United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R06-89/047
December 1988

EPA

Superfund Record of Decision:

Pesses Chemical, TX

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. EPA/ROD/R06-89/047	2.	3. Recipient's Accession No.

4. Title and Subtitle
SUPERFUND RECORD OF DECISION
Pesses Chemical, TX
First Remedial Action - Final

5. Report Date: 12/22/88

6.

7. Author(s)

8. Performing Organization Rept. No.

9. Performing Organization Name and Address

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

13. Type of Report & Period Covered: 800/000

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The 4.2-acre Pesses Chemical Company site is located in Tarrant County, Ft. Worth, Texas. The site is situated in a light industrial and commercial area with an estimated 19,500 people residing or working within a one mile radius. The site is divided into a northern and southern section. The northern section is fenced and includes an occupied office building and brick warehouse as well as the former operations area, composed of a metal warehouse, various equipment, a bag house, a storage yard, and two underground sumps. The southern portion of the site is an abandoned field. In June 1979, the Pesses Company began operations to reclaim cadmium and nickel from dry-cell batteries and metal sludges (without the required construction or operation permits). During July and August 1979, excessive cadmium emissions were investigated by both the city and State air pollution control offices. Pesses ceased operations to obtain the proper permits; however, after operations began again cadmium emissions were measured as high as 2,900 percent above permit limits. In January 1981, the parent company declared bankruptcy and site operations were discontinued. In March 1983, a grass fire at the site resulted in toxic cadmium oxide fumes, which hospitalized a firefighter. Approximately 1,500 deteriorating drums containing heavy metal sludges, powder, and empty battery cases remained onsite. In April 1983, EPA removed 3,400 yd3 of soil,
(See Attached Sheet)

17. Document Analysis a. Descriptors
Record of Decision - Pesses Chemical, TX
First Remedial Action - Final
Contaminated Media: soil, debris
Key Contaminants: metals (lead)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

Availability Statement	19. Security Class (This Report) None	21. No. of Pages 52
	20. Security Class (This Page) None	22. Price

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16. Abstract (continued)

drummed material, and debris from the site and installed a clay cap in the storag yard to prevent exposure to contaminated soil. Heavy metals contamination from airborne dust and surface water runoff are the main potential threats at the site addition to soil contamination, two sumps in the southern portion contain 1,914 gallons of liquid contaminated with metals and 16.6 yd3 of sludge contaminated wit cadmium and nickel. There is also limited offsite cadmium contamination of soil. primary contaminants of concern affecting the soil, buildings and equipment, and debris are metals including cadmium, lead and nickel.

The selected remedial action for this site includes excavation of contaminated offsite soil and wastes, and consolidation with onsite contaminated soil, followed in situ stabilization; installation of a concrete cap around the fenced portion of site and around the south warehouse and office building, and a RCRA clay cap placed the south field; decontamination of the metal warehouse and equipment with resultan solid wastes combined with the soil remediation, and waters treated and discharged into the sewer system; offsite disposal of drums and debris, as well as equipment t cannot be adequately cleaned, and offsite deep well injection of wastewater above P discharge requirements; and cleaning and sealing the sumps. The estimated present worth cost for this remedial action is $1,200,000 with annual O&M of $7,000.

RECORD OF DECISION

FOR

PESSES CHEMICAL SITE
FORT WORTH

TARRANT COUNTY, TEXAS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
DECEMBER 1988

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PESSES CHEMICAL COMPANY
RECORD OF DECISION

DECLARATION
PESSES CHEMICAL COMPANY
RECORD OF DECISION

December 1988

SITE NAME AND LOCATION

Pesses Chemical is located in Fort Worth, Tarrant County, Texas.

STATEMENT OF PURPOSE

This decision document presents the selected remedial action and the rationale for this action as warranted for the Pesses site. This decision is in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Contingency Plan (40 CFR Part 300).

STATEMENT OF BASIS

This decision is based upon the administrative record for the Pesses Chemical Superfund Site. The attached index (Appendix A) identifies the items which comprise the administrative record.

Based upon the findings in the Remedial Investigation for this site, the residual contamination remaining in surface and subsurface soils and the Pesses warehouse (following the 1983 Emergency Response Action) pose health and environmental threats which require remediation. Ground water has not been and should not be affected by this site. Therefore, the remedy selected will address all concerns of the site and will represent the only operable unit required for final remediation of the Pesses site.

The Agency for Toxic Substances and Disease Registry (ATSDR) has been consulted and supports this conclusion.

DESCRIPTION OF SELECTED REMEDIAL ACTION

- Contaminated off-site soils will be incorporated with treatment of contaminated onsite soils.

- Contaminated soils will be treated in place utilizing a stabilization technique available for shallow soils. A concrete cap will be placed within the fenced portion of the site around the south warehouse and office building. A RCRA clay cap will be placed in the south field.

- The metal warehouse and miscellaneous equipment will be cleaned and left in place. Liquid and solid wastes will be generated as a result of this decontamination process. Solids will be combined with the soils remediation and the waters will be treated and discharged into the sewer system. Equipment which cannot be adequately cleaned and water which cannot meet discharge requirements will require off-site disposal.

- The site will be maintained annually and inspected every 5 years for review of the remedy's effectiveness.

DECLARATION

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986, and the National Contingency Plan, I have determined that this decision will provide adequate protection of human health and the environment. This remedy attains Federal and State requirements that are applicable, or relevant and appropriate to the site. This remedy satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. This remedy is cost effective. Because hazardous substances will remain onsite above health based levels, five-year facility reviews will be conducted after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

The State of Texas has been consulted and supports this remedial decision for the Pesses Chemical Superfund Site.

12-22-93
DATE

Robert E. Layton Jr., P.E.
Regional Administrator

DECISION SUMMARY

PESSES CHEMICAL COMPANY
RECORD OF DECISION

DECISION SUMMARY
PESSES CHEMICAL COMPANY
RECORD OF DECISION

December 1988

I. SITE BACKGROUND

Location and General Description

The Pesses Chemical Company Superfund Site is located at 2301 South Main Street in Ft. Worth in Tarrant County, Texas [Figure 1]. The site is triangular in shape, approximately 4.2 acres in size. An office building, brick warehouse, and asphalt parking lot within the northernmost fenced portion of the site are currently occupied. The former Pesses operations area within the southern fenced portion of the site and the south field are abandoned. The former operations area consists of a metal warehouse with various pieces of equipment, a baghouse, two underground sumps, and a storage yard with a concrete pad [Figure 2].

Bordered on the north by the Cenikor Drug Rehabilitation Foundation, on the east and much of the south by the Ney Railway Yard, and on the west by South Main Street, the site is situated in a light industrial and commercial area. Morningside Drive borders the southern tip of the site. Residential districts are located approximately one half mile to the northeast and three-fourths mile southwest of the site. Two hospitals and five schools are within one mile of the site. In 1984, approximately 19,500 people were estimated to reside or work within a one mile radius of the Pesses site.

Site History

The Pesses Company of Solon, Ohio [METCOA] purchased property in Ft. Worth, Texas, in December 1978. Operations to reclaim cadmium and nickel from dry-cell batteries and metal sludges began in mid-June of 1979. Furnaces fired by natural gas were heated to separate cadmium from the mixture in the form of cadmium oxide gas. Once the gasses were cooled and condensed into liquid, the cadmium was formed into solid balls weighing approximately 1.25 pounds each. These balls were then shipped to various plating facilities off-site. Nickel and iron scrap were collected in 55 gallon drums for shipment to the Pesses Company reclamation plant in Pennsylvania.

