



September 10, 1997

Paul Johnescu
Matson Terminals
3050-7th St.
Oakland CA 94607

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

REMEDIAL ACTION COMPLETION CERTIFICATION

RE: Matson Terminals, 3050-7th St., Oakland CA 94607
Case File Number 3901

Dear Mr. Johnescu,

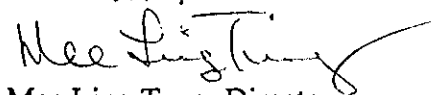
This letter confirms the completion of site investigation and remedial action for the underground storage tanks formerly located at the above referenced site. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tanks is greatly appreciated.

Based on information in the above-referenced file, and with the provision that the information provided to this agency was accurate and representative of site conditions, **no further action related to the underground tank release is required.**

This notice is issued pursuant to a regulation contained in Title 23, Division 3, Chapter 16, Section 2721(e) of the California Code of Regulations.

Please contact our office if you have any questions regarding this matter.

Sincerely,



Mee Ling Tung, Director

cc: Kevin Graves, RWQCB
Dave Deaner, SWRCB, UST Cleanup Fund Program
Attn: Leroy Griffin, Supervisor, Hazardous Materials Program, City of Oakland, Fire Services Agency, 505-14th St., suite 702, Oakland CA 94612
Sydney Geels, IT Corporation, 4585 Pacheco Blvd. Martinez CA 94553-2233
Jennifer Eberle (3 copies of letter only)

LOP/Completion
je.3901clos.let

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



September 10, 1997
LOP STID 3901
page 1 of 2

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RE: **CASE CLOSURE**
three underground storage tanks
(10,000-gallon diesel, 12,000-gallon gasoline, and 1,000-gallon waste oil)
Matson Terminals, 3050-7th St., Oakland CA 94607

Dear Mr. Johnescu,

This letter transmits the enclosed underground storage tank (UST) case closure letter in accordance with Chapter 6.75 (Article 4, Section 25299.37[h]). The State Water Resources Control Board (SWRCB) adopted this letter on 2/20/97. As of 3/1/97, Alameda County Health Care Services Agency, Environmental Health Services, Local Oversight Program is required to use this case closure letter for all UST leak sites. We are also transmitting to you the enclosed case closure summary. These documents confirm the completion of the investigation and cleanup of the reported release at the subject site. **The subject fuel leak case is closed.**

SITE INVESTIGATION AND CLEANUP SUMMARY:

Please be advised that the following conditions exist at the site:

- * Three thousand, nine hundred parts per million (ppm) Total Petroleum Hydrocarbons as motor oil (TPH-mo), 0.006 ppm benzene, 0.018 ppm toluene, 0.006 ppm ethylbenzene, 0.035 ppm xylene and 33 ppm total lead remain *in the native soil*.
- * Eleven thousand parts per billion (ppb) TPH-mo and 0.51 ppb xylene remain *in the groundwater*.

If you have any questions, please call Ms. Jennifer Eberle at 510-567-6761. Thank you.

APR 24 1997 **KG**

QUALITY CONTROL BOARD

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION

Date: 2/27/97

Agency name: **Alameda County-HazMat** Address: **1131 Harbor Bay Pky**
 City/State/Zip: **Alameda CA 94502** Phone: **(510) 567-6700**
 Responsible staff person: **Jennifer Eberle** Title: **Hazardous Materials Spec.**

II. CASE INFORMATION

Site facility name: **Matson Terminals**
 Site facility address: **3050-7th St., Oakland CA 94607**
 RB LUSTIS Case No.: **N/A** Local Case No./LOP Case No.: **3901**
 ULR filing date: **11/19/90** SWEEPS No: **N/A**

Responsible Parties: **Addresses:** **Phone Numbers:**
 Paul Johnescu, Matson Terminals, 3050-7th St., Oakland CA 94607 (510-271-9826)

<u>Tank No:</u>	<u>Size in gal.:</u>	<u>Contents:</u>	<u>Closed in-place or removed?:</u>	<u>Date:</u>
1	10,000	diesel	removed	3/2/94
2	12,000	gasoline	removed	3/2/94
3	1,000	waste oil	removed	3/2/94

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: unknown
 Site characterization complete? YES
 Monitoring Wells installed? YES Number: 11 Proper screened interval? YES
 Highest GW depth below ground surface: 3.17' DTW in MW10 on 2/21/96
 Lowest GW depth: 8.42' DTW in MW8 on 9/3/91
 Flow direction: highly variable due to heterogeneity of the subsurface, and tidal influences
 Most sensitive current use at present: marine transport of containerized freight, stevedoring services
 Are drinking water wells affected? NO Aquifer name: n/a
 Is surface water affected? Undetermined but unlikely
 Nearest SW name: San Francisco Bay is approx 500' S of the site
 Off-site beneficial use impacts (addresses/locations): n/a
 Report(s) on file? YES Where is report(s) filed?
Alameda County, 1131 Harbor Bay Pky, Alameda Ca 94502

Leaking Underground Fuel Storage Tank Program

Treatment and Disposal of Affected Material:

<u>Material</u>	<u>Amount (include units)</u>	<u>Action (Treatment of Disposal w/destination)</u>	<u>Date</u>
Tanks	12,000 lb (waste oil and diesel USTs)	Disposed to Erickson (#93243827)	3/2/94
	2,000 lb (gasoline UST)	Disposed to Erickson (#93243826)	3/3/94
Soil around USTs	200 yd ³	Disposed to Port Costa Materials (non-haz)	3/28/94
Groundwater	4,000 gal	Disposed to Gibson Oil Co. (Non-haz)	3/2/94
UST Contents	550 gal (Waste oil)	disposed to H&H Ship Service	12/17/90

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm)		Water (ppb)	
	Before	After	Before	After
TPH (Gas)	3*	NA**	700#	NA##
TPH (Diesel)	ND*	NA**	NA#	NA##
Benzene	NA*	0.006**	130#	ND##
Toluene	NA*	0.018**	22#	ND##
Ethylbenzene	NA*	0.006**	11#	ND##
Xylene	NA*	0.035**	17#	0.51##
Oil & Grease	NA*	NA**	NA#	NA##
TPH-motor oil	2,300*	3,900**	1,000#	11,000##
Total lead	NA*	33**	NA#	NA##

* soil samples collected on 7/30/90, Kaldveer Associates; See Table 1 and Figure 3

** verification soil samples collected on 8/21/96, IT Corp; See Table 6 and Figure 9

grab groundwater samples collected on 7/30/90, Kaldveer Associates; See Table 1 and Figure 3

MW samples collected on 5/20/96, IT Corp; See Table 7 and Figure 9

Leaking Underground Fuel Storage Tank Program

IV. CLOSURE

Does corrective action protect public health for current land use? YES

Site management requirements: NA

Should corrective action be reviewed if land use changes? YES

Monitoring wells Decommissioned: Not yet

Number Decommissioned: 0 11 Number Retained: 10

List enforcement actions taken: none

List enforcement actions rescinded: none

JE 9-8-97

V. ADDITIONAL COMMENTS, DATA, ETC.

The Matson Terminals (Matson) site is located near the end of 7th St. in the Port of Oakland's industrial marine terminal area. See Figure 1. The fueling facility is located in the south-central area of the site. See Figure 2.

Three USTs were reportedly installed in the 1960s: one 10,000-gallon steel gasoline UST, one 10,000-gallon steel diesel UST, and one 1,000-gallon steel waste oil UST. In 1980, the 10,000-gallon gasoline UST was reportedly replaced with a single-wall, fiber reinforced plastic (FRP) UST of the same size. The tank replacement was reportedly conducted due to tank leakage.¹

Matson Terminals hired Kaldveer Associates in 1990 to conduct a soil and groundwater investigation caused by fuel or waste oil UST leakage. They drilled 16 borings for soil and groundwater sample collection. Table 1 summarizes the soil samples. TPHg and TPHd ranged from ND to 3 mg/kg. TPH as oil ranged from ND to 2,300 mg/kg. BTEX was not analyzed. Table 2 summarizes the groundwater samples. TPHg ranged from ND to 700 ug/L. Benzene ranged from ND to 130 ug/L. Figure 3 indicates sample locations. Figure 4 depicts the extent of TPH-oil in soil. Kaldveer concluded that TPH-oil was present in the soil at a depth of 7 to 10' bgs, and was a result of a leak in the waste oil UST, while the groundwater contamination may have either resulted from cross-contamination during open borehole sampling, or be truly representative of actual conditions. The surficial soils consisted of dredged bay material and imported fill that partly contained oil.¹

International Technology Corporation (IT) was retained by Matson in January 1991 to conduct an additional groundwater assessment. Between January 1991 and January 1992, 26 soil borings were emplaced; See Figures 5 and 6 for sample locations. Seven of these borings were used as temporary well points for groundwater sample collection. Seven of these borings were used for collection of vadose zone soils. Eleven of these borings (MW1 to MW11) were completed as onsite groundwater monitoring wells. Since contamination was encountered during the onsite investigation near the property boundary, an offsite investigation was also conducted. On 10/28/91, 14 boreholes were attempted using a hydraulic system (Powercore). The onsite and offsite investigations were considered as separate issues because it was unclear whether the offsite contamination was related to the UST release.²

Leaking Underground Fuel Storage Tank Program

The extent of onsite soil and groundwater contamination was apparently defined. See **Tables 3 and 4** for a historical summary of soil and groundwater results, respectively.²

The onsite hydrocarbon release was to be remediated by source removal, including tank and piping excavation and vadose soil treatment. To this end, remedial pilot tests were conducted subsequent to drilling activities. Biotreatment and oxidation were under consideration. IT recommended installing a remediation system concurrent with UST and piping removal.²

In early 1991, IT conducted pilot studies which included soil vapor extraction, biofeasibility and biotreatability. They decided to utilize a bioventing system, consisting of an aboveground compound (with a 200 CFM blower and a nutrient addition tank) and twelve vadose zone wells for injection/extraction to circulate oxygen and nutrients (ammonia). They planned to install the system when the USTs were removed.³

In August 1993, IT submitted a remediation workplan.⁴ This type of remediation combines bioremediation and soil vapor extraction. This workplan was approved as per County letter dated 9/1/93, on the condition that verification test borings would include TPHg, TPHd, BTEX, and O&G.

