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Union Pacific Railroad Company

Annual Report, Permit No. HW-50343-000, January 1 through December 31, 2001

Former Houston Wood Preserving Works

January 22, 2002

W.O. #422-102

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

ERM®

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1.0 *INTRODUCTION*

On June 20, 1994, the Texas Natural Resources Conservation Commission (TNRCC) issued RCRA Permit Number HW-50343-000 (the Permit) and TNRCC Compliance Plan Number CP-50343 to Southern Pacific Transportation Company (SPTCo). The Permit authorizes post-closure care for one former surface impoundment (TNRCC Permit Unit No. II.B.1) located at the former Houston Wood Preserving Works facility at 4910 Liberty Road, Houston, Texas (Figure 1-1). This Annual Report for 2001 was prepared by Environmental Resources Management (ERM) on behalf of Union Pacific Railroad (UPRR) in accordance with the requirements of Provisions III.B.1, IV.C.4.g, and V.F. of the Permit.

1.1 *PERMIT REQUIREMENTS*

Provision III.B.1 of the Permit requires that the Annual Report include the following:

1. Information and records required by Title 30 Texas Administrative Code (TAC) Section 335.154, including:
   - U.S. EPA identification number, name, and address of the facility;
   - Calendar year covered by the report;
   - TNRCC (formerly Texas Water Commission) hazardous waste code and quantity of each hazardous waste received by the facility during the year;
   - Method of storage, processing, or disposal of each hazardous waste;
   - Most recent closure cost estimate under the regulations contained in 40 Code of Federal Regulations (CFR) §264.142 and 30 TAC §335.178 and, for disposal facilities, the most recent post-closure care estimate under 40 CFR §264.144;
   - For generators who treat, store, or dispose of hazardous waste on site, a description of efforts undertaken to reduce the volume and toxicity of waste generated;
   - For generators who treat, store, or dispose of hazardous waste on site, a description of changes in volume and toxicity of waste actually achieved in comparison with previous years; and
   - Certification signed by owner or operator of the facility or authorized representative.
2. Summary of ground water compliance monitoring activities;

3. Summary of inspections made and any remedial and/or maintenance activities conducted;

4. Summary of annual cost estimate adjustments for facility closure and post-closure care;

5. Certification of waste minimization in accordance with Permit Provision V.N., as follows:

   - Permittee has a program in place to reduce the volume and toxicity of all hazardous wastes generated by the facility operation to the degree determined to be economically practicable;
   - The proposed method of treatment, storage, or disposal is that practicable method currently available to the permittee, which minimizes the present and future threat to human health and the environment.

As provided in Provision II.B, the Permit authorizes and requires the permittee to perform post-closure care for a closed landfill consisting of one former surface impoundment, Notice of Registration (NOR) Facility No. 01. This impoundment has a total surface area of 0.5923 acre and a total capacity of 5,065 cubic yards. Since this facility is closed, hazardous and toxic waste is not received or disposed at the facility. Wastes are being generated as Investigation Derived Wastes (IDW) associated with the ongoing, periodic monitoring of Point of Compliance (POC) and Corrective Action Observation (CAO) wells, interim remedial activities, and implementation of investigation work plans approved under the Permit and Compliance Plan. A recovery system has not been installed for this facility; therefore, items 1 through 5, as listed above, are addressed herein as they relate to a facility under post-closure care.

1.2 *GEOLOGIC ZONE DESIGNATION*

For simplicity and organizational reasons, the nomenclature to designate strata has been modified from the designations in the Permit. The native cohesive and transmissive zones underlying the site have been re-designated alphabetically from shallowest to deepest. For example, the shallowest or uppermost transmissive zone is referred to as the A-Transmissive Zone or A-TZ. The lithologic units that underlie the site are the fill material, the A-Cohesive Zone (A-CZ), the A-Transmissive Zone (A-TZ), the B-Cohesive Zone (B-CZ), the B-Transmissive Zone (B-TZ), the C-Cohesive Zone (C-CZ), the C-Transmissive Zone (C-TZ), and the D-Cohesive Zone (D-CZ).

2.0 *REPORT ITEMS*

This section includes the information and records required by Provision III.B.1 of the Permit and listed as numbers 1 through 5 in Section 1.1 of this report.

2.1 *INFORMATION AND RECORDS REQUIRED BY 30 TAC §335.154*

The following sub-sections discuss facility identification, period covered, hazardous waste codes, waste storage information, post-closure care cost estimate revisions, waste minimization, and certification.

2.1.1 *Facility Identification*

This facility is identified by the following information:

EPA identification number:	TXD000820266
Facility name:	Former Surface Impoundment
Facility address:	Former Houston Wood Preserving Works Union Pacific Railroad 4910 Liberty Road Houston, Texas 77020

2.1.2 *Calendar Year Covered by This Report*

The activity period covered by this report is designated in Provision III.B.1 of the Permit and encompasses January 1 through December 31, 2001.

2.1.3 *Hazardous Waste Codes and Quantities Received*

This facility is closed and has not received any hazardous wastes during the 2001 reporting period. The former surface impoundment that is subject to Permit No. HW-50343-000 has been closed and currently is undergoing post-closure care.

