Versar INC. SACRAMENTO

400 Gal UST Removal

January 14, 1992

Mr. George Brooks
Manager, Environmental Compliance
Pacific Division
Crowley Maritime Corporation
2401 Fourth Avenue
P.O. Box 2287
Seattle, Washington 98111

Reference: Summary of Tank Removal Activities, Pacific Dry Dock Yard I, 1441 Embarcadero, Oakland, California; Versar Project No. 7703.26

Dear Mr. Brooks:

The purpose of this letter is to inform you of the results of the underground storage tank (UST) removal activities performed at the Pacific Dry Dock Yard I (PDDI) facility. All work was performed by, or under the supervision of, Versar, Inc. (Versar). The results and conclusions presented in this letter are subject to the Standard Disclaimer presented as Exhibit A.

Site History and Background

The PDDI facility, which is located at 1441 Embarcadero in Oakland, California, has been used as a boat repair and dry dock facility by Pacific Dry Dock and Repair Company and other companies since 1935. PDDI is currently inactive. The area surrounding PDDI is occupied by light industrial and commercial facilities. The location and layout of the site are presented in Figures 1 and 2, respectively, which are included in Attachment I.

A 400-gallon UST used for the storage of unleaded gasoline was identified in the Phase I Environmental Site Assessment of the property conducted by Versar during 1991. Since the UST was not in use, and Pacific Dry Dock and Repair did not have any plans for the future use of the UST, Versar recommended that the UST be removed from the site. The UST had no associated subsurface piping other than fill and vent pipes.

5330 PRIMROSE DRIVE • SUITE 228 • FAIR OAKS, CALIFORNIA 95628
TELEPHONE: (916) 962-1612 • FAX: (916) 962-2678

UST Removal

The excavation and removal of the UST was performed by Environmental Control Industries Inc. (ECI) (Contractors License No. 425901). Prior to the start of excavation, the appropriate permits were obtained from Alameda County Health Care Agency (ACHCA) and the City of Oakland Fire Department, and all underground utilities in the UST area were located. Copies of the county and fire department permits are included in Attachment II. The Bay Area Air Quality Management District (BAAQMD) and the Port of Oakland (PO) were also notified of the UST removal activities to take place. Neither the BAAQMD nor the PO had any comments regarding the UST removal activities.

Prior to the beginning of excavation activities, the dispenser pump located over the east end of the UST was disconnected and removed by PDDI personnel. At that time, PDDI personnel also removed the vent pipe, which extended through the roof of the drum-storage shed adjacent to the UST location.

On September 24, 1991, ECI personnel removed the six-inch-thick rebar-reinforced concrete pad and sand and gravel fill which covered the UST. The concrete was left on site for disposal at a later date. The removed fill was stockpiled adjacent to the excavation area on clear plastic sheeting. The long axis of the UST was situated parallel to the drum-storage shed wall in an east-west orientation.

Once the UST was uncovered, PDDI personnel removed approximately 40 gallons of product remaining in the UST by pumping it to a mobile aboveground tank for reuse. The fill pipe was then removed, and 30 pounds of solid carbon dioxide (dry ice) were introduced into the UST to render the internal UST atmosphere inert. After a period of one hour had been allowed to elapse to ensure that the dry ice had vaporized, the internal atmosphere of the UST was tested for explosive conditions. When it was determined that the mixture of gases in the UST was not explosive, the tank was removed from the excavation. The UST measured approximately 2.5 feet in diameter by 12 feet in length. ~440 gal.

Mr. Barney Chan of the ACHCA and Mr. John Roemer of the City of Oakland Fire Department witnessed the removal of the UST. The tank showed some staining and rust corrosion, but no holes or material failures were evident. The tank, and fill and vent

lines were transported to LMC Corporation in Richmond for disposal. A copy of the manifest for the shipment of the tank is included as Attachment III. A copy of the tank disposal certificate is included as Attachment IV. Photographs of the tank and excavation are included as Attachment V.

The soil exposed in the UST excavation was fill material from the surface to approximately four feet below surface, and native sediment deposits from approximately four feet below surface to the bottom of the excavation at approximately six feet below surface. The fill materials encountered consisted of green sandy gravel just below the cement pad. This fill material had a moderate to strong hydrocarbon odor. Below the sandy gravel was a brown-orange silty sand and gravel, and a black, dry, gritty clay just above the native sediment. Neither of these fill materials had any indications of hydrocarbon contaminants. The native sediment was a grey-green, damp, sandy clay. The native grey-green clay had a slight hydrocarbon odor in places.

Approximately three inches of ground water entered the deepest area of the excavation from the surrounding soils at the western end of the excavation. The ground water was covered with a 0.25-inch layer of a gold-brown, sticky fluid and had a distinct hydrocarbon odor.

After the removal and sampling activities were completed, the open excavation, which measured approximately six by 17 feet and was six feet deep, was surrounded with barricades and caution tape. No-smoking signs were posted around the excavation. The stockpiled fill material was covered with plastic sheeting to prevent run-off and the escape of hydrocarbons to the air, and was also barricaded and surrounded with caution tape. The excavation is currently unfilled and barricaded.

An Underground Storage Tank Unauthorized Release (LEAK)/Contamination Site Report was prepared and submitted to the ACHCA by Versar on behalf of PDDI. A copy of the report is included as Attachment VI.

Sampling Procedures

Versar representative Ms. Yvonne Lembi, Geologist, collected soil and ground-water samples from the tank excavation, and a sample of the stockpiled fill material, for laboratory analysis.

The samples were collected immediately following the removal of the UST. Mr. Barney Chan of the ACHCA witnessed the sampling procedures.

Two native soil samples were collected from the tank excavation, one from above the capillary fringe in the excavation wall at each end of the former tank location. The locations from which the samples were taken are shown in Attachment I, Figure 3. The samples were collected from a relatively undisturbed portion in the backhoe bucket in the manner recommended in the Leaking Underground Fuel Tank (LUFT) Field Manual. A precleaned brass tube was driven into the undisturbed portion of native soil and was filled to minimize the headspace in the tube as much as possible. The tube was removed, and the ends covered with aluminum foil and capped. Each tube was clearly labelled with the date and time of collection and a sample identification code, and placed in an individual Ziploc™ bag. The samples were immediately placed in an insulated cooler on ice until they were delivered, accompanied by Versar's chain of custody document, to a State of California-certified laboratory.

The stockpile sample was collected by clearing away a minimum of one foot of the surface of the pile and driving the brass tube into the cleared area. The sample was sealed, labelled, and stored in the same manner as the native soil samples.

The ground-water sample was collected from the excavation by carefully lowering a laboratory-provided, pre-cleaned container into the liquid. Once the container had filled with liquid from the excavation, the container was raised to the ground surface, with care being taken not to disturb or aerate the liquid unnecessarily. Laboratory-provided, pre-cleaned sample bottles and jars were then filled from the container which had been used for sample collection. Each sample container was labelled and handled as described above until their delivery to the laboratory.

Laboratory Analyses

The soil, ground-water, and fill material samples were analyzed by Trace Analysis Laboratory, a state-certified laboratory in Hayward, California. The soil samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-G)

by the California Department of Health Services (DHS) method; for benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8020; and for organic lead by the DHS method. The ground-water sample was analyzed for TPH-G by the DHS method, for BTEX by a modified EPA Method 8020, and for organic lead by the DHS method.

The two native-soil samples, 7703.26-N1 and 7703.26-S1, both contained various levels of all the analytes, with the exception of organic lead, which was detected only in 7703.26-S1; the concentrations detected in the sample 7703.26-S1 were generally one order of magnitude greater than the concentrations detected in the sample 7703.26-N1. The fill material sample, 7703.26-Pile1, also contained detectable concentrations of all the analytes, including organic lead. The ground-water sample, 7703.26-Water, contained detectable concentrations of all the analytes with the exception of benzene. The detection limit for benzene in the ground-water sample was 9,400 micrograms per liter due to the interference caused by the elevated concentrations of TPH-G. The laboratory analytical results are summarized in Table 1, Attachment VII. A copy of the laboratory analytical results and Versar's chain of custody document are included as Attachment VIII.

