Challenge Dairy Products

Summary Report:

Soil and Groundwater

Investigation and Remediation

August 15, 1991

Prepared by
Uribe & Associates
Oakland, CA

URIBE & ASSOCIATES
2930 LAKESHORE AVENUE
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ENVIRONMENTAL CONSULTING SERVICES

August 15, 1991

Mr. Lowell Miller
Alameda County Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

SUBJECT: Summary Investigation Report - Challenge Dairy Products San Leandro Facility

Dear Mr. Miller:

Enclosed please find the final *Summary Report: Soil and Groundwater Investigation and Remediation* for the Challenge Dairy Products facility in San Leandro. This report summarizes investigation procedures in conjunction with the removal of two underground tanks at the facility.

This report is being forwarded to you by Uribe and Associates on behalf of Challenge Dairy Products, Inc. Please call Tom Ditto of Challenge Dairy Products if you have any questions.

Sincerely,

Pete Uribe
URIBE & ASSOCIATES

cc: John Whetten, Challenge Dairy Products, Dublin, CA
Tom Ditto, Challenge Dairy, San Leandro, CA
Mike Campos, Baker, Manock & Jenson, Fresno, CA
Robert D. Lucey, Reynolds & Brown, San Leandro, CA

Challenge Dairy Products

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SUMMARY REPORT

SOIL AND GROUNDWATER

INVESTIGATION AND REMEDIATION

August 15, 1991

Prepared for:

Challenge Dairy Products, Inc.

San Leandro Facility

Prepared by:

Uribe And Associates

Oakland, CA

CHALLENGE DAIRY PRODUCTS, INC.

SUMMARY REPORT
SOIL AND GROUNDWATER INVESTIGATION AND REMEDIATION

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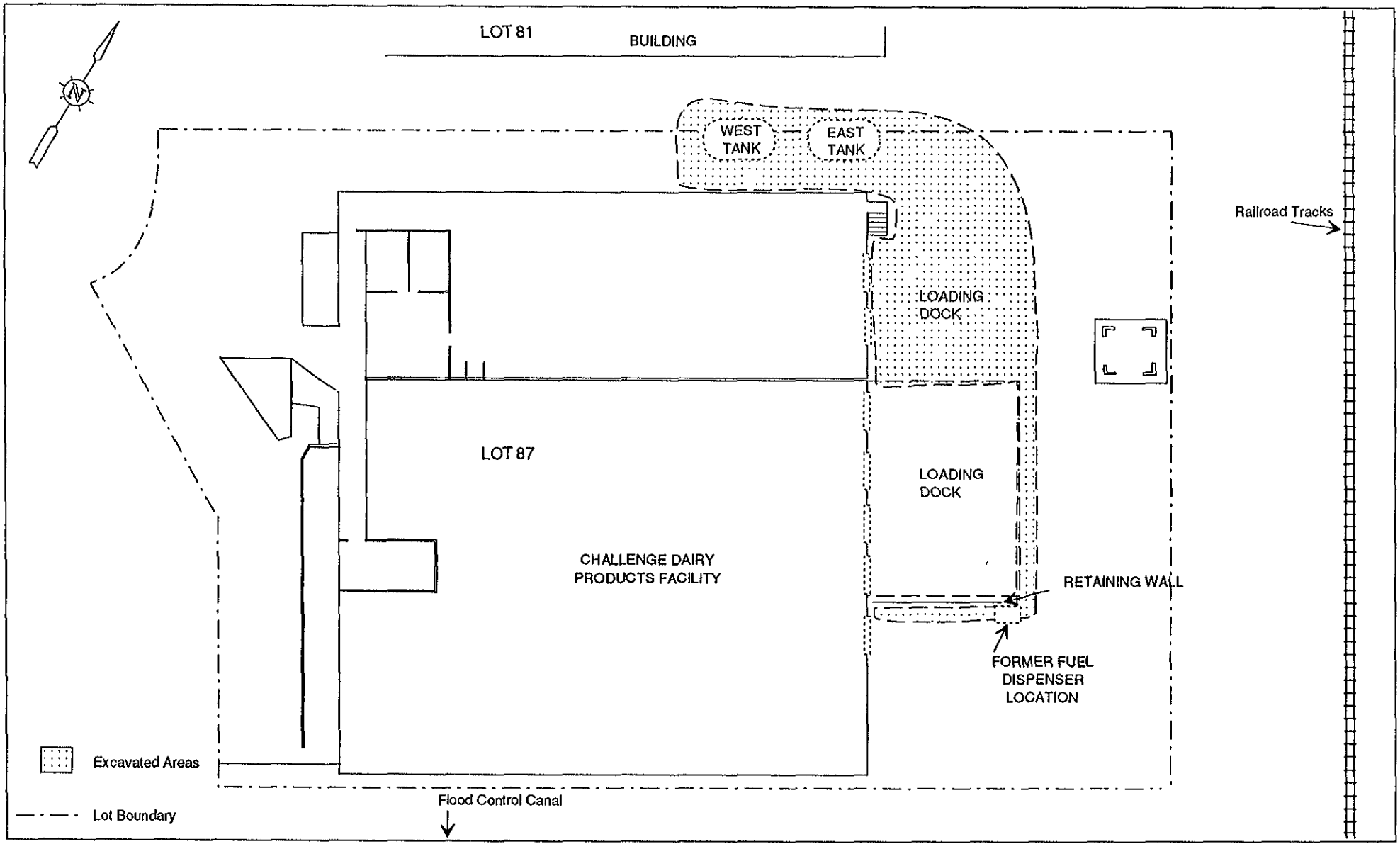
EXECUTIVE SUMMARY

This document summarizes the remediation and investigation activities involved with the removal of two underground fuel tanks and associated piping and dispensers at the Challenge Dairy facility in San Leandro, California. A separate assessment noted possible leakage in June, 1990. The tanks were removed in December, 1990. Sampling occurred during the assessment, tank removal, and subsequent investigations. All results are summarized in this report.

Both tanks, a pipeline leading from the fuel dispenser, and soil surrounding the tanks, under the northern portion of the loading dock, and in the pipeline corridor were removed on December 20, 1990. An additional pipeline leading to the tanks from the dispenser was removed on December 26, 1990. Soil sample analyses show that in the areas where the tanks and pipline were excavated, contamination has been removed to below the detection limit. Additional soil investigations have been conducted on the site to determine the extent of contamination in the surrounding area.

Relatively low levels of Total Petroleum Hydrocarbons (TPH) and benzene, toluene, xylene, and ethyl benzene (BTXE) were observed in soil and in groundwater around the site. These levels are not considered significant at this time. Shallow soil contamination was found in localized areas beneath the concrete loading dock. One sample collected at 2.5 feet below the ground surface contained 2,700 ppm TPH (Diesel). The remaining five boreholes beneath the loading dock had lower TPH levels that ranged from 720 ppm to below the detection limit. No TPH contamination was found under the loading dock area at depths greater than 6 feet. In the vicinity of the former fuel dispenser, one sample containing 9,400 ppm TPH (Diesel) was found.



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APPROXIMATE SCALE

Figure E-1	Uribe & Associates
SITE PLAN	CHALLENGE DAIRY PRODUCTS FACILITY UNDERGROUND TANK REMOVAL

1.0 INTRODUCTION

The following report is a summary of all soil investigation procedures associated with the removal of two fuel tanks at the Challenge Dairy distribution center in San Leandro, California. The tanks and associated piping were removed by J. Quarle Associates. The soil sampling was conducted by Golder Associates Inc., and analyzed by Sequoia Analytical. Further analysis was provided by J. M. Minney, Consulting Engineer.

Both tanks, a pipeline leading from the fuel pump, and soil surrounding the tanks under the northern portion of the loading dock and in the pipeline corridor were removed on December 20, 1990. An additional pipeline leading to the tanks from the dispenser was removed on December 26, 1990. Soil sample analyses show that in the areas where excavation has occurred, contamination has been removed to below the detection limit. Additional soil investigations have been conducted on the site to determine the extent of contamination in the surrounding area. The results of this analyses are reported in Chapter 4.0.

1.1 SITE LOCATION

The Challenge Dairy facility is located at 14790 Catalina Street, San Leandro, California, 94577. The property is part of the Catalina Business Park, which consists of seven separate light manufacturing facilities approximately 0.8 miles east of the San Francisco Bay (See Figure 1-1). Challenge Dairy Products, Inc. leases Lot 87 situated on the south-eastern edge of the Park (See Figure 1-2). The San Leandro Flood Control Canal is located approximately 0.15 miles south of the property. Active railroad tracks run north-south adjacent to the eastern edge of the facility.

1.2 OWNERSHIP CONTACTS

Challenge Dairy Products Inc. leases the property from Catalina Business Park. Reynolds and Brown , 2336 Merced Street, San Leandro, CA, 94577 manages for the owners, R. and B. Property, Inc. Robert Lucey of Reynolds and Brown can be reached at (415) 351-4930. Tom Ditto of Challenge Dairy can be reached at (415) 351-3600.

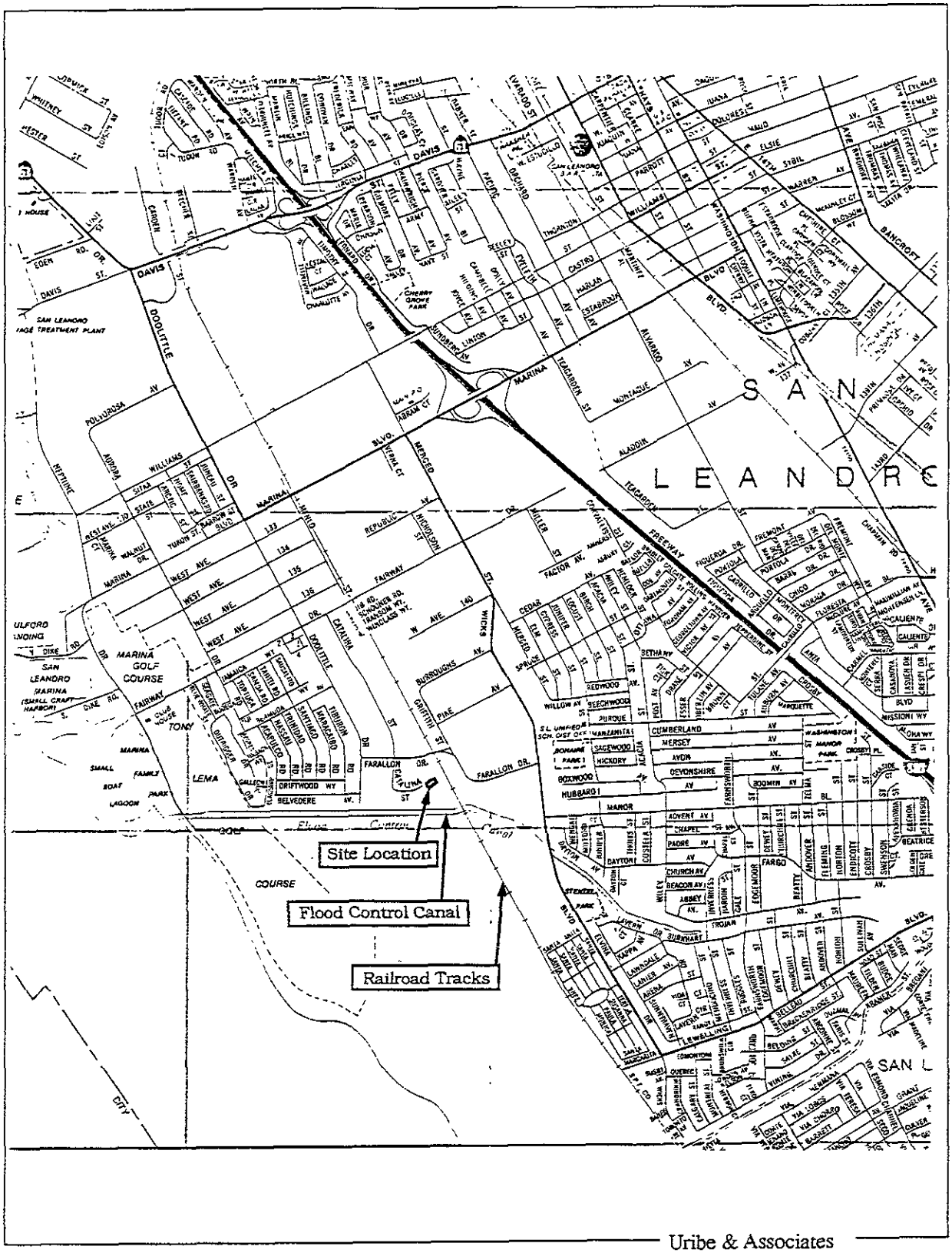


Figure 1-1: Site Location Map

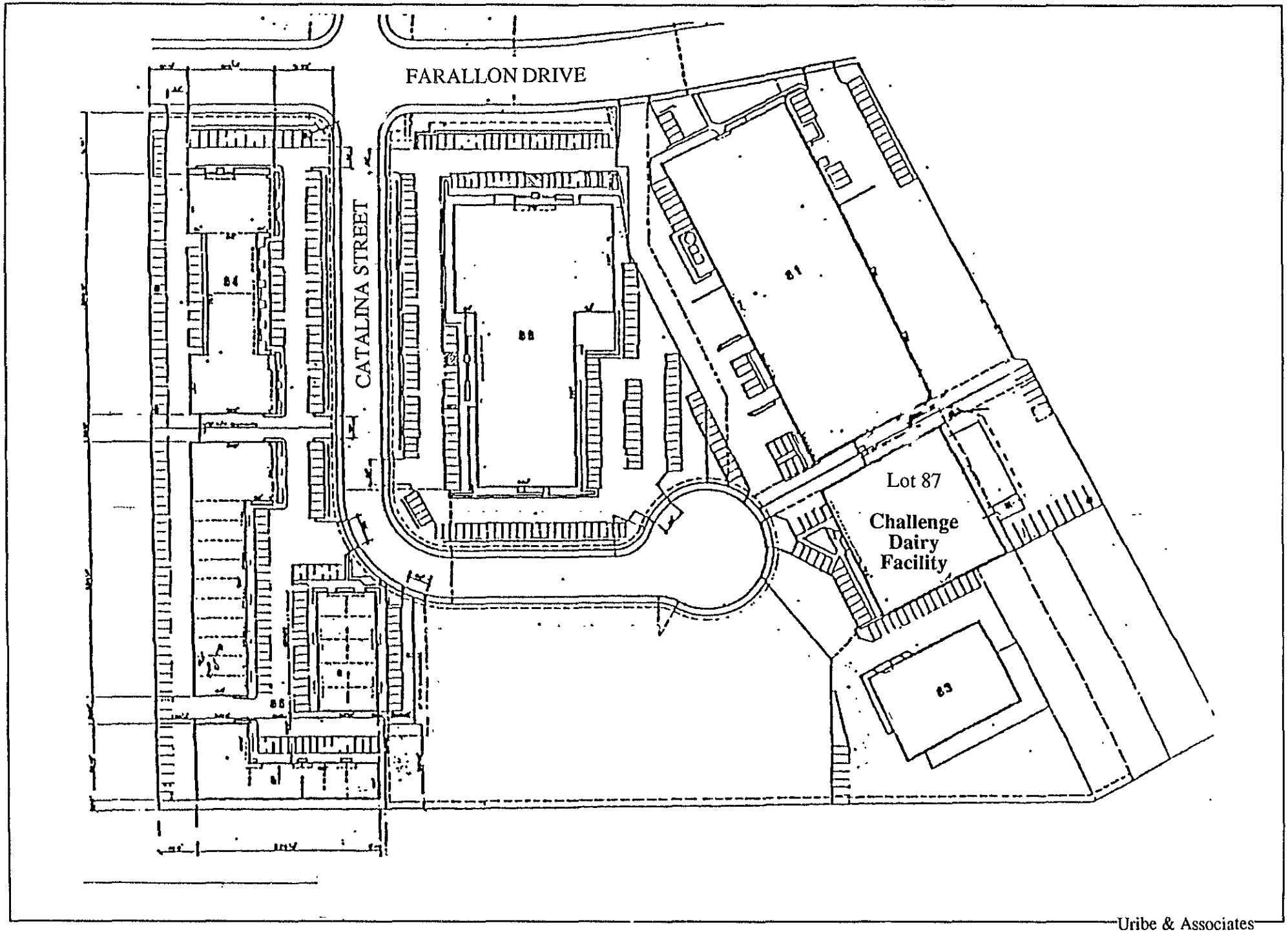


Figure 1-2: Layout of Catalina Business Park, San Leandro

1.3 SITE HISTORY

The development of the facility began in 1980 (Minney, Ref. #5), and was apparently the first improvement on the land. The two underground fuel storage tanks were installed by Challenge during the final phase of the building construction in 1980. The facility is used as a distribution center for dairy products. It encompasses one section of the business park and consists of one building and a parking area for trucks (see Chapter 2.0). The two steel 10,000 gallon underground tanks contained diesel and gasoline required for the trucks.