The NOR for the site includes a temporary container storage area (i.e., less than 90 or 180 days, depending on the volume of waste generated) around the permitted and clean-closed surface impoundment (Permit Unit II.B.1). This storage area is designated for the storage of ground water generated by purging and sampling of monitor wells and soil generated by soil boring completion and monitor well installation. Revisions to the NOR were submitted to the TNRCC's Industrial and Hazardous Waste Division Waste Evaluation Section on two occasions during 1999.

The NOR includes hazardous solid and aqueous wastes generated from soil boring installation, equipment decontamination, and purging of monitor wells for site investigation activities. Nonhazardous wastes on the NOR include petroleum-affected soils and personal protective equipment generated during corrective action, scrap metals, waste oil, and waste rail ties. The scrap metals, waste oil, and rail ties are wastes generated from operations at the rail yard and are not related to activities conducted to satisfy the requirements of the Permit.

2.1.4 *Storage, Processing, or Disposal of Hazardous Wastes*

Hazardous waste generated at the facility during the 2001 reporting period was limited to IDW. The IDW consisted of affected ground water generated during monitor well purging and sampling activities (Texas Waste Code No. 0914101H), personal protective equipment and bailers (Texas Waste Code No. 0001301H), and affected soil generated during installation of monitor wells (Texas Waste Code No. 0915301H). IDW was not processed at the facility during 2001. Except as noted below, the IDW was properly disposed off site; a copy of the Annual Waste Summary Form for reporting year 2001 is presented in Appendix A.

Approximately 16.61 cubic yards of non-hazardous petroleum affected soils are being stored temporarily on site in accordance with 30 TAC §335.69(d) pending off-site disposal (scheduled for February 2002). Additionally, four empty 55-gallon drums and one concrete-filled 55-gallon drum are being stored on-site pending off-site disposal (scheduled for February 2002).

2.1.5 *Post-Closure Care Cost Estimate*

The regulated unit was clean-closed in 1984. A revised post-closure care cost estimate for 2002 prepared in accordance with 40 CFR §264.144 is addressed in Section 2.4 of this Annual Report. The total estimated cost for post-closure care for 2002 is $90,162.

2.1.6 *Reduction of Volume and Toxicity of Waste Generated*

Waste minimization typically applies to operating facilities; as stated above, this facility has been closed since 1984. However, wastes are generated at this facility as a result of the specific investigation or post-closure care activities directed by the TNRCC under the Permit and Compliance Plan. These IDW and remediation waste volumes are directly related to the scope and schedule of activities as they are conducted under the RCRA Facility Investigation (RFI) and Extent of Contamination (EOC)

Work Plans, as approved by the TNRCC under the Permit and Compliance Plan.

No hazardous wastes were treated or disposed on site during 2001. The only hazardous waste stored on site was IDW. Investigative techniques such as low-flow ground water sampling and direct-push technologies are utilized when possible during installation and sampling of soil borings, monitor wells and piezometers in order to reduce the volume of soil cuttings and purge water generated for off-site disposal.

2.1.7 *Waste Minimization Relative to Previous Years*

As stated in Section 2.1.6 of this report, IDW volumes are directly controlled by the activities required by the Permit and Compliance Plan. These wastes are not directly comparable with respect to years prior to 1984 when this facility was operating.

2.1.8 *Certification*

A certification signed by the owner or operator of the facility or his authorized representative, as required, is included as Appendix B.

2.2 *SUMMARY OF GROUND WATER COMPLIANCE MONITORING ACTIVITIES*

Existing CAO and POC wells were monitored and sampled on a semiannual basis in April and September 2001 to evaluate the extent of impacted ground water in the A-TZ and B-TZ. A map showing the location of CAO and POC wells is presented as Figure 2-1. The schedule for ground water monitoring was changed from quarterly to semiannual beginning in July 1995, as provided by Provision VI.C.3 of the Compliance Plan. Ground water monitoring results for the April 2001 monitoring event were presented in the first semiannual report, dated July 19, 2001. Ten wells completed in the A-TZ and two wells and three piezometers completed in the B-TZ were sampled during each event in 2001. Ground water monitoring results for the September 2001 monitoring event are included in the second 2001 semiannual report, which will be submitted under separate cover.

The CAO and POC wells and piezometers are summarized below:

Monitor Well or Piezometer ID	*Transmissive Zone Screened*
MW-1A	A-TZ
MW-2	A-TZ
MW-3	A-TZ
MW-4	A-TZ
MW-5	A-TZ
MW-7	A-TZ
MW-8	A-TZ
MW-9	A-TZ
MW-10A	A-TZ
MW-11A	A-TZ
MW-10B	B-TZ
MW-11B	B-TZ
P-10	B-TZ
P-11	B-TZ
P-12	B-TZ

For the purposes of this report, the ground water analytical data for each semiannual sampling event are listed in Tables 2-1 through 2-4; results are tabulated separately for the A-TZ and B-TZ. For each sampling event, detected concentrations of analytes in excess of the Ground Water Protection Standard are indicated by bold italics.

Table 2-5 lists the total depth, casing reference elevation, the measured depth to water, and the calculated water level elevation relative to mean sea level for each monitor well and piezometer. For both water-bearing zones, the monitor wells and piezometers provide a general indication that the potentiometric surfaces have relatively low gradients. Data gathered as part of the RFI indicates that the horizontal hydraulic gradient is typically 0.001 ft/ft in both the A-TZ and the B-TZ.