The Pesses Company did not obtain the construction or operation permits required by the State prior to operations. In July and August of 1979, excessive cadmium emissions were investigated by both the City and State air pollution control offices. Pesses ceased operations to obtain the proper permits. Once operations were again underway, February 1980, cadmium emissions were measured as high as 2900 percent of the 0.01 pound per hour permit limits. In January 1981, the parent company in Ohio claimed bankruptcy and operations at the Ft. Worth plant were discontinued.

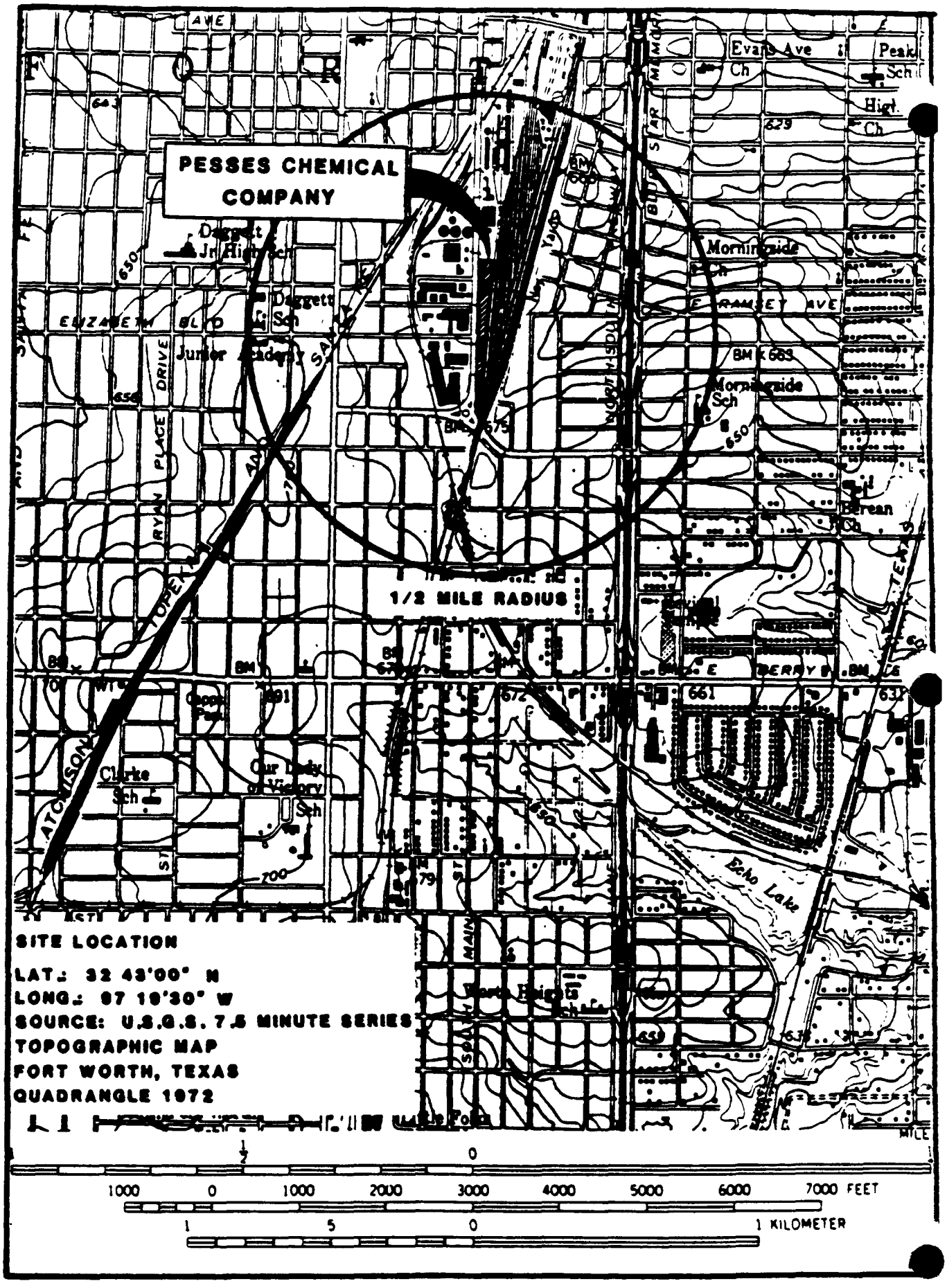
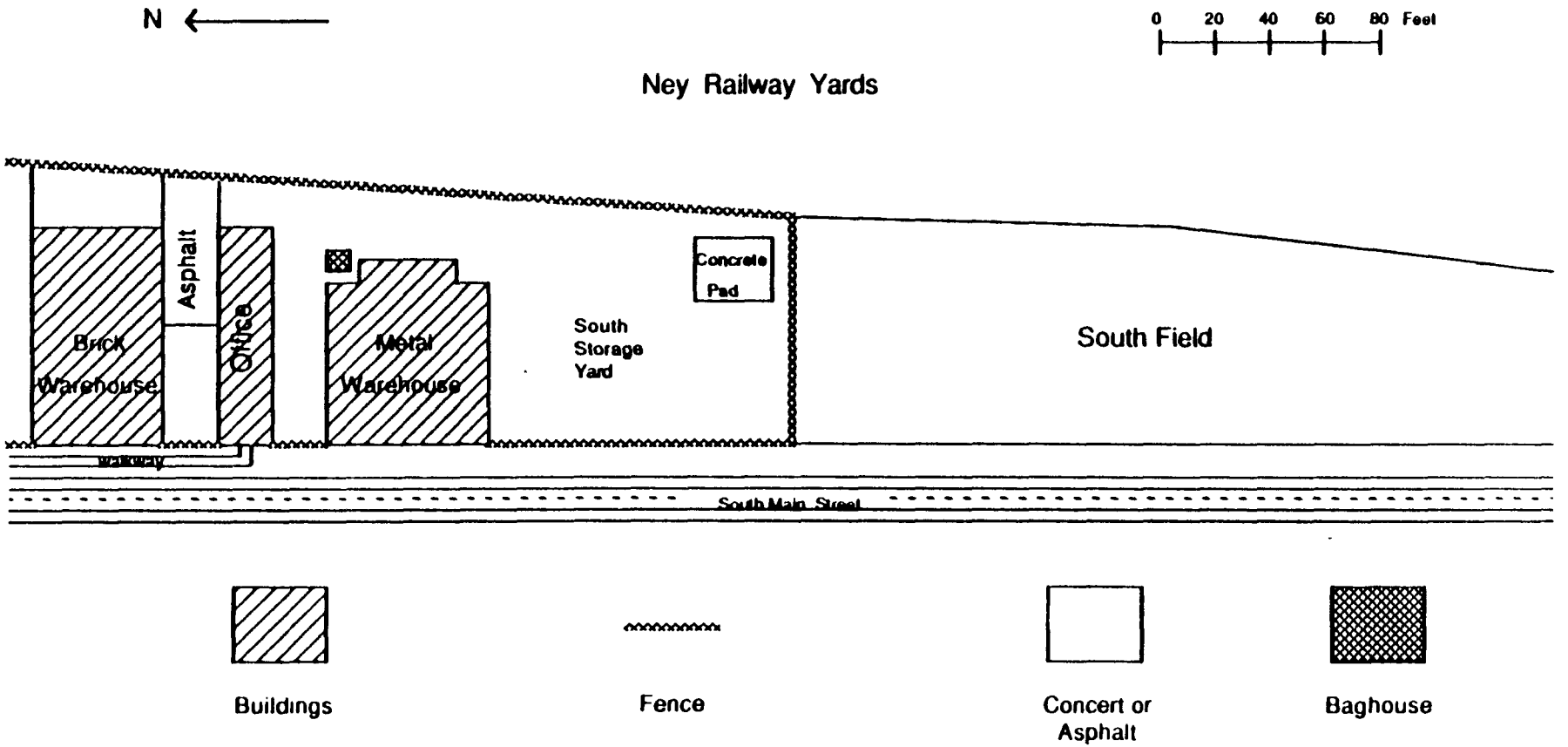


FIGURE 1 LOCATION MAP OF PESSES CHEMICAL COMPANY

Figure 2: Pesses Site, Fort Worth, Texas



In March 1983, a grass fire at the site resulted in toxic cadmium oxide fumes which hospitalized a firefighter. Approximately 1500 deteriorating drums remained onsite with heavy metal sludges, powder, and empty battery cases. Since the Pesses Company lacked the funds necessary for site cleanup, the Environmental Protection Agency Emergency Response Team removed 3,400 cubic yards of soil, drummed material, and debris from the site in April 1983. A clay cap was placed in the south storage yard to prevent exposure to contaminated soils remaining onsite.