Conclusions

The results of the laboratory analysis of soil and ground-water samples from the UST excavation indicate that minor soil contamination and significant ground-water contamination exists at the site in the vicinity of the UST excavation. Minor soil contamination was noted at the surface during the tank excavation, however this contamination was probably associated with overfilling the UST; and no evidence was noted in the field linking the surface contamination and the lower soil and ground-water contamination. Also, the concentration of TPH-G detected in the ground water is several orders of magnitude greater than the concentrations detected in the soil samples. The physical inspection of the removed tank, the clay-rich nature of the soil (which is not conducive to contaminant migration), and the detected concentrations are not consistent with a vadose zone release of the detected hydrocarbons.

However, significant ground-water contamination does exist at the site and further investigation of the contamination should be performed. This investigation should also include the possibility of a non-UST related source. If you have any questions or comments about the contents of this letter, please do not hesitate to contact our Fair Oaks office at (916) 962-1612.

Sincerely,

Yvonne M. Lembi

Yvonne M. Lembi
Geologist

cc: Mr. Barney Chan, ACHCA
Mr. Dan Schoenholz, Port of Oakland

EXHIBIT A

DISCLAIMER

The purpose of this letter report is only to inform the client of the environmental conditions as they currently exist at the subject site and the methodology to correct the identified environmental impairment. Versar Inc. does not assume responsibility for the discovery and elimination of hazards that could possibly cause accidents, injuries, or damage. Compliance with submitted recommendations and/or suggestions in no way assures elimination of hazards or the fulfillment of a client's obligation under any local, or federal laws or any modifications or changes thereto. In many cases, federal, or local codes require the prompt reporting to relevant authorities if a release occurs. It is the responsibility of the client to comply with requirements to notify authorities of any conditions that are in violation of the current legal standards.

Factual information regarding operations, conditions, and test data was obtained, in part, from the client and have been assumed by Versar to be correct and complete. Since the facts stated in this letter report are subject to professional interpretation, they could result in differing conclusions. In addition, the findings and conclusions contained in this letter report are based on various quantitative and qualitative factors as they existed on or near the date of the investigation. Therefore, if the recommendations made in this letter report are not implemented within a reasonable period of time, there can be no assurances that intervening factors will not arise that will affect the conclusions reached herein.

Versar makes no warranty and assumes no liability with respect to the use of information contained in this letter report. No changes to its form or content may be made without Versar's express written approval.

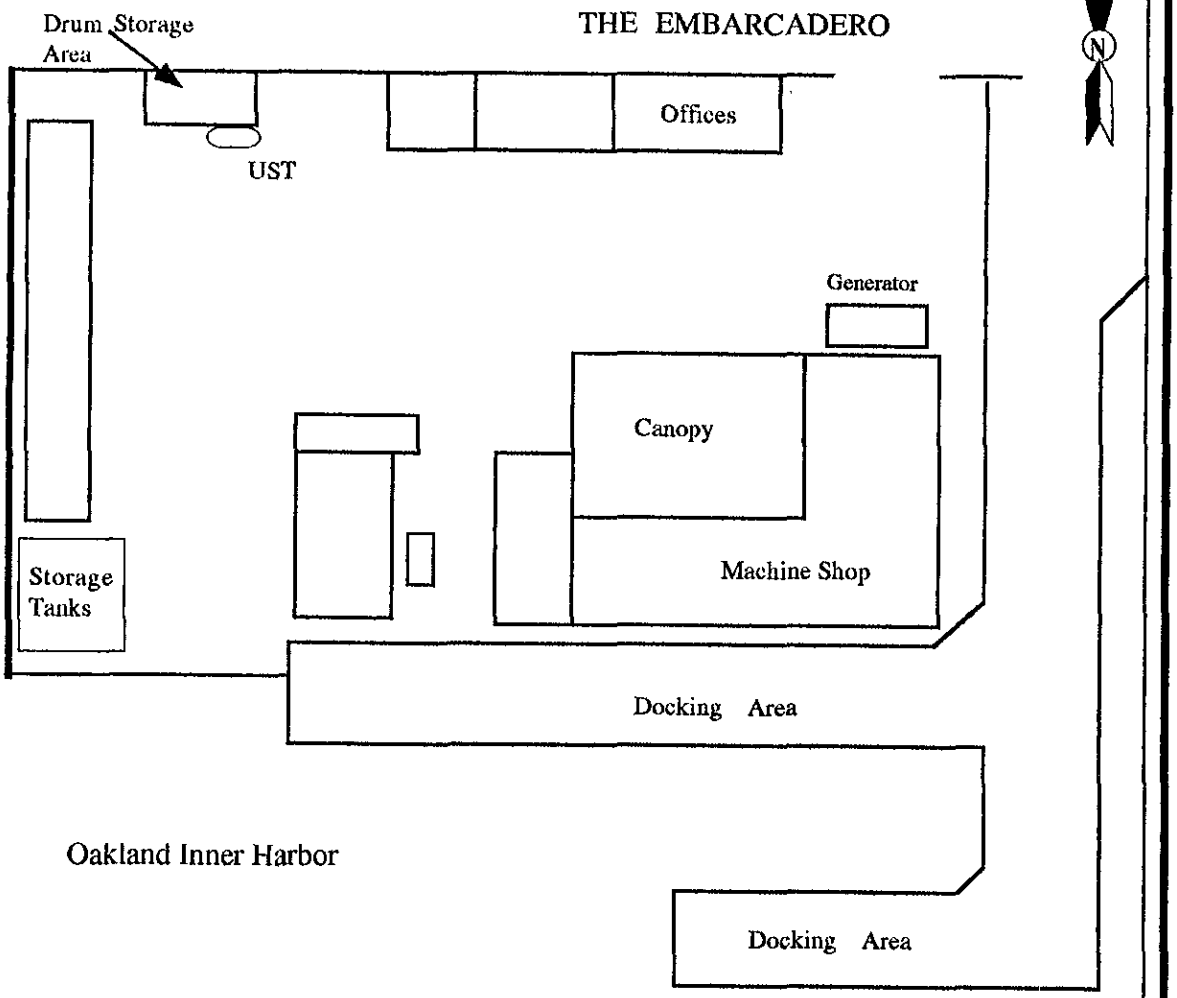
This letter report reflects conditions, operations, and practices as observed during the investigation. Changes or modifications to procedures and/or facilities made after the site visit are not included.