2.3 *SUMMARY OF INSPECTIONS AND REMEDIAL/MAINTENANCE ACTIVITIES*

In a letter dated January 10, 1995, the TNRCC acknowledged fulfillment of the requirement of Compliance Plan Provision XI.B by approving the Operation and Maintenance (O&M) Plan, dated August 19, 1994, and the addendum to the O&M Plan, dated December 8, 1994. Under this O&M Plan, inspections of the former surface impoundment and monitor wells are conducted on a monthly basis. O&M Plan Amendment 2, dated May 20, 1995 and Amendment 3 dated June 23, 1995 were submitted to the TNRCC on May 21, 1995 and August 8, 1995, respectively. In a letter dated October 13, 1995, the TNRCC approved the second and third amendments to the O&M Plan. O&M Plan Amendment 3 establishes a

weekly inspection schedule for the former surface impoundment and a quarterly inspection schedule for the monitor wells.
Inspection of the integrity of the well casings was conducted during May, October, and December 2001. No issues were identified concerning monitor well inspections in 2001.

Inspections related to the former surface impoundment and container storage areas for IDW were performed weekly. The former surface impoundment was mowed the week of September 24, 2001. No issues were identified regarding the former surface impoundment.

2.4 *SUMMARY OF ANNUAL COST ESTIMATE FOR POST-CLOSURE CARE*

An adjusted annual cost estimate for post-closure care in 2002 is presented in Appendix C. The post-closure care cost estimate includes ground water monitoring, inspection, and operation and maintenance costs averaged on an annual basis. Ground water monitoring includes quarterly sampling and analysis for newly-installed monitor wells and piezometers and semiannual sampling and analysis for existing monitor wells and piezometers. For estimation purposes, it was assumed that seven new wells and/or piezometers would be installed during 2002. Inspection and maintenance activities include monthly inspection for monitor well integrity, weekly inspections of the closed surface impoundment and the container storage areas, and minor repairs and upgrades. Cost for replacement of existing monitor wells is not included.

The annual cost estimate for post-closure care has been adjusted from 2001 dollars in accordance with 40 CFR §264.144 using the Implicit Price Deflator obtained from the U.S. Department of Commerce. The Implicit Price Deflator results in an inflation factor of 1.0982. The total estimated post-closure care cost for 2002 is $90,162.

2.5 *CERTIFICATION OF WASTE MINIMIZATION*

The volume and toxicity of IDW are directly controlled by the activities required by the Permit and Compliance Plan. The scope and schedule of activities proposed in the RFI and EOC Work Plans, as approved by the TNRCC, were designed to reduce the volume and toxicity of the IDW generated by the facility investigations to the degree determined to be economically practicable and in accordance with the requirements of the Permit and Compliance Plan. Waste minimization has occurred and will continue through the use of low-flow ground water sampling, and direct push and hydropunch techniques, where practical, as outlined in the

Work Plans. Relative to the method of treatment, storage, or disposal utilized at the facility, waste is temporarily stored and disposed of using methods designed to minimize the present and future threat to human health and the environment.

Tables

January 24, 2002
W.O. #422-102

Environmental Resources Management
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TABLE 2-1

Summary of Analytical Results for the A-Transmissive Zone (A-TZ)
First Semiannual Sampling Event, 2001

Houston Wood Preserving Works
Houston, Texas

Analyte	GWPS[1]	Monitor Well ID:	MW-01A	MW-02	MW-03	MW-04	MW-05	MW-07	MW-08	MW-08D	MW-09	MW-10A	MW-11A	MW-11AD
		Sample Date:	04/27/01	04/26/01	04/26/01	04/25/01	04/24/01	04/25/01	04/25/01	04/25/01	04/24/01	04/27/01	04/26/01	04/26/01
Benzene	0.005		0.001 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003 J	0.003 J
Chlorobenzene	0.005		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.005		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003 J	ND
Methylene chloride	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	0.005		0.004 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003 J	0.003 J
Toluene	0.005		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002 J	0.002 J
Xylene (total)	0.005		0.007 J	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	0.007 J	0.007 J
Acenaphthene	0.010		0.170	0.00010	0.25	0.0004 J	0.003	ND	0.002	0.011	ND	0.003	0.28	0.37
Acenaphthylene	0.010		0.004	0.0003 J	0.003	ND	ND	ND	ND	ND	ND	ND	0.004	0.004
Anthracene	0.010		0.005	0.002 J	0.004	0.001 J	0.0006 J	0.001 J	0.0006 J	0.0006 J	0.0005 J	0.0006 J	0.014	0.016
Benzo(a)anthracene	0.010		ND	0.0004 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.010		ND	0.0002 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	0.010		ND	0.0003 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	0.010		0.091	0.008	0.110	0.0003 J	ND	ND	0.001 J	0.006	ND	ND	0.14	0.18
Di-n-butylphthalate	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0006 J	ND	ND
2,4-Dimethylphenol	0.010		0.0009 J	ND	ND	ND	ND	ND	ND	0.0006 J	ND	ND	0.001 J	0.002
4,6-Dinitro-o-cresol	0.050		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0007 J	ND	ND
Fluoranthene	0.010		0.007	0.003	0.015	ND	ND	ND	ND	ND	ND	ND	0.015	0.017
Fluorene	0.010		0.092	0.009	0.140	0.0004 J	ND	ND	0.001 J	0.005	ND	ND	0.16	0.2
2-Methylnaphthalene	0.010		0.012	0.0009 J	ND	ND	ND	ND	ND	0.002	ND	ND	0.014	0.025
Naphthalene	0.010		0.240	0.028	0.0009 J	0.001 J	ND	ND	0.013	0.089	ND	ND	0.47	0.79
Nitrobenzene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Nitrophenol	0.050		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	0.050		0.0004 J	0.0002 J	0.0002 J	0.0003 J	0.0003 J	0.0003 J	0.0003 J	0.0002 J	0.0004 J	ND	0.0004 J	0.0004 J
Phenanthrene	0.010		0.042	0.002	0.0009 J	0.0003 J	ND	ND	ND	0.0009 J	ND	ND	0.074	0.11
Phenol	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	0.010		0.003	0.002 J	0.006	ND	ND	ND	ND	ND	ND	ND	0.006	0.007