In April 1984, particulate air sampling revealed .014 - .048 parts per billion cadmium at the site boundary. The Pesses Chemical Company site was placed on the National Priorities List in October 1984 with a score of 28.86 due mainly to the potential off-site migration of heavy metals via airborne dust and surface water runnoff.

From June 1985 through November 1985, the south storage yard was occupied by a tenant through the bankruptcy court. The tenant had placed several trailers on the cap and truck grooves on the cap indicated that the clay layer had been damaged. The EPA Technical Assistance Team repaired damage to the cap and resecured the site in November 1985.

The Remedial Investigation was initiated in November 1987. At this time, the northern portion of the site was leased out by the bankruptcy trustee. The tenant had no access to the southern portion of the site. Sampling results of the Phase I Remedial Investigation revealed high levels of cadmium and lead in soils on the northern portion of the site between the north brick warehouse and office building. Since this area was transversed frequently with heavy machinery, the tenant agreed to place a 5 inch asphalt cap and a 6 foot chain link fence across this area to reduce potential health risk to his employees. The action was overseen by EPA personnel in August 1988. The tenant remains onsite.

Enforcement Activities

The goal of EPA is to recover as much cost as possible from the bankruptcy court, proceedings out of Solon, Ohio. In addition, EPA has currently identified five separate potentially responsible parties for the Pesses site. These parties will be given the opportunity to conduct or participate in the remedial action selected for the site. If they fail to accept this opportunity, EPA will issue an administrative order for their participation. If they refuse the order, EPA may fund and implement the site remedy and then initiate cost recovery actions against them.

II. SITE CHARACTERIZATION

Topography

The site surface is fairly flat, although the land does slope slightly in certain areas. The railroad tracks are elevated above the site to form a drainage ditch area along the east boundary of the site. The area north of the Pesses warehouse generally drains east to this ditch and then northward toward a storm sewer located on the east site of the Cenikor property. Drainage south of the Pesses warehouse is towards storm sewers located along South Main Street.

The Pesses site is situated within the drainage basin of Sycamore Creek which is a tributary to the West Fork of the Trinity River. Sycamore Creek has its headwaters in rural areas southwest of downtown and flows northeasterly via an open channel through urbanized areas to the south and east of downtown Ft. Worth. The creek is approximately 1.1 miles southeast of the site. Pesses is not located in the 100 year flood plain of Sycamore Creek-Trinity River

Geology

Pesses is situated on the outcrop of the undifferentiated Washita and Fredricksburg groups. This outcrop is approximately 425 feet thick in the vicinity of the site. Shallow soils are mostly calcareous silty clay which resulted from weathering of the underlying shaley limestones and marls. The geology below the site consists of interbedded clay layers and discontinuous limestone units down to a 40 foot depth. At this point, the number of semiconsolidated limestone and shale units increase with depth to approximately 380 feet below ground surface.

Hydrogeology

From an estimated altitude of 290 feet above mean sea level, the Paluxy Formation is isolated from surface infiltration by 380 feet of low permeability clay, shale, and shaley limestone. The Paluxy Formation yields small to moderate quantities of water for municipal, industrial, and agricultural uses in Ft. Worth. The closest well to the site was identified at Saint Joseph Hospital, 0.6 mile north of the site. This well has been inactive for at least 40 years.

Although shallow perched water conditions were encountered to a depth of 15 feet, these localized conditions were discontinuous. This water does not constitute an uppermost water bearing unit. No water bearing zones are present from 15 feet to 100 feet below the surface. Therefore, the Paluxy Formation is the uppermost aquifer below the site.

III. SITE ASSESSMENT

The Remedial Investigation fieldwork was conducted in December 1987 and February 1988. The primary objective was to acquire site-specific data needed to document the existence of hazardous substances and threats of releases of hazardous substances at the Pesses site. This data was used to evaluate the potential effect of site contaminants on human health and the environment.

Contaminants of concern were selected by assessing their toxicity, concentration, and persistence. Because the contaminants of concern at Pesses are common elements in the environment or are the result of other industrial activities in the area, background concentrations were used for comparative purposes. In the absence of health criteria or background information, toxicity information was used to quantify risks associated with a chemical. Qualitative evaluations were done for contaminants of concern for which toxicity information was not available.

Nature and Extent of Site Contamination

Although the imminent health threat had been alleviated by the Emergency Removal Action in 1983, some soils retained high metal concentrations. The building and miscellaneous equipment were left unaddressed and some drums of debris remained onsite. The RI sampling effort confirmed the following facts:

- Organic contaminants were not found at concentrations which pose health or environmental impacts.

- Cadmium, nickel, lead, and copper are the inorganic contaminants of concern. Table 1 lists concentrations of these metals in the various media at Pesses.

- Soils onsite contain elevated metal concentrations to an average 1 foot depth. A limited area of contamination extends 10 feet in depth.

- Two sumps located in the south storage yard contain 1,914 gallons of liquid and 16.6 cubic yards of sludge. The liquids contain less than 1 mg/l of metals. The sludges contain 750 mg/kg of cadmium and 1,100 mg/kg of nickel.

- The baghouse at the northeast corner of the metal warehouse contains dust of high cadmium content.

- The metal warehouse contains cadmium contaminated dust on the floor and walls. Miscellaneous equipment inside the warehouse contains similar dust.

- Exposed insulation fibers in the metal warehouse tested negative for asbestos.

TABLE 1
CONTAMINANTS OF CONCERN IN VARIOUS MEDIA
PESSES CHEMICAL SITE

	AIR PARTICULATES (mg/m^3)		SEDIMENTS (mg/kg)		SURFACE WATER (mg/l)		SURFACE SOILS (mg/kg)		DUST PILES (mg/kg)	
	Mean	Maximum	Mean	Maximum	Mean	Maximum	Mean	Maximum	Mean	Maximum
Cadmium	0.0002	0.0039	77.3	310.0	0.30	0.48	383	2400	216000	590000
Copper	0.0005	0.0039	124.3	400.0	0.46	0.99	2475	29000	1450	3400
Lead	0.0001	0.0017	115.4	300.0	0.31	1.70	1275	46000	726	2100
Nickel	0.0005	0.0097	54.7	290.0	0.09	0.17	463	3200	41100	260000

- Waste piles and drums inside and outside the building contain high cadmium and nickel concentrations.

- Limited off-site areas of shallow soils contain cadmium as a result of:

  (1) excessive cadmium oxide emissions during active site operations;
  (2) drainage from the site to the Cenikor Foundation;
  (3) tracking from the south storage yard in 1985 when the clay cap was disturbed by active use of the area with heavy machinery.

- Airborne particulates did not contain contaminants at levels of concern during fieldwork activities.

Site Risk Assessment Summary

The following summary highlights the broad concerns raised as a result of the risk assessment process, but does not present the numerous assumptions and constraints employed in the actual assessment. Please refer to the Remedial Investigation Report for a complete presentation of the risk assessment.