Versar INC. SACRAMENTO

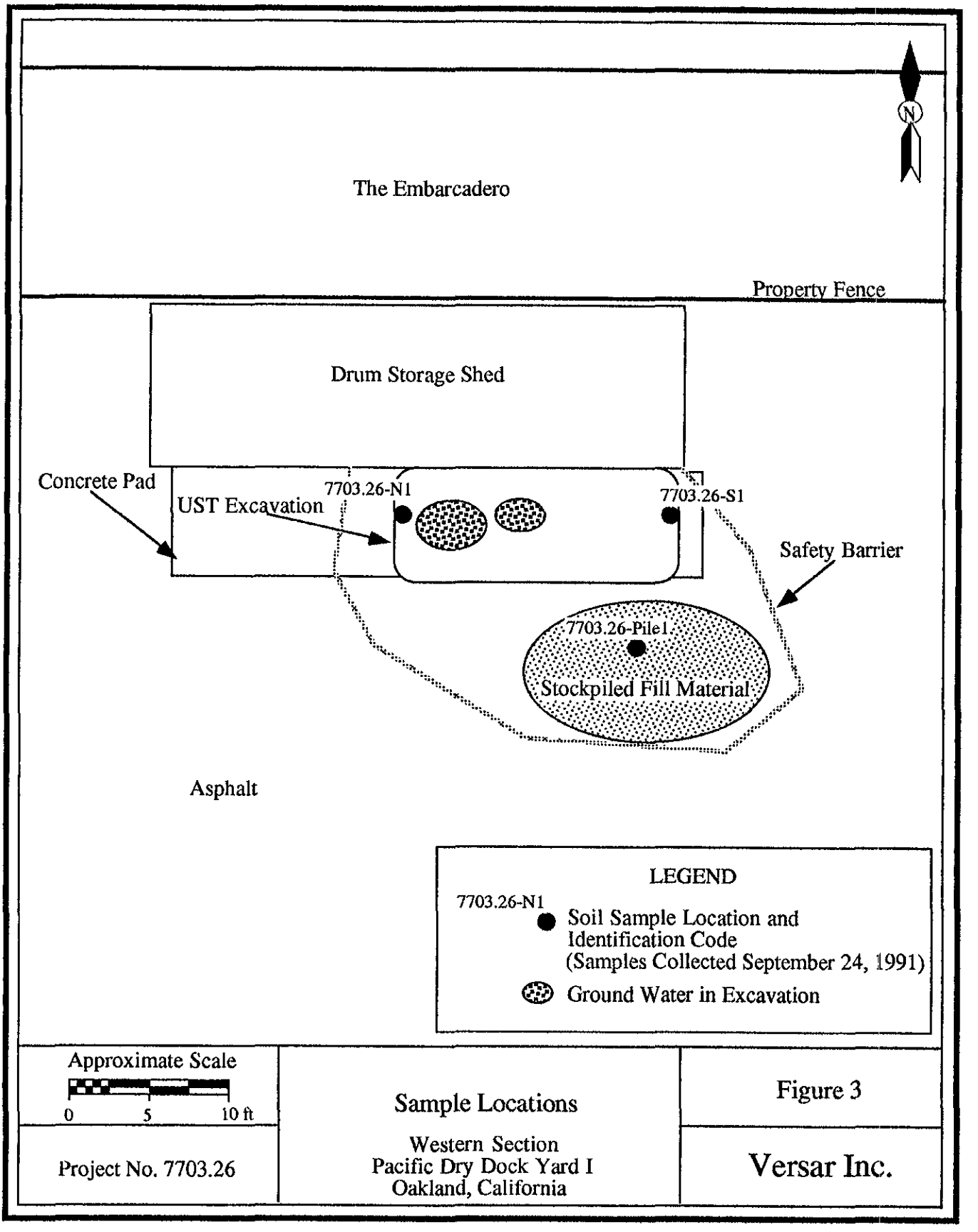
ATTACHMENT I

SOURCE: USGS TOPO 1959

Approximate Scale 0 0.25 0.50 mi	Site Location	Figure 1
Project No. 7703.26	Pacific Dry Dock Yard I Oakland, California	Versar Inc.



Approximate Scale 0 75 150 ft	Site Layout	Figure 2
Project No. 7703.26	Western Section Pacific Dry Dock Yard I Oakland, California	Versar Inc.


The Embarcadero
N
Property Fence
Drum Storage Shed
Concrete Pad
UST Excavation
7703.26-N1
7703.26-S1
Safety Barrier
7703.26-Pile1
Stockpiled Fill Material
Asphalt
LEGEND
7703.26-N1
Soil Sample Location and Identification Code (Samples Collected September 24, 1991)
Ground Water in Excavation
Approximate Scale
0
5
10 ft
Sample Locations
Western Section
Pacific Dry Dock Yard I
Oakland, California
Figure 3
Project No. 7703.26
Versar Inc.

Versar INC. SACRAMENTO

ATTACHMENT II

Excavation Permit Granted _____ No. _____

CITY OF OAKLAND

Permit to Excavate and Install, Repair, or Remove Inflammable Liquid Tanks.

Tank Permit No. 9444

Oakland, California, June 7, 19 91

PERMISSION IS HEREBY GRANTED TO ~~xxxxx~~ remove ~~xxxx~~ Gasoline tank and excavate commencing _____ feet inside property line

on the s/w side of Embarcadero Street Avenue 1800 feet s/e of Tenth Avenue Street Avenue

House No. 1441 Embarcadero Street Avenue Present Storage _____

Owner Port of Oakland Address 530 Water St. Oakland Phone 272-1220

Applicant Versar Address 5330 Primrose Dr. #228 Fair Oaks, CA 95628 Phone 916-962-1612

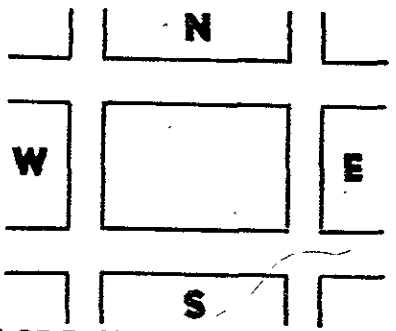
Dimensions of street (sidewalk) surface to be disturbed _____ X _____ Number of Tanks 1 Capacity 400 Gallons, each.

Remarks: _____

This Permit is granted in accordance with existing City Ordinances.
Owner hereby agrees to remove tanks on discontinuance of use or when notified by the City Authorities.
When installing, removing or repairing tanks, no open flame to be on or near premises.

Approved _____
Fire Marshal

Approved _____
Drainage Division Engineering Dept.



EXCAVATING PERMIT

Issued in accordance with Ord. No. 278 CMS, Sec. 6-2.04

_____ square feet of digging or removal granted.

The receipt of $ _____ special deposit is hereby acknowledged.

GENERAL DEPOSIT.

BUREAU OF PERMITS AND LICENSES.

CERTIFICATE OF TANK AND EQUIPMENT INSPECTION

Inspected and passed on _____ 19 91

By _____ #708
Fire Marshal

Inspection Fee Paid - - - - - - - - $ 80.00 ck#330 rec#651558

Received by G. M. Johnson
FIRE PREVENTION BUREAU

NOTICE

Before Covering Tanks, Above Certificate Must Be Signed.

When ready for inspection notify Fire Prevention Bureau, 273-3851

THIS PERMIT MUST BE LEFT ON THE WORK AS AUTHORITY THEREFOR.

538-68 (6-67)

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621
PHONE NO. 415/271-4320

Project Specialist (print) Barney Chan

OK 5/29/91 BC

Removal of Tank and Piping
Sampling
Final Inspection

UNDERGROUND TANK CLOSURE PLAN

*** * * Complete according to attached instructions * * ***

1. **Business Name** Pacific Dry Dock and Repair Yard

   Business Owner Crowley Maritime Corporation

2. **Site Address** 1441 Embarcadero

   City Oakland **Zip** 94606 **Phone** ~~(415)839-4020~~

3. **Mailing Address** P.O. Box 2287

   City Seattle **Zip** 98111 **Phone** (206)443-7882

4. **Land Owner** Port of Oakland

   Address 530 Water Street **City, State** Oakland, CA **Zip** 94607

5. **Generator name under which tank will be manifested**

   Crowlet/Maritime Corporation

   EPA I.D. No. under which tank will be manifested CAD 009140864

rev 12/90

6. Contractor Environmental Control Industries

Address 2700 Teagarden Street

City San Leandro Phone (415)614-0180

License Type A, Asbestos, B2 ID# 425101

7. Consultant Versar Inc.

Address 5330 Primrose Drive, Suite 228

City Fair Oaks, CA 95628 Phone (916)962-1612

8. Contact Person for Investigation

Name R. Stephen Wilson Title Senior Geologist

Phone (916)962-1612

9. Number of tanks being closed under this plan One

Length of piping being removed under this plan Less than 5 ft

Total number of tanks at facility One

10. State Registered Hazardous Waste Transporters/Facilities (see instructions).

** Underground tanks are hazardous waste and must be handled ** as hazardous waste

a) Product/Residual Sludge/Rinsate Transporter

Name Erickson EPA I.D. No. CAD 009466392

Hauler License No. #019 License Exp. Date 5/92

Address 255 Parr Boulevard

City Richmond State CA Zip 94801

b) Product/Residual Sludge/Rinsate Disposal Site

Name Gibson Pilot EPA I.D. No. CAD043260702

Address 475 Seaport Boulevard

City Redwood City State CA Zip 94063

rev 12/90

c) Tank and Piping Transporter

Name Erickson EPA I.D. No. CAD 009466392

Hauler License No. #019 License Exp. Date 5/92

Address 255 Parr Boulevard

City Richmond State CA Zip 94801

d) Tank and Piping Disposal Site

Name Erickson EPA I.D. No. CAD 009466392

Address 255 Parr Boulevard

City Richmond State CA Zip 94801

11. Experienced Sample Collector

Name John C. Bird, R.E.A.

Company Versar Inc.

Address 5330 Primrose Drive, Suite 228

City Fair Oaks State CA Zip 95628 Phone (916)962-1612

12. Laboratory

Name Trace Analytical Laboratories

Address 3423 Investment Boulevard, Unit B

City Hayward State CA Zip 94545

State Certification No. 1199

13. Have tanks or pipes leaked in the past? Yes [ ] No [X]

If yes, describe.

14. Describe methods to be used for rendering tank inert

25 lbs of dry ice per 1,000 gallons tank capacity.

Before tanks are pumped out and inerted, all associated piping must be flushed out into the tanks. All accessible associated piping must then be removed. Inaccessible piping must be plugged.