On 3/2/94, the 10,000-gallon diesel UST, 12,000-gallon gasoline UST, and 1,000-gallon waste oil USTs were removed. The diesel and waste oil USTs were steel, while the gasoline UST was fiberglass. The diesel UST contained holes. The fiberglass UST broke into pieces while removing it. Overburden soils were removed from the UST excavations and sampled. See **Table 5 and Figure 7**. Maximum stockpiled soil concentrations were 170 mg/kg TPHg, 380 mg/kg TPHd, 760 mg/kg O&G, 0.16 mg/kg toluene, 5.4 mg/kg xylenes, 89 mg/kg total lead (and ND benzene and ethylbenzene).⁵

The bioventing system was installed concurrent with the removal of the USTs. The bioventing system was designed to remediate the vadose soils. However, it was anticipated that it would allow natural biodegradation to occur in the groundwater as well. Soil verification samples were collected on 6/27/95 and on 8/21/96 in order to evaluate the effectiveness of the bioventing system. See **Figures 8 and 9**. Since the results of the first round of sampling indicated such low results in the TA-1 area, IT Corp requested that future sampling would not include area TA-1. Results from the second and final round of soil verification sampling (8/21/96) indicated maximum soil concentrations of 3,900 mg/kg TRPH, 0.006 mg/kg benzene, 0.018 mg/kg toluene, 0.006 mg/kg ethylbenzene, 0.035 mg/kg xylenes, and 33 mg/kg total lead. See **Tables 6 and 7**.⁶

Groundwater was monitored and sampled in 1991, and has been monitored and sampled between 1994 and 1996. See **Table 8**.

BTEX has been ND or below MCLs for at least the last four quarters in all eleven wells. BTEX has been ND in six of the eleven MWs. Of the remaining five MWs which have contained BTEX, only two ever contained concentrations in excess of MCLs. TPH-g has been ND during every sampling event, with the exception of 53 ppb and 1,400 ppb in MW5, and 270 ppb and 85 ppb in MW9. The 1,400 ppb TPHg concentration seems to have been an anomaly. Historic TPH-d concentrations have ranged from ND to 2,900 ppb, with the most recent

Leaking Underground Fuel Storage Tank Program

samples ranging from ND to 490 ppb (11/11/94). Historic total lead concentrations have ranged from ND to 3,100 ppb, with the most recent samples ranging from ND to 570 ppb (8/10/95). [The current primary MCL for lead is 50 ppb.] Historic Oil & Grease concentrations have ranged from ND to 14,000 ppb, with the most recent samples ranging from ND to 14,000 ppb (11/11/94). Historic TRPH concentrations have ranged from ND to 11,000 ppb, with the most recent samples ranging from ND to 11,000 ppb (5/20/96). It should be noted that the network of wells ranges to distances of 300 feet away from the former USTs.

The primary contaminants of concern at this site are BTEX. During the last **groundwater** sampling event (5/20/96), the only BTEX component detected was xylenes at 0.51 ppb. This concentration was compared to the Tier 1 look up table in the American Society of Testing and Materials' (ASTM) "Risk Based Corrective Action Applied at Petroleum Release Sites," document E1739-95. Xylenes do not pose a threat to human health when present at any concentration in groundwater, as per the RBSL look up table (any commercial scenario).

The verification **soil** samples collected on 8/21/96 were also compared to the Tier 1 look up table. These concentrations were 0.006 ppm benzene, 0.0018 ppm toluene, 0.006 ppm ethylbenzene, and 0.035 ppm xylenes. The corresponding RBSLs (soil to outdoor air pathway, 10-6, commercial) are 0.13 ppm, RES, RES, and RES. [RES indicates that the compound does not pose a threat to human health when present at any concentration.]

To summarize, the reasons that this case should be closed are as follows:

- * The sources have been removed (three USTs, 4,000 gallons of water from the excavation, and 200 cubic yards of contaminated soil);
- * The site has been adequately characterized (15 soil borings and 11 monitoring wells);
- * All of the wells have been ND or below MCLs for at least the last four quarters for BTEX;
- * There are no sensitive environmental receptors in the site vicinity: the estuary lies approximately 500 feet from the site (a significant and unlikely distance for a hydrocarbon plume to travel), and the site is used as an industrial marine terminal, with constant heavy vehicle traffic;
- * There is likely no significant risk to human health, based on the ASTM's RBCA; and
- * The owner should notify the appropriate agencies if there is a proposal for a change in land use, site activity, or structural configuration of the site (e.g. new construction or excavation activities).

Leaking Underground Fuel Storage Tank Program

¹ "Soil and Ground Water Testing Report," Kaldveer Associates, October 1990. This report is Appendix B of the "Work Plan for Site Assessment," IT Corp., January 1991.

² The 2.5" thick "Problem Assessment Report," IT Corp., February 1992

³ "Remedial Action Plan," IT Corp., April 1992

⁴ "Bioventing Pilot System Design Plan," IT Corp., July 1993

⁵ "Underground Storage Tank Closure Report," IT Corp., March 1994

⁶ "Site Closure Recommendation Report," IT Corp., September 1996

VI. LOCAL AGENCY REPRESENTATIVE DATA

Name: Jennifer Eberle Title: Hazardous Materials Specialist


Signature:  Date: 4-23-97

Reviewed by

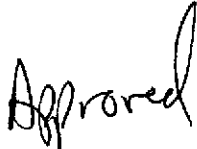
Name: Kevin Tinsley Title: Hazardous Materials Specialist

Signature:  Date: 4-23-97

Name: Tom Peacock Title: Manager of LOP

Signature:  Date: 4-23-97

VII. RWQCB NOTIFICATION

Date Submitted to RWQCB: 4-23-97 RWQCB Response: 

RWQCB Staff Name: Kevin Graves Date: 5/1/97

Associate Water Resources Control Engineer

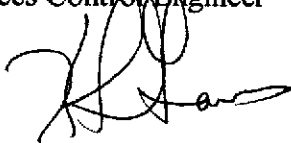


TABLE 1

7-30-90

SOIL SAMPLE ANALYTICAL RESULTS
PETROLEUM HYDROCARBONS
 (reported in parts per million, mg/kg)

Sample Number	Depth	TPH as Gasoline	TPH as Diesel	TPH as Oil
A-2	7.5	ND	ND	130
A0	7.5	ND	ND	210
A1	8.0	ND(6)	ND(300)	1700
A3	8.5	ND(80)	ND(500)	2300
A3	10.5	ND(3)	ND(300)	1400
B2	7.5	ND(1)	ND	210
C0	8.0	ND	ND	ND
C3	8.5	ND	ND	870
D-3	7.5	ND	--	--
D0	8.5	ND(2)	ND(200)	1600**
D3 ✓	8.5	ND	ND	110
D6	6.0	3*	--	--
F4	6.5	ND	--	--
G0	8.0	ND	--	--
G3	6.5	ND	ND(2)	82
G3	8.5	0.6	--	--
Detection Limit		0.2	10	20
(unless otherwise indicated by parentheses)				

Notes:

- * = Result mainly due to aromatics (benzene) in sample.
- ** = Narrow range hydrocarbon mixture present, but does not resemble motor oil (this sample only).
- = Indicates not analyzed.

see Figure 3

7-30-90

TABLE 2

GROUND WATER SAMPLE ANALYTICAL RESULTS
PETROLEUM HYDROCARBONS
 (reported in parts per million, mg/l)

Sample	TPH as Oil	TPH as Gasoline	Benzene	Toluene	Xylene	Ethylbenzene
D1	1.0	0.7	0.13	0.022	0.017	0.011
B2	5.7	ND	ND	ND	ND	ND
Detection Limit	0.2	0.5	0.0003	0.0003	0.001	0.0003

Table X 3

Soil Sample Analytical Results in ppm

Location	Number	Sample Date	Depth	TPH Gas	TPH Diesel	TPH Oil	TRH	Oil & Grease	Bio-treatability
A-2	A-2	07/23/90	7.5	ND _{0.2}	ND ₁₀	130 ₂₀	N/A	N/A	N/A
A-0	A-0	07/23/90	7.5	ND _{0.2}	ND ₁₀	210 ₂₀	N/A	N/A	N/A
A-1	A-1	07/14/90	8.0	ND ₆	ND ₃₀₀	1700 ₂₀	N/A	N/A	N/A
A-3	A-3	07/14/90	8.5	ND ₈₀	ND ₅₀₀	2300 ₂₀	N/A	N/A	N/A
A-3	A-3	07/14/90	10.5	ND ₃	ND ₃₀₀	1400 ₂₀	N/A	N/A	N/A
B-2	B-2	07/23/90	7.5	ND ₁	ND ₁₀	210 ₂₀	N/A	N/A	N/A
C-0	C-0	07/23/90	8.0	ND _{0.2}	ND ₁₀	ND ₂₀	N/A	N/A	N/A
C-3	C-3	07/23/90	8.5	ND _{0.2}	ND ₁₀	870 ₂₀	N/A	N/A	N/A
D-3	D-3	07/14/90	7.5	ND _{0.2}	N/A	N/A	N/A	N/A	N/A
D-0	D-0	07/14/90	8.5	ND ₂	ND ₂₀₀	1600 ₂₀	N/A	N/A	N/A
D-3	D-3	07/23/90	8.5	ND _{0.2}	ND ₁₀	110 ₂₀	N/A	N/A	N/A
D-6	D-6	07/14/90	6.0	3.0 _{0.2}	N/A	N/A	N/A	N/A	N/A
F-4	F-4	07/14/90	6.5	ND _{0.2}	N/A	N/A	N/A	N/A	N/A
G-0	G-0	07/14/90	8.0	ND _{0.2}	N/A	N/A	N/A	N/A	N/A
G-3	G-3	07/14/90	6.5	ND _{0.2}	ND ₂	82 ₂₀	N/A	N/A	N/A
G-3	G-3	07/14/90	8.5	0.6 _{0.2}	N/A	N/A	N/A	N/A	N/A
MW-2	MW2-S-2.5	01/21/91	2.5	N/A	N/A	ND ₁₀	N/A	170 ₃₀	N/A
MW-2	MW2-S-8.0	01/21/91	8.0	N/A	N/A	ND ₁₀	N/A	ND ₃₀	N/A
MW-4	MW4-S-5.5	01/21/91	5.5	N/A	N/A	10 ₁₀	N/A	40 ₃₀	N/A
SB-1	SB-1-2.5	04/25/91	2.5	N/A	N/A	N/A	N/A	N/A	Positive
SB-2	SB-2-2.5	04/25/91	2.5	N/A	N/A	N/A	N/A	N/A	Positive
SB-2	SB-2-5.0	04/25/91	5.0	N/A	N/A	N/A	N/A	N/A	Positive
SB-3	SB-3-2.5	04/25/91	2.5	N/A	N/A	N/A	N/A	N/A	Positive
SB-3	SB-3-5.0	04/25/91	5.0	N/A	N/A	N/A	N/A	N/A	Positive
MW-8	MW8SS-1	08/27/91	5.5	ND _{1.0}	*8 _{1.0}	12 ₁₀	N/A	N/A	N/A
MW-9	MW9SS-1	08/27/91	5.5	^3.3 _{1.0}	*150 _{6.0}	260 ₆₀	N/A	N/A	N/A
MW-10	MW10SS-2	08/27/91	10.5	ND _{1.0}	*10 _{1.4}	24 ₁₄	N/A	N/A	N/A
BH-1	B1-1	1/21/92	4.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A
BH-1	B1-2	1/21/92	7.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A