NOTES:

All values reported in mg/L. ND - Not detected at the Sample Quantitation Limit (SQL).
[1]GWPS - Ground Water Protection Standard as defined on Table 1 of the Compliance Plan.
[2] [ ] indicate values reported above the GWPS.
[3]The compound was not detected but the reported detection limit was greater than the SQL.
J=Value was detected, but below limit of quantitation.
B=Analyte was found in the associated blank as well as in the sample.
Concentrations are reported on the Form 1s up to 3 significant figures in µg/L; then they are converted to mg/L.

TABLE 2-2

Summary of Analytical Results for the B-Transmissive Zone (B-TZ)
First Semiannual Sampling Event, 2001

Houston Wood Preserving Works
Houston, Texas

Analyte	GWPS[1]	Monitor Well ID:	MW-10B	MW-11B	P-10	P-11	P-12
		Sample Date:	4/26/2001	4/25/2001	4/25/2001	4/25/2001	4/24/2001
Benzene	0.005		0.002 J	ND	ND	ND	ND
Chlorobenzene	0.005		ND	ND	ND	ND	ND
1,2-Dichloroethane	0.005		ND	ND	ND	ND	ND
Methylene chloride	0.010		ND	ND	ND	ND	ND
Ethylbenzene	0.005		0.004 J	0.003 J	0.018	ND	ND
Toluene	0.005		ND	ND	ND	ND	ND
Xylene (total)	0.005		0.003 J	0.003 J	0.011 J	ND[3]	ND[3]
Acenaphthene	0.010		0.087	0.200	0.320	0.011	ND
Acenaphthylene	0.010		0.002	0.003	ND	ND	ND
Anthracene	0.010		0.004	0.011	0.021	ND	ND
Benzo(a)anthracene	0.010		ND	ND	ND	ND	ND
Benzo(a)pyrene	0.010		ND	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	0.010		ND	ND	ND	ND	ND
2-Chloronaphthalene	0.010		ND	ND	ND	ND	ND
Chrysene	0.010		ND	ND	ND	ND	ND
Dibenzofuran	0.010		0.036	0.100	0.110	ND	ND
Di-n-butylphthalate	0.010		ND	ND	ND	ND	ND
2,4-Dimethylphenol	0.010		0.002	0.0006 J	ND	ND	ND
4,6-Dinitro-o-cresol	0.050		ND	ND	ND	ND	ND
2,4-Dinitrotoluene	0.010		ND	ND	ND	ND	ND
2,6-Dinitrotoluene	0.010		ND	ND	ND	ND	ND
1,2-Diphenylhydrazine	0.010		ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	0.010		ND	ND	ND	ND	ND
Fluoranthene	0.010		0.003	0.011	0.015	0.0009 J	ND
Fluorene	0.010		0.047	0.110	0.190	0.002	ND
2-Methylnaphthalene	0.010		0.0005 J	0.056	0.140	ND	ND
Naphthalene	0.010		0.180	0.470	3.800	ND	ND
Nitrobenzene	0.010		ND	ND	ND	ND	ND
p-Nitrophenol	0.050		ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	0.010		ND	ND	ND	ND	ND
Pentachlorophenol	0.050		0.0006 J	0.0004 J	0.0004 J	0.0003 J	0.0002 J
Phenanthrene	0.010		0.014	0.086	0.110	ND	ND
Phenol	0.010		0.002	ND	ND	ND	ND
Pyrene	0.010		0.001 J	0.005	0.006	0.0005 J	0.009

NOTES:

All values reported in mg/L. ND - Not detected at the Sample Quantitation Limit (SQL).
[1]GWPS - Ground Water Protection Standard as defined on Table I of the Compliance Plan.
[2] [ ] indicate values reported above the GWPS.
[3]The compound was not detected but the reported detection limit was greater than the SQL.
J=Value was detected, but below limit of quantitation.
B=Analyte was found in the associated blank as well as in the sample.
Concentrations are reported on the Form 1s up to 3 significant figures in µg/L; then they are converted to mg/L.

