, Bureau of Laboratories, Water Analysis Report. September 8, 2004. 12 pages.
 33. U.S. Department of the Interior, Water Resources Division, Well Schedule - Geological Surveys. October 1967. 32 pages.

WORKSHEET FOR COMPUTING HRS SITE SCORE

	<u>S</u>	<u>S²</u>
1. Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	<u>25.1733</u>	<u>633.6950</u>
2a. Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	<u>4.6666</u>	<u>21.7772</u>
2b. Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	<u>8.3333</u>	<u>69.4439</u>
2c. Surface Water Migration Pathway Score (S_{sw}) Enter the larger of lines 2a and 2b as the pathway score.	<u>8.3333</u>	<u>69.4439</u>
3. Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	_____	_____
4. Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	_____	_____
5. Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$	<u>703.1389</u>	
6. HRS Site Score Divide the value on line 5 by 4 and take the square root	<u>13.25</u>	