Table X 3

**Soil Sample Analytical Results in ppm
(Continued)**

Location	Number	Sample Date	Depth	TPH Gas	TPH Diesel	TPH Oil	TRH	Oil & Grease	Bio-treatability
BH-2	B2-1	1/21/92	4.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A
BH-2	B2-2	1/21/92	7.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A
BH-3	B3-1	1/20/92	4.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A
BH-3	B3-2	1/20/92	7.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A
BH-4	B4-1	1/20/92	4.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A
BH-4	B4-2	1/20/92	7.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A
BH-5	B5-1	1/20/92	4.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A
BH-5	B5-2	1/20/92	7.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A
MW-11	MW11-1	1/20/92	4.0	N/A	N/A	N/A	ND ₅₀	N/A	N/A
MW-11	MW11-2	1/20/92	7.0	N/A	N/A	N/A	400 ₅₀	N/A	N/A
VW-1	VW1-1	1/20/92	6.0	N/A	N/A	N/A	N/A	N/A	Pending
BH-4	B4-M	1/20/92	6.0	N/A	N/A	N/A	N/A	N/A	Pending

- TPH = total petroleum hydrocarbons
- N/A = not analyzed
- ND_x = not detected at x method detection limit
- ppm = parts per million
- 0.6_x = amount detected at x method detection limit
- * = Chromatographic pattern of compounds detected and calculated as diesel is similar to, but does not match that of the diesel standard used for calibration; pattern is characteristic of weathered diesel.
- ^ = compounds detected and calculated as low boiling hydrocarbons are due to a petroleum mixture other than gasoline.
- TRH = total recoverable hydrocarbons

TABLE ~~X~~ 4
GROUNDWATER SAMPLE ANALYTICAL RESULTS IN ppb

Well No.	Boring No.	Sample No.	Date	TPH Gas	TPH Diesel	TPH Oil	Oil & Grease	Lead	B	T	E	X	TRH
-	D1	D1	07/14/90	700 ₅₀	NA	1000 ₂₀₀	NA	NA	130 _{0.3}	22 _{0.3}	17 _{0.3}	11 ₁	NA
-	B2	B2	07/23/90	ND ₅₀	NA	5700 ₂₀₀	NA	NA	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND ₁	NA
MW-1	-	020791MW1	02/07/91	ND ₅₀	ND ₅₀	ND ₅₀₀	ND ₅₀₀₀	32 ₅	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA
MW-2	-	020791MW2	02/07/91	3000 ₅₀₀	+730 ₅₀	ND ₅₀₀	ND ₅₀₀₀	83 ₅	1000 ₅	16 ₅	55 ₅	110 ₅	NA
MW-3	-	020791MW3	02/07/91	ND ₅₀	*78 ₅₀	ND ₅₀₀	ND ₅₀₀₀	245 ₅	5 _{0.5}	ND _{0.5}	ND _{0.5}	2 _{0.5}	NA
MW-4	-	020791MW4	02/07/91	ND ₅₀	*74 ₅₀	ND ₅₀₀	ND ₅₀₀₀	34 ₅	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA
MW-5	-	020791MW5	02/07/91	**53 ₅₀	*87 ₅₀	ND ₅₀₀	ND ₅₀₀₀	589 ₅	ND _{0.5}	ND _{0.5}	ND _{0.5}	0.89 _{0.5}	NA
MW-1	-	022591MW1	02/25/91	NA	ND ₅₀	ND ₅₀₀	NA	NA	NA	NA	NA	NA	NA
MW-2	-	022591MW2	02/25/91	NA	700 ₅₀	ND ₅₀₀	NA	NA	NA	NA	NA	NA	NA
MW-3	-	022591MW3	02/25/91	NA	ND ₅₀	ND ₅₀₀	NA	NA	NA	NA	NA	NA	NA
MW-4	-	022591MW4	02/25/91	NA	ND ₅₀	ND ₅₀₀	NA	NA	NA	NA	NA	NA	NA
MW-5	-	022591MW5	02/25/91	NA	ND ₅₀	ND ₅₀₀	NA	NA	NA	NA	NA	NA	NA
-	BH3	042591BH3	04/25/91	ND ₅₀	ND ₅₀	ND ₅	NA	NA	ND ₅	ND ₅	ND ₅	ND ₅	NA
-	BH5	042591BH5	04/25/91	ND ₅₀	300 ₅₀	30 ₅	NA	NA	ND ₅	ND ₅	ND ₅	ND ₅	NA
-	BH6	042591BH6	04/25/91	ND ₅₀	550 ₅₀	20 ₅	NA	NA	ND ₅	ND ₅	ND ₅	ND ₅	NA
MW-6	-	050291MW6	05/02/91	ND ₅₀	2900 ₅₀	1500 ₅₀₀	7200 ₅₀₀₀	NA	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	NA
MW-6	-	060291MW6	06/12/91	NA	630 ₅₀	NA	ND ₅₀₀₀	NA	NA	NA	NA	NA	NA
MW-7	-	050291MW7	05/02/91	ND ₅₀	ND ₅₀	ND ₅₀₀	ND ₅₀₀₀	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA
MW-8	-	090391MW8	09/03/91	ND ₅₀	***72 ₅₀	ND ₅₀₀	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA
MW-9	-	090391MW9	09/03/91	270 ₅₀	***990 ₅₀	1400 ₅₀₀	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA
MW-10	-	090391MW10	09/03/91	ND ₅₀	***120 ₅₀	ND ₅₀₀	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA
-	PC1	102891PC1	10/28/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	4100 _{1.0}
-	PC2	102891PC2	10/28/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	3500 _{1.0}
-	SB1	102991SB1	10/29/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	1700 _{1.0}

TABLE ~~X~~ 4
 GROUNDWATER SAMPLE ANALYTICAL RESULTS IN ppb
 (CONTINUED)

Well No.	Boring No.	Sample No.	Date	TPH Gas	TPH Diesel	TPH Oil	Oil & Grease	Lead	B	T	E	X	TRH
-	SB2	102991SB2	10/29/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	1900 _{1.0}
-	SB3	102991SB3	10/29/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	6200 _{1.0}
-	SB4	102991SB4	10/29/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND _{1.0}
-	SB5	102991SB5	10/29/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND _{1.0}
-	SB6	110891SB6	11/08/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	1200 _{1.0}
-	SB6	110891SB6D	11/08/91	NA	93 ₅₀	ND ₅₀₀	NA	NA	NA	NA	NA	NA	NA
-	SB7	110891SB7	11/08/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND _{1.0}
-	SB8	110891SB8	11/08/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND _{1.0}
-	SB9	110891SB9	11/08/91	NA	NA	NA	NA	NA	NA	NA	NA	NA	2500 _{1.0}
-	MW-11	012292MW11	01/22/92	ND ₅₀	2600 ₅₀	ND ₅₀₀	ND ₅₀₀₀	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA

Notes:

- PPB = parts per billion
- TPH = total petroleum hydrocarbons
- B = benzene
- T = toluene
- E = ethylbenzene
- X = xylene
- TRH = total recoverable hydrocarbons
- NA = not analyzed
- NDx = none detected at x method detection limit.
- 110x = amount detected at x method detection limit.
- + = results include compounds apparently due to gasoline as well as those due to diesel.
- * = chromatographic pattern of compounds detected and calculated as diesel is similar to but does not match that of the diesel standard used for calibration; pattern is characteristic of weathered diesel.
- ** = compounds detected and calculated as low boiling hydrocarbons consist of compounds eluting within the chromatographic range of gasoline, but are not characteristic of the standard gasoline standard pattern.
- *** = compounds detected and calculated as high boiling hydrocarbons consist of compounds eluting within the chromatographic range of diesel, but are not characteristic of the standard diesel standard pattern.

