CROWLEY MARINE SERVICES, INC.

October 4, 1995

Mr. Thomas Peacock
Hazardous Materials Division
Department of Environmental Health
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, CA 94502

91 OCT 6 AM 9:15

Reference: **Pacific Dry Dock and Repair Company Yard I**

Dear Mr. Peacock:

Enclosed, for your review, please find a proposed addendum to the Work Plan for the investigation at the Crowley Marine Services' facility referenced above, located at 1441 Embarcadero in Oakland. The addendum outlines the work performed to date and a schedule for the proposed scope of work.

The proposed work will not be implemented until I have received your comments on this addendum. If you have any questions or comments regarding this matter please contact me at (206) 443-8042.

Sincerely,

R. Stephen Wilson

Stephen Wilson
Manager, Environmental Compliance

STID 1420

Enclosure

cc: PDD I Correspondence w/o enclosure
Dan Schoenholz w/enclosure
Beth Hamilton w/o enclosure
Michael Sellens w/o enclosure

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Versar INC.

ADDENDUM TO
WORK PLAN FOR
SITE INVESTIGATION

CROWLEY MARINE SERVICES, INC.
PACIFIC DRY DOCK YARD I

Prepared for:

CROWLEY MARINE SERVICES, INC.
2401 Fourth Avenue
P.O. Box 2287
Seattle, Washington 98111

Prepared by:

VERSAR, INC. - SACRAMENTO
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Michael P. Sellens

Michael P. Sellens, R.G. #4714

October 2, 1995

Background

Crowley Marine Services, Inc. (CMS) is in the process of conducting environmental evaluation of the Pacific Dry Dock Yard I (the "Site") facility. The activities and results have been submitted to the Alameda County Health Care Services Agency ("ACHCSA") in various reports and other correspondence. Those efforts were preceded by a Work Plan dated March 1992, and subsequent addenda. This Addendum applies to the March 1992 workplan, and has been prepared by Versar, Inc. on behalf of CMS.

Scope of Work for Work Plan Addendum

The work proposed in this Addendum includes the installation of groundwater monitoring wells, and delineation and removal of lead-impacted soils. The work will be conducted consistent with the provisions of the original Work Plan, which was approved by the ACHCSA in March 1992, and the subsequent addenda, where applicable. The activities to be addressed under this Addendum are presented as the following tasks.

1. Perimeter Monitoring Well Installation

To assess potential groundwater impairment and evaluate the potential of constituent migration to or from the Site, CMS, through its consultant Versar, proposes to install four, two-inch diameter monitoring wells (MW7 through MW10) in the eastern portion of the Site. The proposed locations of the wells are shown in Figure 1. The actual location for each well will be determined in the field, based upon field conditions and any additional information that becomes available. Monitoring well installation procedures will be in accordance with the protocol presented in the March 1992 workplan.

2. Underground Storage Tank (UST) Investigation

To evaluate the extent of potential environmental impact present as a result of release(s) from the former UST in the northeast corner of the Site, CMS, through its consultant Versar, will conduct a subsurface evaluation. The subsurface evaluation will include the installation of one groundwater monitoring well (MW11) in association with data collection and evaluation from the four planned perimeter monitoring wells. The location of the UST investigation monitoring well is shown in Figure 1. To assess potential soil impairment, soil samples will be collected from both the UST investigation monitoring well and the perimeter monitoring well located in the northeast corner of the Site. Selected soil samples from each of the monitoring well borings will be analyzed for TPH-G by the California Department of Health Services (DHS) Method, TPH-D by EPA Method 8015M, and BTEX by EPA Method 8020. In addition, selective samples may also be analyzed for total lead, see Task 5.

3. Groundwater Sampling

Each newly installed groundwater monitoring well (total of five) will be measured, developed, purged, and sampled in accordance with standard procedures. A groundwater sample will be collected from each well and analyzed for TPH-G by California DHS Method, TPH-D by EPA Method 8015M, and BTEX by EPA Method 602. In addition, selected groundwater samples (three samples) from the monitoring wells located adjacent to the known areas where lead-impacted soil has been identified will also be analyzed for total lead. Following the initial sampling, groundwater sampling for these newly installed wells will be included in the current sampling program for the Site.