1.3.1 SITE ASSESSMENT

R. and B. Property, Inc. contracted with A.D. Selditch and Associates in June 1990 to perform a site assessment of the Catalina Business Park. The report that followed outlined a "limited program of soil and groundwater sampling ... executed on the property to determine if the property has been impacted by the release of hazardous materials from off-site locations" (Selditch, Ref. #1).

During this program, seven sampling locations were drilled on the Challenge Dairy facility (see Figure 3-1). The results showed high TPH (19,900 mg/kg) at sampling location EB-2 near the Challenge Dairy underground fuel tanks. The Selditch report recommended that, "a probable solution would be removal of both tanks." (Selditch, Ref. #1).

1.3.2 SITE REMEDIATION

The two tanks and associated piping were removed on December 20, 1990 by construction contractor J. Quarle and Associates. A report prepared by Corrosion Engineering and Research Company analyzed the removed tanks. The report located areas where corrosion had penetrated the tank walls. Soil and water samples were taken on both December 20th and 26th. Sequoia Analytical, using an on-site mobile

laboratory, provided the sample analysis. Soil potentially contaminated with TPH and benzene, toluene, ethyl benzene, and xylenes (BTXE) was removed from the area around the two tanks and pipeline corridor, and stockpiled on the eastern edge of the property. The soil has been aerated to below 75 ppm TPH (per conversation with M. Campos, 8/14/91) and will be taken to a Class III disposal facility. Samples have been taken from this stockpiled dirt as shown in Section 4.6.

The area where the tanks were removed was excavated to approximately 14 feet. Eight feet of soil was excavated from the north loading dock area and the pipeline corridor. Additional sampling occurred in January, February, and May around the excavated areas as well as in other areas of the site. Groundwater collecting in the excavated pit is pumped out and treated before being discharged.

In December 1990, following telephone communications with the Alameda County Health Department, the excavated area (north of the building) where the tanks had been as well as in the vicinity of the pipeline was backfilled with clean off-site material to prevent damage to the structural integrity of the building. Figure 1-3 shows areas which have been backfilled. Figure 1-4 provides a color photograph of the backfilled area where the tanks were revomed, as well as a photograph of the excavation where the fuel dispenser pumps were located.

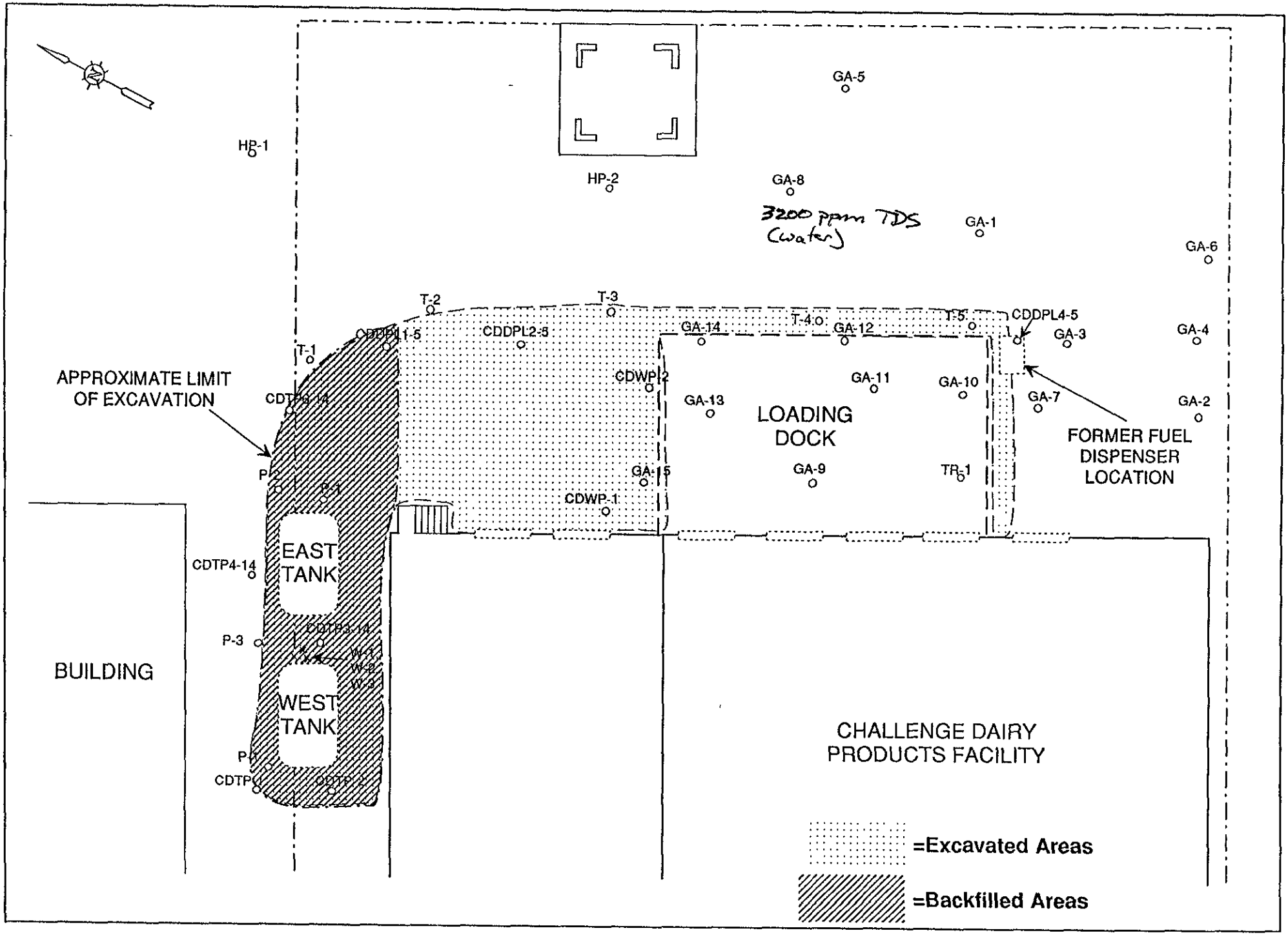
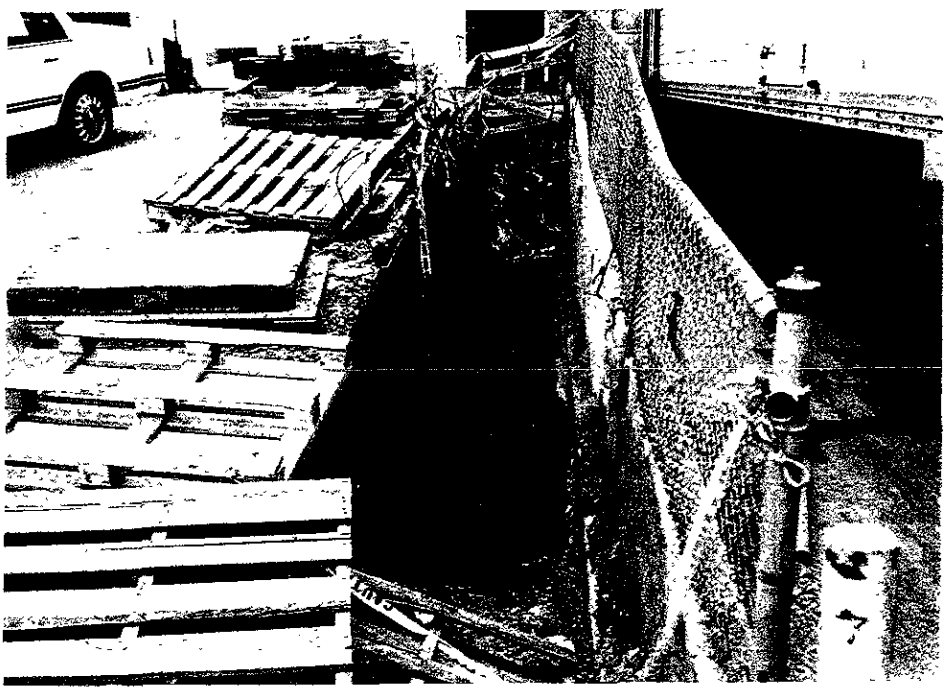


Figure 1-3: Excavated and Backfilled Areas

Location of Excavated Tanks Showing Partial Backfill
(Photo Facing West)



Location of Excavated Fuel Pumps
(Photo Facing West)

Figure 1-4: Photographs of Excavated Areas.
Date of Photos: 8/2/91.

2.0 SITE DESCRIPTION

The Catalina Business Park is located in southwest San Leandro approximately 0.8 miles east of the San Francisco Bay. The Challenge Dairy Products Inc. distribution facility consists of one lot (# 87) of the Park. The lot contains one single story building with approximately 26,400 square feet of floor space (163' x 163'). The lot itself is approximately 56,900 square feet, 30,475 square feet of which is used for truck parking and landscaping (see Figure 2-1). The truck parking area is covered in asphalt ranging from 3 to 4 inches in thickness. A six inch thick loading dock pad made of concrete is located on the south-east side of the building. This concrete pad underlaid both loading dock areas before soil excavation operations removed the northern portion (see Figure 2-2).

The two removed underground storage tanks were located end-to-end just north of the building on the center line between lot 87 and 81 (see Figure 2-2).

2.1 SITE GEOLOGY

The area was historically a tidal marsh or mud-flat combined with intermittent inlet channels. Sand and gravel fill ranging from 0.5 feet to 1.5 feet in thickness underlies the asphalt. In the southwest areas of the site, a fill consisting of broken asphalt, concrete, black sand and dark reddish brown sand was found ranging from 1.5 feet to 6.5 feet in thickness (Golder, Ref. #3). This fill was apparently deposited in the late 1960s (Minney, Ref. #5). Debris, such as spark plug cables and a fan belt, was found in this fill approximately four to five feet below the ground surface in the area of the excavated loading dock (per conversation with Tom Ditto, 8/14/91). Beneath this fill is a layer of native clays and silts ranging from 3.5 feet to 9 feet in thickness. Approximately 14 feet below ground surface, an olive colored sand begins to appear, characteristic of natural bay channel deposits. Figure 2-3 is a generalized cross section of the upper 15 feet of the subsurface.

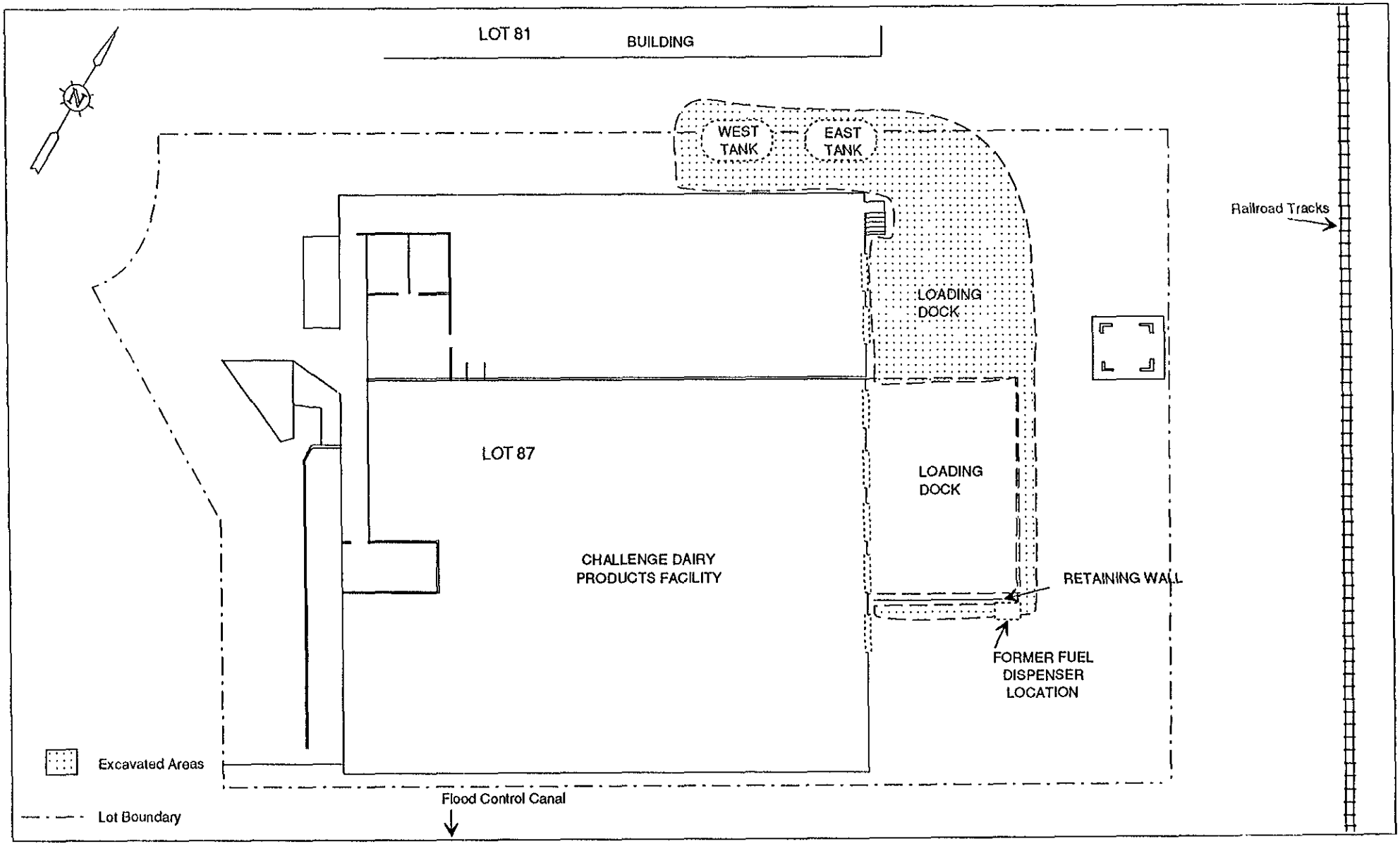


Figure 2-1	Uribe & Associates
SITE PLAN	CHALLENGE DAIRY PRODUCTS FACILITY UNDERGROUND TANK REMOVAL