TABLE X 5

SUMMARY OF STOCKPILE SOIL SAMPLE ANALYTICAL RESULTS IN PPM
 MATSON TERMINALS INCORPORATED
 IT PROJECT NO. 190882

Sample Number	Date	TPH as Gasoline	TPH as Diesel	Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	Total Lead	Soluble Lead
030294SS1	03/02/94	ND _{1.0}	ND _{5.0}	80 ₅₀	ND _{.005}	ND _{.005}	ND _{.005}	ND _{.005}	21 _{1.0}	NA
030294SS2	03/02/94	ND _{1.0}	ND _{5.0}	610 ₅₀	ND _{.005}	ND _{.005}	ND _{.005}	ND _{.005}	53 _{1.0}	NA
030294SS3	03/02/94	ND _{1.0}	ND _{5.0}	80 ₅₀	ND _{.005}	ND _{.005}	ND _{.005}	ND _{.005}	12 _{1.0}	NA
030294SS4	03/02/94	170 ₂₅	130 ₂₅	760 ₅₀	ND _{.15}	0.16 _{.03}	ND _{.15}	5.4 _{.15}	61 _{1.0}	NA
030294SS5	03/02/94	ND _{1.0}	380 ₂₅	470 ₅₀	ND _{.005}	ND _{.005}	ND _{.005}	0.017 _{.005}	42 _{1.0}	NA
030294SS6	03/02/94	16 _{1.0}	100 ₂₅	250 ₅₀	ND _{.025}	ND _{.025}	ND _{.025}	0.68 _{.025}	14 _{1.0}	NA
030294SS7	03/02/94	7 _{1.0}	110 ₂₅	740 ₅₀	ND _{.005}	ND _{.005}	ND _{.005}	0.084 _{.005}	44 _{1.0}	NA
030294SS8	03/02/94	ND _{1.0}	18 _{5.0}	450 ₅₀	ND _{.005}	ND _{.005}	ND _{.005}	ND _{.005}	81 _{1.0}	NA
030294SS9	03/02/94	24 _{1.0}	50 ₅₀	150 ₅₀	ND _{.025}	ND _{.025}	ND _{.025}	0.57 _{.025}	89 _{1.0}	NA
030294SS10	03/02/94	7 _{1.0}	51 _{5.0}	480 ₅₀	ND _{.025}	ND _{.025}	ND _{.025}	0.14 _{.025}	61 _{1.0}	NA
SS-1 thru SS-3	composited 3/16/94	NA	NA	NA	NA	NA	NA	NA	NA	1.1 _{0.1}
SS-4 thru SS-6	composited 3/16/94	NA	NA	NA	NA	NA	NA	NA	NA	1.1 _{0.1}
SS-7 thru SS-10	composited 3/16/94	NA	NA	NA	NA	NA	NA	NA	NA	3.4 _{0.1}

NOTES:

- ppm = Parts per million
- TPH = Total petroleum hydrocarbons
- ND_x = None detected at x method detection limit
- 16_x = Concentration encountered at x method detection limit
- N/A = Not analyzed

I.T. Corporation 4585 Pacheco Blvd. Martinez, CA 94553	Client Project ID: # 190882.15; Matson	Date Sampled: 06/27/95
		Date Received: 06/27/95
	Client Contact: Dan Bannon	Date Extracted: 06/30/95
	Client P.O.:	Date Analyzed: 06/30/95

Total Recoverable Petroleum Hydrocarbons as Oil & Grease (with Silica Gel Clean-up) by Scanning IR Spectrometry*

EPA method 418.1 or 9073; Standard Methods 5520 C&F

Lab ID	Client ID	Matrix	TRPH ⁺
53661	TA1-2.5	S	560
53662	TA1-5	S	77
53663	TA1-7.5	S	140
53664	TA1-10	S	320
53665	TA2-2.5	S	ND
53666	TA2-5	S	320
53667	TA2-7.5	S	19
53668	TA3-2.5	S	6600
53669	TA3-5	S	4000
53670	TA3-7.5	S	4100
53671	TA3-10	S	82
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W		1.0 mg/L
	S		10 mg/kg

* water samples are reported in mg/L and soils in mg/kg

surrogate diluted out of range

+ At the laboratory's discretion, one positive sample may be run by direct injection chromatography with FID detection. The following comments pertain to this GC result: a) gasoline-range compounds (C6-C12) are present; b) diesel range compounds (C10-C23) are present; c) oil-range compounds (> C18) are present; d) other patterned solvent (?); e) isolated peaks; f) GC compounds are absent or insignificant relative to TRPH inferring that complex biologically derived molecules (lipids?) are the source of IR absorption; h) a lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment.

Table 6 (cont)

TABLE ~~X~~ 7
ANALYTICAL RESULTS FOR VERIFICATION SOIL SAMPLES

all ok
↓

Sample Location	Depth (feet)	Date	TRPH (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
SB1	2.5	8/21/96	ND ₁₀	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	3.3 _{0.2}
SB1	4	8/21/96	140 ₁₀	0.005 ₀₀₅	ND ₀₀₅	ND ₀₀₅	0.014 ₀₀₅	6.1 _{0.2}
SB1	6	8/21/96	ND ₁₀	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	0.006 ₀₀₅	ND _{0.2}
SB2	2.5	8/21/96	ND ₁₀	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	0.009 ₀₀₅	ND _{0.2}
SB2	4	8/21/96	3900 ₁₀	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	0.012 ₀₀₅	ND _{0.2}
SB2	6	8/21/96	120 ₁₀	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	0.015 ₀₀₅	15 _{0.2}
SB3	2.5	8/21/96	70 ₁₀	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	0.009 ₀₀₅	0.49 _{0.2}
SB3	5	8/21/96	200 ₁₀	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	0.009 ₀₀₅	6.1 _{0.2}
SB3	7	8/21/96	1400 ₁₀	ND ₀₀₅	ND ₀₀₅	0.006 ₀₀₅	0.026 ₀₀₅	2.2 _{0.2}
SB3	10	8/21/96	ND ₁₀	ND ₀₀₅	0.015 ₀₀₅	0.0058 ₀₀₅	0.031 ₀₀₅	ND _{0.2}
SB3	13	8/21/96	ND ₁₀	0.006 ₀₀₅	0.018 _{0.005}	0.005 ₀₀₅	0.035 ₀₀₅	ND _{0.2}
SB3	14.5	8/21/96	ND ₁₀	ND ₀₀₅	0.008 ₀₀₅	ND ₀₀₅	0.023 ₀₀₅	ND _{0.2}
SB4	2.5	8/21/96	88 ₁₀	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	ND ₀₀₅	0.59 _{0.2}
SB4	5	8/21/96	190 ₁₀	ND ₀₀₅	0.010 ₀₀₅	ND ₀₀₅	0.021 ₀₀₅	8.4 _{0.2}
SB4	8	8/21/96	440 ₁₀	ND ₀₀₅	0.006 ₀₀₅	ND ₀₀₅	0.017 ₀₀₅	1.1 _{0.2}
SB4	12	8/21/96	400 ₁₀	ND ₀₀₅	0.008 ₀₀₅	ND ₀₀₅	0.023 ₀₀₅	5.2 _{0.2}
Composite	--	8/21/96	NA	ND ₀₀₅	0.006 ₀₀₅	ND ₀₀₅	0.022 ₀₀₅	33 _{0.2}

TAB 2

TAB 3

NOTES:

- ppm = Parts per million
- TPH = Total petroleum hydrocarbons
- ND_x = None detected at _x method detection limit
- 140_x = Concentration encountered at _x method detection limit
- NA = Not analyzed

TABLE X 8
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES

Well No.	Date Sampled	TPH Diesel (ppb)	Oil & Grease (ppb)	TPH Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	Total Lead (ppb)	TRPH (ppb)
MW-1	02/07/91	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	32 ₅	NA
MW-1	02/18/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND ₂₀	NA
MW-1	05/18/94	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-1	08/19/94	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-1	11/11/94	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-1	02/25/95	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-1	05/18/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	6 ₅	ND ₁₀₀₀
MW-1	08/10/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	39 ₅	2,000 ₁₀₀₀
MW-1	11/28/95	NA	NA	NA	NA	NA	NA	NA	NA	ND ₁₀₀₀
MW-1	02/21/96	NA	NA	NA	NA	NA	NA	NA	NA	8,600 ₁₀₀₀
MW-1	05/20/96	NA	NA	NA	NA	NA	NA	NA	NA	11,000 ₁₀₀₀

TABLE ~~X~~ 8
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
(Continued)

Well No.	Date Sampled	TPH Diesel (ppb)	Oil & Grease (ppb)	TPH Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	Total Lead (ppb)	TRPH (ppb)
MW-2	02/07/91	730 ₅₀	ND ₅₀₀₀	3000 ₅₀	1000 ₅	16 ₅	55 ₅	110 ₅	83 ₅	NA
MW-2	02/18/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND ₂₀	NA
MW-2	05/18/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	23 ₅	NA
MW-2	08/19/94	150 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND ₅	NA
MW-2	11/11/94	130 ₅₀	14000 ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	240 ₅	NA
MW-2	02/24/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	55 ₅	1,700 ₁₀₀₀
MW-2	05/18/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	60 ₅	10,000 ₁₀₀₀
MW-2	08/10/95	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-2	11/28/95	NA	NA	NA	NA	NA	NA	NA	NA	1,100 ₁₀₀₀
MW-2	02/21/96	NA	NA	NA	NA	NA	NA	NA	NA	2,800 ₁₀₀₀
MW-2	05/20/96	NA	NA	NA	NA	NA	NA	NA	NA	9,400 ₁₀₀₀

TABLE ~~X~~ 
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
 (Continued)

Well No.	Date Sampled	TPH Diesel (ppb)	Oil & Grease (ppb)	TPH Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	Total Lead (ppb)	TRPH (ppb)
MW-3	02/07/91	78 ₅₀	ND ₅₀₀₀	ND ₅₀	5 _{0.5}	ND _{0.5}	ND _{0.5}	2 _{0.5}	245 ₅	NA
MW-3	02/18/94	ND ₃₀₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND ₂₀	NA
MW-3	05/18/94	ND ₃₀₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.6}	47 ₅	NA
MW-3	08/19/94	60 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND ₅	NA
MW-3	11/11/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	44 ₅	NA
MW-3	02/24/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	30 ₅	ND ₁₀₀₀
MW-3	05/18/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND ₅	ND ₁₀₀₀
MW-3	08/10/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	44 ₅	ND ₁₀₀₀
MW-4	02/07/91	74 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	34 ₅	NA
MW-4*	02/18/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	0.4 _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	30 ₂₀	NA

TABLE ~~X~~ 8
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
 (Continued)