TABLE 2-3

Summary of Analytical Results for the A-Transmissive Zone (A-TZ)
Second Semiannual Sampling Event, 2001

Houston Wood Preserving Works
Houston, Texas

Analyte	PQL (GWPS)[1]	Monitor Well ID: / Sample Date:	MW-01A 09/28/01	MW-02 09/28/01	MW-03 09/28/01	MW-04 09/27/01	MW-05 09/27/01	MW-07 09/27/01	MW-08 09/27/01	MW-08D 09/27/01	MW-09 09/27/01	MW-10AD 09/28/01	MW-11A 09/27/01
Benzene	0.005		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003J
Chlorobenzene	0.005		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.005		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	0.005		0.004J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.007
Toluene	0.005		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003J
Xylene (total)	0.005		0.005J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.014J
Acenaphthene	0.010		0.360	0.012	0.120	ND	0.003	0.006	ND	ND	ND	0.0006J	0.310
Acenaphthylene	0.010		0.005	0.0005J	0.001J	0.0003J	ND	ND	ND	ND	ND	ND	0.004
Anthracene	0.010		0.007	0.002J	0.004	0.001 J	0.0009J	0.002J	0.0008J	0.0006J	0.0009J	0.0005J	0.008
Benzo(a)anthracene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	0.010		0.180	0.010	0.072	0.0003J	ND	ND	ND	ND	ND	0.0004J	0.130
Di-n-butylphthalate	0.010		0.0006J	ND	ND	ND	0.0005J	0.0006J	0.0006J	ND	0.0004J	ND	0.0006J
2,4-Dimethylphenol	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	0.050		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	0.010		ND	ND	ND	0.0007J	0.0006J	0.0006J	0.0007J	0.0005J	0.001J	ND	0.0008J
Fluoranthene	0.010		0.010	0.002J	0.009	ND	0.0005J	0.001J	0.0005J	ND	ND	ND	0.012
Fluorene	0.010		0.170	0.010	0.078	ND	ND	ND	ND	ND	ND	0.0004J	0.180
2-Methylnaphthalene	0.010		ND	0.001J	ND	ND	ND	ND	ND	ND	ND	ND	0.140
Naphthalene	0.010		0.065	0.034	0.0007J	0.001J	ND	ND	ND	ND	0.0005J	ND	2.400
Nitrobenzene	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Nitrophenol	0.050		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	0.050		0.0007J	0.0003J	0.0007J	ND	0.0003J	0.0003J	ND	ND	ND	0.0002J	ND
Phenanthrene	0.010		0.100	0.003	0.002	ND	ND	0.0004J	ND	ND	0.0003J	0.0003J	0.075
Phenol	0.010		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	0.010		0.006	0.001J a	0.006 a	ND	0.0006J	0.0009J	0.0004J	0.0005J	ND	ND a	0.008

NOTES:

All values reported in mg/L. ND - Not detected at the Method Detection Limit (MD), which is less than or equal to the Practical Quantitation Limit (PQL) in all instances.

[1]PQL - *Practical Quantitation Limit* as defined on Table I of the Compliance Plan, and determined by the analytical methods of EPA.

SW-846. The PQL is the Ground Water Protection Standard.

[2] [ ] indicate values reported above the Ground Water Protection Standard (GWPS).

J=Value was detected, but below limit of quantitation.

a = Laboratory reported Matrix interface present in sample.

TABLE 2-4

Summary of Analytical Results for the B-Transmissive Zone (B-TZ)
Second Semiannual Sampling Event, 2001

Houston Wood Preserving Works
Houston, Texas

Analyte	PQL (GWPS)[1]	Monitor Well ID:	MW-10B	MW-11B	P-10	P-11	P-12	P-12
		Sample Date:	9/28/2001	9/2272001	9/27/2001	9/27/2001	9/27/2001	9/27/2001
Benzene	0.005		0.002J	ND	ND	ND	ND	ND
Chlorobenzene	0.005		ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.005		ND	ND	ND	ND	ND	ND
Methylene chloride	0.010		ND	ND	ND	ND	ND	ND
Ethylbenzene	0.005		ND	ND	0.017	ND	ND	ND
Toluene	0.005		ND	ND	ND	ND	ND	ND
Xylene (total)	0.005		ND	ND	0.014J	ND	ND	ND
Acenaphthene	0.010		0.072	0.140	0.300	ND	ND	ND
Acenaphthylene	0.010		0.001J	0.003	ND	ND	ND	ND
Anthracene	0.010		0.002	0.005	0.013	0.0005J	ND	ND
Benzo(a)anthracene	0.010		ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.010		ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	0.010		ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	0.010		ND	ND	ND	ND	ND	ND
Chrysene	0.010		ND	ND	ND	ND	ND	ND
Dibenzofuran	0.010		0.029	0.068	0.130	ND	ND	ND
Di-n-butylphthalate	0.010		ND	ND	ND	0.0006J	0.0006J	ND
2,4-Dimethylphenol	0.010		ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	0.050		ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	0.010		ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	0.010		ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine	0.010		ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	0.010		ND	ND	0.0005J	0.0006J	0.0007J	ND
Fluoranthene	0.010		0.002J	0.004	0.010	ND	ND	ND
Fluorene	0.010		0.036	0.072	0.170	ND	ND	ND
2-Methylnaphthalene	0.010		ND	0.056	0.140	ND	ND	ND
Naphthalene	0.010		0.001J	0.500	3.200	ND	0.0005J	0.0004J
Nitrobenzene	0.010		ND	ND	ND	ND	ND	ND
p-Nitrophenol	0.050		ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	0.010		ND	ND	ND	ND	ND	ND
Pentachlorophenol	0.050		0.0006J	ND	0.0004J	ND	ND	ND
Phenanthrene	0.010		0.019	0.046	0.120	ND	ND	ND
Phenol	0.010		ND	ND	ND	ND	ND	ND
Pyrene	0.010		0.001J a	0.003	0.006	ND	0.01	0.009

NOTES:

All values reported in mg/L. ND - Not detected at the Method Detection Limit (MD), which is less than or equal to the Practical Quantitation Limit (PQL) in all instances.
[1]PQL - *Practical Quantitation Limit* as defined on Table I of the Compliance Plan, and determined by the analytical methods of EPA

SW-846. The PQL is the Ground Water Protection Standard.