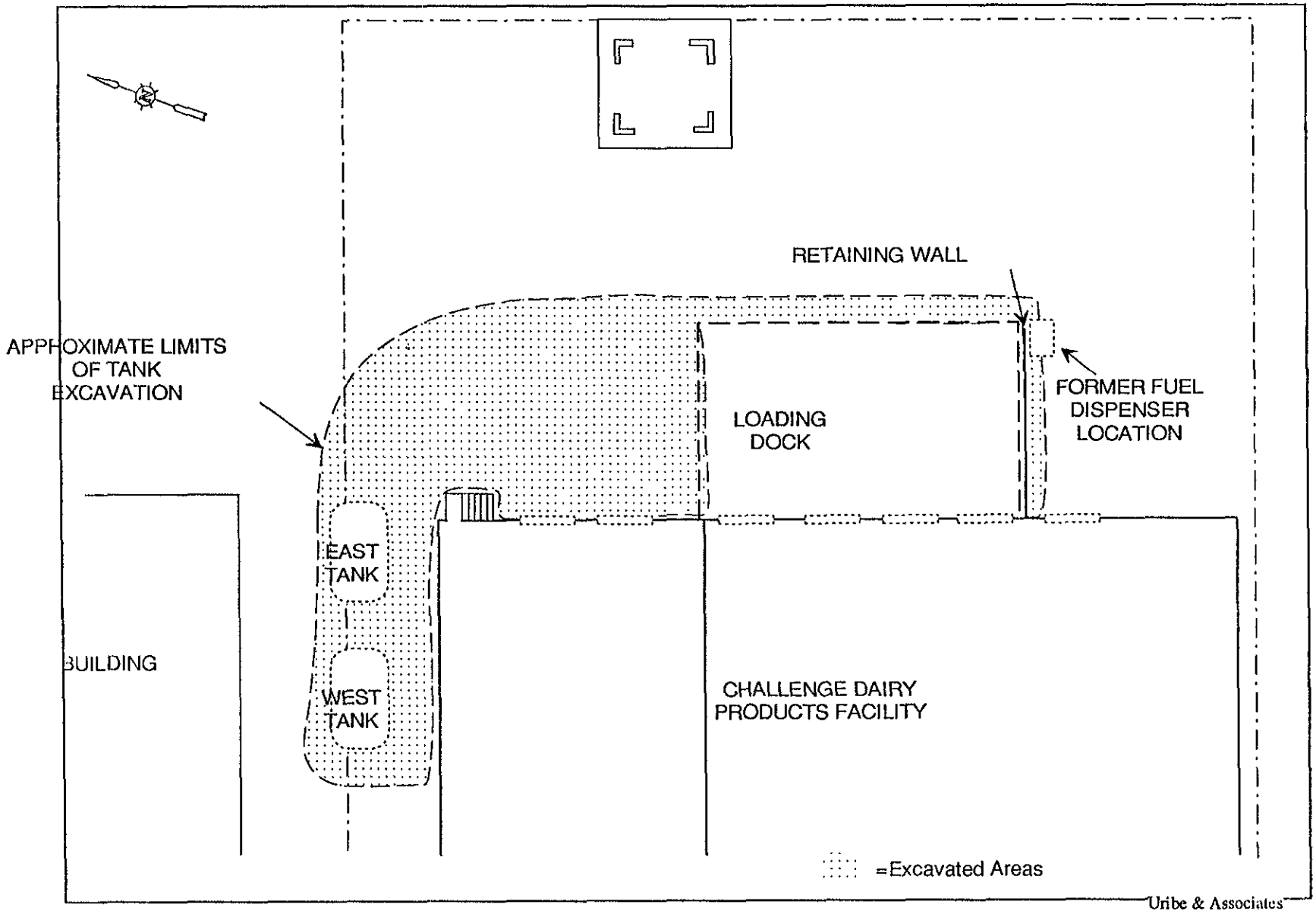


Figure 2-2: Excavated Area - Challenge Dairy Facility

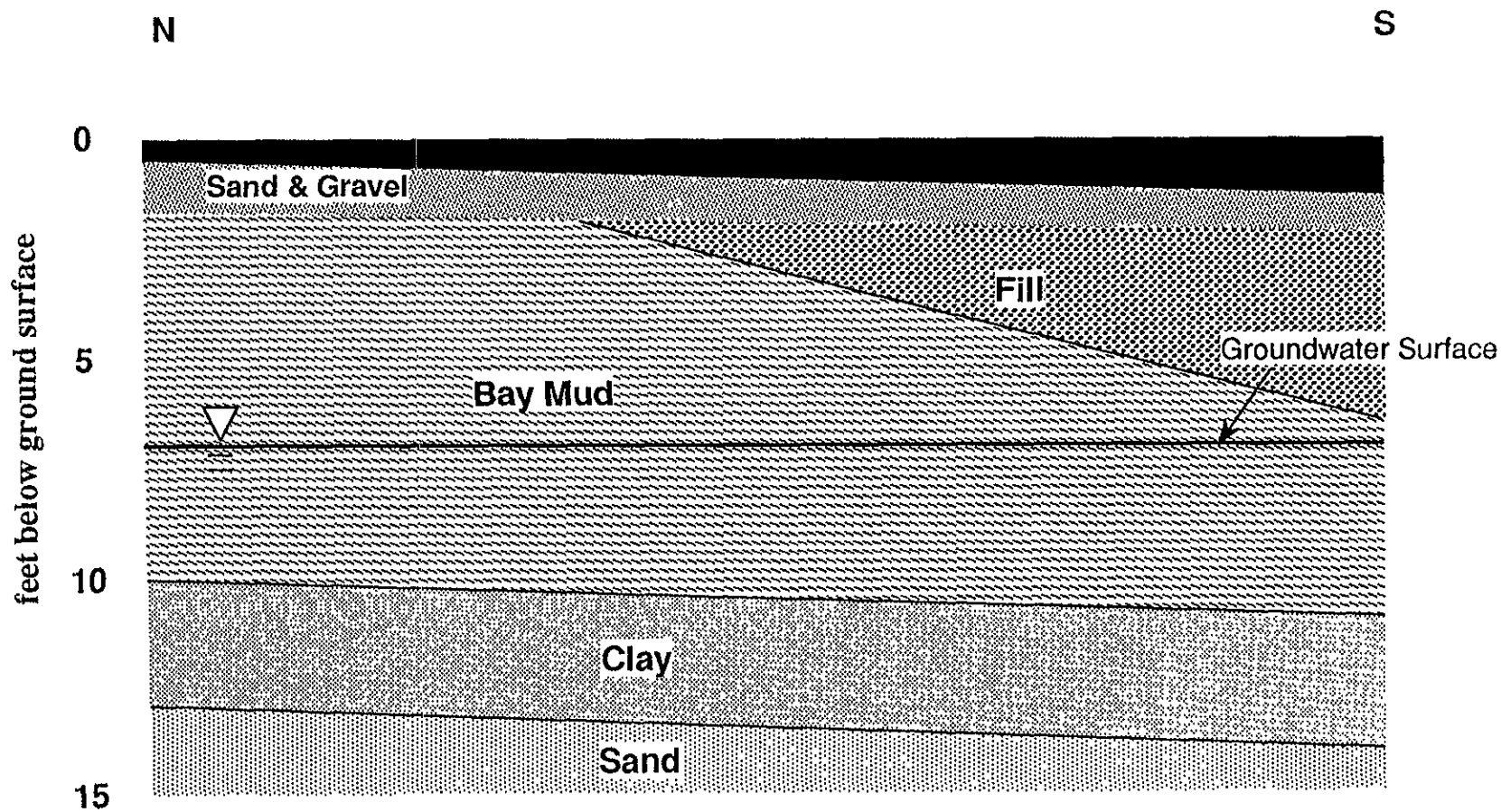


Figure 2-3	Uribe & Associates
GENERALIZED (N-S) CROSS SECTION	CHALLENGE DAIRY PRODUCTS FACILITY UNDERGROUND TANK REMOVAL

2.1.1 GEOLOGY SURROUNDING THE SITE

In the environmental property assessment of June 28, 1990, Selditch (Ref.#1) reported:

> Information available from the United States Geologic Survey (USGS) indicates the near surface (generally less than 10 feet below ground surface) geologic deposits underlying the property are composed of unconsolidated, water-saturated, dark, plastic clay and silty clay rich in organic material. These deposits interfinger with alluvial deposits along the margins of the bay....

2.1.2 HYDROGEOLOGY

In the environmental property assessment of June 28, 1990, Selditch (Ref.#1) reported:

> The property overlies the western portion of the East Bay Plain aquifer system, a sub-regional aquifer that encompasses most of the area from the base of the Diablo Range to the Bay margin and the Cities of Berkeley, Emeryville, Oakland, San Leandro, and San Lorenzo. Based on a limited soil and groundwater investigation conducted on the property...the depth to first groundwater in the vicinity of the property averages approximately 7 feet below ground surface with a range of depths between 4 feet and 10.5 feet below ground surface.
>
> A major east-west trending flood control canal is located immediately south of the property at a distance of less than .15 miles. According to a USGS topographic map, the canal is in hydraulic continuity with San Francisco Bay, and therefore contains water subject to tidal influence throughout a given year.

2.1.3 WATER QUALITY

Water samples were taken from one sample location (GA-8) and tested for standard water quality. The results of this analysis indicate brackish groundwater with total dissolved solids (TDS), 3200 ppm, at concentrations above the SWRCB criteria for

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

J. Quarle & Associates	Client Project ID:	Challenge Dairy/San Leandro	
620 Marina Blvd.	Sample Descript:	Water	
San Leandro, CA 94577	Analysis Method:	Membrane Filtration	
Attention: Jack Quarle	First Sample #:	105-2389	Reported: May 21, 1991

BACTERIOLOGICAL ANALYSIS: TOTAL COLIFORM

Sample Number	Date Sampled and Received	Sample Description	Total Coliform Bacteria CFU/100 mL
105-2389	5/16/91	GA-8/7042-GA8-WC	26

SEQUOIA ANALYTICAL

Tickie Tague
Project Manager

Please Note:
The State of California Drinking Water Standard is less than one Colony Forming Unit (CFU) per 100 mL

Uribe & Associates

Figure 2-4: Water Quality Analysis for Sample GA-8

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

J. Quarle & Associates	Client Project ID:	Challenge Dairy, San Leandro	Sampled: May 15, 1991
620 Marina Blvd.	Sample Descript:	Water, GA-8	Received: May 15, 1991
San Leandro, CA 94577			Analyzed: May 16-28, 1991
Attention: Jack Quarle	Lab Number:	105-2129	Reported: May 28, 1991

GENERAL MINERAL & INORGANIC CHEMICAL ANALYSES

Analyte	Detection Limit mg/L (ppm)	Sample Results mg/L (ppm)
Aluminum	0.10	2.0
Arsenic	0.0050	0.0070
Barium	0.10	N.D.
Bicarbonate Alkalinity	1.0	420
Cadmium	0.010	N.D.
Calcium	1.0	40
Carbonate Alkalinity	2.0	N.D.
Chloride	0.20	1,100
Chromium	0.0050	N.D.
Copper	0.010	N.D.
Fluoride	0.10	2.4
Hardness	1.0	230
Hydroxide Alkalinity	0.10	N.D.
Iron	0.010	2.2
Lead	0.0050	0.014
Magnesium	1.0	31
Manganese	0.010	0.36
Mercury	0.00020	N.D.
Nitrate as NO3	1.0	N.D.
pH (pH units)	N.A.	8.1
Potassium	1.0	28
Selenium	0.0050	0.0050
Silver	0.010	N.D.
Sodium	0.50	850
Specific Conductance (µmhos/cm)	1.0	4,800
Sulfate	0.10	600
Surfactants	0.020	0.056
Total Dissolved Solids	1.0	3,200
Zinc	0.010	0.024
Boron	0.10	1.7

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

VMTague

Vickie Tague
Project Manager

Please Note:
Amended report May 28, 1991.

1052129.JJJ <1>

Uribe & Associates

Figure 2-5: Water Quality Analysis for Sample GA-8 Cont.

"sources of drinking water" (SWRCB Resolution 88-63). Figure 2-4 and 2-5 summarizes the water quality data analyzed on samples taken from boring GA-8.

2.2 SURROUNDING AREA

The surrounding area consists of industrial yards, a railroad thoroughfare, the Estudillo Flood Control Canal, and bay marshes. A former landfill located down-gradient from the site has been converted into a golf course.

Thirteen underground tank leaks are listed within a one-half mile radius of the site. An adjacent property (Coast Crane) is listed on the "Cortese List" (Office of Planning and Research, Hazardous Waste and Substances Sites List).

3.0 METHODS AND PROCEDURES

3.1 INTRODUCTION

This chapter describes the methods and procedures used in the investigation of soil and groundwater contamination at the site. It is divided into four sections covering the four phases of the investigation. This summary report is based on the reports prepared for each phase of the site investigation. Each section below includes a discussion of the goals of each event, the methods used for soil sampling, boring locations (and rationale), water sampling procedures, and decontamination and disposal of contaminated equipment and materials. Sampling quality control/quality assurance methods (e.g., blanks, duplicates, splits) are not discussed in the previous reports.

3.2 PHASE 1 - SELDITCH PROPERTY ASSESSMENT JUNE 28, 1990

3.2.1 GOAL

The first phase of the site investigation was an environmental property assessment conducted by A. D. Selditch & Associates, Inc.; the Selditch report is dated June 28, 1990. The goal was to identify potential sources of environmental contamination and future liability for the property owners. One area of potential liability was the underground storage tanks at the Challenge Dairy facility and soil boring was conducted to evaluate the underground tanks.

3.2.2 SOIL SAMPLING

Selditch personnel collected soil and groundwater samples from 7 borings in the vicinity of the Challenge Dairy Facility.

3.2.3 BORING LOCATION

The boring locations are shown in Figure 3-1. The goal of the borings was to determine if the storage tanks were leaking.

3.2.4 WATER SAMPLING

One water sample is included in the Selditch Property Assessment (Ref.#1) data set for the lot which Challenge Dairy leases. There is no discussion of methods for collection. The sample was analyzed by EPA Method 8015 (TPH) and EPA Method 625 (semi-volatile organic compounds).