The Bay Area Air Quality Management District (771-6000), along with local Fire and Building Departments, must also be contacted for tank removal permits. Fire departments typically require the use of explosion proof combustible gas meters to verify tank inertness. It is the contractor's responsibility to bring a working combustible gas meter on site to verify tank inertness.

15. Tank History and Sampling Information

Tank		Material to be sampled (tank contents, soil, groundwater, etc.)	Location and Depth of Samples
Capacity	Use History (see instructions)		
400 gallons	Unknown	Soil and Water	Sidewall soil sample above the water table. and water Sample if present

One soil sample must be collected for every 20 feet of piping that is removed. A ground water sample must be collected should any ground water be present in the excavation.

Excavated/Stockpiled Soil	
Stockpiled Soil Volume (Estimated) 25 yd3	**Sampling Plan** Random sampling grid, as per RWQCB guidlines. 1 discrete/20 yd 3

Stockpiled soil must be placed on bermed plastic and must be completely covered by plastic sheeting.

16. Chemical methods and associated detection limits to be used for analyzing samples

The Tri-Regional Board recommended minimum verification analyses and practical quantitation reporting limits should be followed. See attached Table 2.

Contaminant Sought	EPA, DHS, or Other Sample Preparation Method Number	EPA, DHS, or Other Analysis Method Number	Method Detection Limit
Leaded gas	GCFID (5030)		Water 50.00 ppb Soil 1.0 ppm
BTEX	EPA 8020	40 ml	Water 0.5 ppb Soil 0.005ppm
TPH w/BTEX	EPA 8260	40 ml	Same as above for soil
Total Lead	AA		As per California Admin. code
TEL	DHS-LUFT		
EDB	DHS-AB 1803		

17. Submit Site Health and Safety Plan (See Instructions)

18. Submit Worker's Compensation Certificate copy ✓

Name of Insurer National Union Fire Insurance Co.

19. Submit Plot Plan (See Instructions)

20. Enclose Deposit (See Instructions)

21. **Report any leaks or contamination to this office within 5 days of discovery.** The report shall be made on an Underground Storage Tank Unauthorized Leak/Contamination Site Report form. (see Instructions)

22. Submit a closure report to this office within 60 days of the tank removal. This report must contain all the information listed in item 22 of the instructions.

I declare that to the best of my knowledge and belief the statements and information provided above are correct and true.

I understand that information in addition to that provided above may be needed in order to obtain an approval from the Department of Environmental Health and that no work is to begin on this project until this plan is approved.

I understand that any changes in design, materials or equipment will void this plan if prior approval is not obtained.

I understand that all work performed during this project will be done in compliance with all applicable OSHA (Occupational Safety and Health Administration) requirements concerning personnel health and safety. I understand that site and worker safety are solely the responsibility of the property owner or his agent and that this responsibility is not shared nor assumed by the County of Alameda.

Once I have received my stamped, accepted closure plan, I will contact the project Hazardous Materials Specialist at least three working days in advance of site work to schedule the required inspections.

Signature of Contractor

Name (please type) Kurt Zimmerman, ECI

Signature _____

Date 5/7/91

Signature of Site Owner or Operator

Name (please type) John C. Bird, Versar signing for Crowley Maritime Corp

Signature John C Bird

Date 5/8/91

mm 11/90

ACORD. CERTIFICATE OF INSURANCE

ISSUE DATE (MM/DD/YY) 5/06/91

PRODUCER

DSI INSURANCE SERVICES
1737 N. FIRST STREET, SUITE 400
SAN JOSE, CA 95112
DORA SHUEY
(408) 436-7180
(408) 436-7187 (FAX)

INSURED

ENVIRONMENTAL CONTROL INDUSTRIES
2700 TEAGARDEN STREET
SAN LEANDRO, CA 94577

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY LETTER	A	NATIONAL UNION FIRE INSURANCE CO.
COMPANY LETTER	B	MASSACHUSETTS BAY (HANOVER)
COMPANY LETTER	C	WINDSOR INSURANCE LIMITED
COMPANY LETTER	D	
COMPANY LETTER	E	

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITIONS OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN. THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	ALL LIMITS IN THOUSANDS	
	GENERAL LIABILITY				GENERAL AGGREGATE	$ 3,000
	X COMMERCIAL GENERAL LIABILITY				PRODUCTS-COMP/OPS AGGREGATE	$ 1,000
A	X CLAIMS MADE X OCCUR.	AA17778447	8/31/90	8/31/91	PERSONAL & ADVERTISING INJURY	$ 1,000
	X OWNER'S & CONTRACTOR'S PROT.				EACH OCCURRENCE	$ 1,000
	X "TRUE OCCURRENCE"				FIRE DAMAGE (Any one fire)	$ 50
	X ASBESTOS ABATEMENT				MEDICAL EXPENSE (Any one person)	$ 1
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT	$ 1,000.
	ANY AUTO					
	ALL OWNED AUTOS				BODILY INJURY (Per person)	$
B	X SCHEDULED AUTOS	ADM3746014	8/31/90	8/31/91		
	X HIRED AUTOS				BODILY INJURY (Per accident)	$
	X NON-OWNED AUTOS					
	GARAGE LIABILITY				PROPERTY DAMAGE	$
	EXCESS LIABILITY				EACH OCCURRENCE	AGGREGATE
C	X OTHER THAN UMBRELLA FORM	EXCESS OF GL & AUTO WTI01221	4/1/91	8/31/91	$ 4,000,	$ 4,000,
	WORKER'S COMPENSATION				STATUTORY	
	AND				$ 1,000, (EACH ACCIDENT)	
A	EMPLOYERS' LIABILITY	RMWC4196736	4/1/91	4/1/92	$ 1,000, (DISEASE-POLICY LIMIT)	
					$ 1,000, (DISEASE-EACH EMPLOYEE)	
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

THE AGGREGATE LIMIT OF LIABILITY IS APPLICABLE TO ALL OF THE NAMED INSURED'S SCHEDULED PROJECT.
"FOR INFORMATION ONLY".

CERTIFICATE HOLDER

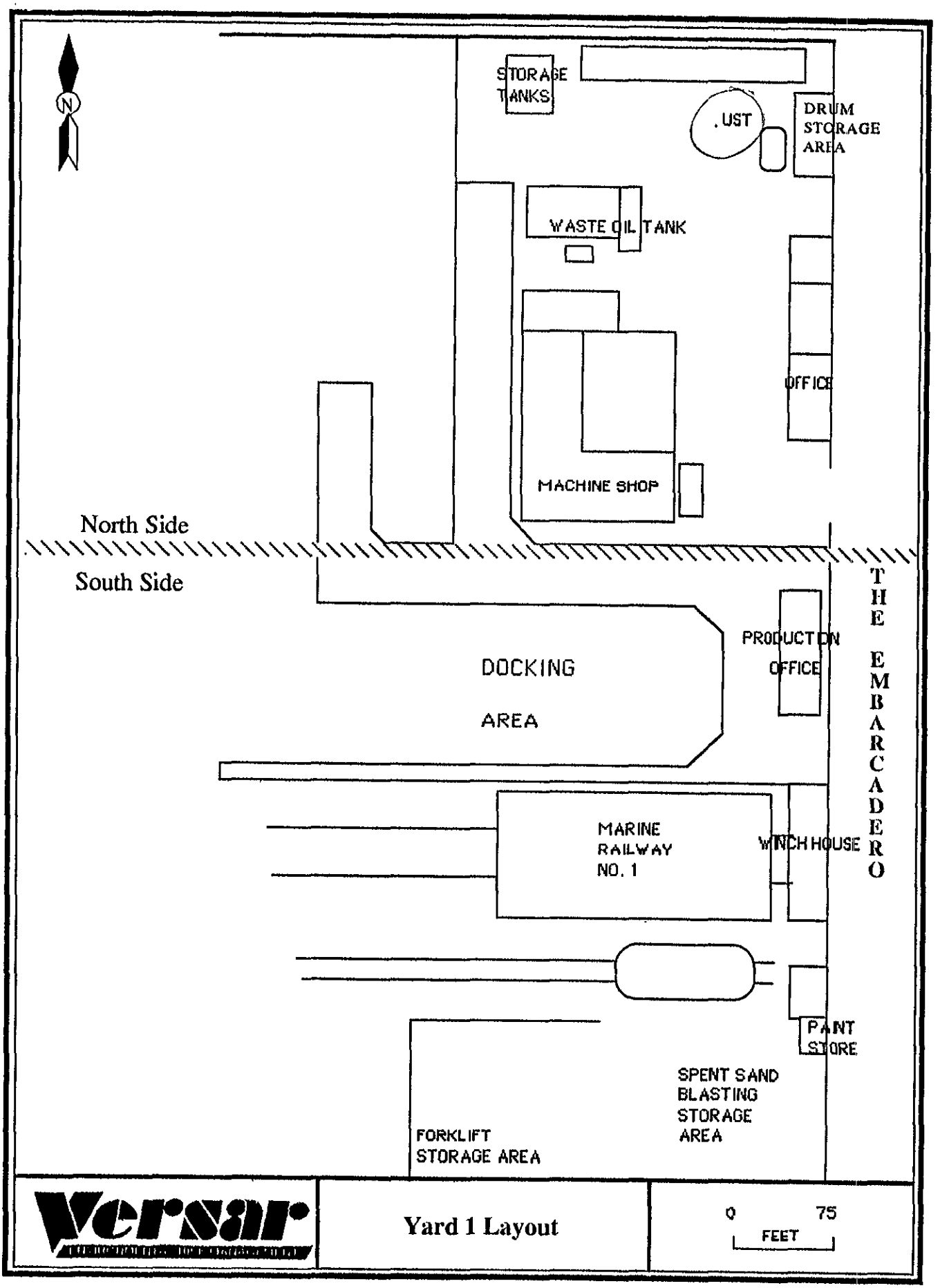
"FOR INFORMATION ONLY"