The risk assessment was conducted using conservative assumptions according to the general public health evaluation guidelines outlined in the Superfund Public Health Evaluation Manual, 1986 Directive 9285.4-1. The purpose of using conservative assumptions is to explore the potential for adverse health effects using conditions that tend to overestimate risk. As a result, the assessment of risks should not be construed as presenting an absolute estimate of risk to human health. Rather, it is a conservative analysis intended to indicate the potential for adverse health effects to occur.

"Maximum plausible cases" of exposure that current residents or nearby workers may be subject to under the present site use conditions were used to estimate "worst case risk". For example, a "maximum plausible case" assumes that exposure to the maximum concentration level identified onsite occurs every time exposure occurs. The "worst case risk" is then estimated over an individual's expected 70 year lifetime.

Although none of the heavy metals of concern are cancer-causing [carcinogens] from direct contact or ingestion, adverse health effects can still occur from the levels of heavy metals present onsite. For instance, an individual on the site might dermally contact heavy metal contaminants in soils and/or waste piles and after continued exposure might develop problems with her kidney, nervous system, etc.

Cadmium and nickel are carcinogens via inhalation. In other words, besides incidentally ingesting contaminants through hand to mouth interactions, an individual might stir up soils/waste and inhale heavy metal particulates. An individual who trespasses onsite has a two-in-one-thousand chance of developing cancer over his expected 70 year lifetime due to exposure to the maximum concentrations of both cadmium and nickel identified onsite. However, if an individual were to work on the site and be exposed to contaminants for longer and more frequent periods of exposure, he might have a two-in-one-hundred chance of developing cancer.

Remediation Goals

From the risk assessment, potential health hazards exceed EPA's one in ten thousand maximum risk for leaving the site as it presently exists. Target soil action levels were determined from the worst case exposure scenario that was provided in the baseline risk assessment and from comparison with background sample values of metals in the site vicinity:

Metal of Concern	Action Level
Cadmium	15 ppm
Nickel	100 ppm

The cadmium and nickel concentrations ensure that a carinogenic risk from the site will not exceed a one in one million risk. Since areas which contain elevated cadmium and nickel concentrations correspond with areas of elevated lead and copper, lead and copper concentrations detected onsite will not present a health or environmental impact once cadmium and nickel contaminated soils are addressed.

IV. RESPONSE ACTION

The remedial activities at the Pesses site have not been separated into operable units. Each remedial alternative described in this Record of Decision addresses all contaminated media identified at the site.

Description of Remedial Alternatives

In accordance with the National Contingency Plan [NCP], initial remedial approaches were screened to determine which might be appropriate for this site. The Feasibility Study Report describes the details of this screening. From the possible remedies developed for Pesses, six alternatives were chosen for detailed analysis. A No Action Alternative is included in the final analysis to comply with the NCP requirements.

Common elements among the remedial action alternatives include considerations for the metal warehouse, baghouse and miscellaneous equipment, and the two sumps located onsite. All remedial alternatives consider cleaning the building and leaving it in place. Drums and other contaminated debris which cannot be included in the main soil remedy will be disposed off-site. Equipment that cannot be adequately cleaned and left in place may also be disposed off-site. The sumps will be cleaned and sealed in place.

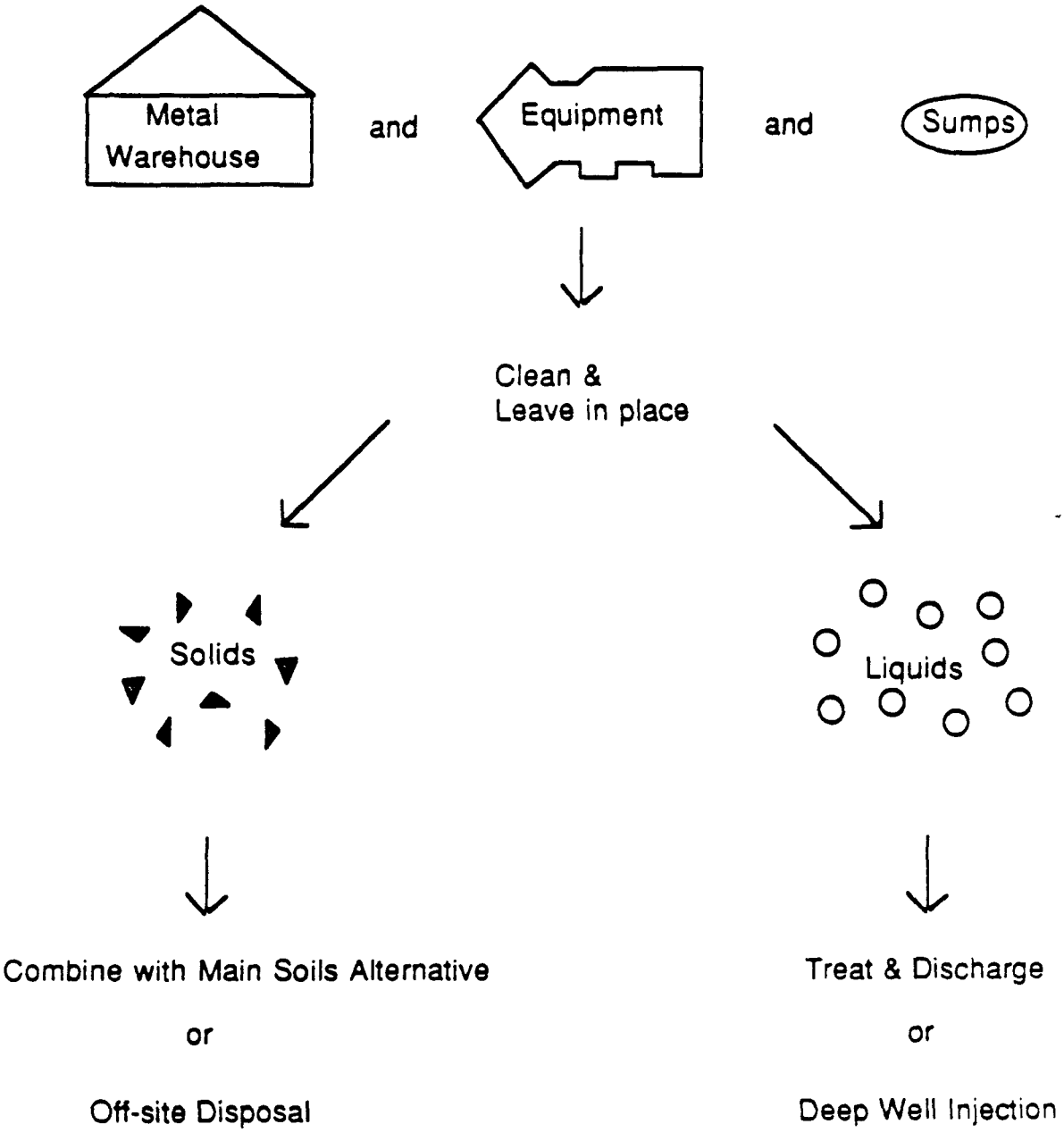
As part of any remedial alternative, solid and liquid wastes will be generated as a result of building, equipment, and personnel decontamination. Each alternative assumes that solid wastes can be combined with the soils remediation and liquid wastes can be treated onsite and discharged to the storm sewer. However, those solids which cannot be combined effectively with the soils remediation will be included with the drums and other debris for off-site disposal. Similarly, if wastewaters cannot be treated to meet applicable or relevant and appropriate discharge requirements, then off-site deep well injection will be necessary. The decon water levels anticipated and the sump waters tested are below the criteria for deep well injection. Figure 3 is a schematic of how each concern will be addressed.

In the Feasibility Study, cleaning and demolition of the surface structures was considered as a separate alternative. In this Record of Decision, the cleaning, demolition, and off-site disposal alternative is not considered except in part (equipment that cannot be adequately cleaned and left in place). By cleaning the structures and leaving them in place, the building can be reused and the equipment salvaged.