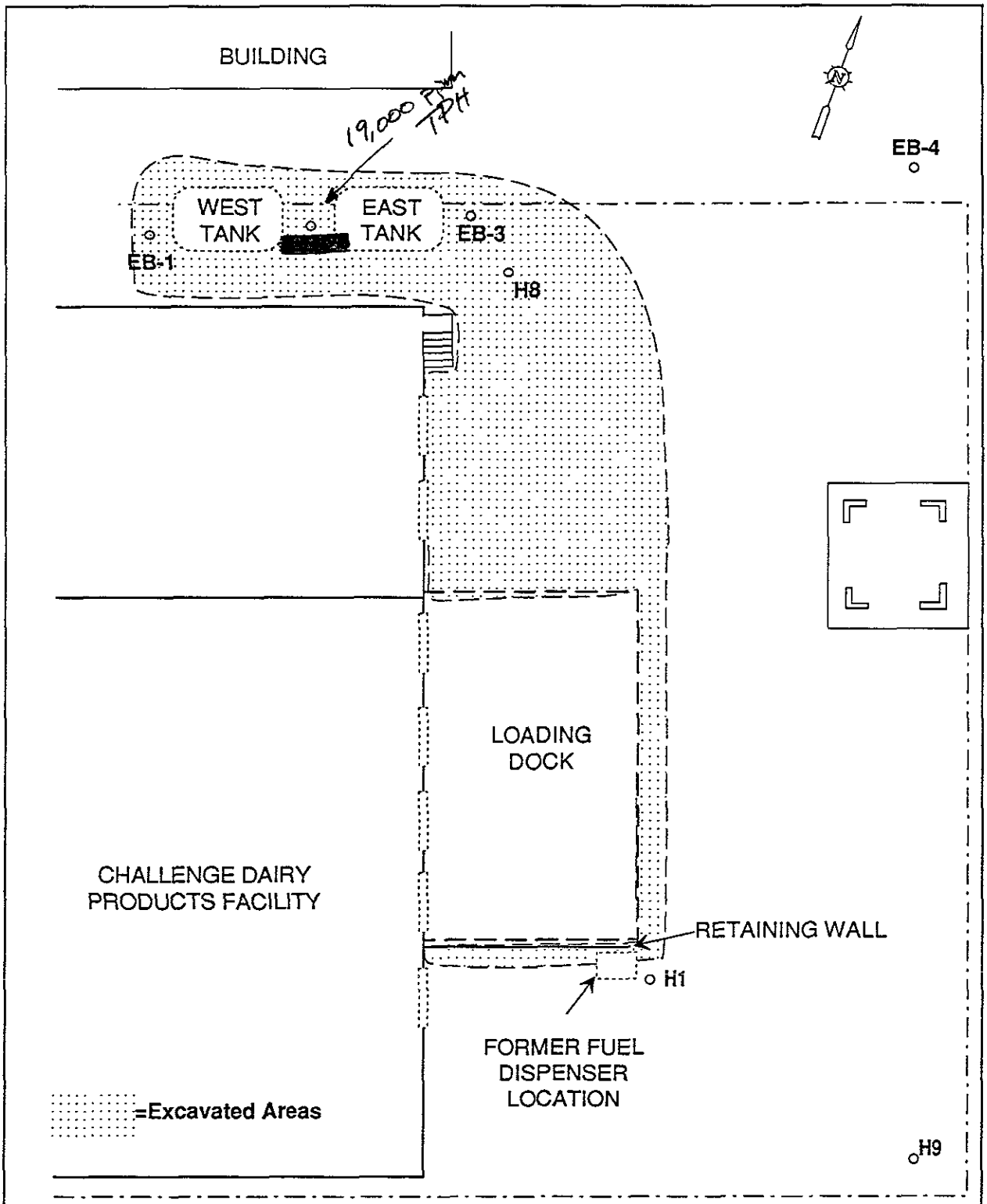
3.3 PHASE 2 - GOLDER REPORT OF TANK REMOVAL MARCH 15, 1991

3.3.1 GOALS

The goals of this program were to remove the tanks and product lines, and assess the need to excavate additional soil to remove contamination to the extent possible. A report was prepared by Golder Associates, Inc. (Golder, Ref. #2) who conducted the sampling for the tank-pull contractor, J. Quarle & Associates. The excavations were observed by Mr. Mike Bakaldin of the San Leandro Fire Department.

3.3.2 SOIL SAMPLING

Golder Associates collected nine soil samples from the pit and trench excavations on December 20, 1990. Most of the soil samples were collected by pushing brass liners into soil removed from the sides and bottom of the excavation with a backhoe. One sample was collected with a Xytec sampling system by driving a sampler with a brass liner into



Note: Locations are approximate.

Figure 3-1	Uribe & Associates
SOIL AND GROUNDWATER SAMPLE LOCATIONS FROM SELDITCH REF. #1	CHALLENGE DAIRY PRODUCTS FACILITY UNDERGROUND TANK REMOVAL

Modified from Golder Associates Inc., Ref. #2

the side wall of the excavation. Upon collection, the brass liners were immediately capped with aluminum foil and plastic end caps, and were placed in a cooler.

The tank pit excavation samples were analyzed for TPH as Diesel and Gasoline (EPA Method 8015, with two different extraction methods), and aromatic hydrocarbons, BTXE (EPA Method 8020). The product line trench excavation samples were analyzed for TPH as Diesel and BTXE.

3.3.3 BORING/SAMPLING LOCATIONS

The soil sampling locations were discussed with the San Leandro Fire Department representative who was on site during the excavation to inspect the excavation activities. A total of nine samples were collected. The sampling locations are given in Figure 3-2.

3.3.4 WATER SAMPLING

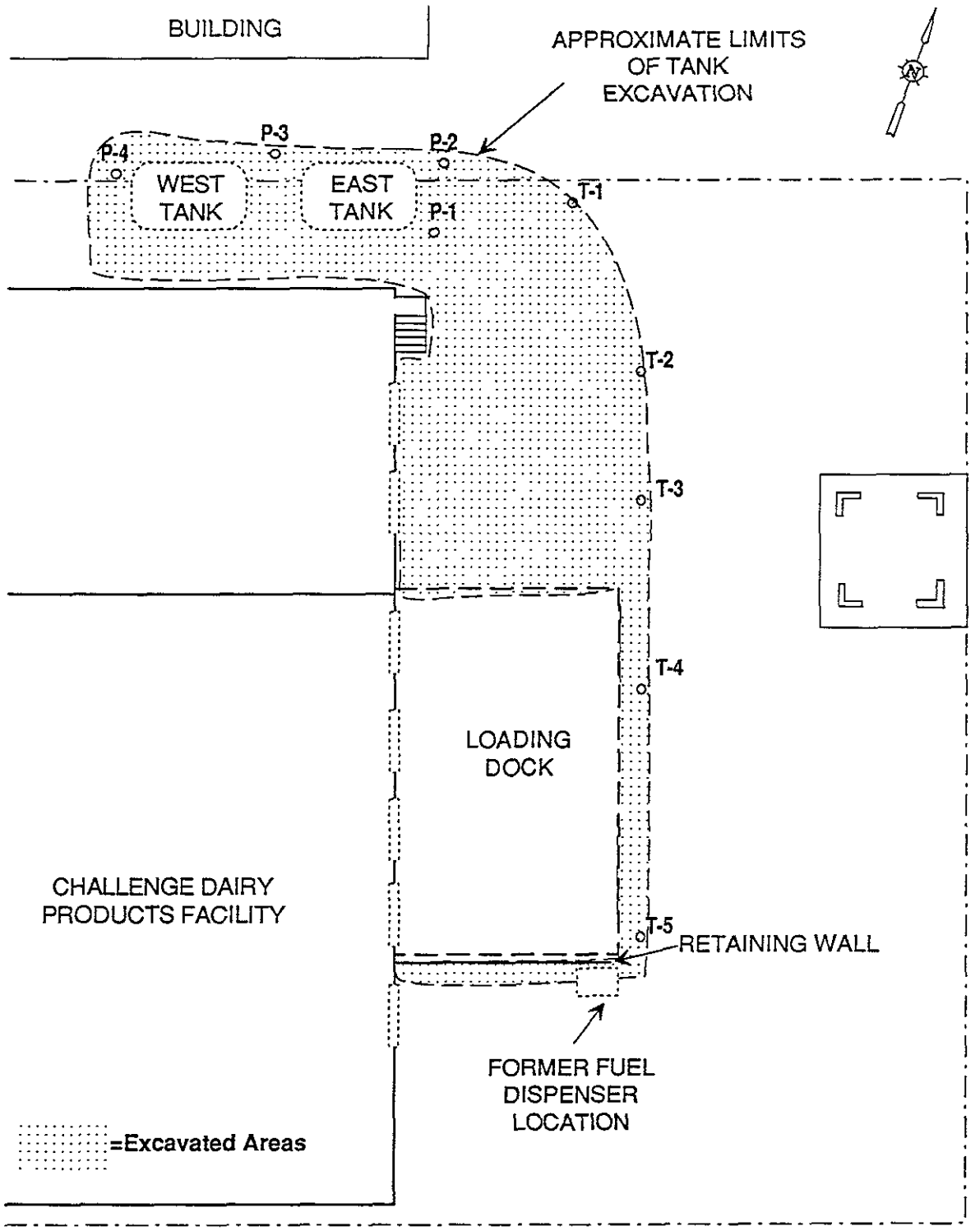
One water sample was collected from the tank excavation pit on December 20, 1990. The water sample was collected with a disposable PVC bailer.

3.4 PHASE 3 - GOLDER DELINEATION INVESTIGATION MARCH 27, 1991

3.4.1 GOALS

The goals of this phase were to attempt to delineate the extent of soil and groundwater contamination before clean-up levels and a remediation program were developed. A

UST closure



Note: Locations are approximate.

Figure 3-2	Uribe & Associates
SOIL AND GROUNDWATER SAMPLE LOCATIONS FROM GOLDER REF. #2	CHALLENGE DAIRY PRODUCTS FACILITY UNDERGROUND TANK REMOVAL
Modified from Golder Associates Inc., Ref. #2	

report was prepared by Golder Associates, Inc. on March 27, 1991 which describes the activities and results.

3.4.2 SOIL SAMPLING

Soil samples were collected from borings with a modified California sampler with brass liners. Samples were collected every 2.5 feet. After collection, the samples were capped with aluminum foil, plastic caps and sealed with electrical tape. The samples were then put in cooler and turned over to the mobile laboratory on-site. Two samples from each boring were submitted for laboratory analysis.

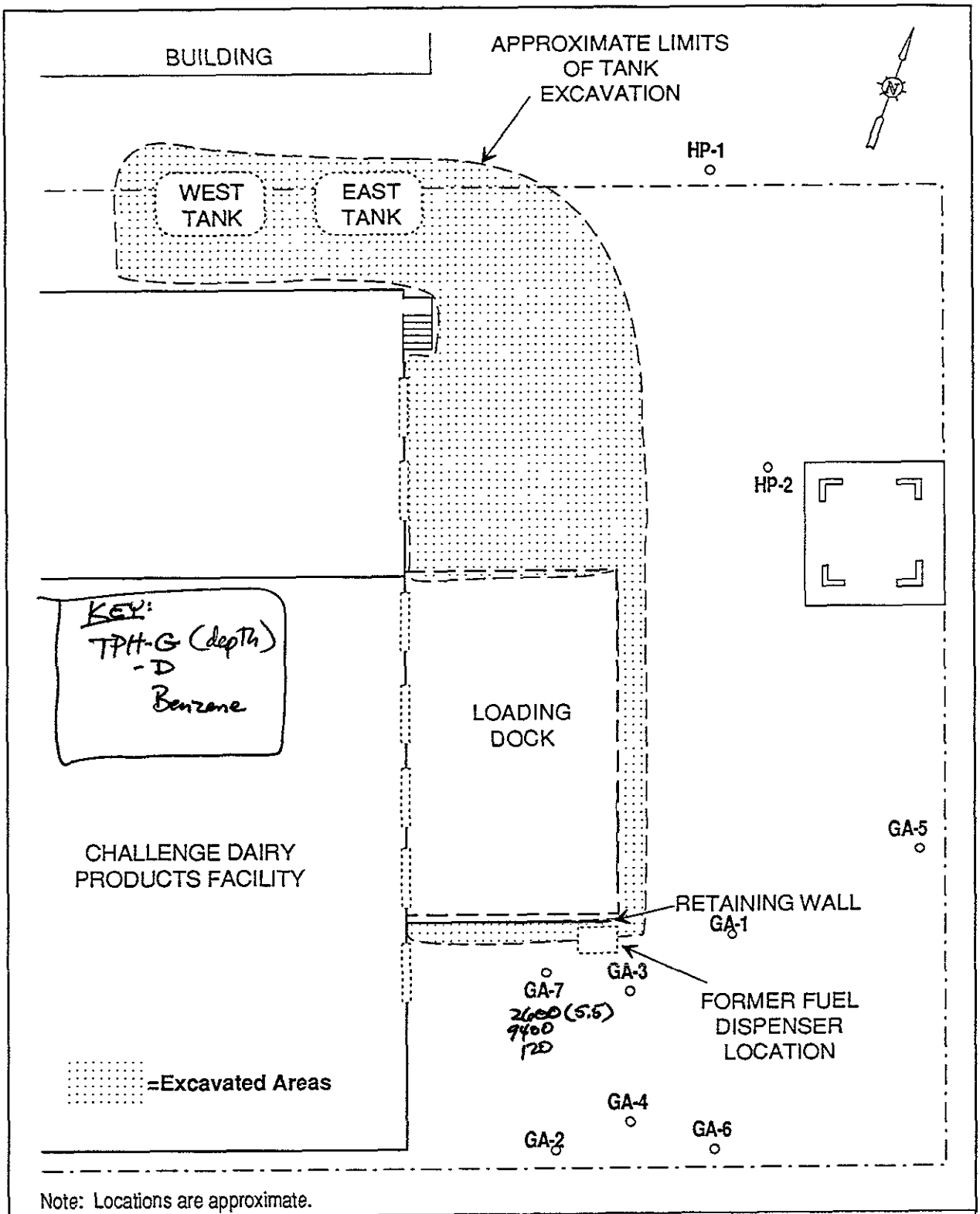
The soil samples were screened with a Thermo OVA.

3.4.3 BORING LOCATIONS

Sampling locations for this monitoring plan were selected by J. Quarle and Associates personnel and Challenge Dairy personnel. Locations were selected for seven borings for soil samples, and two borings for hydro-punch water samples. The boring locations are given in Figure 3-3.

3.4.4 WATER SAMPLING

Water samples were collected from the soil borings (GA-1 through GA-7) with a two inch Teflon™ bailer. The hydro-punch borings (HP-1 and HP-2) were attempted in order to collect additional water samples. One of the hydro-punch borings did not encounter sufficient water flow to collect a sample. The other boring was able to collect a groundwater sample from approximately 17 feet below ground surface (which is approximately 10 feet below the groundwater surface). A total of 7 water samples were collected and submitted to the mobile laboratory for analysis. The results of the analysis are summarized in Section 4.



Note: Locations are approximate.

Figure 3-3

SOIL AND GROUNDWATER SAMPLING LOCATIONS FROM GOLDER REF. #3

Uribe & Associates

CHALLENGE DAIRY PRODUCTS FACILITY
UNDERGROUND TANK REMOVAL

Modified from Golder Associates Inc., Ref. #2

3.4.5 DECONTAMINATION AND DISPOSAL

The equipment used in each boring was steam-cleaned prior to drilling and between borings. Soil sampling equipment and water sampling equipment was washed with a non-phosphate detergent and rinsed with distilled water between sampling intervals. The borings were back-filled with a sand/cement grout.

3.4.6 ADDITIONAL CHARACTERIZATION

There were several additional borings installed by Golder Associates in May, 1991. The laboratory data are discussed in Chapter 4. The sampling locations are included on Figure 3-4.