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAY WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAI SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON TH COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

JAMES W. UNTIEDT


N
STORAGE TANKS
.UST
DRUM STORAGE AREA
WASTE OIL TANK
OFFICE
MACHINE SHOP
North Side
South Side
PRODUCTION OFFICE
DOCKING AREA
THE EMBARCADERO
MARINE RAILWAY NO. 1
WINCH HOUSE
PAINT STORE
SPENT SAND BLASTING STORAGE AREA
FORKLIFT STORAGE AREA
Versar
Yard 1 Layout
0
75
FEET

Versar INC. SACRAMENTO

ATTACHMENT III

State of California—Health and Welfare Agency

Please print or type. Form designed for use on elite (12-pitch typewriter).

See instructions on back of page 2 (163)

Department of Health Servic
Toxic Substances Control Progra
Sacramento, Californ

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
CAD009140164	76377		

3. Generator's Name and Mailing Address
PACIFIC DAY DOCK + REPAIR
321 EMBARCADERO OAKLAND CA 94606
4. Generator's Phone (510) 891-7030

A. State Manifest Document Number: 91488815
B. State Generator's ID:
C. State Transporter's ID: 204552
D. Transporter's Phone: (510)778-2881
E. State Transporter's ID:
F. Transporter's Phone:
G. State Facility's ID: CAD009466392
H. Facility's Phone: (510) 235-1393

5. Transporter 1 Company Name	6. US EPA ID Number
TRIDENT TRUCK LINE, INC.	CAD982484370
7. Transporter 2 Company Name	8. US EPA ID Number

9. Designated Facility Name and Site Address	10. US EPA ID Number
ERICKSON INCORPORATED 255 PARR BLVD. RICHMOND, CA. 94801	CAD009466392

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. EMPTY TANK NON-RCRA HAZARDOUS WASTE SOLID	001	T	P 00400	P	State 512 EPA/Other NONE
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
QUANTITY 1 EMPTY STORAGE TANK(S) 7353 HAVE BEEN INERTED WITH 15 LBS. DRY ICE PER 1000 GAL. CAPACITY

K. Handling Codes for Wastes Listed Above
a. 01 b.
c. d.

15. Special Handling Instructions and Additional Information
KEEP AWAY FROM SOURCES OF IGNITION. ALWAYS WEAR HARDHATS AND GLASSES WHEN WORKING AROUND UNDERGROUND STORAGE TANKS. 24 HR. CONTACT NAME: JOHN DUNN AND PHONE: (510) 518-1380

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
JOHN DUNN		09	12	91

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
BOB SEMAN		09	12	91

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name	Signature	Month	Day	Year
		09	12	91

DO NOT WRITE BELOW THIS LINE.

GENERATOR
TRANSPORTER
FACILITY

IN CASE OF EMERGENCY OR SPILL CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802. WITHIN CALIFORNIA, CALL 1-800-852-7550

91488815

Versar INC. SACRAMENTO

ATTACHMENT IV

DAY OR NIGHT TELEPHONE (415) 235-1393

CERTIFICATE

CERTIFIED SERVICES COMPANY

255 Parr Boulevard • Richmond, California 94801

NO.

CUSTOMER Arenson

JOB NO. 2327

FOR: Erickson, Inc. TANK NO. 7/53

LOCATION: Richmond DATE: 09-26-91 TIME: 8:00 a.m.

TEST METHOD Visual Gastech/1314 SMPN LAST PRODUCT Unleaded Gas

This is to certify that I have personally determined that this tank is in accordance with the American Petroleum Institute and have found the condition to be in accordance with its assigned designation. This certificate is based on conditions existing at the time the inspection herein set forth was completed and is issued subject to compliance with all qualifications and instructions.

TANK SIZE 1- 400 Gallon Tank CONDITION Safe For Fire - Oxy 20.0% LEL LESS THAN 0.1%

REMARKS:

In the event of any physical or atmospheric changes affecting the gas-free conditions of the above tanks, or if in any doubt immediately stop all hot work and contact the undersigned. This permit is valid for 24 hours if no physical or atmospheric changes occur.

STANDARD SAFETY DESIGNATION

SAFE FOR MEN: Means that in the compartment or space so designated (a) The oxygen content of the atmosphere is at least 19.5 percent by volume; and that (b) Toxic materials in the atmosphere are within permissable concentrations; and (c) In the judgment of the Inspector, the residues are not capable of producing toxic materials under existing atmospheric conditions while maintained as directed on the Inspector's certificate.

SAFE FOR FIRE: Means that in the compartment so designated (a) The concentration of flammable materials in the atmosphere is below 10 percent of the lower explosive limit; and that (b) In the judgment of the Inspector, the residues are not capable of producing a higher concentraiton that permitted under existing atmospheric conditions in the presence of fire and while maintained as directed on the Inspector's certificate, and further, (c) All adjacent spaces have either been cleaned sufficiently to prevent the spread of fire, are satisfactorily inerted, or in the case of fuel tanks, have been treated as deemed necessary by the Inspector.

The undersigned representative acknowledges receipt of this certificate and understands the conditions and limitations under which it was issued.

REPRESENTATIVE TITLE INSPECTOR

Shipper's No.

019

CARRIER: Erickson, Trucking Inc. SCAC Carrier's No. Date

TO: Consignee Street Destination	LMC Corp. 600 S. 4th St. Richmond, Ca. 94805 Zip	FROM: Shipper Street Origin	Erickson, Inc. 255 Parr Blvd. Richmond, Ca. 94801 Zip

Route: Vehicle Number

HM	Description of articles (if hazardous materials, proper shipping name)	Hazard Class	I.D. Number	Weight	Rate	Labels Required
✓	NON-D.O.T. REGULATED MATERIAL NON-HAZARDOUS, GAS FREE					
	UNDERGROUND STORAGE TANKS FOR SCRAP. 76403-7161					
	76377-7153	NONE	N/A	N/A	N/A	NONE
	76378-7151					
	Trident-7171					

Remit C.O.D. to:
Address:
City: State: Zip:

COD Amt: $

C.O.D. FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES ☐ PREPAID ☐ COLL

NOTE — Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

PLACARDS REQUIRED: NO — PLACARDS SUPPLIED ☐ YES ☐ NO — FURNISHED BY CARRIER DRIVER SIGNATURE

SHIPPER: Erickson, Inc. — CARRIER:
PER: Jim Cox. — PER: Don Bailey
DATE: 9-26-91 — DATE: 9-26-91

EMERGENCY RESPONSE TELEPHONE NUMBER: ( )

Monitored at all times the Hazardous Material is in transportation including storage incidental to transportation (172.604).