4. Monitoring Well Elevation and Location Survey

Each newly installed well will be surveyed to a common datapoint and tied into the existing wells on Site. Data obtained during the survey will be used to calculate groundwater movement beneath the Site.

5. Delineation of Lead-Impacted Soils

In July and August 1995, CMS, through its consultant Versar, coordinated the excavation of lead-impacted soils from two locations at the Site. The scope of this work was outlined in an workplan addendum submitted to ACHCSA on March 27, 1995, and approved in a letter dated June 13, 1995. Excavation and confirmation sampling has indicated that the extent of the impacted soils is greater than originally anticipated. To date a total of approximately 40 cubic yards of soil has been excavated from the two areas of concern. The location, extent, and sampling results associated with this action are shown in Figure 2 and Table 1.

It is CMS' intention to fully define the vertical and lateral extent of the lead-impacted soils, prior to the removal of any additional soils. The investigation will consist of drilling up to a total of eight soil borings to a depth of approximately six feet below ground surface (bgs), in the vicinity of the current excavations. Selected borings will be continuously sampled. The remaining borings will be sampled at three-feet intervals. The proposed locations of these borings are shown in Figure 3. Selected soil samples will be submitted to a state certified laboratory for analysis for total lead by EPA Method 7240. In addition, selected soil samples from the borings drilled for the monitoring wells presented under Tasks 1 and 2 may also be analyzed for total lead. Based upon the total lead results, additional samples may be analyzed for total and/or soluble lead. Soluble lead analysis will be performed in accordance with the California waste extraction test (WET).

6. Removal of Lead-Impacted Soils

Based upon the results of Task 5, in association with the analytical results from the existing excavation (see Figure 2 and Table 1), additional removal of lead-impacted soil will be conducted. Following any excavation activities, confirmation sampling will be conducted in accordance with the protocol presented in the Work Plan addendum dated March 27, 1995.

7. Disposal of Lead-Impacted Soils

To date approximately 40 cubic yards of soil have been excavated from areas where elevated concentrations of lead had previously been identified. Furthermore, additional soil requiring disposal will likely be generated during Task 6.