3.5 PHASE 4 - DATA GENERATED BY J.M. MINNEY

3.5.1 GOALS

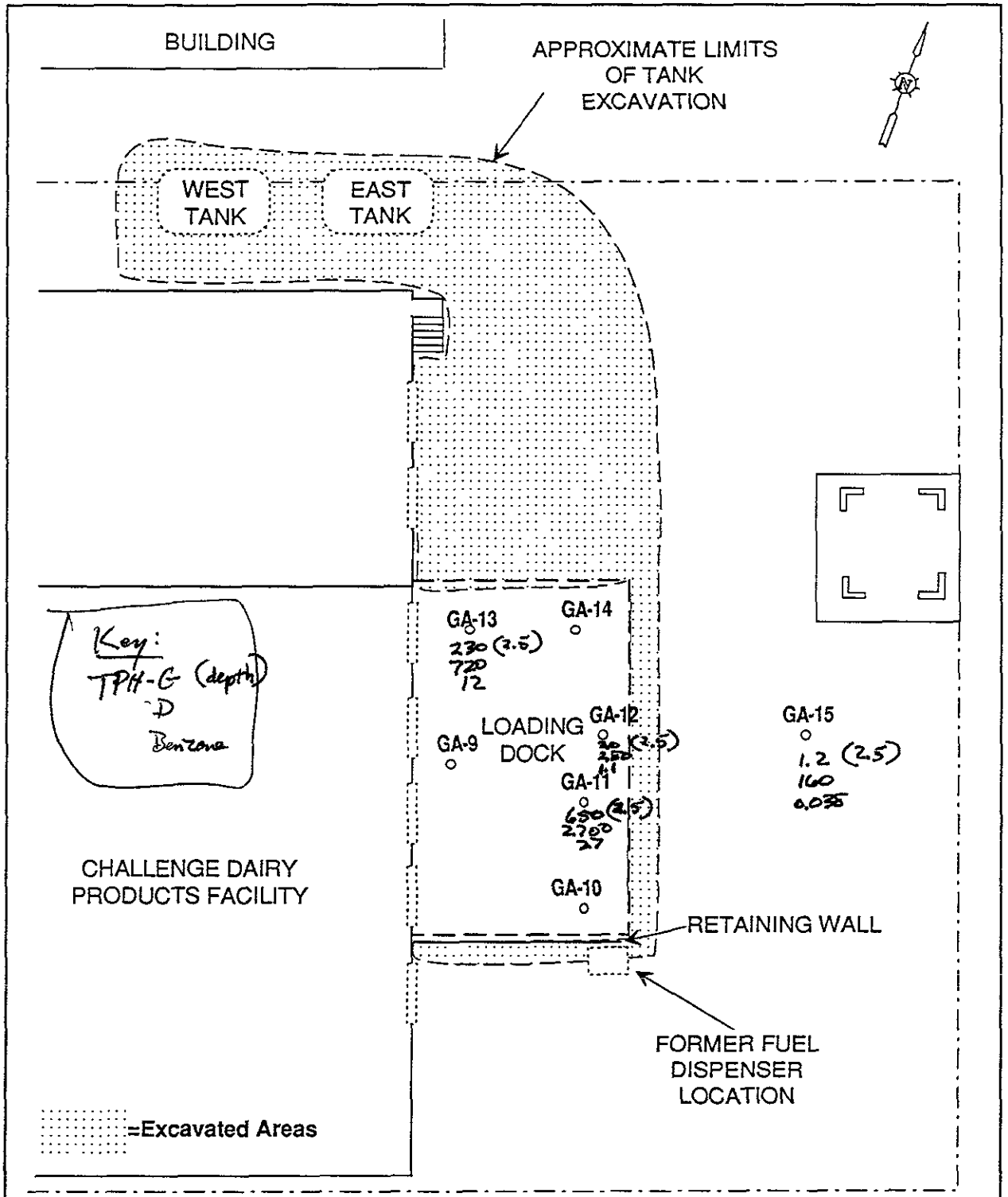
The goal of this phase was to address the need for remediation activities other than the removal of the tanks and to propose clean-up levels for the site soils. The phase was conducted by Golder Associates and the information summerized by J.M. Minney.

3.5.2 SOIL/WATER SAMPLING

This phase obtained three "background samples" adjacent to the site: Two soil samples and one water sample.

3.5.3 BORING/SAMPLING LOCATION

The sampling locations were 1) from the railroad bed adjacent to the site, 2) from the runoff area of the railroad bed, 3) a water sample from the end of the concrete flood control canal. The background sampling locations are shown on Figure 3-5. This information was provided by J.M. Minney.



Note: Locations are approximate.

Figure 3-4	Uribe & Associates
SOIL AND GROUNDWATER SAMPLE LOCATIONS FROM MINNEY,REF. #6	CHALLENGE DAIRY PRODUCTS FACILITY UNDERGROUND TANK REMOVAL

Modified from Golder Associates Inc., Ref. #2

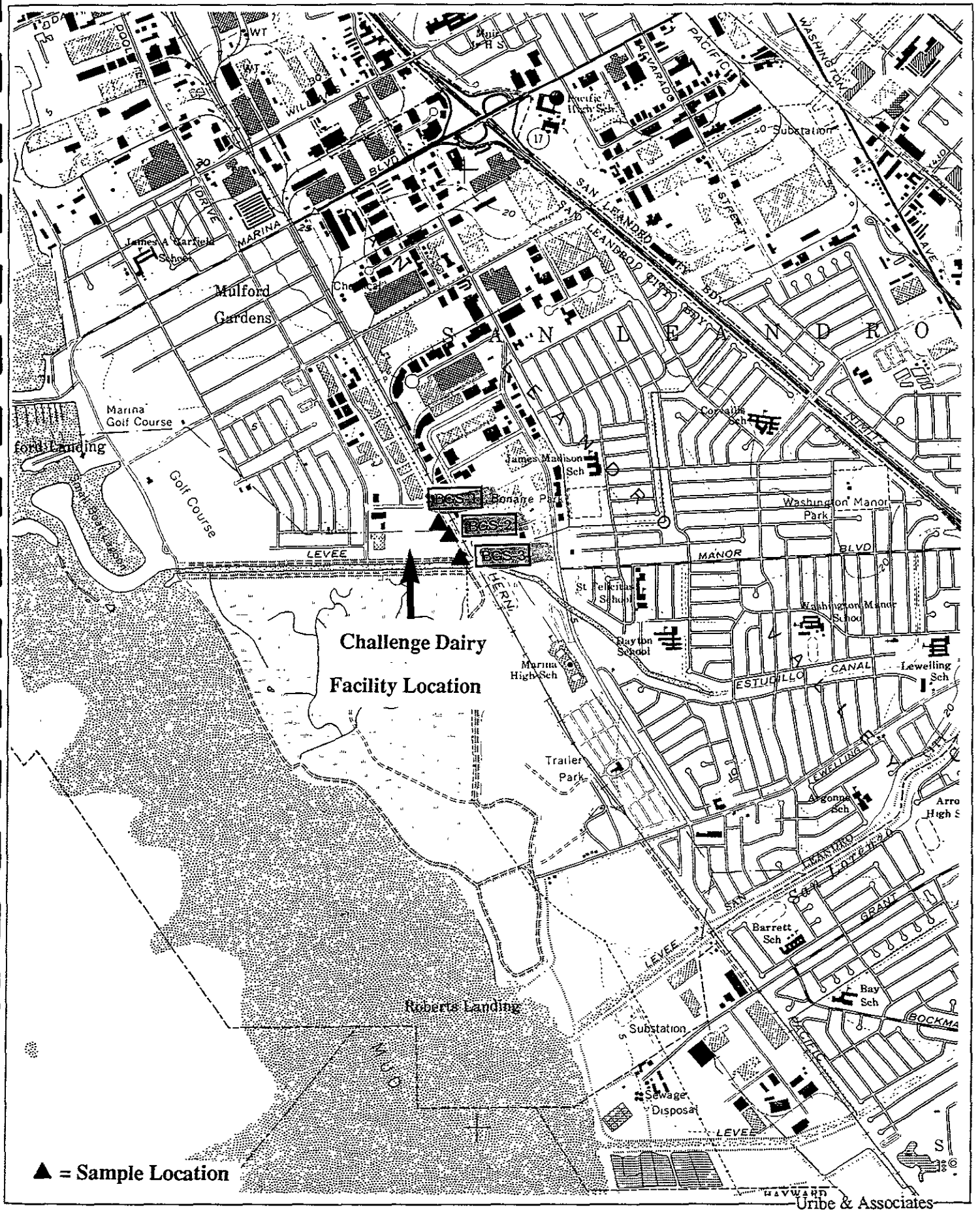


Figure 3-5: J. M. Minney Background Sample Locations

4.0 ANALYSIS RESULTS

4.1 INTRODUCTION

The analysis results for the four phases of the sampling program are presented in this section. The majority of the sample collection and analyses at the site were associated with Phase Two and Phase Three. Figure 4-1 presents all of the sampling locations at the Challenge Dairy Facility.

4.2 PHASE 1 - SELDITCH PROPERTY ASSESSMENT JUNE 28, 1990

On April 21, 1990, seven soil samples were collected from the area of the two underground storage tanks and from the area of the retaining wall at the fuel dispenser location. These samples were analyzed for Total Petroleum Hydrocarbons (TPH) with EPA Method 8015, at a detection limit of 1 ppm. Six of the seven soil samples did not have detectable levels of TPH. Sample EB-2 (See Figure 3-1), which was collected from a location between the two underground storage tanks, had 19,900 ppm of TPH. This contaminated soil was removed along with the tanks.

One water sample was collected and analyzed by EPA Method 8015 (TPH) and Method 625 (semi-volatile organic compounds). TPH was not detected at a detection limit of 5 ppm and semi-volatile organics were not detected at a detection limit of 2 ppb.

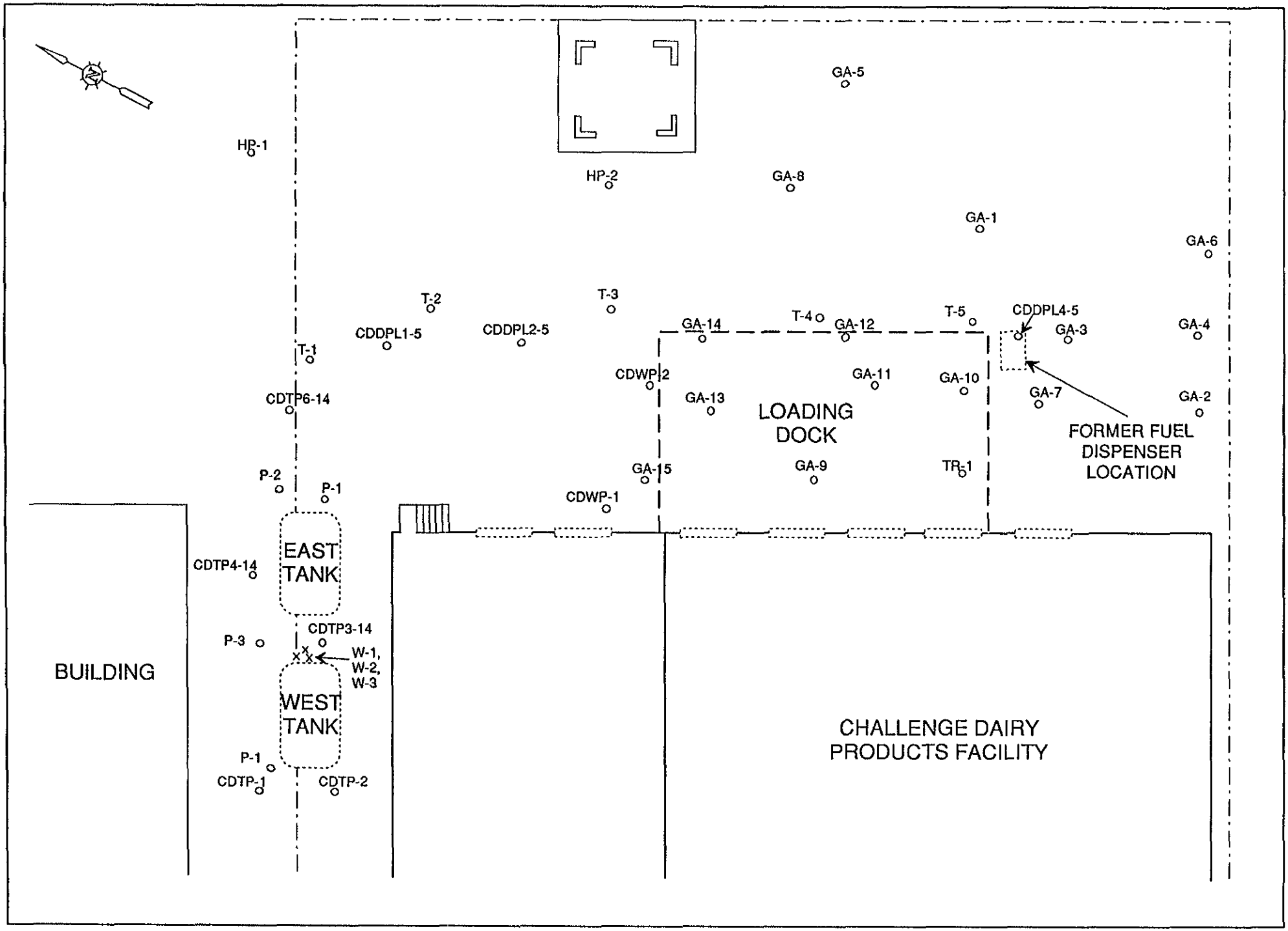


Figure 4-1: Sample Locations at Challenge Dairy Facility

4.3 PHASE 2 - GOLDER REPORT OF TANK REMOVAL MARCH 15, 1991

4.3.1 INTRODUCTION

On December 20, 1990, the underground storage tanks and the east product line were excavated and removed. After the equipment had been removed, soil and water samples were collected from the excavations. Soil and water samples were analyzed by the following EPA test methods:

- Method 8015, Total Petroleum Hydrocarbons (TPH) as Diesel. Detection limit of 1 ppm.
- Method 8015, Total Petroleum Hydrocarbons (TPH) as Gasoline. Detection limit of 1 ppm.
- EPA Method 8020, Aromatic Hydrocarbons or BTXE (Benzene, Toluene, Ethyl benzene, and Xylenes). Detection limit of 0.005 ppm.

Results from EPA Method 8015 can be referred to as TPH as Diesel or TPH as Gasoline, depending on whether the analyses are quantified against diesel or gasoline standards. Detected TPH that are quantified by these standards contain hydrocarbons that are constituents of diesel or gasoline. The results of the EPA Method 8015, TPH as diesel, analyses are summarized in Figure 4.3-A. The results of the EPA Method 8020 analyses for benzene are summarized in Figure 4.3-B.

4.3.2 SOIL SAMPLES

TPH as Diesel concentrations in soil samples ranged from below the detection limit to 13 ppm. The laboratory noted that the two samples with detectable levels of TPH as Diesel appeared to actually contain diesel. TPH as Gasoline concentrations in soil samples ranged from the detection limit to 8.6 ppm. The laboratory noted that the one Method 8015 sample with a detectable TPH concentration did not appear to contain gasoline.