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

THIS IS TO CERTIFY that the following described commodity was weighed, measured or counted by a weighmaster whose signature is on this certificate who is a recognized authority of accuracy as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

WEIGHMASTER CERTIFICATE

LMC METALS
A DIVISION OF SUMITOMO METAL USA CORPORATION
600 SOUTH 4th STREET
RICHMOND, CALIFORNIA 94804

MATL.10201-1 UNP TICKET# 61420
PRICE / TON:$
TOTAL PRICE:$ PAY WEIGHT: 12700
WEIGHT ADJUSTMENT: 0 PERCENT:*****%
INBOUND WEIGHT: 46320 Lbs.

ACCOUNT:22168801
ERICKSON INC.
265 PARR BLVD.
RICHMOND . CA
CASH I.D.:

TRUCK NO. DRIVER:1 LICENSE NO.

46320	(M)	Gross Weight	Lbs.	9/27/91-	6:55
33620		Tare Weight	Lbs.	9/27/91-	7:20
12700		Net Weight	Lbs.		

FRT. CODE:1 COST:$ 0.00

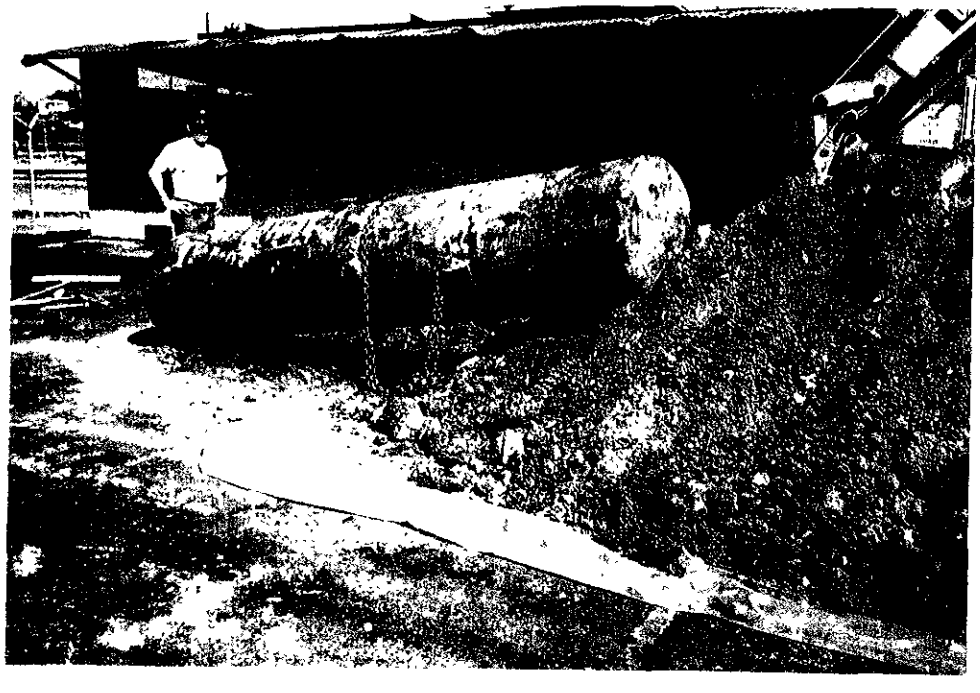
LMC METALS WEIGHMASTER

2-08277

Versar INC. SACRAMENTO

ATTACHMENT V

Photograph 1. Underground Storage Tank Being Removed from the Excavation



Photograph 2. View of Underground Storage Tank After Removal

Photograph 3. View of Bottom of Excavation and Oily Ground Water

Photograph 4. Current Condition of Underground Storage Tank Excavation and Stockpile Site (November 1991)

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☒ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☒ NO

REPORT DATE: 10/18/91

CASE #:

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFTY CODE.
SIGNED ____ DATE ____

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: Yvonne M. Lembi
PHONE: (916) 962-1612
SIGNATURE: Yvonne M. Lembi

REPRESENTING ☒ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☐ OTHER ____
COMPANY OR AGENCY NAME: Versar Inc.

ADDRESS: 5330 Primrose Drive, Suite 228 (STREET) Fair Oaks (CITY) CA (STATE) 95628 (ZIP)

RESPONSIBLE PARTY

NAME: Pacific Dry Dock Repair Co. ☐ UNKNOWN
CONTACT PERSON: George Brooks
PHONE: (206) 443-8519

ADDRESS: 2401 Fourth Avenue (STREET) Seattle (CITY) WA (STATE) 98111 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE): Pacific Dry Dock (Yard I)
OPERATOR: Pacific Dry Dock Repair Co.
PHONE: (415) 518-1380

ADDRESS: 1441 Embarcadero (STREET) Oakland (CITY) Alameda (COUNTY) 94606 (ZIP)

CROSS STREET: 10th Street Avenue

TYPE OF AREA ☐ COMMERCIAL ☒ INDUSTRIAL ☐ RURAL ☐ RESIDENTIAL ☐ OTHER ____

TYPE OF BUSINESS ☐ RETAIL FUEL STATION ☐ FARM ☒ OTHER ship yard

IMPLEMENTING AGENCIES

LOCAL AGENCY / AGENCY NAME: Alameda County Health Agency
CONTACT PERSON: Mr. Barney Chan
PHONE: (510) 271-4320

REGIONAL BOARD: San Francisco Bay Region
PHONE: ( )

SUBSTANCES INVOLVED

(1) NAME: Unleaded gasoline
QUANTITY LOST (GALLONS): ____ ☒ UNKNOWN

(2) ____ ☐ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 09/24/91
HOW DISCOVERED ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☒ TANK REMOVAL ☐ OTHER ____

DATE DISCHARGE BEGAN: ____ ☒ UNKNOWN

HAS DISCHARGE BEEN STOPPED? ☒ YES ☐ NO IF YES, DATE 09/24/91

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY)
☒ REMOVE CONTENTS ☐ REPLACE TANK ☒ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURE ☒ OTHER remove tank

SOURCE/CAUSE

SOURCE OF DISCHARGE: ☐ TANK LEAK ☒ UNKNOWN ☐ PIPING LEAK ☐ OTHER

TANKS ONLY/CAPACITY: 400 GAL. AGE ____ YRS ☒ UNKNOWN

MATERIAL: ☐ FIBERGLASS ☒ STEEL ☐ OTHER ____

CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☐ CORROSION ☒ UNKNOWN ☐ SPILL ☐ OTHER ____

CASE TYPE

CHECK ONE ONLY
☐ UNDETERMINED ☐ SOIL ONLY ☒ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS

CHECK ONE ONLY
☒ SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) ☐ CLEANUP IN PROGRESS ☐ SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY)
☐ NO ACTION TAKEN ☐ POST CLEANUP MONITORING IN PROGRESS ☐ NO FUNDS AVAILABLE TO PROCEED ☐ EVALUATING CLEANUP ALTERNATIVES

REMEDIAL ACTION

CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)
☐ CAP SITE (CD) ☐ EXCAVATE & DISPOSE (ED) ☐ REMOVE FREE PRODUCT (FP) ☐ ENHANCED BIO DEGRADATION (IT)
☐ CONTAINMENT BARRIER (CB) ☐ EXCAVATE & TREAT (ET) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ REPLACE SUPPLY (RS)
☐ TREATMENT AT HOOKUP (HU) ☐ NO ACTION REQUIRED (NA) ☐ OTHER (OT) ____

COMMENTS

Laboratory analysis results for soil and ground-water samples received 10/17/91

Versar INC. SACRAMENTO

ATTACHMENT VI

Versar INC. SACRAMENTO

FILE

October 22, 1991

Mr. Barney Chan
Hazardous Materials Specialist
Division of Hazardous Materials
Department of Environmental Health
Alameda County Health Department
800 Swan Way, Room 200
Oakland, California 94621

Reference: Underground Storage Tank Unauthorized Release (LEAK)/Contamination Site Report for Pacific Dry Dock Yard I, 1441 Embarcadero Avenue, Oakland, California; Versar Job No. 7703.26

Dear Mr. Chan:

Please find enclosed the Underground Storage Tank Unauthorized Release (LEAK)/Contamination Site Report for Pacific Dry Dock Yard I, 1441 Embarcadero Avenue, Oakland, California. Once you have signed the form, please forward the report to the Regional Water Quality Control Board.

If you have any questions or require supplemental information, please contact our Fair Oaks office at (916) 962-1612.

Sincerely,

Yvonne M. Lembi

Yvonne M. Lembi
Geologist

cc: Mr. George Brooks - Crowley Maritime Corp.