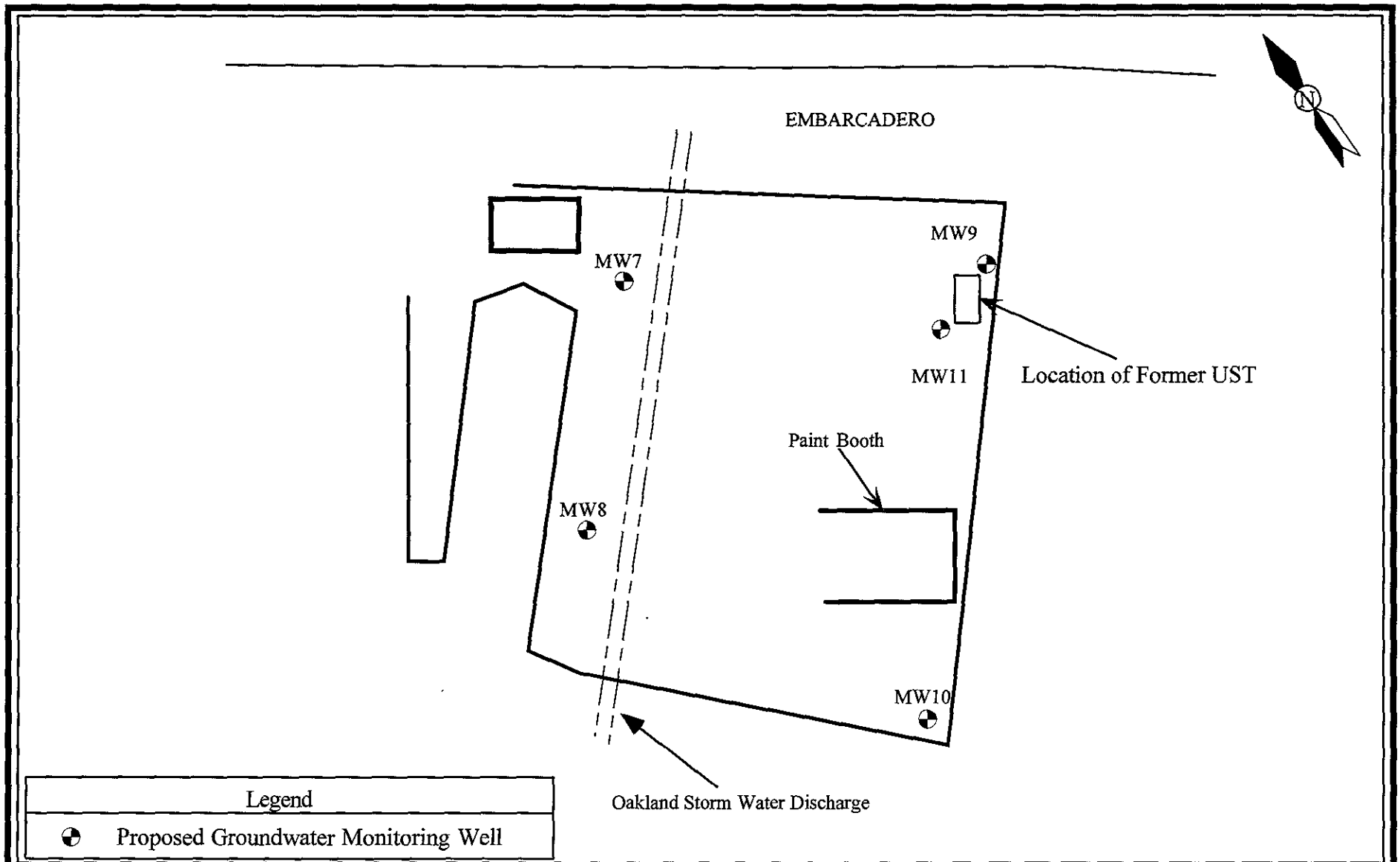
The soil currently stockpiled on site is separated into four piles based on the phase of excavation activity and the excavation location. Based on the analytical results of the stockpiled material (see Figure 2 and Table 1), it is proposed that the soils (currently approximately 20 cubic yards) which are consistent with background lead concentrations should be disposed of on-site. The remaining stockpiled soils will be transported off site to a suitable licensed disposal facility. Any additional laboratory analyses required for characterization and disposal will be determined by the receiving disposal facility.

Soil generated during any additional excavation activities will be treated in a manner similar to that proposed for the existing stockpiled material.

8. Schedule

Field activities will commence upon approval of this Addendum by the ACHCSA. All aspects of the work will be conducted under the guidance of a registered professional. The proposed schedule is as follows:

Field Work Implementation	October 16, 1995
Disposal of Stockpiled Soils	To be Determined
Submittal of Report	December 20, 1995