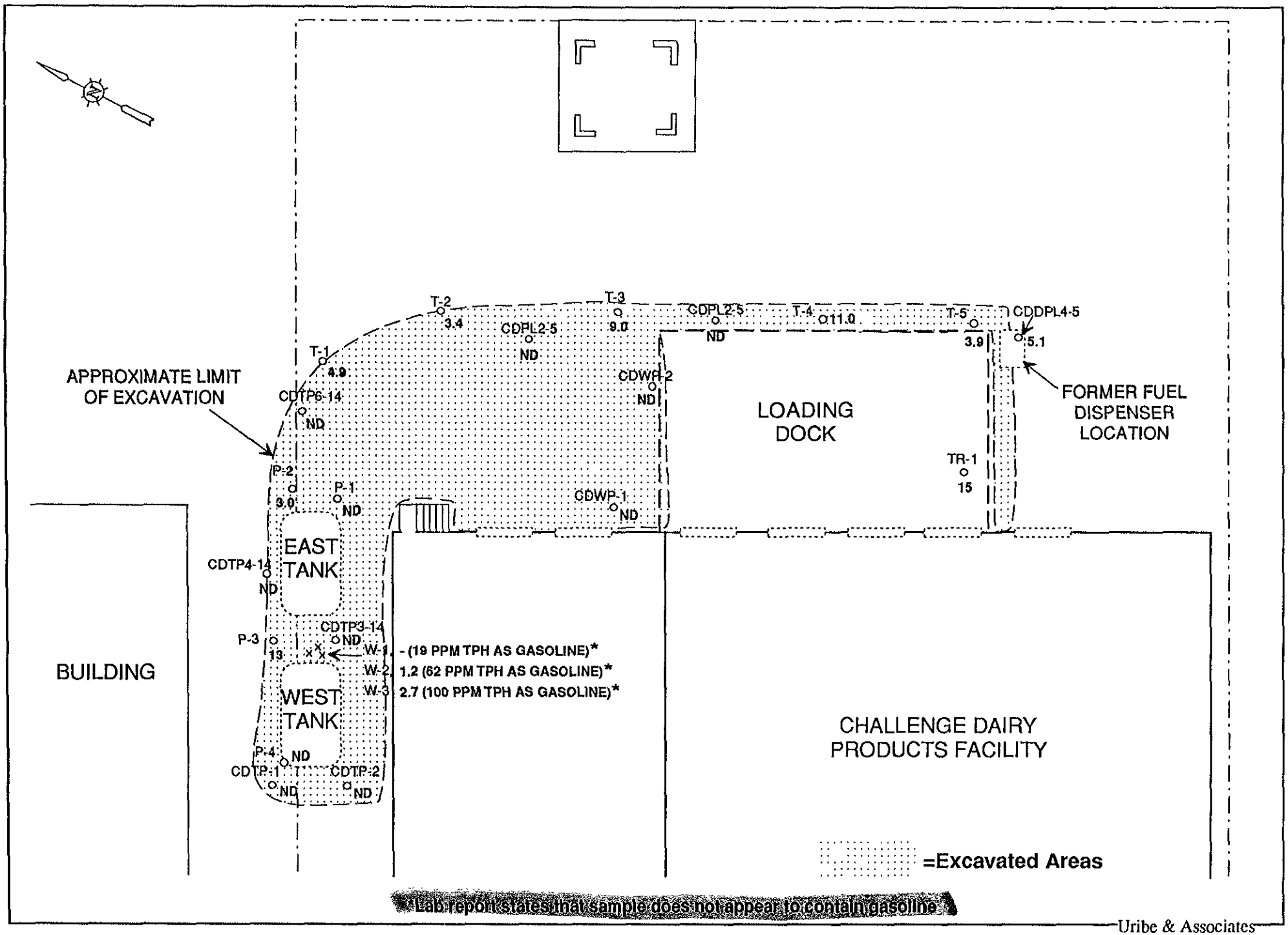


Figure 4.3-A: TPH as Diesel (Method 8015) in Excavated Areas (ppm)

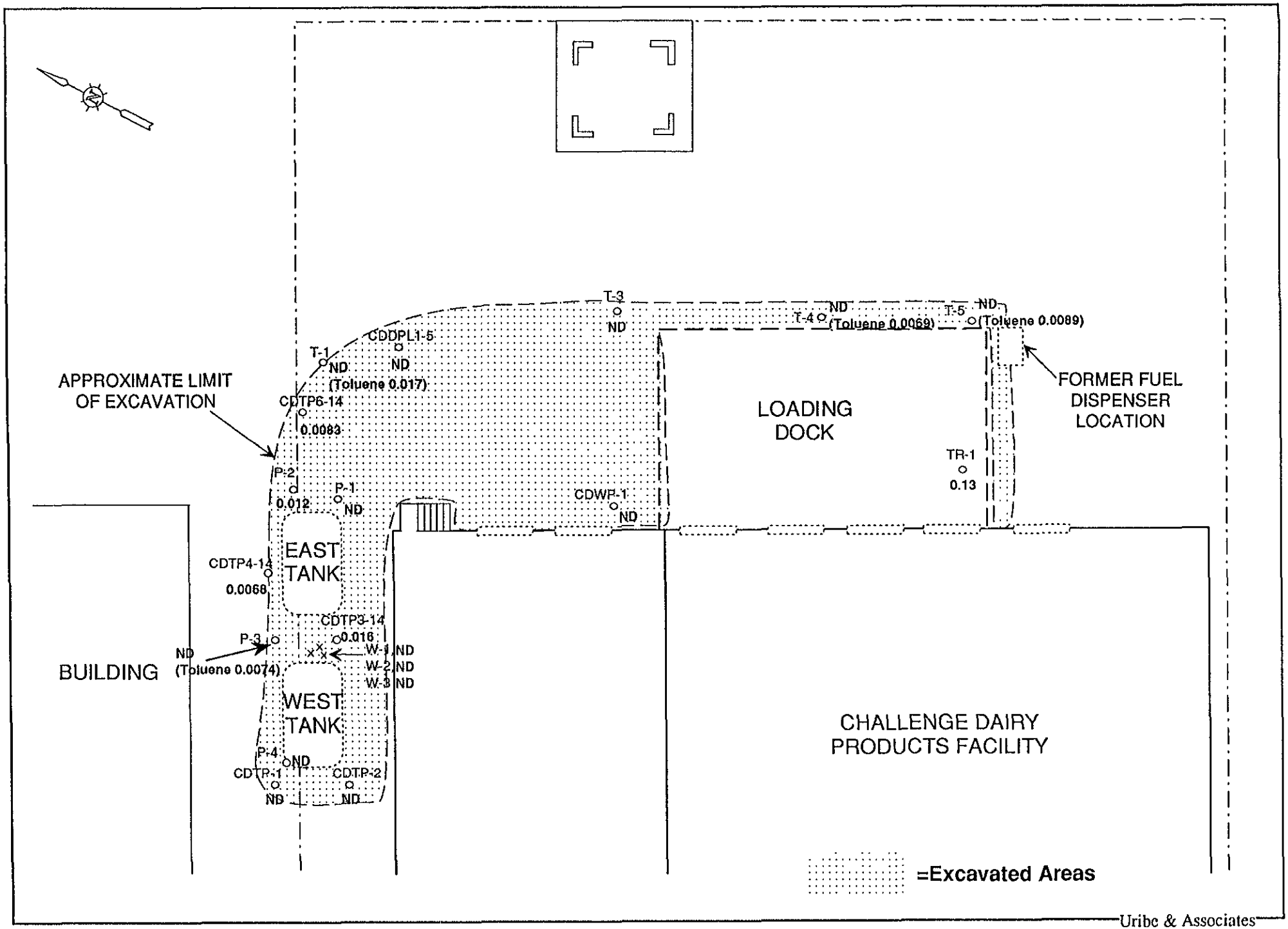


Figure 4.3-B: Benzene Levels (Method 8020) in Excavated Areas (ppm)

Four of the soil samples did not contain detectable levels of BTXEs. Benzene was detected in one sample at 0.012 ppm, toluene was detected in five samples (maximum concentration of 0.0074 ppm), ethyl benzene was detected in one sample at 0.0051 ppm, and xylenes were detected in one sample at 0.022 ppm.

4.3.3 WATER SAMPLES

BTXEs were not detected in any of the groundwater samples except HP-2 where a reading of 0.44 ppm was found. (See Section 4.6 for a discussion of standing water samples.) TPH as Gasoline concentrations ranged from 19 to 100 ppm, but the laboratory report states that the detected hydrocarbons did not appear to be gasoline. TPH as Diesel concentrations ranged from 1.2 to 2.7 ppm, but the laboratory report states that the detected hydrocarbons did not appear to be diesel.

4.4 PHASE 3 - GOLDER DELINEATION INVESTIGATION MARCH 27, 1991

4.4.1 INTRODUCTION

On February 21 and 22, 1991, soil and water samples were collected from seven boreholes and two hydropunch holes; only one of the hydropunch holes yielded groundwater samples. On May 15, 1991, soil samples were collected from an additional eight boreholes and one surface location. Samples were analyzed by the following EPA test methods:

- Method 8015, TPH as Gas and Diesel Detection limit of 1 ppm.
- Method 8015/8020, TPH with BTXE distinction. Detection limit of 1 ppm for TPH and 0.005 ppm for BTXE.

In the data summary, TPH results of Method 8015 are reported as Total Diesel and TPH results of Method 8015/8020 are reported as Total Gasoline.

Figures 4.4-A through 4.4-D summarize the TPH as Diesel results with respect to depth. Figure 4.4-A includes iso-concentration lines at 10 ppm and 100 ppm TPH as Diesel. Figures 4.4-E through 4.4-H provide a summary of the benzene data. Figure 4.4-E

includes iso-concentration lines at 0.10 ppm and 1.0 ppm benzene. As can be seen from the figures, the highest TPH and benzene levels found on the site were in a sample from the shallow depths beneath the loading dock and a sample collected adjacent to the former fuel dispenser. The site-maximum TPH and benzene levels of 9,400 ppm and 120 ppm, respectively, were found in the sample collected adjacent to the fuel dispenser. With the exception of one TPH analysis, detected levels of TPH and benzene were at least one order of magnitude lower than the site maximum values.

4.4.2 SAMPLES COLLECTED ON FEBRUARY 21 AND 22

The discussion of sample results from February 21 and 22, 1991 is excerpted from Reference 3 (Golder, Ref. #3).

Groundwater was encountered during drilling at approximately 11 to 12 feet in all the boreholes except GA-7 and hydropunch hole HP-1. At borehole GA-7, groundwater was encountered at a depth of 6.5 feet. Static water levels measured in boreholes after drilling indicate depth to groundwater is approximately 5.5 feet to 7.5 feet.

During soil borehole drilling and sampling, organic vapor monitoring was conducted on soil samples and auger cuttings. The results of the soil and fill materials sampled ranged from 0 to 2 ppm except in a sample collected from borehole GA-7 to a depth of 5 feet, where a reading of 332 ppm was observed. This sample of fill material with visible hydrocarbon contamination was retrieved from 5 feet .

The results of the laboratory chemical analyses indicate the presence of diesel in all the boreholes, except GA-1, with concentrations ranging from 4.5 ppm at a depth of 3.5 feet in borehole GA-5 to 9400 ppm at a depth of 5.5 feet in borehole GA-7. The concentrations of TPH as diesel appear to show decreasing concentration with depth, with the exception of boreholes GA-3 and GA-7 which appear to increase in concentration with depth. TPH as gasoline was not reported in any of the soil samples collected, with the exception of borehole GA-7. Gasoline was reported at a concentration of 4.9 ppm at a depth of 4.5 feet and 2600 ppm in a sample collected at a depth of 5.5 feet in borehole GA-7. Low levels of benzene, toluene, ethyl benzene and xylene (BTXE) were also reported in all boreholes with the exception of borehole GA-4, where BTXE was not detected above the reported detection limit of 0.0050 ppm. The results of the benzene analysis of soil samples indicate concentrations ranging from a low of 0.0096

ppm at a depth of 3.5 feet at borehole GA-5 to a high of 120 ppm at a depth of 5.5 feet at borehole GA-7. The results of the analyses indicate the presence of toluene ranging in concentration from 0.0061 ppm at a depth of 12.5 feet in borehole GA-6 to 4.5 ppm at a depth of 5.5 feet in borehole GA-7. Ethyl benzene was identified above the detection limit at GA-7 from 0.0098 ppm (4.5 feet) to 89 ppm (5.5 feet). Xylene identified above the detection limit ranged from 0.0096 ppm at GA-5 (3.5 feet) to 310 ppm at GA-7 (5.5 feet).

TPH as diesel was reported in all borehole groundwater samples ranging in concentration from 64 ppb in hydropunch hole HP-2 to 360 ppb in borehole GA-2. TPH as gasoline as well as BTXE were not detected in any of the groundwater samples analyzed, with the exception of hole HP-2 where benzene was detected at a concentration of 0.44 ppb.

4.4.3 SAMPLES COLLECTED ON MAY 15

All but one of the boreholes drilled on May 15 were located under the loading dock. A single surface sample was also collected under the loading dock. TPH as gasoline was only detected at depths of 2.5 feet. Five of the six samples collected at 2.5 feet had detectable levels of TPH as gasoline , which ranged from 1.2 to 650 ppm. TPH as diesel was detected in samples collected from 2.5 and 5.0 feet. Five of the six samples collected at 2.5 feet had detectable levels of TPH as diesel, which ranged from 23 to 2,700 ppm. The surface sample under the loading dock had 15 ppm TPH as diesel. Five of the six samples collected at 5 feet had detectable levels of TPH as diesel, which ranged from 1.2 to 84 ppm.

Detectable levels of BTXEs generally coincide with the presence of TPH as diesel, with the exception of one sample from 10 feet in borehole GA-11 and one sample from 15 feet in borehole GA-8. In these samples TPH as diesel is not detected at 1 ppm, while benzene is present at concentrations of 0.017 and 0.021 ppm. Samples located 5 feet above these two samples did not have detectable levels of BTXEs.

The data from phases 3 and 4 are summarized in Tables 4.5-A and 4.5-B; Table 4.5-A presents the analytical data and Table 4.5-A summarizes the character of the samples.

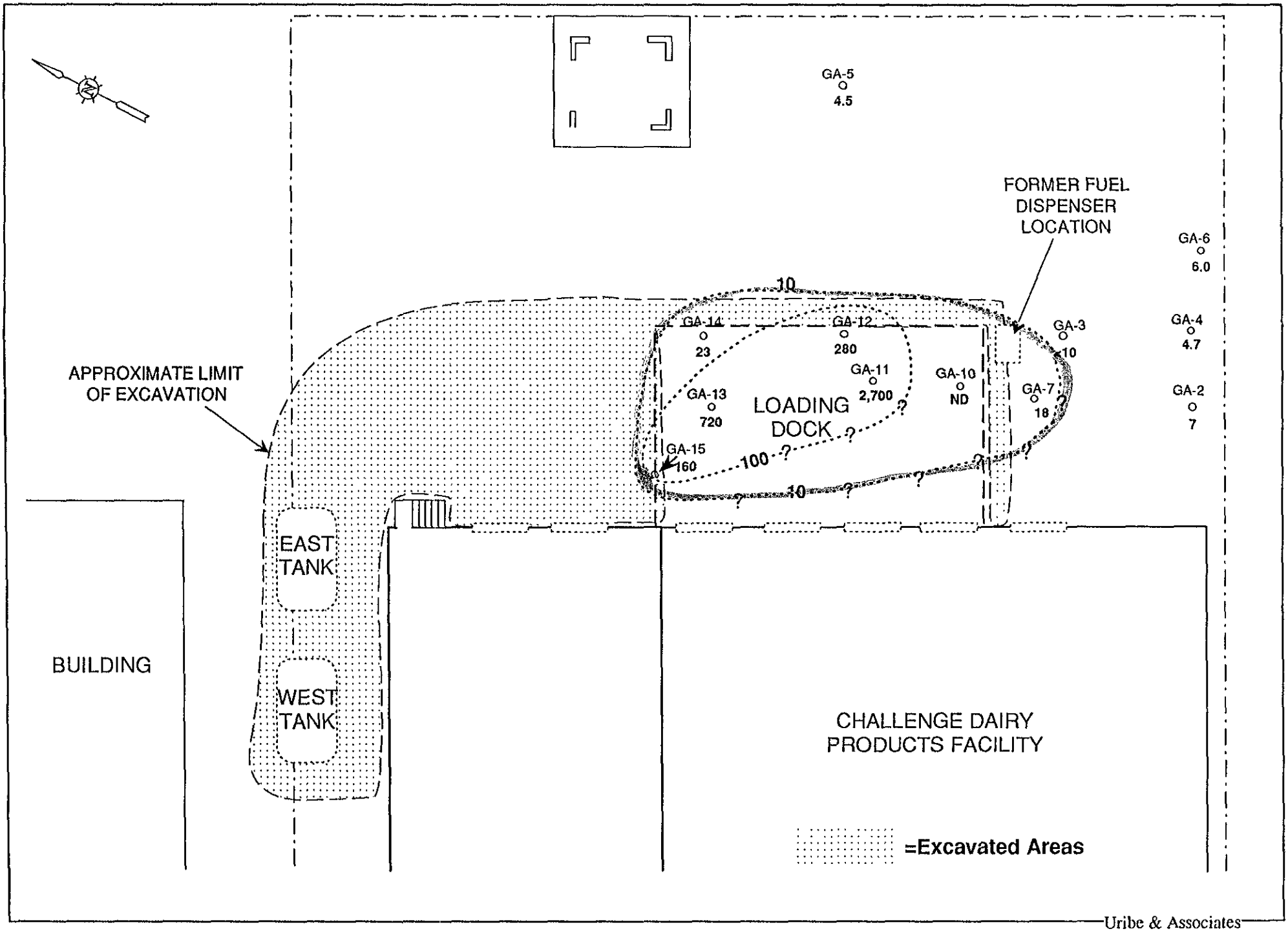


Figure 4.4-A: TPH as Diesel (Method 8015) in Site Soils (ppm)
2.5 to 4.5 foot depth