Alternative 1: No Action

No remedial action would be conducted. Since site contaminants would remain onsite above health based levels, annual maintenance and 5-year facility reviews would be required. This alternative would cost approximately $60,000 in net present worth dollars over a 30 year period.

Figure 3: Concerns common to all alternatives.



Alternative 2: Capping

A concrete cap would be placed in the fenced area and a clay cap would be placed in the south field area. The concrete cap is considered for its durability and reliability, since continued light industrial use of the area around the buildings is anticipated. The clay cap would be constructed in accordance with minimum technology requirements under the Resource Conservation and Recovery Act (RCRA). Contaminated off-site soils would be brought back onsite prior to capping.

Implementation of this remedy is estimated to take 6 months. Since site contaminants would remain onsite above health based levels, annual maintenance and 5-year facility reviews are required. The total present value cost for this remedy is estimated at $940,000 over a 30 year period.

Alternative 3: In Situ Vitrification Plus Capping

The soils would be treated in place to immobilize the heavy metal particulates (stabilization). Wastes and off-site soils would be consolidated on site prior to treatment and included in the process. The site would be capped as described in Alternative 2.

The vitrification process utilizes electricity to melt the soil into a glassified mass which traps the heavy metals inside. Due to the large area to be remediated, the energy requirement would need to be quantified. Also, the adequate capture of volatile cadmium is uncertain. A treatability study would be necessary prior to implementation of this remedy.

Implementation for this remedy is estimated to take from 9 to 14 months. Annual maintenance and 5-year facility reviews would be required. The cost estimate for this alternative is $3.8 million over a 30 year period.

Alternative 4: In Situ Stabilization Plus Capping

The soils would be treated in place to immobilize the heavy metal particulates (stabilization). Wastes and off-site soils would be consolidated on site prior to treatment and included in the process. Soils deeper than 2 feet in depth which are above the target action level will have to be excavated and included in the treatment process. The site would be capped as described in Alternative 2.

A large roto-tiller would be used to inject and mix a stabilizing agent into the contaminated soils. Water would be used to compact and set the soils into a hardened mass in place. Treatability studies have been performed which show adequate results for both cement and asphalt stabilization of the soil at the Pesses site. However, a small scale test might be required prior to implementation to ensure proper mixing and setting. The specific in-place technique for shallow soils identified in the FS Report has been utilized at other similar heavy metal sites.

Alternative 4: In Situ Stabilization... (continued)

Implementation of this remedy should not exceed 6 months. Annual maintenance and 5-year facility reviews would be required. This alternative is estimated to cost $1.2 million over a 30 year period.

Alternative 5: Excavation, Onsite Stabilization with Consolidation in the South Field

All soils above the target action levels will be excavated and treated above ground in an onsite treatment unit. The fenced area would be backfilled with clean soil and all of the stabilized material would be placed in the south field beneath a RCRA clay cap.

Due to space constraints at the site, the increased handling of contaminated soils/waste might prove difficult. Excavation and stockpiling of clean soil is necessary to create adequate capacity for the stabilized material. Off-site stockpiling of clean material would need to be granted by area businesses/railway yard. However, vacant land near to the site is also minimal. If the clean material is taken too far from the site, cost will increase substantially.

Implementation of this remedy would take a minimum of 6 months. The site would be maintained annually and 5-year facility reviews would be necessary. A representative cost estimate for this alternative would be $1.4 million over a 30 year period.

Alternative 6: Excavation, Onsite Stabilization, Off-Site Disposal

This remedial action is essentially the same as Alternative 5 in terms of excavating and treating the soils and waste in an onsite treatment unit. However, the risks to human health and the environment are entirely removed from the Pesses site. All stabilized material would be transported off-site to a RCRA approved landfill.

Monitoring the site for the first year after implementation would be included in this remedy. Since contaminants would not remain onsite, annual maintenance and five year facility reviews are not required for this alternative. A representative cost estimate for this alternative is $8.3 million over a 2 year period.

Evaluation of Alternatives

An evaluation of each alternative is shown in Table 2. The following values were assigned for comparison between the alternatives for each remedial selection criteria:

+ The alternative exceeds the criterion in comparison to the other alternatives.

o The alternative can be designed to meet the criterion.

- The alternative would prove difficult in modification to meet the criterion.

Protection of Human Health and the Environment

The No Action Alternative would not adequately protect human health and the environment since the worst case risk posed by the site is greater than EPA's action level of one in ten thousand. Capping alone would prevent the direct contact threat and provide a barrier to any off-site migration of heavy metal particulates via rainfall runoff, airborne dust, and vertical leaching. Therefore, Alternative 2 is rated "o" . However, Alternatives 3-5 are each rated "+" since stabilization plus capping would ensure added protection if the cap were ever penetrated. Excavation and off-site disposal completely removes contaminants from the Pesses site. However, Alternative 6 is rated "+" since the risk is merely transferred to a different location.

Applicable or Relevent and Appropriate Requirements [ARARs]

Table 3 lists the action-specific ARARs identified for each remedial action alternative at the Pesses site. All action alternatives can meet their specified ARARs. The No Action Alternative is a remedial alternative that will not be included in the following references to remedial action alternatives. See footnote on Table 2.

The Land Disposal Restrictions are not applicable to any onsite remedy at the Pesses site due to the following rationale:

1) Listed wastes are not present onsite.

2) Although some wastes are characteristically toxic, due to the cadmium content, those wastes which are characteristic will not be removed from the area of contamination (if excavated at all).

The Land Disposal Restrictions are relevant and appropriate for off-site disposal of characteristically toxic soils as described in Alternative 6. Although criteria have not yet been promulgated for soil and debris, any standards which will be promulgated would more than likely be met by treating soils/waste and/or cleaning equipment, etc.

TABLE 2
REMEDIAL ALTERNATIVE EVALUATION
PESSES CHEMICAL SITE

REMEDIAL ALTERNATIVE	PROTECTION H.H. & E.	ARARS	EFFECTIVENESS			REDUCTION IN		
			Long-Term	Short-Term	Implementation	TOX.	MOB.	VOL.
No Action	-	NA	NA	NA	NA	NA	NA	NA
Capping	0	0	0	0	0	0	0	0
In Situ Vitrification	+	+	+	-	-	0	+	+
In Situ Stabilization	+	+	+	+	+	0	+	0
Stabilization and Consolidation	+	+	++	0	-	0	+	-
Stabilization and Offsite Disposal	+	+	++	0	0	0	+	-

NA Not Applicable
Several areas of evaluation among the remedial action alternatives are not compared to the No Action Alternative since no action would result in an inadequate protection of human health and the environment.

TABLE 3
ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS
PESSES SITE

FEDERAL REQUIREMENTS	STATE OF TEXAS REQUIREMENTS	ARAR for REMEDIAL ACTIONS 2	3	4	5	6	ARAR Met? (yes/no) Alternatives which do not meet ARAR?
Occupational Safety and Health Act	- - -	A	A	A	A	A	Yes
Clean Air Act and National Ambient Air Quality Standards	- - -	R	R	R	R	R	Yes
National Pollutant Discharge Elimination System treatment standards.	Water Quality Standards Texas Administrative Code Part 319 *	R	R	R	R	R	Yes
Hazardous Materials Transportation Act and Solid Waste Disposal Act [RCRA]	Texas Solid Waste Act *	A	A	A	A	A	Yes
RCRA Clean Closure	- - -	R	R	R	R	R	Yes
RCRA Land Disposal Restrictions	- - -	-	-	-	-	A	Yes

APPLICABLE (A)
RELEVANT AND APPROPRIATE (R)

* MORE STRINGENT REQUIREMENT TO BE MET (Federal vs State)

ARARs (continued)

Since chemical-specific and location-specific ARARs do not exist for the contamination at the Pesses site, target soil action levels were developed to be considered in each remedial action alternative. Capping alone utilizes the target soil action levels to a lesser degree than the treatment plus capping/removal alternatives. For this reason, Alternative 2 is rated "o" and all other action alternatives are rated "+".