Well No.	Date Sampled	TPH Diesel (ppb)	Oil & Grease (ppb)	TPH Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	Total Lead (ppb)	TRPH (ppb)
MW-5	02/07/91	87 ₅₀	ND ₅₀₀₀	53 ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	0.89 _{0.5}	589 ₅	NA
MW-5	02/18/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	30 ₅₀	NA
MW-5	05/18/94	ND ₃₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	1.2 _{0.3}	0.8 _{0.3}	2.7 _{0.5}	ND ₅	NA
MW-5	08/19/94	120 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	0.55 _{0.55}	ND ₅	NA
MW-5	11/11/94	180 ₅₀	ND ₅₀₀₀	1,400 ₅₀	130 _{0.5}	320 _{0.5}	48 _{0.5}	200 _{0.5}	53 ₅	NA
MW-5	02/24/95	NA	NA	NA	ND _{0.5}	0.81 _{0.5}	34 _{0.5}	4.9 _{0.5}	19 ₅	1,000 ₁₀₀₀
MW-5	05/18/95	NA	NA	NA	0.52 _{0.5}	ND _{0.5}	5.1 _{0.5}	0.85 _{0.5}	34 ₅	ND ₁₀₀₀
MW-5	08/10/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	0.54 _{0.5}	1.6 _{0.5}	33 ₅	ND ₁₀₀₀
MW-5	11/28/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA	ND ₁₀₀₀
MW-5	02/21/96	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA	1,300 ₁₀₀₀
MW-5	05/20/96	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	0.51 _{0.5}	NA	1,900 ₁₀₀₀

TABLE ~~8~~ 8
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
(Continued)

Well No.	Date Sampled	TPH Diesel (ppb)	Oil & Grease (ppb)	TPH Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	Total Lead (ppb)	TRPH (ppb)
MW-6	05/02/91	2,900 ₅₀	7,200 ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA	NA
MW-6	02/18/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	500 ₂₀	NA
MW-6	05/18/94	ND ₃₇₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND ₅	NA
MW-6	08/19/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND ₅	NA
MW-6	11/11/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	58 ₅	NA
MW-6	02/24/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	22 ₅	ND ₁₀₀₀
MW-6	05/18/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	19 ₅	ND ₁₀₀₀
MW-6	08/10/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	39 ₅	ND ₁₀₀₀
MW-7	05/02/91	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA	NA
MW-7	02/18/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND ₂₀	NA
MW-7	05/18/94	930 ₅	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND ₅	NA
MW-7	08/19/94	NS	NS	NS	NS	NS	NS	NS	NS	NA
MW-7	11/11/94	130 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	9 ₅	NA
MW-7	02/24/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND ₅	ND ₁₀₀₀
MW-7	05/18/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND ₅	ND ₁₀₀₀
MW-7	08/10/95	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE X 8
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
(Continued)

Well No.	Date Sampled	TPH Diesel (ppb)	Oil & Grease (ppb)	TPH Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	Total Lead (ppb)	TRPH (ppb)
MW-8	09/03/91	72 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA	NA
MW-8	02/18/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND _{0.5}	30 ₂₀	NA
MW-8	05/18/94	ND ₃₀₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND _{0.5}	69 ₅	NA
MW-8	08/19/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND ₅	NA
MW-8	11/11/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	420 ₅	NA
MW-8	02/24/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	110 ₅	ND ₁₀₀₀
MW-8	05/18/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	56 ₅	ND ₁₀₀₀
MW-8	08/10/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	48 ₅	ND ₁₀₀₀
MW-9	09/03/91	990 ₅₀	1,400 ₅₀₀₀	270 ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA	NA
MW-9	02/18/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND ₂₀	NA
MW-9	05/18/94	1,800 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND ₅	NA
MW-9	08/19/94	720 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	0.8 _{0.5}	ND _{0.5}	ND _{0.5}	ND ₅	NA
MW-9	11/11/94	490 ₅₀	ND ₅₀₀₀	85 ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	47 ₅	NA
MW-9	02/24/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	350 ₅	ND ₁₀₀₀
MW-9	05/18/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	38 ₅	ND ₁₀₀₀
MW-9	08/10/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	570 ₅	ND ₁₀₀₀
MW-9	11/28/95	NA	NA	NA	NA	NA	NA	NA	NA	ND ₁₀₀₀

TABLE ~~X~~ 8
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
 (Continued)

Well No.	Date Sampled	TPH Diesel (ppb)	Oil & Grease (ppb)	TPH Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	Total Lead (ppb)	TRPH (ppb)
MW-10	09/03/91	120 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA	NA
MW-10	02/18/94	ND ₂₀₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	30 ₂₀	NA
MW-10	05/18/94	ND ₂₀₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	1,400 ₅	NA
MW-10	08/19/94	67 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND ₅	NA
MW-10	11/11/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	2500 ₅	NA
MW-10	02/24/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	3,100 ₅	1,100 ₁₀₀₀
MW-10	05/18/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	330 ₅	ND ₁₀₀₀
MW-10	08/10/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	15 ₅	ND ₁₀₀₀

TABLE ~~X~~ 8
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
(Continued)

Well No.	Date Sampled	TPH Diesel (ppb)	Oil & Grease (ppb)	TPH Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	Total Lead (ppb)	TRPH (ppb)
MW-11	01/22/92	2,600 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	NA	NA
MW-11	02/18/94	ND ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND ₂₀	NA
MW-11	05/18/94	1,300 ₅	ND ₅₀₀₀	ND ₅₀	ND _{0.3}	ND _{0.3}	ND _{0.3}	ND _{0.5}	ND ₅	NA
MW-11	08/19/94	230 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND ₅	NA
MW-11	11/11/94	170 ₅₀	ND ₅₀₀₀	ND ₅₀	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	240 ₅	NA
MW-11	02/24/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	54 ₅	ND ₁₀₀₀
MW-11	05/18/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	31 ₅	2,000 ₁₀₀₀
MW-11	08/10/95	NA	NA	NA	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND _{0.5}	ND ₂₅	ND ₁₀₀₀
MW-11	11/28/95	NA	NA	NA	NA	NA	NA	NA	NA	ND ₁₀₀₀
MW-11	02/21/96	NA	NA	NA	NA	NA	NA	NA	NA	ND ₁₀₀₀
MW-11	05/20/96	NA	NA	NA	NA	NA	NA	NA	NA	ND ₁₀₀₀

TABLE 8
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
(Continued)

Notes:

ppb = parts per billion or micrograms per liter

TPH = total petroleum hydrocarbons

ND_x = none detected at x method detection limit

74_x = concentration detected at x method detection limit

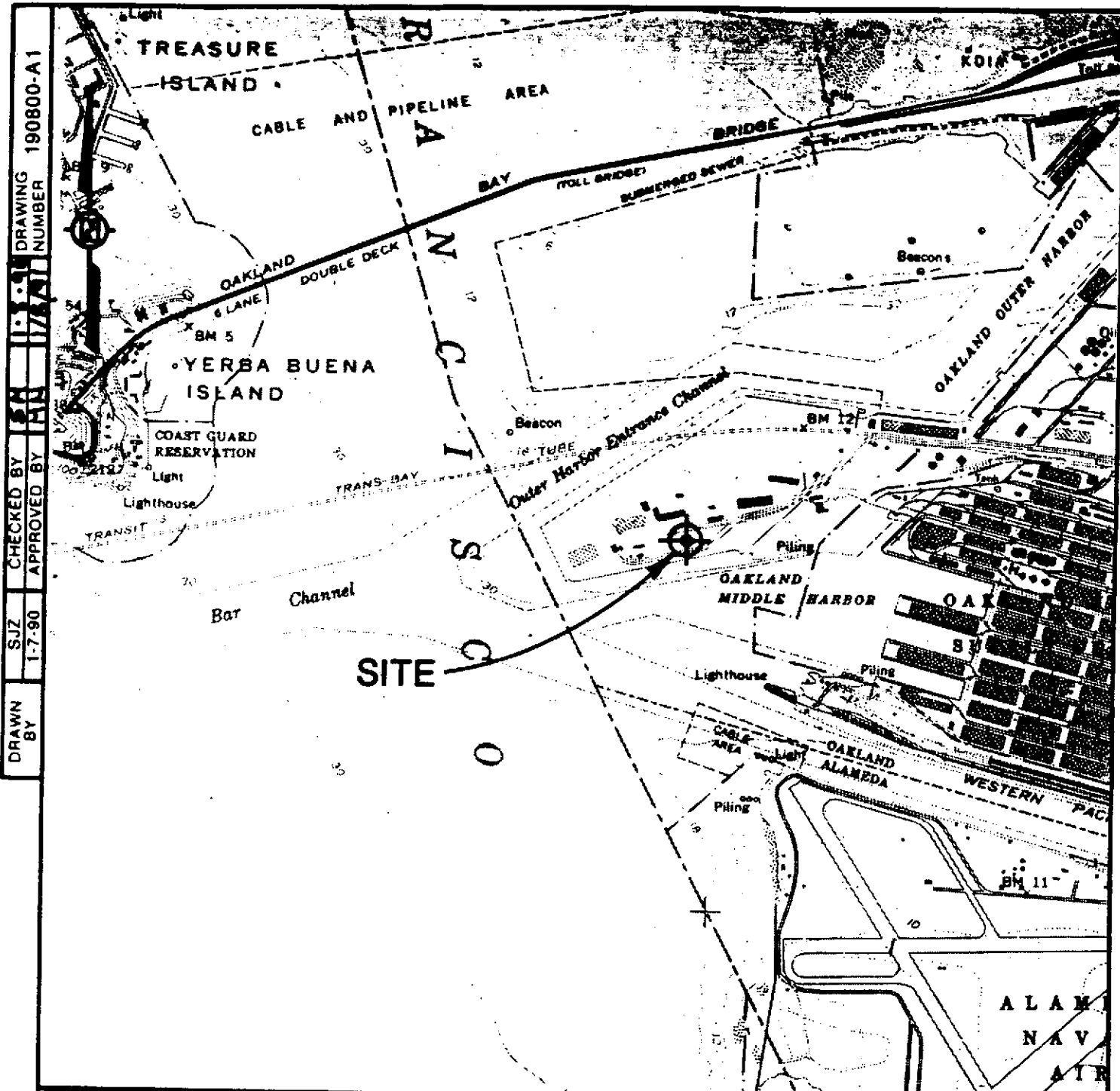
NS = no sample collected due to inaccessibility of well

* = well destroyed on 03/02/94 per Alameda County Flood Control and Water Conservation District - Zone 7 guidelines

B = samples which exhibited a characteristic diesel fuel hydrocarbons peak were reported with a "B" qualifier to indicate the presence of contamination in the method blank sample. All samples collected on May 18, 1994 and analyzed for diesel reflect an elevated detection limit due to contamination found in the method blank sample.