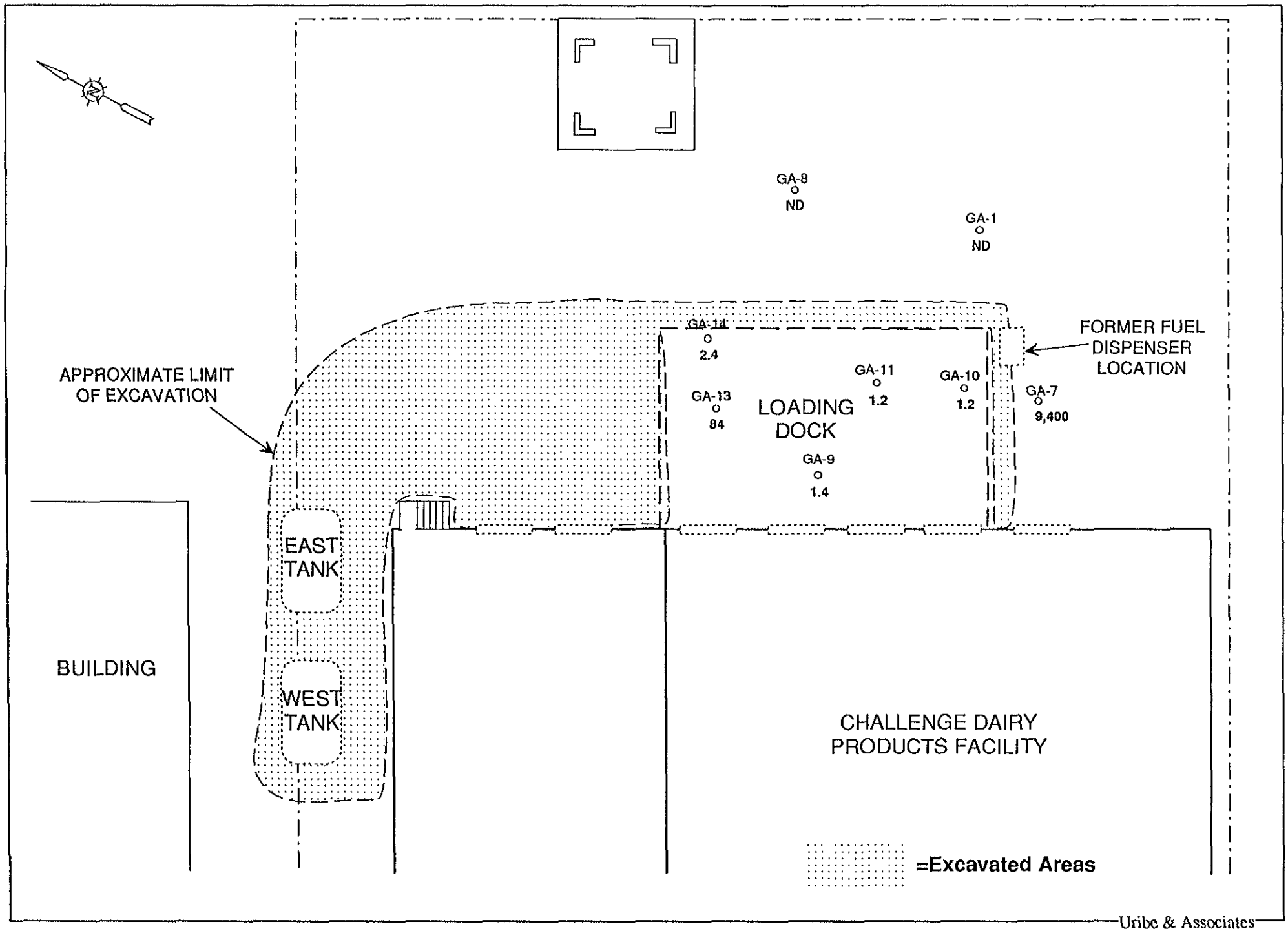


Figure 4.4-B: TPH as Diesel (Method 8015) in Site Soils (ppm)
5.0 to 6.0 foot depth

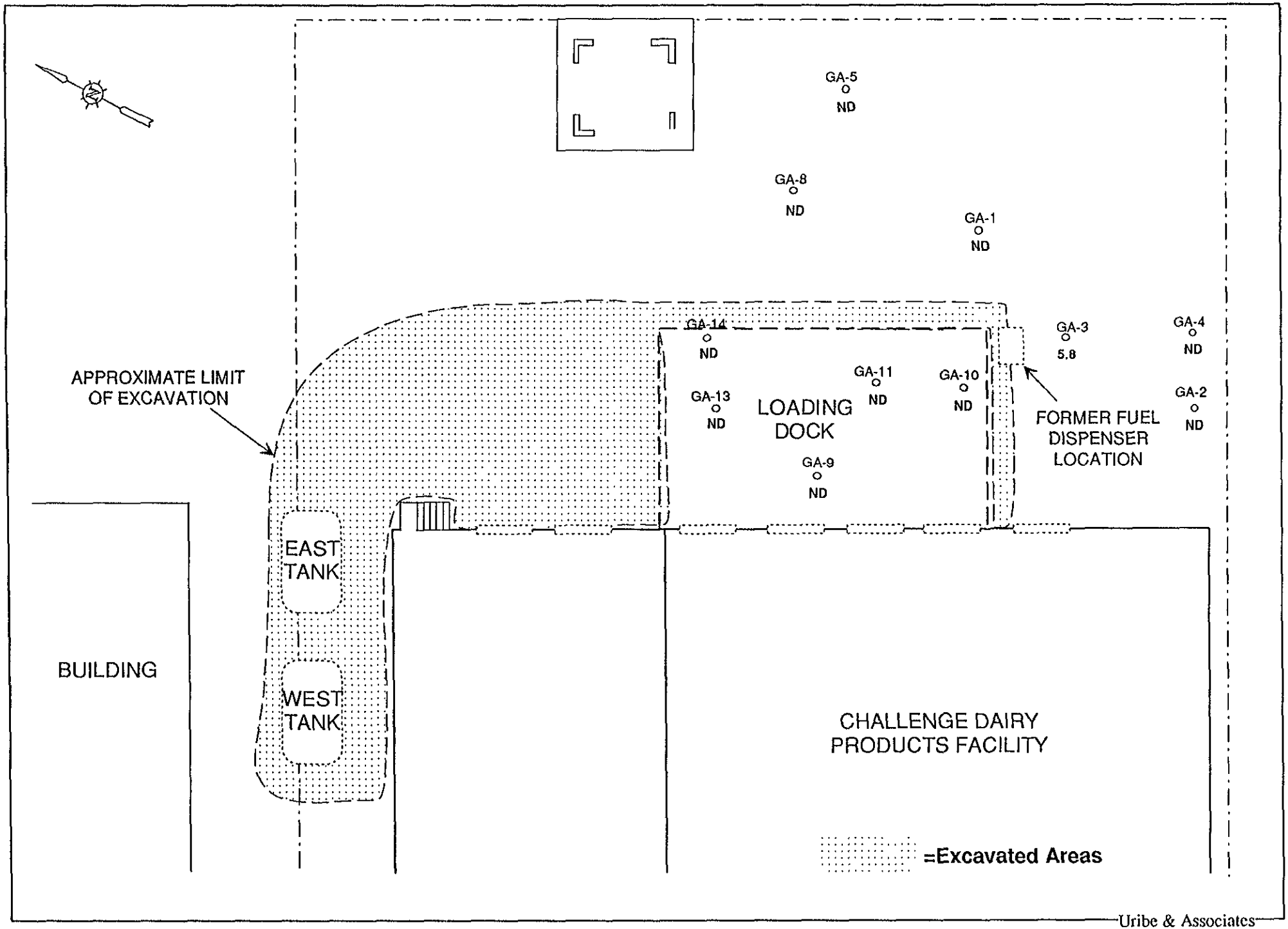


Figure 4.4-C: TPH as Diesel (Method 8015) in Site Soils (ppm)
8.0 to 11.0 foot depth

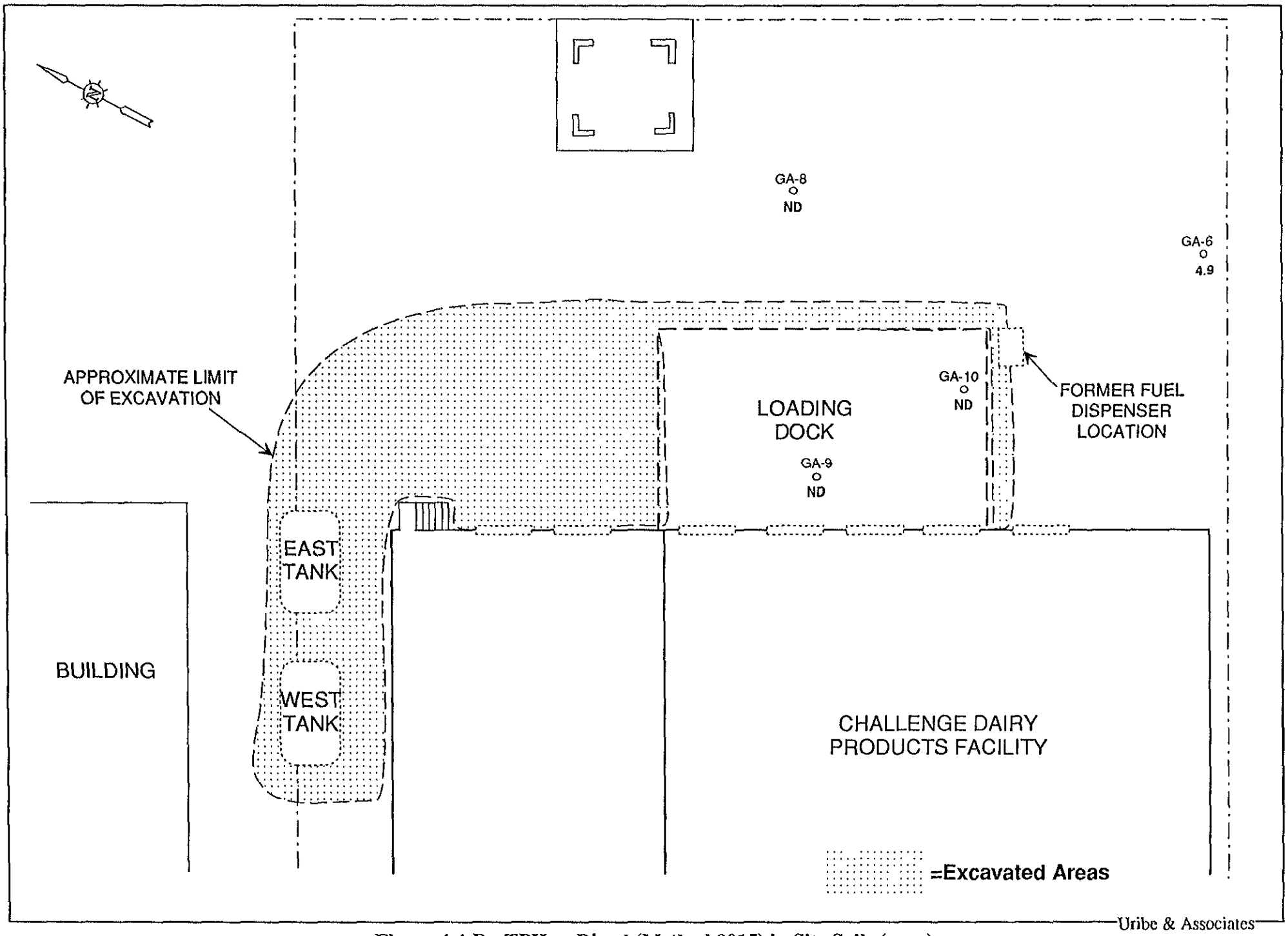


Figure 4.4-D: TPH as Diesel (Method 8015) in Site Soils (ppm)
12.5 to 15.0 foot depth

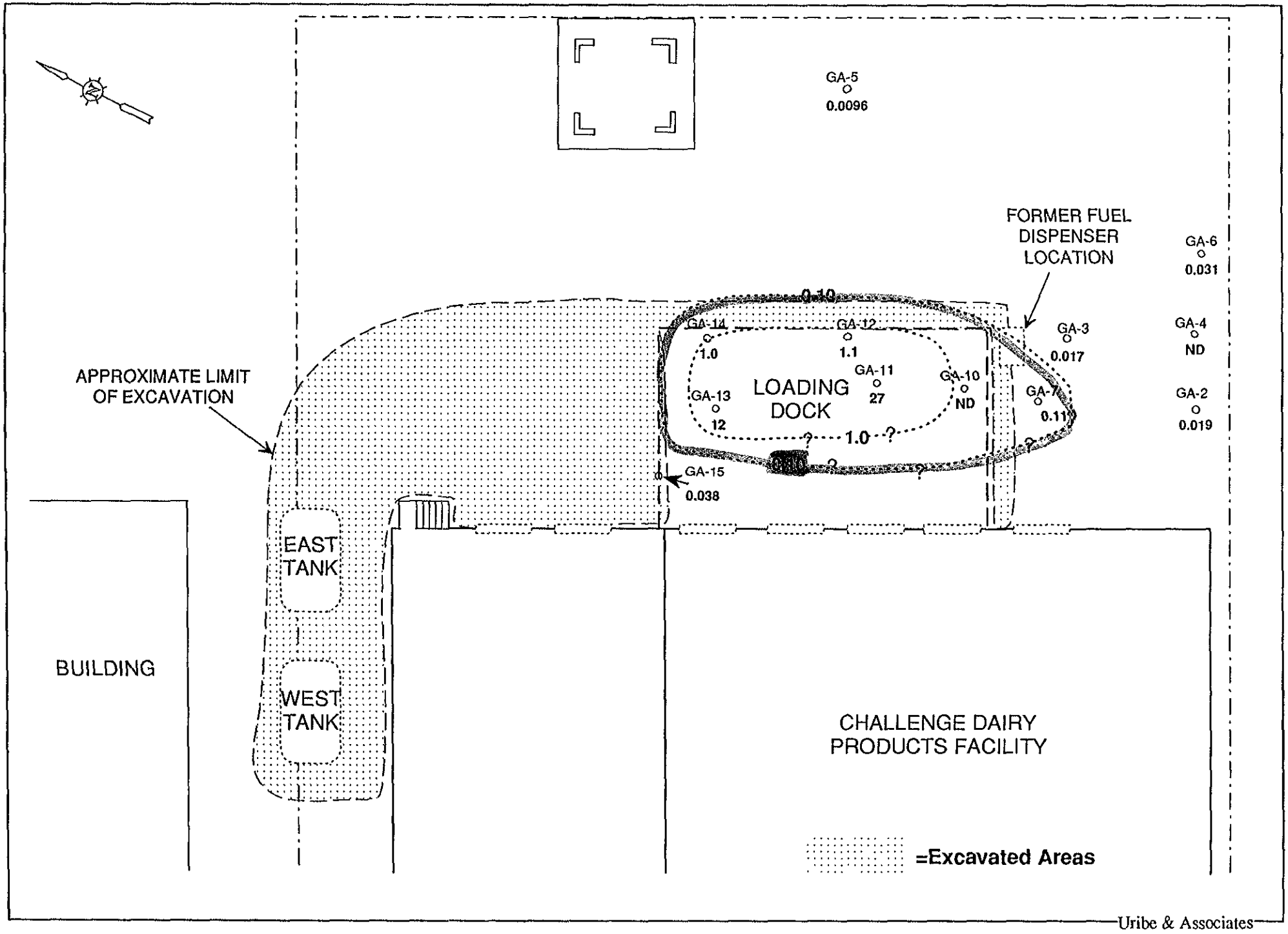


Figure 4.4-E: Benzene Levels (Method 8020) in Site Soils (ppm)
2.5 to 4.5 foot depth