Long-term Effectiveness and Permanence

All the remedial action alternatives will afford long-term effectiveness and permanence. If appropriate maintenance is performed, those remedies which leave contaminants onsite provide equivalent protection to that of the off-site disposal remedy. However, capping alone may not prove as reliable as the stabilization plus capping alternatives, due to the risk of exposure if the caps become damaged. In situ treatment with capping offers a higher degree of permanence and effectiveness since even if the caps are damaged, the underlying soils are stabilized in form. Therefore, Alternative 2 is rated "o" in comparison to Alternatives 3 and 4 which are each rated "+". Alternative 5 (Stabilization and Consolidation in the South Field) and Alternative 6 (Off-Site Disposal) each rate "++" since the management and the maintenance of the site following implementation would be minimal. Although off-site removal would offer the least long-term management at the Pesses site, the stabilized materials are merely moved to a different location.

Reduction in Toxicity, Mobility, and Volume

All remedial action alternatives are rated "o" for reducing toxicity since the toxicity cannot be altered by capping or by stabilization.

All action alternatives can reduce mobility. Since capping alone offers minimum reduction, Alternative 2 is rated "o" for mobility reduction. However, the stabilization alternatives will further reduce mobility due to the matrix created to hold metals in a hardened mass. For this reason, all the remaining remedial alternatives (3-6) are each rated "+" for reducing mobility.

The excavation alternatives (Alternatives 5 and 6) substantially increase the volume of material to be managed due to excavation and are, therefore, rated "-" for volume reduction. Alternatives 2 and 4 do not substantially affect the volume of contaminated material and are thus rated "o". The only alternative which can reduce the volume of heavy metal contaminated materials is Alternative 3 due to the shrinking of the clay soils during the vitrification process. Therefore, Alternative 3 is rated "+" for volume reduction.

Short-term Effectiveness

Short-term effectiveness of all alternatives are equal in reducing the health and environmental risks posed by contaminants currently at the site. However, Alternative 4 is rated "+" in comparison to the other alternatives since the in situ process poses minimum risk to human health and the environment during implementation. Although Alternative 3 is also an in situ process, it is rated "-" due to short-term risks posed to the community, workers, and the environment during implementation. For instance, the volatile cadmium would have to be captured adequately during the vitrification of soils instead of released to the environment.

Implementability

Alternatives 3 (In Situ Vitrification Plus Capping) and 5 (Stabilization and Consolidation in the South Field) are each rated "-" due to difficulties expected during implementation. For example, available power sources may not meet the capacity requirements in the in situ vitrification process. The adequate capture of cadmium volatilized is also an unknown factor for the size area requiring vitrification. In Alternative 5, the excavation and stockpiling of clean soils on the small piece of vacant land available on and near the site will create administrative as well as physical difficulties during implementation.

Treatment and off-site disposal (Alternative 6) is rated "o" since implementation is easy, but involves increased handling of materials in comparison to Alternatives 2 and 4. Alternatives 2 (Capping) and 4 (In Situ Stabilization Plus Capping) are rated "+" since they involve minimal handling of contaminated material and are easy to implement.

Cost Comparison

No annual operational costs are anticipated for any of the remedial action alternatives since implementation can be completed in one year or less for each. Maintenance costs are similar for all the action alternatives which leave material onsite. Although Alternative 6 requires minimal maintenance (1 year) since contaminants are entirely removed from the Pesses site, the capital cost far exceeds that of the onsite remedies. Alternatives 3 (In Situ Vitrification) is also expensive due to high capital costs. Since these alternatives do not offer substantial increase in the level of protection to human health and the environment, they are not cost effective in comparison to the other remedial action alternatives.

Although capping alone (Alternative 2) is the least expensive alternative, the level of protection gained through the stabilization plus capping alternatives is substantial. Therefore, Alternatives 4 and 5 are the most cost effective alternatives. A comparison of capital, maintenance, and total present value cost for each alternative is shown in Table 4.

State and Community Acceptance

State and community acceptance of various remedial alternatives will be discussed in the Responsiveness Summary.

TABLE 4
COMPARITIVE COST ANALYSIS FOR ALTERNATIVES
PESSES SITE

ALTERNATIVE	COSTS ($1,000 UNITS) CAPITAL	MAINTENANCE	TOTAL
No Action	28	3	60
Capping	834	7	940
In Situ Vitrification	3,800	7	3,800
In Situ Stabilization	1,100	7	1,200
Stabilization and Consolidation	1,400	4	1,400
Stabilization and Off-Site Disposal	3,500	1	3,500

* Present Worth Total Cost at 10% discount rate, 0% inflation rate, over a 30 year period.

V. RECOMMENDED REMEDY AND STATUTORY DETERMINATION

The recommended alternative for remediation of the Pesses site is the In Situ Stabilization Plus Capping Alternative (4). This onsite alternative is protective of human health and the environment and utilizes treatment to the maximum extent practical for heavy metal contaminants. All requirements for this remedy that are Applicable or Relevant and Appropriate can be met through adequate design and planning. Long-term effectiveness is achieved through proper maintenance. Easy to implement, this remedy is reliable and will not pose short term risk to the community and area businesses as the other remedial action alternatives.

This remedy is cost effective. Capital cost for this remedy is estimated at $1.1 million. Maintenance is estimated at $7,000 per year. Five year facility reviews are required for this remedy at a cost of $4,000 per review. The total present worth cost of this remedy is $1.2 million over a 30 year period.

Compared to the recommended remedy, the other alternatives were rejected for the following reasons:

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

Capping - if the caps are damaged or not maintained properly, risk from potential exposure to the untreated contaminants beneath the caps could be equivalent to current risk estimate.

In Situ Vitrification - short-term risks posed and reliability uncertain during implementation.

Stabilization and Consolidation - although end result is similar to the recommended remedy, difficulties and substantial volume increase during implementation.

Off Site Disposal - the substantial volume increase due to excavation and the substantial increase in cost. Although more effective in terms of long-term maintenance of the site, this remedy merely moves the contaminants to a different location. Overall effectiveness (short-term and implementation included) is not substantially different than the recommended remedy.

TENTATIVE REMEDIAL ACTION SCHEDULE

REMEDIAL ACTION SELECTED [ROD SIGNED]	DECEMBER 1988
COMPLETE ENFORCEMENT NEGOTIATIONS*	JUNE 1989
DESIGN INITIATED	JUNE 1989
DESIGN COMPLETE	APRIL 1990
CONSTRUCTION INITIATED	JUNE 1990
CONSTRUCTION COMPLETE	DECEMBER 1990

*Dates following this task dependent on PRP takeover.

RESPONSIVENESS SUMMARY

PESSES CHEMICAL COMPANY
RECORD OF DECISION

RESPONSIVENESS SUMMARY
PESSES CHEMICAL COMPANY
RECORD OF DECISION

December 1988

This community relations responsiveness summary is divided into two sections; The first section provides a brief history of community interest and concern raised during the remedial planning activities at the Pesses Chemical Superfund site. The second section provides a brief summary of the community concerns raised during the public comment period and EPA responses to the comments.

BACKGROUND OF COMMUNITY INVOLVEMENT AND CONCERNS

The March 1983 fire at the Pesses site drew considerable press attention as well as letters of concern about the site from Fort Worth officials. EPA conducted a removal at the site in April 1983. The local officials and citizens were concerned that the action by EPA should have been more thorough and complete. The nature of conditions at the Pesses site required that a more lengthy investigation be conducted under the Superfund law.