[2] ☐ indicate values reported above the Ground Water Protection Standard (GWPS).

J=Value was detected, but below limit of quantitation.

a = Laboratory reported Matrix interface present in sample.

TABLE 2-5

Semiannual Water Level Depths and Elevation
May and October 2001

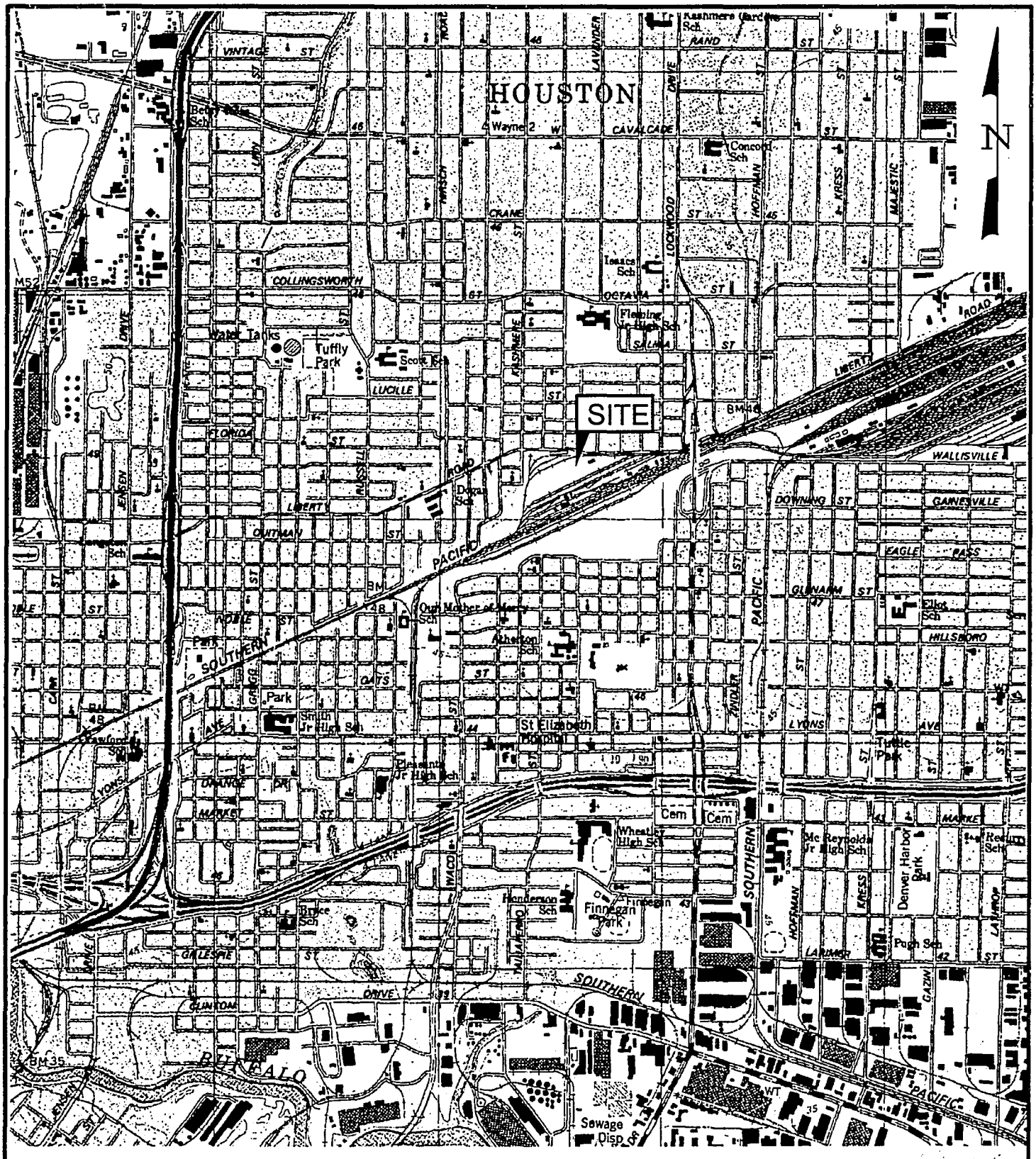
Houston Wood Preserving Works
Houston, Texas

	Reference Elevation (Feet Mean Sea Level)	Depth to Water (Feet)		Water Level Elevation (Feet Mean Sea Level)	
		May	October	May	October
A-TZ Well					
MW-1A	47.95	6.60	6.85	41.35	41.10
MW-2	48.03	6.91	8.22	41.12	39.81
MW-3	48.55	7.26	7.57	41.29	40.98
MW-4	49.85	8.41	8.68	41.44	41.17
MW-5	49.35	7.47	7.79	41.88	41.56
MW-7	48.86	7.64	8.00	41.22	40.86
MW-8	49.37	7.83	8.05	41.54	41.32
MW-9	49.29	7.16	7.39	42.13	41.90
MW-10A	49.90	8.64	8.93	41.26	40.97
MW-11A	50.04	8.78	9.12	41.26	40.92
B-TZ Well					
MW-10B	49.97	8.75	9.12	41.22	40.85
MW-11B	50.19	5.97	9.33	44.22	40.86
P-10	49.72	6.52	6.85	41.20	40.87
P-11	49.02	7.48	7.74	41.54	41.28
P-12	48.82	6.70	6.93	42.12	41.89