TRPH = total recoverable petroleum hydrocarbons

NA = not analyzed



DRAWN BY: SJZ
 CHECKED BY: SA
 APPROVED BY: HA
 DRAWING NUMBER: 190800-A1
 DATE: 1-7-90

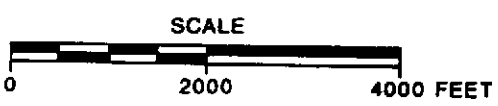


FIGURE 1

SITE LOCATION MAP

MATSON TERMINALS, INC.
 3050 SEVENTH STREET
 OAKLAND CALIFORNIA

PREPARED FOR

MATSON TERMINALS, INC.
 OAKLAND CALIFORNIA

REFERENCE:
 7.5' USGS TOPOGRAPHIC QUADRANGLE
 OF OAKLAND WEST, DATE: 1959
 PHOTOREVISED: 1980 SCALE=1:24,000



QUADRANGLE LOCATION



148494
 © 1984 ITC CORPORATION
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Do Not Scale This Drawing



CONTAINER EQUIPMENT MAINTENANCE BUILDING

CONCRETE PAD

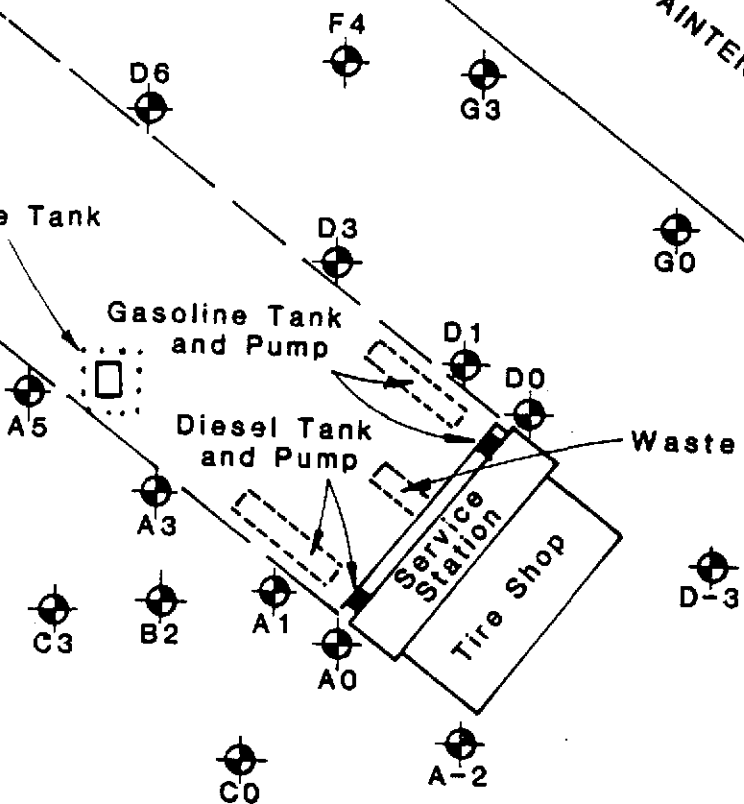
Propane Tank

Gasoline Tank and Pump

Diesel Tank and Pump

Waste Oil Tank

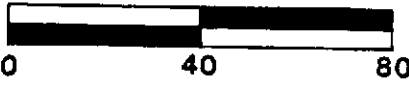
Service Station
Tire Shop



LEGEND

Approximate Location of Exploratory Boring

Approximate Scale (feet)



Base: Construction Plans Prepared by Hugh M. O'Neil Company, Consulting Civil and Construction Engineers. Provided by Matson Inc.



Kaldveer Associates
Geoscience Consultants
A California Corporation

SITE PLAN

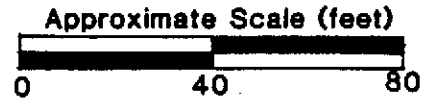
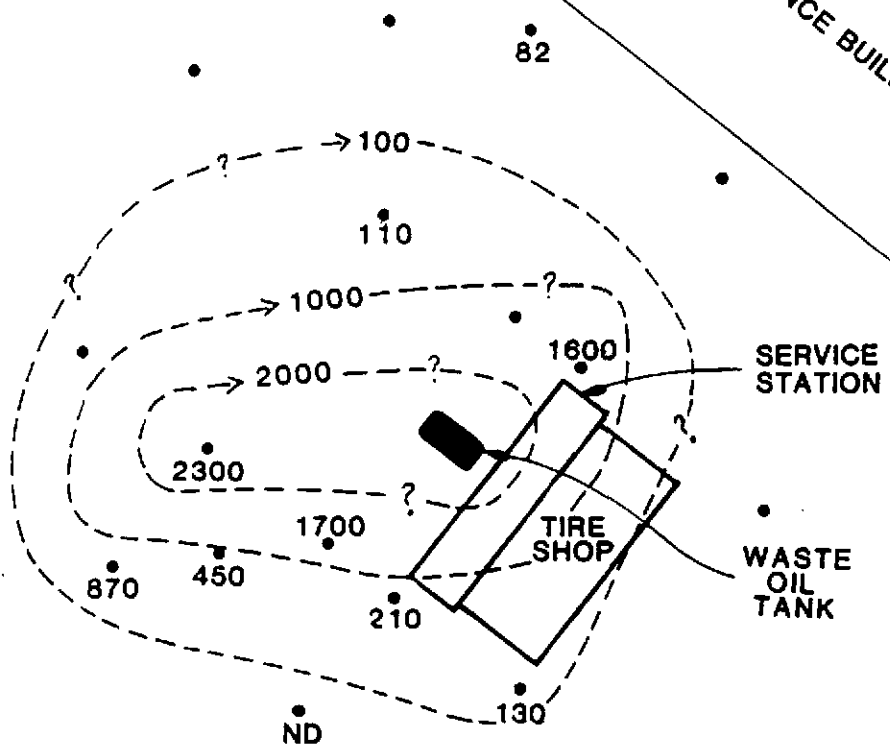
MATSON TERMINAL SERVICE STATION
Oakland, California

PROJECT NO.	DATE
KE 1157-1-134	October 1990

Figure **X3**



CONTAINER EQUIPMENT MAINTENANCE BUILDING



2300 • Oil Concentration at Boring Location in Parts Per Million



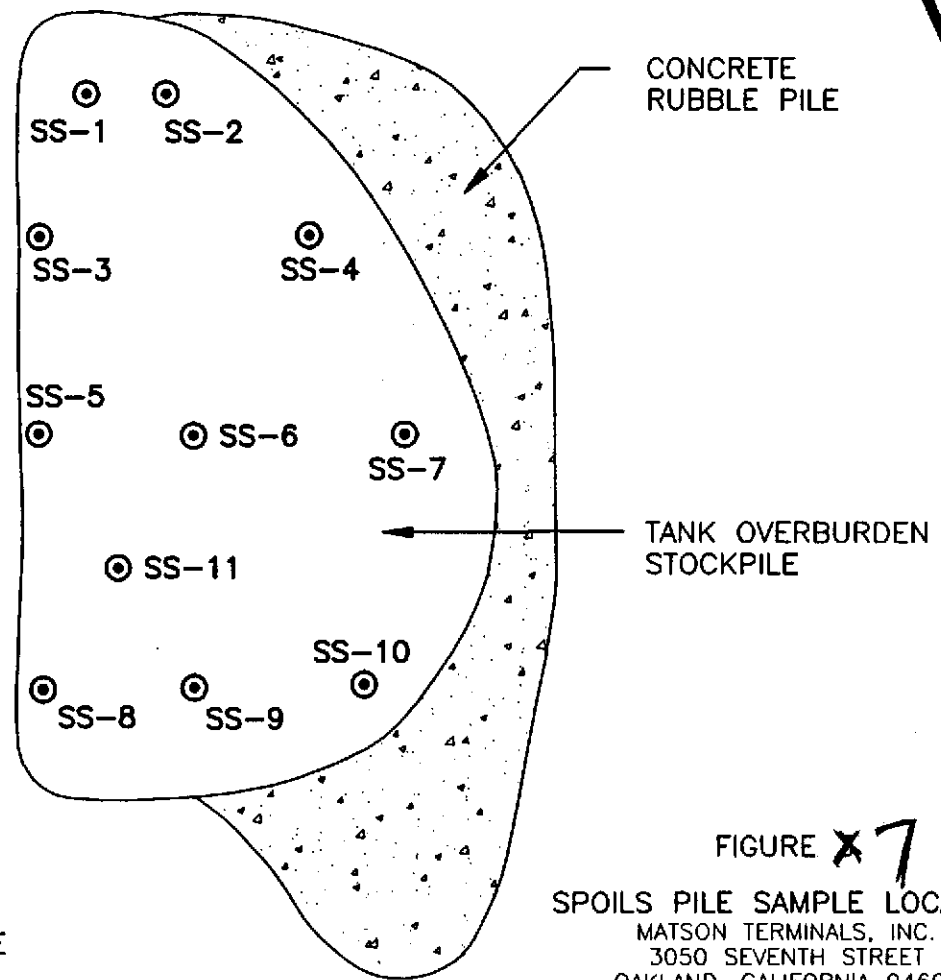
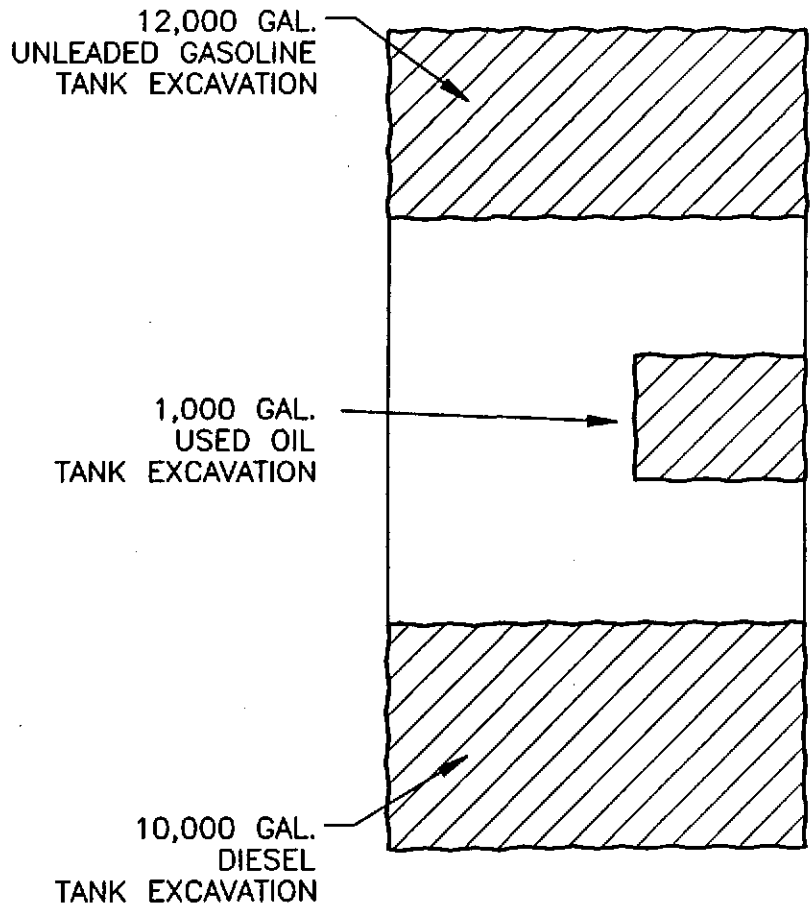
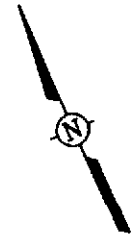
Kaldveer Associates
Geoscience Consultants
A California Corporation