The Pesses site was proposed for the National Priorities List (NPL) in October 1984. The Texas Water Commission accepted the lead responsibility for Pesses and held a meeting for local residents on February 26, 1985, to explain the Superfund process and to gather information about any citizen interest or concerns. EPA officials participated in the meeting to discuss the removal action. Nine citizens attended the meeting. Their main concerns included: (1) possible contamination off-site, (2) why the plant was allowed to operate, and (3) what dangers exist from the site.

Due to the Superfund reauthorization, funds to conduct the more indepth investigations were not awarded to TWC until April 1987. In November 1987 TWC sent a questionnaire to area officials and residents requesting information on their concerns or issues relative to Pesses. Twenty responses were received. Respondents mainly wanted to be kept informed of site activities. TWC held a public meeting on December 3, 1987, to brief citizens about field activities at the site. There were no local officials nor citizens in attendance.

On October 18, 1988, EPA officials briefed Fort Worth health officials on the investigation and proposed remedy for the site. On October 31, 1988, EPA announced in the Fort Worth Telegram that the Administrative Record on the Pesses site would be available at local repositories for public review and comments between November 2 and December 2, 1988. A public meeting on the proposals would be held on November 16, 1988.

The public meeting was held at the Holiday Inn South, Fort Worth. About 20 people attended the meeting which began at 7:00 p.m. There was no opposition to EPA's proposed remedy. However, the City of Fort Worth requested that contaminated soil be consolidated in the south field in order that other portions of the land be available for industrial use. A copy of the transcript from this meeting is available in the Administrative Record. However, the issues discussed at the meeting are also summarized in the following section.

SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA'S RESPONSES.

Comment 1: The Environmental Protection Agency should consider excavation with onsite stabilization and consolidation of the material in the south field and capping with concrete or clay (Alternative 5). This procedure allows for unrestricted development of the northern portion of the site and limited usage such as parking, storage or slab type construction, on the southern portion while Alternative 4 would have restrictions on future development

Response 1: Although Alternative 5 would allow unrestricted future development of the northern portion of the site, future land development is not a consideration in selection of a remedy for a Superfund site. Future continued land use is considered in establishing action levels for reducing risk to human health and the environment and this has been accounted for in the case of Pesses. Please refer to the evaluation of alternatives in the Decision Summary, page 14 of this Record of Decision. The southern portion of the site allows limited use for either Alternative 4 or 5.

Comment 2: In the Remedial Investigation Report, Table 9-1 of the Public Health Evaluation listed all detected materials but did not list the appropriate selection criteria, such as background concentrations, reported national averages, and the equations promulgated in the referenced guidance document, Superfund Public Health Evaluation Manual (U.S. EPA, 1986). Inclusion of these criteria and equations are necessary to demonstrate the final selection of cadmium, copper, lead, and nickel as the indicator parameters for site specific hazard assessment, as listed in Section 9.2 of the report.

Response 2: Although Table 9-1 does not list background concentrations and reported national averages, this information can be found in Section 4 of the Remedial Investigation Report. Please refer to Table 4-4 for background soil information and Table 4-7 for reported national averages. The equations promulgated in the Superfund Public Health

Response 2 continued:

Evaluation Manual (U.S. EPA, 1986) are typically used to reduce the list of contaminants found at a site to the list of contaminants of concern. These "indicator parameters" are representative of the site contamination to be managed for overall protection of human health and the environment. However, in the case of Pesses, the initial screening left only four inorganics for evaluation. See page 92 of the report for the elimination criteria and discussion. Therefore, further reduction in the list of "indicator parameters" is not necessary.

Comment 3: In the draft Feasibility Study Report, it is unclear in Figure 2-1 if the area between the office and the Pesses chemical building is to be excavated to 2.5' or 12.5'. Please clarify this ambiguity.

Response 3: Figure 2-1 is in error and will be corrected prior to final publication. The area between the office building and the Pesses warehouse should show 2.5 feet for excavation. In addition, the 4 foot depth in the south field should show only a 1 foot depth for excavation.

Comment 4: In the draft Feasibility Study Report, the interchangeable use of "action level" and "clean-up level" is not clearly explained. Please clarify if they are the same or derived from different sources.

Response 4: These terms are the same. However, the term "action-level" is more appropriate and will be used to the exclusion of other terms in the final report.

Comment 4: The technology referred to as "in situ stabilization" is an alternative discussed in the draft Feasibility Study Report. However, the specific application of a "large roto-tiller" type in situ stabilization is not a proven technology for in-place stabilization of soils. With respect to the generally shallow occurrence of contaminants at the site, the use of such a device appears more favorable than the standard auger rig mixture method employed at other NPL sites. However, the agency should conduct a pilot scale study of this technique and establish criteria to measure effectiveness of this alternative prior to issuance of the ROD.

Response 4: The "roto-tiller" type in situ stabilization is a proven technology for in place stabilization of soils. The site contractor for the Pesses RI/FS project is aware of two sites on which this technique has been used. One site had 5,000 cubic yards of soil stabilized and the other had

Response 4 continued:

100,000 cubic yards stabilized. In addition, treatability studies conducted during the Pesses project show effective results for both cement and asphalt stabilizing agents. However, a pilot scale study during remedial design will be recommended to establish effective mixing criteria.

Comment 5: Alternative 5 does not provide added environmental security, but simply increases the future usability of a portion of the site. While this might be of some advantage to the present and future site owners, it is not a consideration for site remediation. With the following exceptions, EPA's conclusion that Alternative 4, in situ stabilization and capping, is an appropriate choice for remedial action:

A. The use of two different caps on the same site creates an inconsistency in site remediation. The only apparent benefit derived from a concrete cap is future site reuse. The responsibility of the PRPs at an NPL site is to protect the public from potential health hazards created by the site and not to reclaim the site for future use.

B. All site caps should be clay with a thickness equivalent to the impermeability of eight inches of steel reinforced concrete. Such a clay cap will be less expensive to construct and maintain than either the eight inch concrete or three foot clay cap currently recommended in Alternative 4. As the FS indicates that the impermeability of an eight inch steel reinforced concrete cap is sufficient, an equally impermeable clay cap should also be acceptable.

C. Site access restrictions for the lifetime of the facility are recommended to ensure the continued integrity of remedial actions.

Response 5A&B: The advantage identified for placing a concrete cap in the former operations area around the buildings is realized under long-term protection and reliability of the remedy selected. Since continued industrial use of the area around the buildings was anticipated as part of the risk assessment, and since remediation goals include consideration of continued land use, a concrete cap in this area would be more effective than a clay cap in maintaining an adequate level of protection to human health and the environment.

5C: "Site access restrictions" for the lifetime of the facility cannot be implemented. However, such restrictions are not necessary if a concrete cap is placed around the building onsite. Deed recordation of any remedial action taken will be necessary at the Pesses site.

Comment 6: The method of inclusion of off-site soils in the onsite remediation should receive more detailed analysis. Recommendation: the off-site materials be blended with stabilizer while the material is above ground (i.e. while it is being excavated and transported onto the site). This approach will decrease the depth to which roto-tilling will have to occur during in situ stabilization.

Response 6: This recommendation will be considered in the remedial design.

Comment 7: Highly contaminated materials should not be treated and left on site. These materials should be transported to the facility chosen to receive the hazardous materials generated during remediation.

Response 7: This is a consideration which may be determined once implementation is initiated. See page 10 of the Decision Summary. If the miscellaneous equipment cannot be cleaned appropriately, it can be included with the other debris/drums to be transported off-site to a compliant permitted facility.

Comment 8: A soil washing alternative should be considered for the Pesses site. Although clays are more difficult to clean than sand or loam soils, a grinder system might be used prior to treatment to effectively remove the metals.