5330 PRIMROSE DRIVE • SUITE 228 • FAIR OAKS, CALIFORNIA 95628
TELEPHONE: (916) 962-1612 • FAX: (916) 962-2678

Versar INC. SACRAMENTO

ATTACHMENT VII

Table 1

Summary of Analytical Laboratory Analysis[1]

Pacific Dry Dock and Repair Yard I
Oakland, California

Sample No.	Date of Sampling	Medium	TPH-G[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Xylenes[3]	Organic Lead[4]
7703.26-N1	9/24/91	Soil	11,000	1,100	110	460	850	<500
7703.26-S1	9/24/91	Soil	130,000	2,000	1,400	3,800	3,800	950
7703.26-Pile1	9/24/91	Soil	13,000	620	110	1,100	6,200	4,400
7703.26-Water	9/24/91	Water	34,000,000	<9,400	170,000	480,000	1,900,000	390

[1]All results reported in micrograms per kilogram for soils, and micrograms per liter for water (ppb)

[2]Total Petroleum Hydrocarbons as Gasoline by DHS Method; detection limit dependant on sample

[3]Analytical method - EPA Method 8020/602; detection limit dependant on sample

[4]Analytical method - DHS Method; detection limit 500 micrograms per kilogram for soils and 100 micrograms per liter for water.

Versar INC. SACRAMENTO

ATTACHMENT VIII

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (415) 783-6960
Facsimile (415) 783-1512

TAL

RECEIVED
OCT 17 1991
Ans'd.....

October 9, 1991

Ms. Yvonne Lembi
Versar, Inc.
5330 Primrose Drive, Suite 228
Fair Oaks, California 95628

Dear Ms. Lembi:

Trace Analysis Laboratory received three soil samples and one water sample on September 24, 1991 for your Project No. 7703.26, Crowley Tank Pull (our custody log number 1340).

These samples were analyzed for Total Petroleum Hydrocarbons as Gasoline, Benzene, Toluene, Ethylbenzene, Xylenes and Organic Lead. Our analytical report, the completed chain of custody form, and our analytical methodologies are enclosed for your review.

Trace Analysis Laboratory is certified under the California Environmental Laboratory Accreditation Program. Our certification number is 1199.

If you should have any questions or require additional information, please call me.

Sincerely yours,

Jennifer Pekol
Project Specialist

Enclosures

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (415) 783-6960
Facsimile (415) 783-1512

TAL

LOG NUMBER: 1340
DATE SAMPLED: 9/24/91
DATE RECEIVED: 9/24/91
DATE EXTRACTED: 9/27/91
DATE ANALYZED: 9/29/91 and 10/02/91
DATE REPORTED: 10/09/91

CUSTOMER: Versar, Inc.

REQUESTER: Yvonne Lembi

PROJECT: No. 7703.26, Crowley Tank Pull

Sample Type: Soil

Method and Constituent:	Units	7703.26-N1 Concentration	7703.26-N1 Reporting Limit	7703.26-S1 Concentration	7703.26-S1 Reporting Limit	7703.26-Pile1 Concentration	7703.26-Pile1 Reporting Limit
DHS Method:							ppm
Total Petroleum Hydrocarbons as Gasoline	ug/kg	11,000	500	130,000	600	13,000	13 500
EPA Method 8020 for:							
Benzene	ug/kg	1,100	44	2,000	176	620	.62 88
Toluene	ug/kg	110	42	1,400	168	110	.11 84
Ethylbenzene	ug/kg	460	46	3,800	184	1,100	1.1 92
Xylenes	ug/kg	850	110	3,800	440	6,200	6.2 220

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 1340
DATE SAMPLED: 9/24/91
DATE RECEIVED: 9/24/91
DATE EXTRACTED: 9/27/91
DATE ANALYZED: 9/29/91 and 10/02/91
DATE REPORTED: 10/09/91
PAGE: Two

Sample Type: Soil

Method and Constituent:	Units	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:			
Total Petroleum Hydrocarbons as Gasoline	ug/kg	ND	500
EPA Method 8020 for:			
Benzene	ug/kg	ND	5.0
Toluene	ug/kg	ND	5.0
Ethylbenzene	ug/kg	ND	5.0
Xylenes	ug/kg	ND	15

QC Summary:

% Recovery: 130 and 120
% RPD: 7.1 and 17

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 1340
DATE SAMPLED: 9/24/91
DATE RECEIVED: 9/24/91
DATE ANALYZED: 9/25/91
DATE REPORTED: 10/09/91
PAGE: Three

Sample Type: Water

Method and Constituent:	Units	7703.26-Water Concentration	7703.26-Water Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:					
Total Petroleum Hydrocarbons as Gasoline	ug/l	34,000,000	39,000	ND	50
EPA Method 8020 for:					
Benzene	ug/l	ND	9,400	ND	0.50
Toluene	ug/l	170,000	9,400	ND	0.50
Ethylbenzene	ug/l	480,000	11,000	ND	0.50
Xylenes	ug/l	1,900,000	32,000	ND	1.5

QC Summary:

% Recovery: 64
% RPD: 11

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 1340
DATE SAMPLED: 9/24/91
DATE RECEIVED: 9/24/91
DATE EXTRACTED: 10/07/91
DATE ANALYZED: 10/08/91
DATE REPORTED: 10/09/91
PAGE: Four

Sample Type: Soil

Method and Constituent:	Units	7703.26-N1 Concentration	7703.26-N1 Reporting Limit	7703.26-S1 Concentration	7703.26-S1 Reporting Limit	7703.26-Pile1 Concentration	7703.26-Pile1 Reporting Limit
DHS Method:							
Organic Lead	ug/kg	ND	500	950	500	4,400	500

Method and Constituent:	Units	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:			
Organic Lead	ug/kg	ND	500

QC Summary:

% Recovery: 95
% RPD: *

Concentrations reported as ND were not detected at or above the reporting limit.

* The RPD is not reportable since the sample prepared in duplicate was not detectable.

TAL Trace Analysis Laboratory, Inc.

LOG NUMBER: 1340
DATE SAMPLED: 9/24/91
DATE RECEIVED: 9/24/91
DATE EXTRACTED: 10/07/91
DATE ANALYZED: 10/08/91
DATE REPORTED: 10/09/91
PAGE: Five

Sample Type: Water

Method and Constituent:	Units	7703.26-Water Concentration	7703.26-Water Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:					
Organic Lead	ug/l	390	100	ND	100

QC Summary:

% Recovery: 87
% RPD: 13

Concentrations reported as ND were not detected at or above the reporting limit.

Louis W. DuPuis
Quality Assurance/Quality Control Manager

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPH-G) FOR WATER, BY PURGE AND TRAP

Method:

This method is based on the "Leaking Underground Fuel Tank (Luft) Field Manual," May 1988, prepared by the State of California, and on the "Regional Board Staff Recommendations," May 1989, by the North Coast, San Francisco, and Central Valley Regional Water Quality Control Boards. This method uses an alternative column, flow rate, and temperature program as specified below.

Sample Preparation:

There is no sample preparation other than dilution.

Sample Introduction:

Water samples are introduced to the gas chromatograph (GC) by EPA Method 5030, Purge and Trap. Up to 5 ml of sample is purged by this method.

Gas Chromatography Analysis:

The volatile organics are separated on a 6-ft x 2 mm I.D. gas chromatography column packed with 5% SP-1200/1.75% Bentone-34 on Supelcoport. A flame ionization detector (FID) is used to detect total petroleum hydrocarbons as gasoline (TPH-G). The FID is preceded by a photoionization detector (PID).

Gas Chromatograph Conditions:

CARRIER GAS:	Nitrogen
FLOW RATE:	30 ml/min.
INJECTOR TEMPERATURE:	240° C
DETECTOR TEMPERATURE:	270° C
INITIAL TEMPERATURE:	50° C
Hold for 2 minutes	
PROGRAM RATE:	6° C/min.
FINAL TEMPERATURE:	90° C
Hold for 17 minutes	

Calculation:

Total Petroleum Hydrocarbons as Gasoline is quantified by comparing the sum of the area of peaks from the sample, to the sum of the area of peaks in the gasoline standard.

1/2/90

BENZENE, TOLUENE, XYLENES, AND ETHYLBENZENE (BTXE) FOR WATER, BY PURGE AND TRAP

Method:

This method is EPA Method 8020 as referenced in the "Leaking Underground Fuel Tank (Luft) Field Manual," May 1988, prepared by the State of California, and on the "Regional Board Staff Recommendations," May 1989, by the North Coast, San Francisco, and Central Valley Regional Water Quality Control Boards. This method uses an alternative carrier gas as specified below.