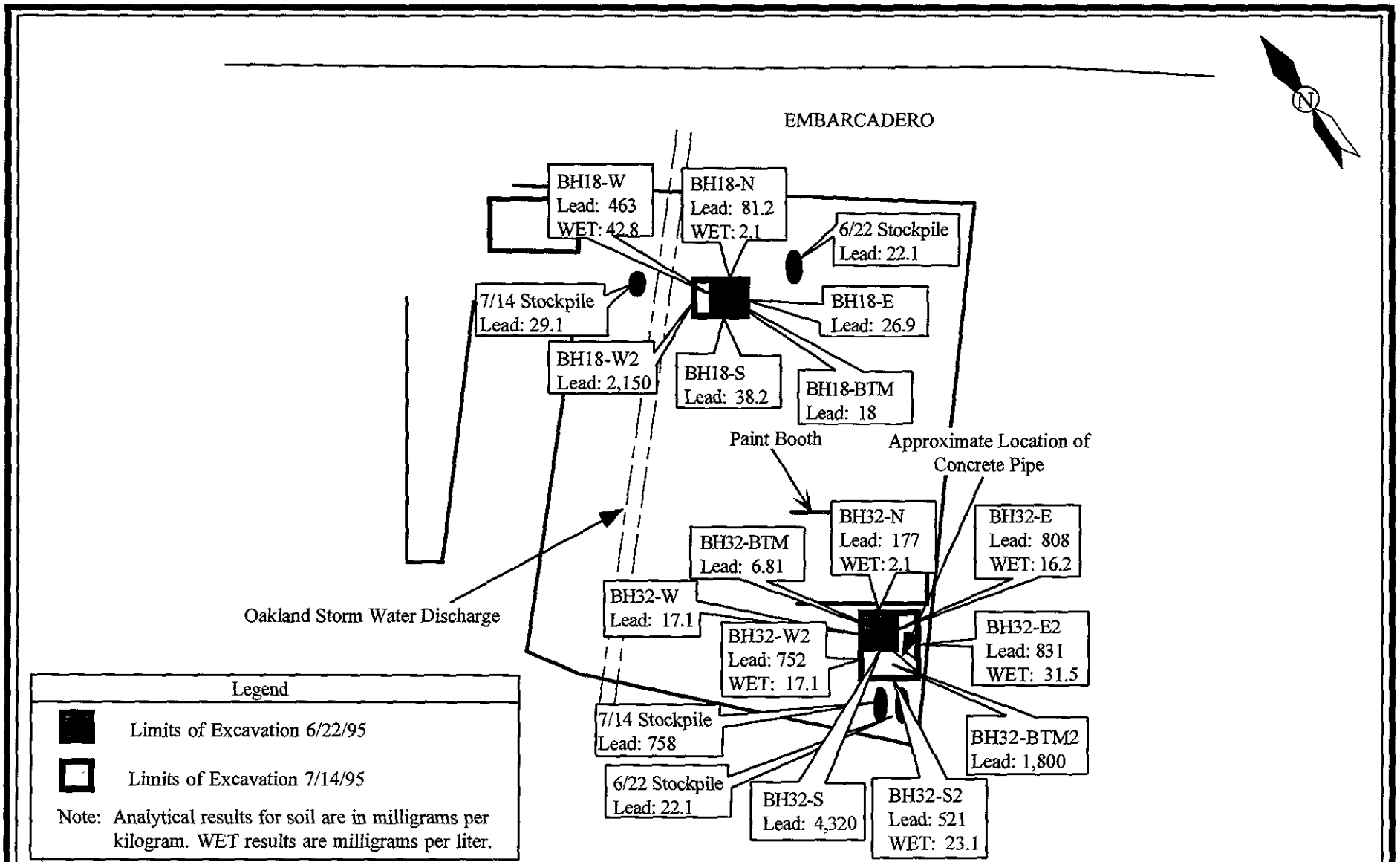
UST Investigation

Former Pacific Dry Dock Facility and Repair Company Yard I
1441 Embarcadero
Oakland, California

Figure 1

Project No. 2722

Versar Inc.