Figures

January 24, 2002
W.O. #422-102

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000



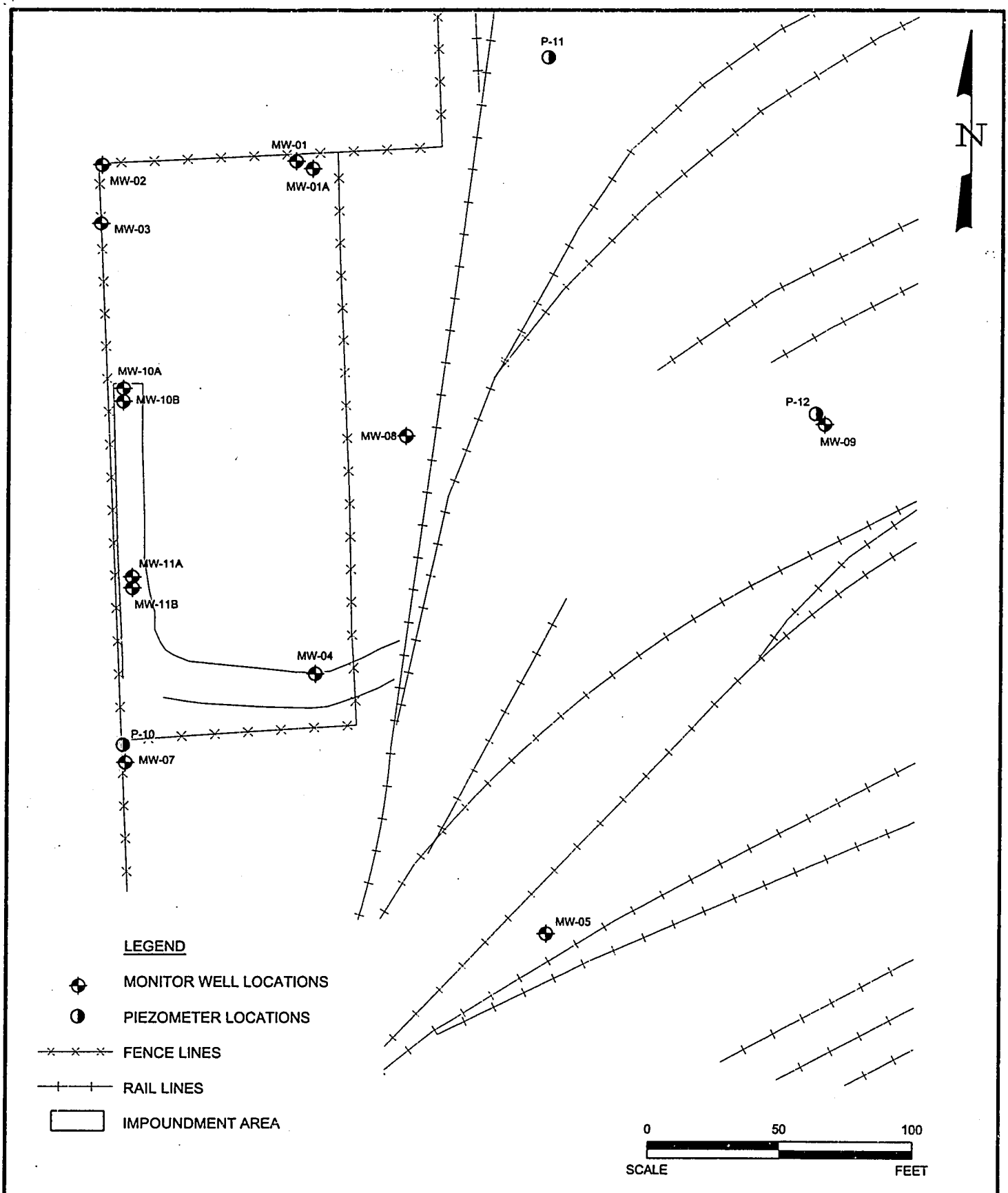
SOURCE: U.S.G.S. 7.5' QUADRANGLE, SETTEGAST, TX, 1982.

ERM-Southwest, Inc.
HOUSTON · NEW ORLEANS · AUSTIN · DALLAS · BEAUMONT · BATON ROUGE

FIGURE 1-1
SITE LOCATION MAP
Houston Wood Preserving Works
Houston, Harris County, Texas

DESIGN: SG	CHKD.:	DATE: 02/20/01	REV.:
DRAWN: CAK	SCALE: AS SHOWN	W.O.NO.: 422009A104 B01	

ERM



ERM-Southwest, Inc.