TPH AS OIL IN SOIL

MATSON TERMINAL SERVICE STATION
Oakland, California

PROJECT NO.	DATE	Figure X4
KE1157-1-134	October 1990	

CONTAINER EQUIPMENT
MAINTENANCE BUILDING



NOT TO SCALE

LEGEND

SS-10
⊙ SOIL SAMPLE LOCATION
(3/2/94)

FIGURE 7
SPOILS PILE SAMPLE LOCATION

MATSON TERMINALS, INC.
3050 SEVENTH STREET
OAKLAND, CALIFORNIA 94607
PREPARED FOR

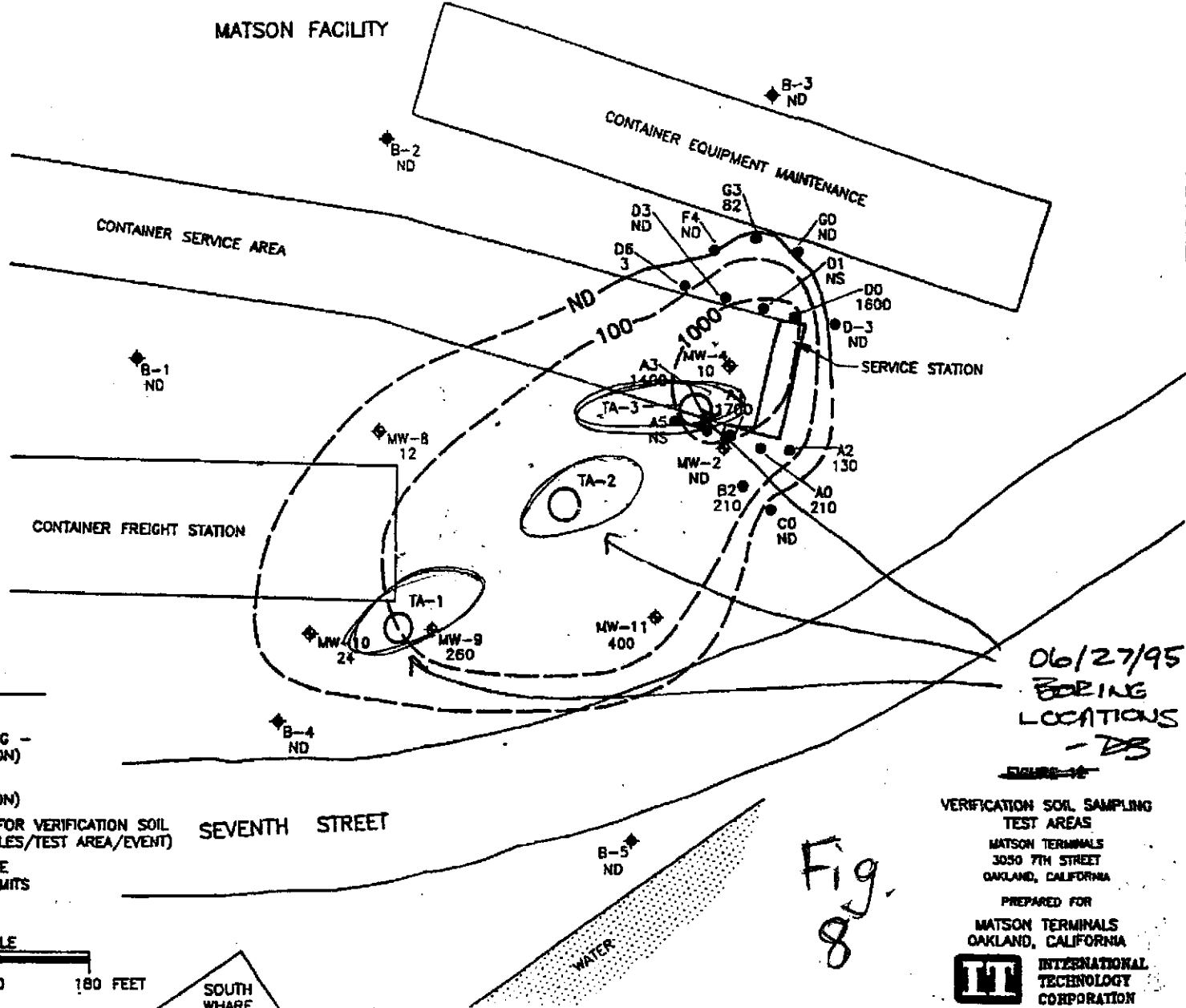
MATSON TERMINALS, INC.
OAKLAND, CALIFORNIA



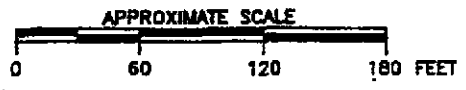
DRAWN BY: [] CHECKED BY: [] APPROVED BY: []
 DATE: [] DATE: [] DATE: []
 DRAWING NUMBER: 190882-B10



MATSON FACILITY



- LEGEND**
- MW-8 ◆ IT MONITORING WELL
 - D3 ● KALDVEER SOIL BORING - (APPROXIMATE LOCATION)
 - B-2 ◆ IT SOIL BORING - (APPROXIMATE LOCATION)
 - TA-1 ○ PLANNED TEST AREA FOR VERIFICATION SOIL SAMPLING (2 BOREHOLES/TEST AREA/EVENT)
 - ND = NONE DETECTED ABOVE METHOD DETECTION LIMITS
 - NS = NO SAMPLE



SEVENTH STREET

SOUTH WHARF

B-5 ND

06/27/95
 BORING
 LOCATIONS
 - DB

VERIFICATION SOIL SAMPLING
 TEST AREAS
 MATSON TERMINALS
 3050 7TH STREET
 OAKLAND, CALIFORNIA

PREPARED FOR
 MATSON TERMINALS
 OAKLAND, CALIFORNIA
 INTERNATIONAL
 TECHNOLOGY
 CORPORATION

Fig.
89.

5102282501
 From: I. I. CORPORATION
 12:44
 03-97
 T-635 P. 07/07 Job-014

DRAWING NUMBER 190882-B5

3.5.92

3.5.72

DPD

CHECKED BY

J. BERA
2-25-92

DRAWN BY



MATSON FACILITY

CONTAINER EQUIPMENT MAINTENANCE

CONTAINER SERVICE AREA

CONTAINER FREIGHT STATION

SERVICE STATION
UST'S

MW-8

MW-3

MW-2

MW-1

MW-6

VW-1

MW-10

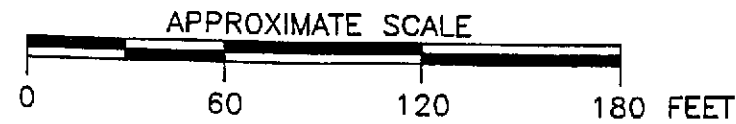
MW-9

MW-11

LEGEND

MW-1 IT MONITORING WELL

VW-1 IT VADOSE WELL



SEVENTH STREET

SOUTH WHARF

WATER

FIGURE X 5

SITE PLAN
MATSON TERMINALS
3050 7TH STREET
OAKLAND, CALIFORNIA

PREPARED FOR
MATSON TERMINALS
OAKLAND, CALIFORNIA



INTERNATIONAL
TECHNOLOGY
CORPORATION

DRAWING NUMBER 190882-B9
 3.5.92
 3.5.12
 CHECKED BY OPP
 APPROVED BY SA
 J. BERA
 2-27-92
 DRAWN BY



MATSON FACILITY

CONTAINER SERVICE AREA

CONTAINER EQUIPMENT MAINTENANCE

CONTAINER FREIGHT STATION

GATE 3

TRA PAC
PARKING AREA

SB-7
ND

SB-8
ND

SB-6
1200

SB-9
2500

MW-8

MW-5

MW-7

MW-6

MW-3

MW-4

MW-2

MW-1

SERVICE STATION

SEVENTH

STREET

PC-3/SB-1
1700

SB-2
1900

PC-4
NS

PC-2
3500

PC-5
NS

PC-1
4100

BERTH "40"

PC-6
NS

SB-5
ND

SB-4
ND

SB-3
6200

SOUTH WHARF

WATER

WATER

LEGEND

- ⊕ MW-8 IT MONITORING WELL (APPROXIMATE LOCATION)
- ⊕ PC-5 IT SOIL BORING TO WATER - HYDRAULIC (APPROXIMATE LOCATION)
- SB-6 IT SOIL BORING TO WATER - HOLLOW STEM AUGER (APPROXIMATE LOCATION)
- 3500 = CONCENTRATION OF TOTAL RECOVERABLE HYDROCARBONS
- NS = NO SAMPLE
- ND = NONE DETECTED