Sample Preparation:

There is no sample preparation other than dilution.

Sample Introduction:

Water samples are introduced to the gas chromatograph (GC) by EPA Method 5030, Purge and Trap.

Gas Chromatography Analysis:

The volatile organics are separated on a 6-ft x 2 mm I.D. gas chromatography column packed with 5% SP-1200/1.75% Bentone-34 on Supelcoport. A photoionization detector (PID) is used to detect BTXE. The PID is followed by a flame ionization detector (FID).

Gas Chromatograph Conditions:

CARRIER GAS:	Nitrogen
FLOW RATE:	30 ml/min.
INJECTOR TEMPERATURE:	240° C
DETECTOR TEMPERATURE:	270° C
INITIAL TEMPERATURE:	50° C
Hold for 2 minutes	
PROGRAM RATE:	6° C/min.
FINAL TEMPERATURE:	90° C
Hold for 17 minutes	

Calculation:

BTXE are identified by comparing the retention times of the sample peaks to those of the standards. BTXE are quantified by comparing the area of the sample peaks to those of the standards. If BTX or E is present and Total petroleum Hydrocarbons as Gasoline (TPH-G) is not, the analysis is confirmed by using a second column or a gas chromatograph mass spectrometer (GC/MS).

1/2/90

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPH-G) FOR SOIL, BY PURGE AND TRAP

Method:

This method is based on the "Leaking Underground Fuel Tank (Luft) Field Manual," May 1988, prepared by the State of California, and on the "Regional Board Staff Recommendations," May 1989, by the North Coast, San Francisco, and Central Valley Regional Water Quality Control Boards. This method uses an alternative column, flow rate, and temperature program as specified below.

Sample Preparation:

Approximately 15 grams of the soil sample are added to 10 ml of methanol. The sample is extracted by agitation.

Sample Introduction:

Methanol extracts are introduced to the gas chromatograph (GC) by EPA Method 5030, Purge and Trap.

Gas Chromatography Analysis:

The volatile organics are separated on a 6-ft x 2 mm I.D. gas chromatography column packed with 5% SP-1200/1.75% Bentone-34 on Supelcoport. A flame ionization detector (FID) is used to detect total petroleum hydrocarbons as gasoline (TPH-G). The FID is preceded by a photoionization detector (PID).

Gas Chromatograph Conditions:

CARRIER GAS:	Nitrogen
FLOW RATE:	30 ml/min.
INJECTOR TEMPERATURE:	240° C
DETECTOR TEMPERATURE:	270° C
INITIAL TEMPERATURE:	50° C
Hold for 2 minutes	
PROGRAM RATE:	6° C/min.
FINAL TEMPERATURE:	90° C
Hold for 17 minutes	

Calculation:

Total Petroleum Hydrocarbons as Gasoline is quantified by comparing the sum of the area of peaks from the sample to the sum of the area of peaks in the gasoline standard.

3/13/91

BENZENE, TOLUENE, XYLENES, AND ETHYLBENZENE (BTXE) FOR SOIL, BY PURGE AND TRAP

Method:

This method is EPA Method 8020 as referenced in the "Leaking Underground Fuel Tank (Luft) Field Manual," May 1988, prepared by the State of California, and on the "Regional Board Staff Recommendations," May 1989, by the North Coast, San Francisco, and Central Valley Regional Water Quality Control Boards. This method uses an alternative carrier gas as specified below.

Sample Preparation:

Approximately 15 grams of the soil sample are added to 10 ml of methanol. The sample is extracted by agitation.

Sample Introduction:

Methanol extracts are introduced to the gas chromatograph (GC) by EPA Method 5030, Purge and Trap.

Gas Chromatography Analysis:

The volatile organics are separated on a 6-ft x 2 mm I.D. gas chromatography column packed with 5% SP-1200/1.75% Bentone-34 on Supelcoport. A photoionization detector (PID) is used to detect BTXE. The PID is followed by a flame ionization detector (FID).

Gas Chromatograph Conditions:

CARRIER GAS:	Nitrogen
FLOW RATE:	30 ml/min.
INJECTOR TEMPERATURE:	240^0 C
DETECTOR TEMPERATURE:	270^0 C
INITIAL TEMPERATURE:	50^0 C
Hold for 2 minutes	
PROGRAM RATE:	6^0 C/min.
FINAL TEMPERATURE:	90^0 C
Hold for 17 minutes	

Calculation:

BTXE are identified by comparing the retention times of the sample peaks to those of the standards. BTXE are quantified by comparing the area of the sample peaks to those of the standards. If BTX or E is present and Total petroleum Hydrocarbons as Gasoline (TPH-G) is not, the analysis is confirmed by using a second column or a gas chromatograph mass spectrometer (GC/MS).

3/13/91

ORGANIC LEAD

Method:

This method is the Department of Health Services method referenced in the "Leaking Underground Fuel Tank (Luft) Field Manual," May 1988, prepared by the State of California, and in the "Regional Board Staff Recommendations," May 1989, by the North Coast, San Francisco, and Central Valley Regional Water Control Boards.

Sample Preparation:

The Organolead compounds are separated from the matrix with Xylene. The extract is reacted with an Iodine solution and Aliquot 336 (Tri-Capryl Methyl Ammonium Chloride)

Atomic Absorption Conditions:

Lamp:	Lead
Wavelength:	283.3 nm
Heat Source:	Acetylene-Air flame

Atomic Absorption Analysis:

The sample is directly aspirated into the flame. The element entering the flame absorbs energy from the lamp. The atomic absorption unit then displays the concentration of the sample aspirated into the flame.

Calculation:

The concentration displayed is adjusted to account for the amount of sample used and the subsequent dilution of the sample.

10/23/90

TRACE

CHAIN OF CUSTODY RECORD

Versar INC.

PROJECT NO.	PROJECT NAME
7703.26	Crowley Tank Pit

SAMPLERS: (Signature)	(Printed)
Yvonne Lembi	YVONNE LEMBI

PARAMETERS

INDUSTRIAL HYGIENE SAMPLE Y / N

1340

FIELD SAMPLE NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TPH-G 5330	BTEX 8020	(5)			TEL	BTEX 602		
7703.26-N1	9-24-91	1150		X	North end side wall	2	X	X				X			1 brass tube 1 8oz jar (soil)
7703.26-S1	9-24-91	1200		X	South " " "	2	X	X				X			1 tube 1 jar (soil)
7703.26-Pile1	9-24-9	1220		X	Stock pile	2	X	X				X			1 tube 1 jar (soil)
7703.26-water	9-24-91	1210		X	recharge water	4	X	~~X~~				X	X		3 voas 1 8oz jar (water)

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
(Printed)		(Printed)	(Printed)		(Printed)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
Yvonne Lembi	9/24/91 2:35	Jennifer Pekul TAL	9/24/91 2:35	Regular Turnaround FAX (916) 962 2678 walk-in on ice
(Printed) YVONNE LEMBI		(Printed) Jennifer Pekul	TAL	

soil	water
1-btec	3 voas
1-8oz jars	1-8oz jar
Y-4	white

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).

TEKE

Versar INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.	PROJECT NAME	INDUSTRIAL HYGIENE SAMPLE	Y / (N)
7703.26	[illegible]		N

SAMPLERS: *(Signature)* [signature]

(Printed) YVONNE LENZI

FIELD SAMPLE NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TPH-G 5330	BTEX [illegible]	[struck out]	[struck out]	[struck out]	TEL	RICK [illegible]		REMARKS
7703.26-N1	9-24-91	1150		X	North [illegible]	2	X	X				X			[illegible] ([illegible])
7703.26-S1	9-24-91	1200		X	South [illegible] " "	2	X	X				X			[illegible] ([illegible])
7703.26-[illegible]	9-24-91	1220		X	[illegible]	2	X	X				X			[illegible] ([illegible])
7703.26-[illegible]	9-24-91	1210		X	[illegible] water	4	X	[struck out]				X	X		3 VOAS 1 [illegible] ([illegible])

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
(Printed)		(Printed)	(Printed)		(Printed)

Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks
[signature]	9/24/91 2:35	[signature]	9/24/91 2:35	Regular Turnaround
(Printed) YVONNE LENZI		(Printed)		FAX (916) 962 2678

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).