HOUSTON · NEW ORLEANS · AUSTIN · DALLAS · BEAUMONT · BATON ROUGE · CORPUS CHRISTI

DESIGN: LBG	DRAWN: EFC	CHKD.:
DATE: 02/11/02	SCALE: AS SHOWN	REV.:
W.O.NO.: H:\DWG\B02\422009A096.dwg, 2/11/2002 3:04:08 PM		

FIGURE 2-1
MONITORING WELLS AND PIEZOMETERS
TNRCC PERMIT UNIT No. II.B.1.
Houston Wood Preserving Works
Houston, Texas

ERM

Annual Waste Summary for Data Year 2001

Appendix A

January 24, 2002
W.O. #422-102

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

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IC 120
INDUSTRIAL AND HAZARDOUS WASTE DIVISION
EXAS NATURAL RESOURCE CONSERVATION COMMISSION
O. BOX 13087
USTIN, TEXAS 78711-3087 TELEPHONE: (512) 239-6832

ANNUAL WASTE SUMMA

Your SOLID WASTE REGISTRATION NUMBER: 31547 (1–6) G1 (7–8) Report for FY 2001 (9–12)

☐ 22 NO REPORT REQUIRED {See 30 TAC 335.9(a)(3); also see instructions}

Your EPA ID # TXD000820266 (10)

Mr. E. H. Honig
Union Pacific Railroad
4910 Liberty Road
Houston, Texas (Area Code) (402) Telephone: 271-5979

SUMMARY STATUS

[X] ORIGINAL SUMMARY ☐ REVISED SUMMARY ☐ SUPPLEMENTAL SUMMARY

YOUR WASTE GENERATION FEE IS CALCULATED FROM THIS REPORT. BE SURE THE INFORMATION IS CORRECT. TO REPORT WASTEWATER, SEE INSTRUCTION BOOKLET RG-151.

TEXAS WASTE CODE (1–30)	EPA HAZARDOUS WASTE NO. (31–38)	EPA HAZARDOUS WASTE NO. (35–38)	EPA HAZARDOUS WASTE NO. (39–42)	EPA HAZARDOUS WASTE NO. (43–46)	WASTE DESCRIPTION (47–87)	TOTAL QUANTITY GENERATED (47–55)	UNITS (56)
9141101H	K001	F034			Ground Water Generated from Purging	13761	P

QUANTITY HANDLED (66–70)	UNITS (66)	SYSTEM TYPE CODE (67)	FEE (70)	FACILITY NUMBER (71–75)	RECEIVER'S EPA ID # (76–87)	COMMENTS (88–117)
13761	P	M		32299	TXD000719518	
		M				
		M				
		M				

TEXAS WASTE CODE (1–30)	EPA HAZARDOUS WASTE NO. (31–38)	EPA HAZARDOUS WASTE NO. (35–38)	EPA HAZARDOUS WASTE NO. (39–42)	EPA HAZARDOUS WASTE NO. (43–46)	WASTE DESCRIPTION (47–87)	TOTAL QUANTITY GENERATED (47–55)	UNITS (56)

QUANTITY HANDLED (66–70)	UNITS (66)	SYSTEM TYPE CODE (67)	FEE (70)	FACILITY NUMBER (71–75)	RECEIVER'S EPA ID # (76–87)	COMMENTS (88–117)
		M				
		M				
		M				
		M				

certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents and that based in my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Peter J. Gagnon — Preparer (PRINT NAME) — Signature of Preparer — 1/22/02 Date

Edwin H. Honig — Authorized Agent (PRINT NAME) — Signature of Authorized Agent — 1/22/02 Date

Certification

Appendix B

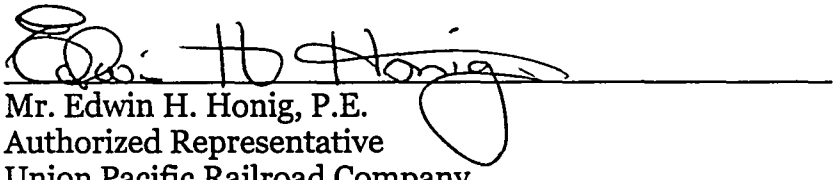
January 24, 2002
W.O. #422-102

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

APPENDIX B

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Mr. Edwin H. Honig, P.E.
Authorized Representative
Union Pacific Railroad Company

Post-Closure Care Cost Estimate

Appendix C

January 24, 2002
W.O. #422-102

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

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APPENDIX C

Post-Closure Care Cost Calculation

Former Houston Wood Preserving Works
4910 Liberty Road
Houston, Texas

Surface Impoundment
Post-Closure Care Permit HW-50343-000
Industrial Solid Waste Registration No. 31547

Ground Water Monitoring

15 existing wells/piezometers sampled semiannually at a cost of $950 each	$28,500
6 installed wells/piezometers at a cost of $1,500 each	$9,000
6 new wells/piezometers sampled quarterly at a cost of $950 each	$22,800
	$60,300

Inspection and Maintenance

21 wells/piezometers inspected monthly at a cost of $50 each	$12,600
Impoundment/storage area inspected weekly at a cost of $150/week	$5,200
Minor repairs and/or upgrades (estimated)	$4,000
	$21,800

Total Estimated Cost (2001)	**$82,100**
Adjusted to 2002 dollars using the inflation factor of 1.0982 (1)	**$90,162**

NOTE:

(1) The annual cost estimate for post-closure care has been adjusted from 2001 dollars in accordance with 40 CFR §264.144 using the Implicit Price Deflator obtained from the U.S. Department of Commerce. The Implicit Price Deflator results in an inflation factor of 1.0982.