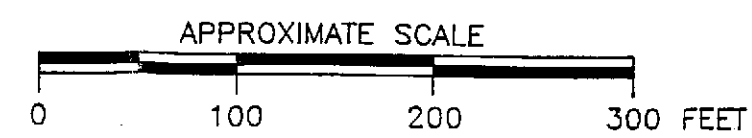


FIGURE * 6

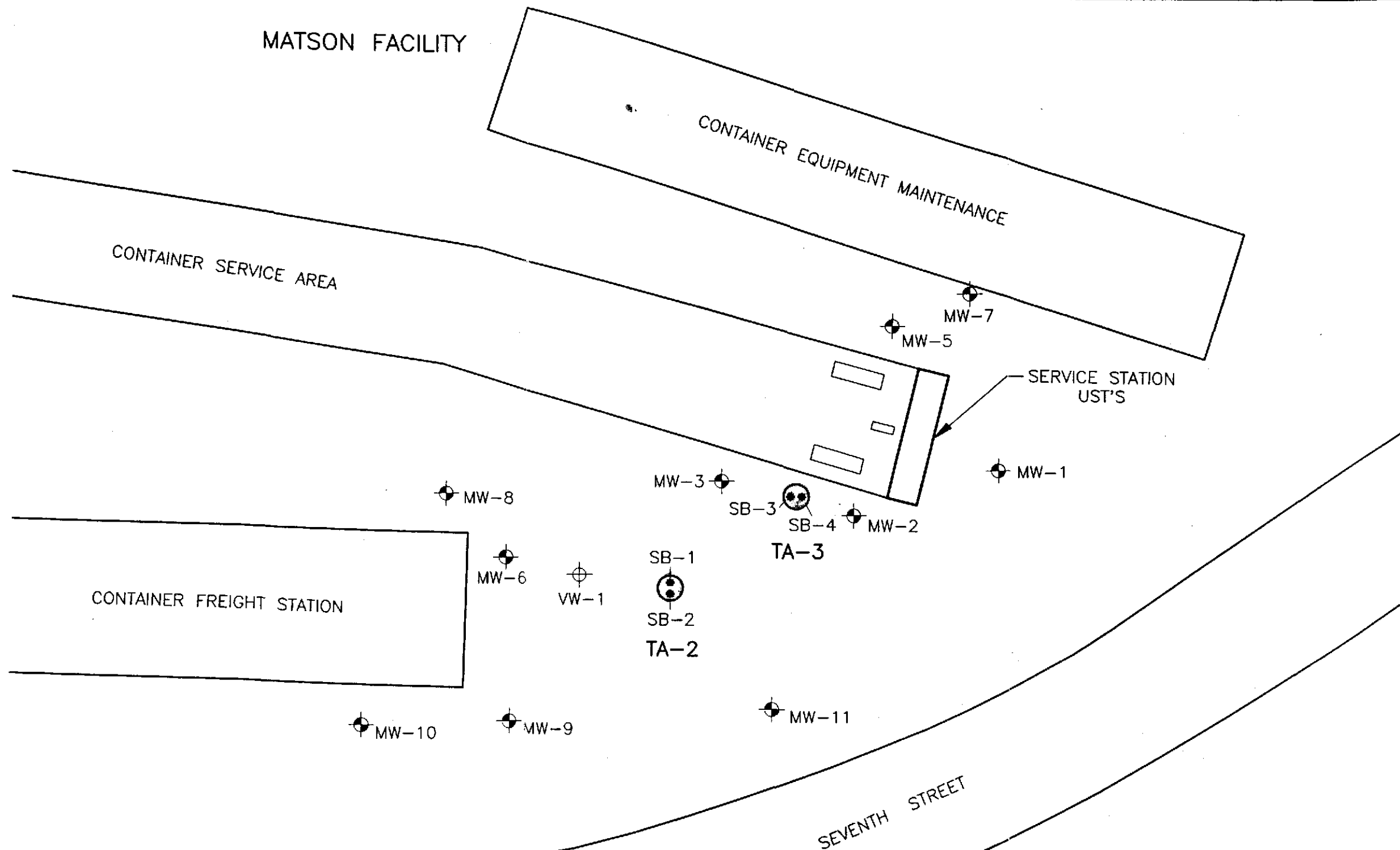
OFFSITE GROUNDWATER
PETROLEUM HYDROCARBONS
RESULTS IN ppb
MATSON TERMINALS
3050 7TH STREET
OAKLAND, CALIFORNIA

PREPARED FOR
MATSON TERMINALS
OAKLAND, CALIFORNIA



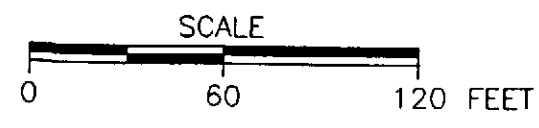
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TECHNOLOGY
CORPORATION

DRAWING NUMBER 190882-B22
 CHECKED BY JS 9-11-96
 APPROVED BY
 DRAWN BY BJ 9/11/96



LEGEND

- MW-3 IT MONITORING WELL (APPROXIMATE LOCATION)
- VW-1 IT VADOSE WELL
- SB-1 SB-2 VERIFICATION SOIL SAMPLING BOREHOLES AUGUST 21, 1996



SOUTH WHARF

FIGURE **x9**
 VERIFICATION SOIL SAMPLING TEST AREAS
 MATSON TERMINALS
 3050 7TH STREET
 OAKLAND, CALIFORNIA
 PREPARED FOR
 MATSON TERMINALS
 OAKLAND, CALIFORNIA
 INTERNATIONAL TECHNOLOGY CORPORATION

LEGEND

- — MAN HOLE
- — CATCH BASIN
- — CLEAN OUT

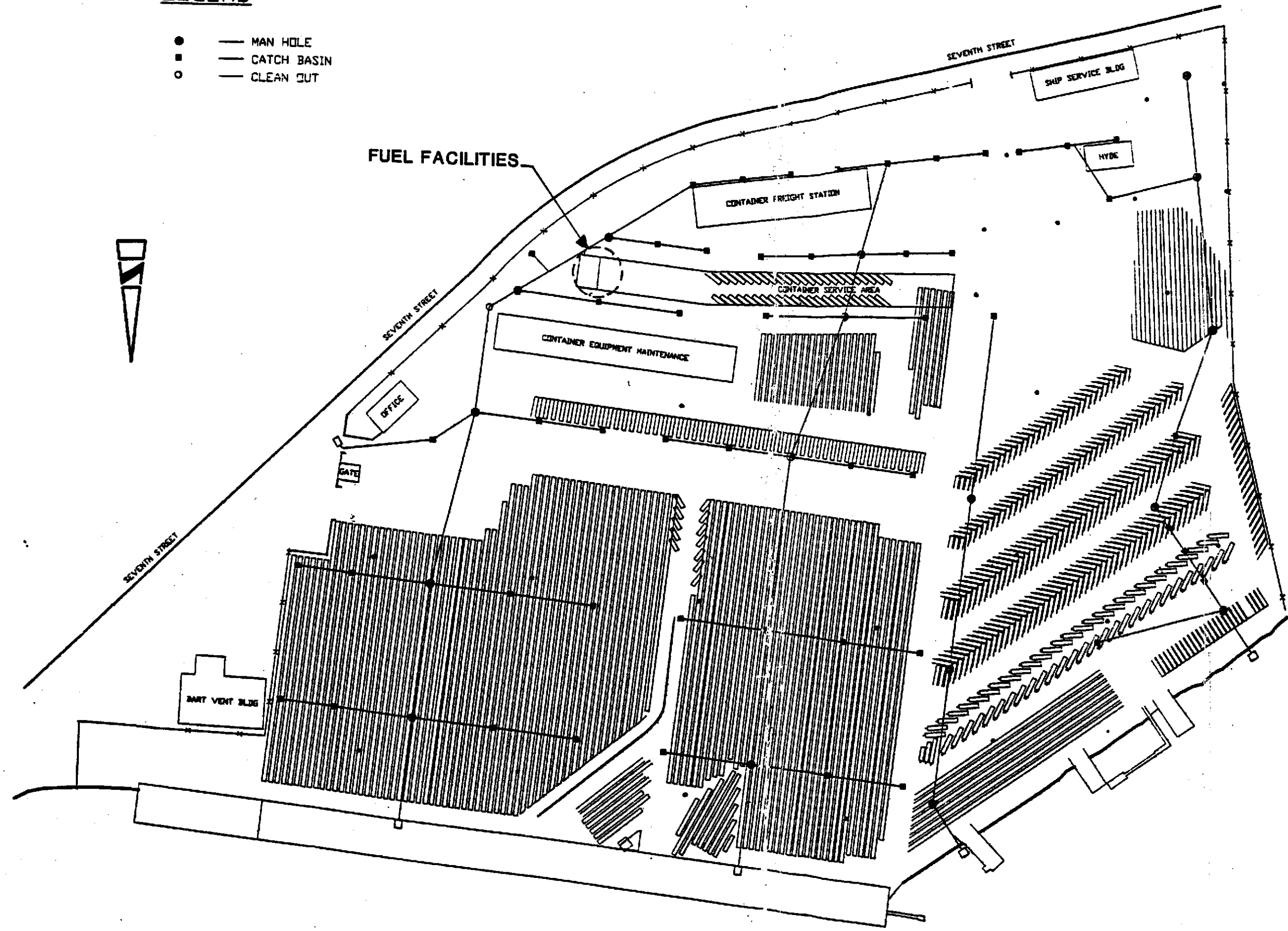


FIGURE 2

**MATSON CONTAINER TERMINAL
OAKLAND, CALIFORNIA**

*Gordon Garvey
Matson Terminals
3050 Seventh St.
OAKLAND, CA. 94607*

DRAWN	DATE AUGUST 25, 1990 FILE
CHECKED	SCALE AS SHOWN
RECOMMENDED	2731
APPROVED	