Response 8: A soil washing treatability study performed during the feasibility study concluded that the soil washing technology is infeasible for the form of metals in soils at the Pesses site. A blender was used in one test to powderize the soil and the result of soil washing was still inadequate for removing the high levels of cadmium in soils. For this reason, the technology was screened prior to development of alternatives.

Comment 9: The Pesses site is potentially impacting wildlife on the site. Numerous great-tailed grackles and other passerine birds were observed using the fence around the site and trees on the southern end of the site for roosting. Sunflowers are known to attract many species of birds and there is substantial stand of sunflowers on undeveloped parts of the site, particularly the area inside the fence.

Response 9: In 1983 EPA removed 3,400 cubic yards of contaminated soil and debris related to the Pesses Chemical Company operations. In addition, a 6-inch clay cap was placed inside the southern storage yard area (Figure 1) and seeded with grass. This action minimized the off-site migration of contaminated airborne particulates and surface water runoff. EPA also believes that this action effectively prevented direct contact between migratory birds and the contaminants identified onsite.

Response 9 continued:

The proposed remedy for the site will address the long-term potential threat of direct contact as well as migration of contaminants off-site which might affect human health and the environment. Soils will be solidified in place, which will minimize impacts to the surrounding area during implementation. The resulting solidified mass will be capped. Long-term maintenance of the site will ensure the integrity of the remedy.

Comment 10: Several heavy metal contaminants are present in Trinity River fish and wildlife in amounts which may be adversely impacting them and the predatory species consuming them. The fact that these contaminants are present in significant amounts in Trinity River fish and wildlife confirms that they are not always bound to the sediments to the extent they are unavailable to fish and wildlife. Migratory birds utilize aquatic habitants downstream from the site in Sycamore Creek and the Trinity River.

Response 10: EPA understands the concern in regard to heavy metals present in the Trinity River. However, results of the remedial investigation demonstrate that the site is not contributing to this problem. Water and sediments along the pathway to the storm sewers were sampled during a heavy rainfall event and were utilized to model the worst case scenario of surface runoff. The site is not located in the 100-year floodplain of Sycamore Creek. See also Response 9.

In addition, sediment sampling results from the Fort Worth Health Department show no detection of cadmium and show the other contaminants of concern below or equivalent to the upgradient levels detected in the segment of Sycamore Creek potentially affected by runoff from the Pesses site.

Comment 11: PCBs were not sampled at the site. PCBs are common industrial contaminants and the former industrial uses of the site are unknown. Since 1,2,4-trichlorobenzene was detected on the site and was used in many transformers that contained PCBs, its presence constitutes a clue that PCBs may also be present.

Response 11: EPA disagrees. The concern of past unknown uses of the site has been an integral part of the remedial investigation. Although EPA had extensive information on the metal reclamation operations of the Pesses company, the remedial investigation sampling plan was devised to consider unknown contaminants from previous site uses.

Response 11 continued:

The initial sampling activities found insignificant levels of organic chemicals in the soil onsite. The only area where organics were detected is located at the southeast corner of the fence, next to the railroad yard. Although the solvent 1,2,4-trichlorobenzene was detected [4 ppm], this compound is not related to PCBs.

Comment 12: Open cans of paint are located onsite. The site is also being used for outdoor storage of computer scrap. Analyses of PCBs and computer-related contaminants (such as beryllium) should be conducted before completing a cleanup plan for the site.

Response 12: The photographs which were submitted show open cans of paint on the Cenikor Foundation property, located adjacent to, but not on, the site. Similarly, the photographs which show scrap metal parts are part of the Singer Metal operation. These concerns are not related to the Pesses site. Singer Metals, the current tenant on the northern portion of the site, does temporarily accumulate metals from computer components for shipment off-site. Since no thermal processes are employed, these metal salvaging operations should not hinder the site remediation.

Comment 13: Most of the contamination onsite has been shown down between one and two feet, with the exception around the buildings. Why is there a difference since these metals bind to the clay?

Response 13: These areas contain higher concentrations of the indicator metals than other areas onsite. This may have resulted from spills of pure liquid nickel-cadmium sludges. In the molten liquid form, these contaminants would have increased mobility over the solid form that they are now found onsite.

Comment 14: Three buildings are onsite. Why is only one building considered for remediation?

Response 14: The Pesses warehouse, the south metal building, is the only building formerly used by Pesses during active operations. The office building and the north rental property warehouse were not used for the thermal processes of the Pesses operations.

Since the two north buildings are currently occupied, EPA did recommend that the tenant request the State Health Department to test dust content for heavy metals. This recommendation was based on the fact that the heavy machinery being used between buildings by the tenant was generating dust which could be blown into the open doorways.

Response 14 continued:

The tenant agreed and also attempted to limit access between buildings until the site is remediated. Sampling results by the State Health Department confirm the fact that some contaminated dust had been blown into the doorways of the two buildings. The levels detected were 3 orders of magnitude less than the dust in the Pesses warehouse. However, the EPA had already determined that an additional cap was necessary for the area where the tenant used heavy machinery. In August 1988, the onsite tenant placed an asphalt cap between the two buildings to further reduce contaminated dust generation and prevent risks to his workers until the site is permanently remediated.

Comment 15: How did the off-site areas become contaminated and to what depth are they contaminated?

Response 15: During active operations at Pesses, the baghouse emitted cadmium in excess of 2900 percent of the .01 pound per hour State permit limits. The wind, predominantly to the northwest, carried some of the cadmium particulates to most of these areas. See Figure 1 of the Decision Summary.

The area directly across the street might be a result of tracking as well as airblown dust deposition. The cap was damaged in 1984 when the bankruptcy court leased out the southern portion of the site and the tenant disturbed the cap with trailers and trucks. The area on the Cenikor property may also be a result of drainage along the ditch by the railroad tracks.

All of the off-site areas are anticipated to be only shallow contamination, less than a foot in depth. However, the action levels will address any depth of contaminated soil.

Comment 16: Since contaminants are being left onsite, who will assume responsibility for maintaining the site and for how long?

Response 16: If the site remains abandoned and the property remains in bankruptcy, responsibility for the first year is that of the EPA, and the Texas Water Commission assumes responsibility for the next 29 years. However, since contaminants remain onsite above health based levels, annual maintenance will be continued if determined necessary at the end of 30 years. If potentially responsible parties participate in the remedial action, they will assume responsibility. However, if the site is sold, the responsibility of maintenance reverts to the owner.

APPENDIX A

ADMINISTRATIVE RECORD INDEX

APPENDIX B

TWC LETTER OF SUPPORT

TEXAS WATER COMMISSION

Allyn M. Davis, PhD., Director
Hazardous Waste Management Division
U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue
Dallas, Texas 75202-2733

Re: Pesses Chemical Company Superfund Site
Record of Decision

Dear Dr. Davis:

We have reviewed the proposed Record of Decision (ROD) for the Pesses Chemical Company Superfund Site. We have no objection to the selected remedy as described in the ROD of December, 1988. The selected remedy requires In-Situ Stabilization Plus Capping.

Sincerely,

Allen Beinke

Allen P. Beinke
Executive Director

APPENDIX C

DOCUMENTATION OF SIGNIFICANT CHANGES

DOCUMENTATION OF SIGNIFICANT CHANGES

In the Proposed Plan, cleaning and demolition of the surface structures was considered as a separate alternative. In this Record of Decision, the cleaning, demolition, and off-site disposal alternative is not considered except in part (equipment that cannot be adequately cleaned and left in place). See page 10 of the Decision Summary.

ADMINISTRATIVE RECORD INDEX

FINAL

SITE NAME: PESSES CHEMICAL COMPANY

SITE NUMBER: TXD 980699656

INDEX DATE: 12/22/88

administrative record index
not included.