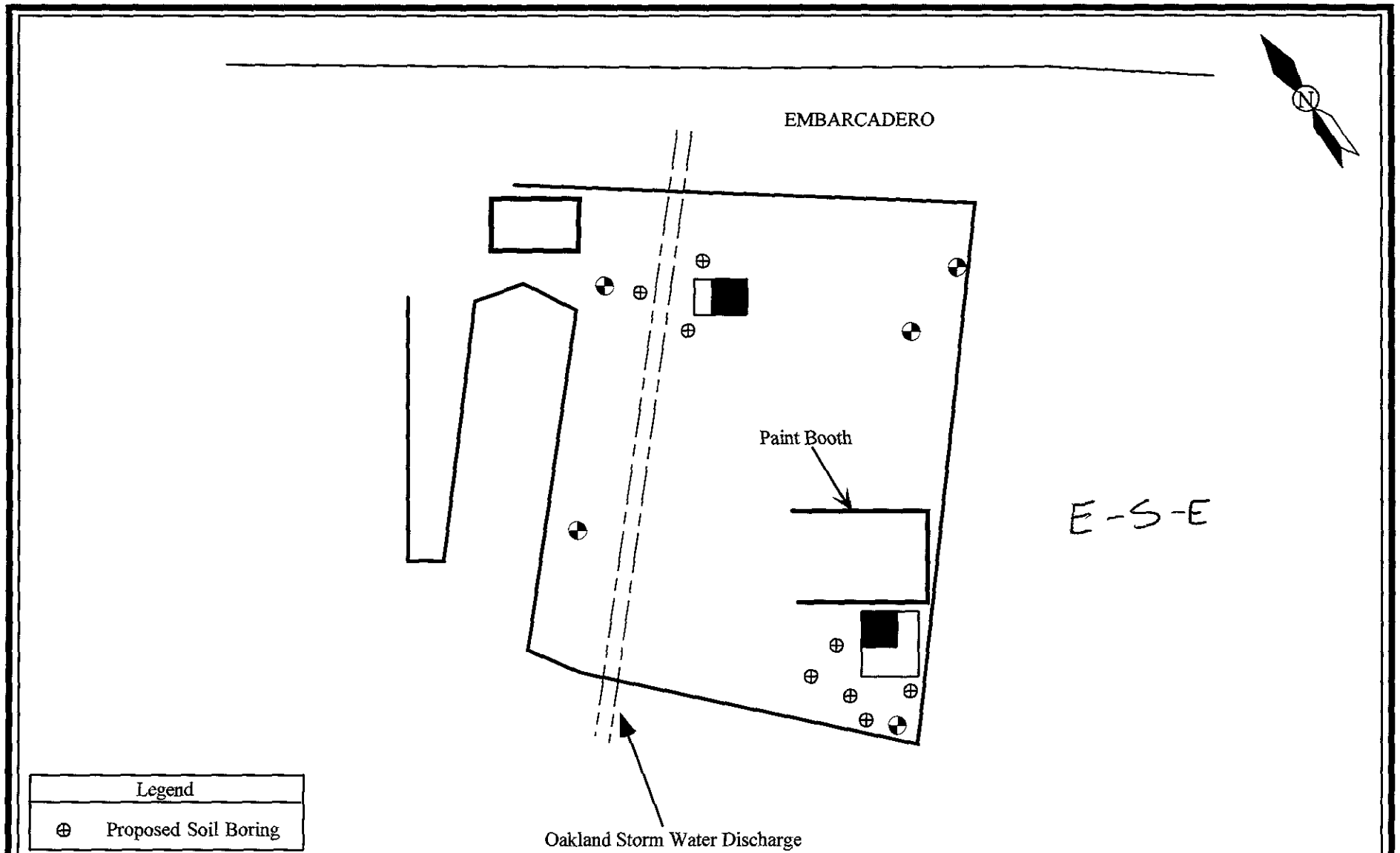
Current Soil Excavation Limits and Laboratory Analytical Results

Figure 2

Project No. 2722

Former Pacific Dry Dock Company and Repair Yard I
1441 Embarcadero--Oakland, California

Versar Inc.



Scale (feet)

0 25

Proposed Soil Boring Location Map

Figure 3

Project No. 2722

Former Pacific Dry Dock Company and Repair Yard I
1441 Embarcadero--Oakland, California

Versar Inc.

TABLE 1

Analytical Results for Lead Sampling

Sample Identification	Total Lead (mg/kg)[2]	WET[1] Lead (mg/L)[3]
BH18-N	81.2	2.1
BH18-S	38.2	NA[4]
BH18-E	26.9	NA
BH18-W	46.3	42.8
BH18-BTM	18	NA
BH18-SPL	22.1	NA
BH32-N	177	0.64
BH32-S	4,320	NA
BH32-E	808	16.2
BH32-W	17.1	NA
BH32-BTM	6.81	NA
BH32-SPL	2,980	NA
BH18-W2	2,150	NA
BH32-W2	752	17.1
BH18-E2	831	31.5
BH32-S2	521	23.1
BH32-BTM2	1,800	NA

[1] California Waste Extraction Test
[2] milligrams per kilogram
[3] milligrams per liter
[4] Not Analyzed