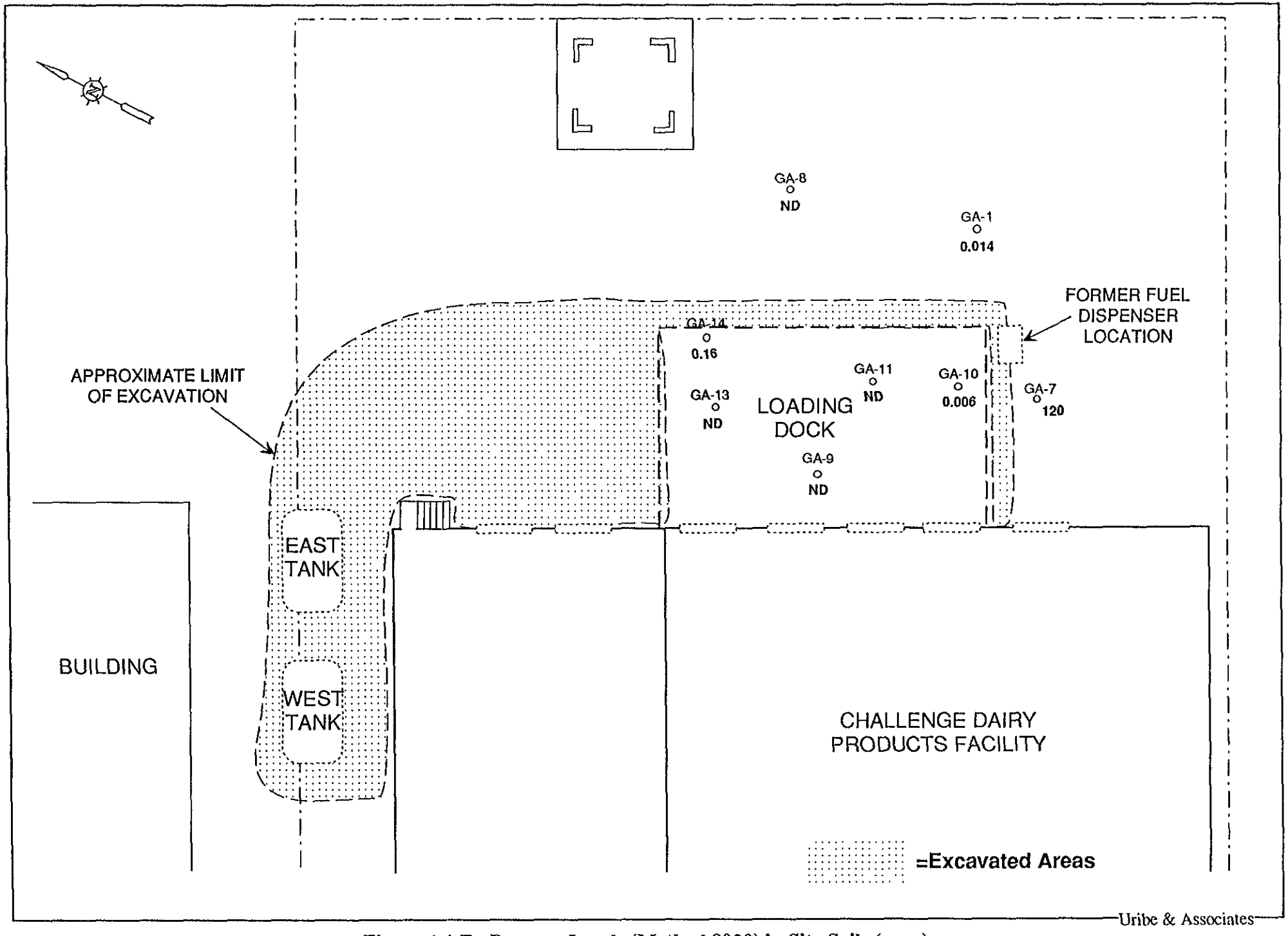


Figure 4.4-F: Benzene Levels (Method 8020) in Site Soils (ppm)
5.0 to 6.0 foot depth

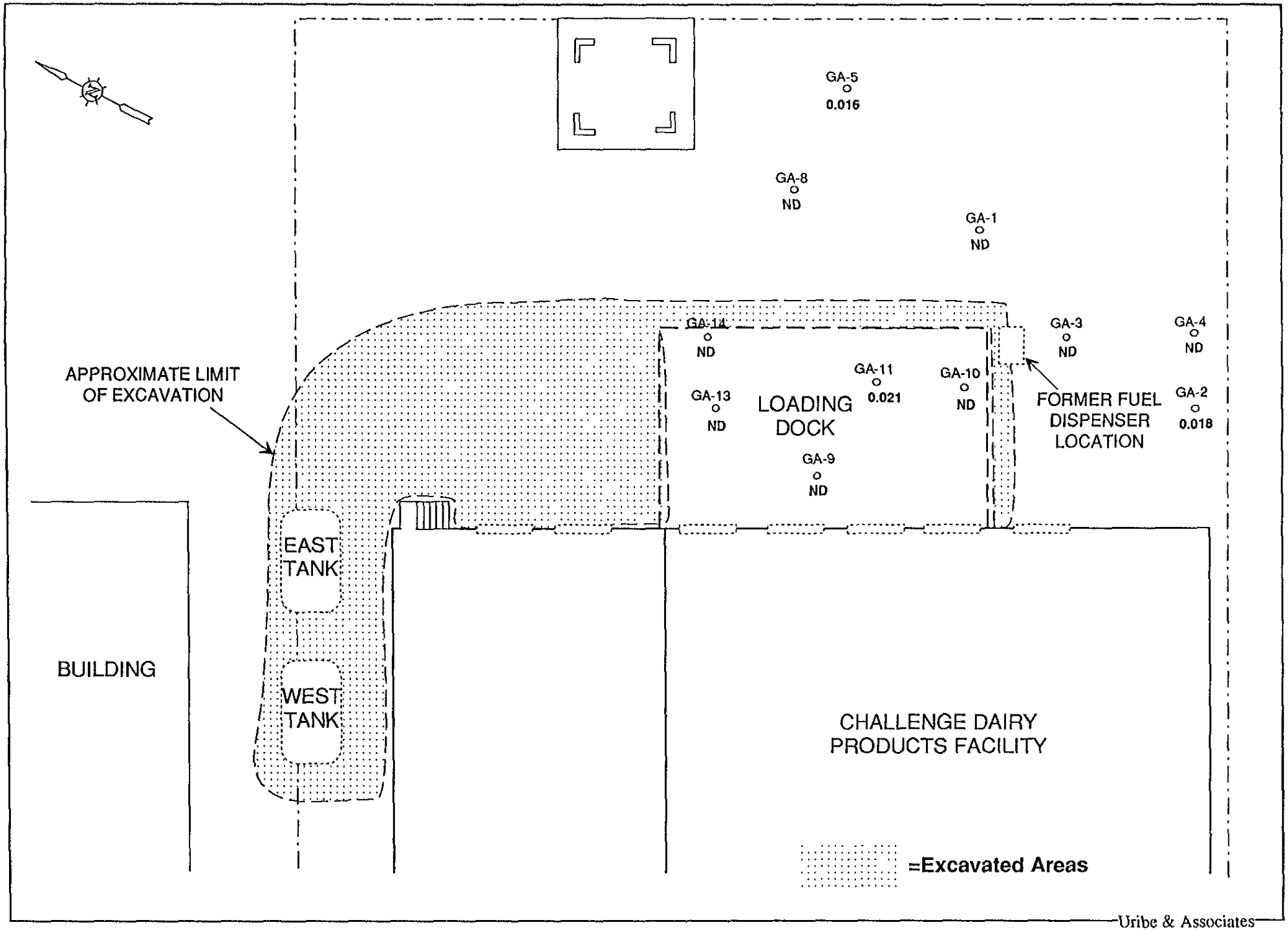


Figure 4.4-G: Benzene Levels (Method 8020) in Site Soils (ppm)
8.0 to 11.0 foot depth

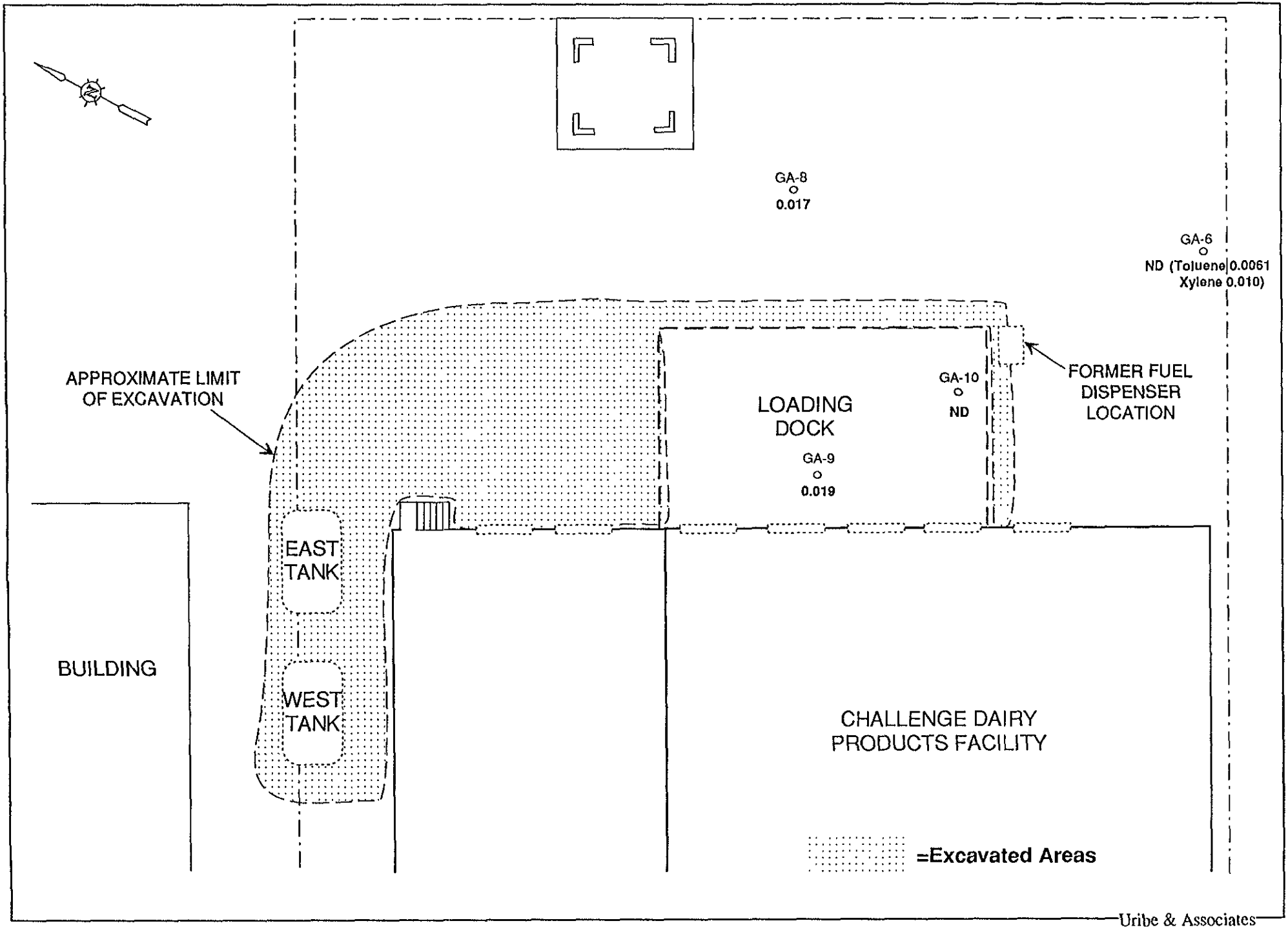


Figure 4.4-H: Benzene Levels (Method 8020) in Site Soils (ppm)
12.5 to 15 foot depth

4.5 PHASE 4 - DATA GENERATED BY J.M. MINNEY

The Phase Four Samples consisted of three off-site, background samples. Two samples were soil samples collected near railroad tracks upgradient from the site and one sample was a water sample from the Estudillo Canal, collected at a point upgradient from the site. TPH concentrations in the soil samples were non-detected and 2,000 ppm. The water sample had 3.4 ppm TPH as diesel.

Table 4.5-A
Summary of Analysis Results
From Excavations, Soil Borings, and Groundwater Samples*

ID Number	Sample Type	TPH Gasoline ppm	TPH Diesel ppm	Benzene ppm	Toluene ppm	Ethylbenzene ppm	Xylene ppm
			December 20, 1990				
T-1	Soil		4.9	<0.005	0.017	<0.005	<0.005
T-2	Soil		3.4	<0.005	<0.005	<0.005	<0.005
T-3	Soil		9	<0.005	<0.005	<0.005	<0.005
T-4	Soil		11	<0.005	0.0069	<0.005	<0.005
T-5	Soil		3.9	<0.005	0.0089	<0.005	<0.005
WS-1	[illegible]	[illegible] 1	[illegible]	<0.015	<0.015	<0.015	<0.015
WS-2	[illegible]	[illegible] 1	[illegible]	<0.030	<0.030	<0.030	<0.030
WS-3	[illegible]	[illegible] 1	[illegible]	<0.030	<0.030	<0.030	<0.030
P1	Soil	<1	<1	<0.005	<0.005	<0.005	<0.005
P2	Soil	<1	3	0.012	0.0059	0.0051	0.022
P3	Soil	8.6	13	<0.005	0.0074	<0.005	<0.005
P4	Soil	<1	<1	<0.005	<0.005	<0.005	<0.005
			January 14, 1991				
CDTP-1	Soil	<1	<1	<0.005	<0.005	<0.005	<0.005
CDTP-2	Soil	<1	<1	<0.005	<0.005	<0.005	<0.005
CDDPL-1-5	Soil	<1	<1	<0.005	<0.005	<0.005	<0.005
CDDPL-2-5	Soil		<1				
CDDPL-3-5	Soil		<1				
CDDPL-4-5	Soil		5.1				
			February 4, 1991				
CDTP3-14	Soil	<1	<1	0.016	0.021	<0.005	0.013
CDTP4-14	Soil	<1	<1	0.0068	0.0094	<0.005	<0.005
CDTP6-14	Soil	<1	<1	0.0083	0.010	<0.005	0.0073
			February 21-22, 1991				
GA-1-6	Soil	<1	<1	0.014	0.023	<0.005	0.017
GA-1-9	Soil	<1	<1	<0.005	<0.005	<0.005	<0.005
GA-2-3.0	Soil	<1	7	0.019	0.028	<0.005	0.021
GA-2-10.5	Soil	<1	<1	0.018	0.032	<0.005	0.033
GA-3-3.5	Soil	<1	<10	0.017	0.025	<0.005	0.020
GA-4-3.0	Soil	<1	5.8	<0.005	<0.005	<0.005	<0.005
GA-4-11	Soil	<1	4.7	<0.005	<0.005	<0.005	<0.005
GA-5-3.5	Soil	<1	<1	0.0096	0.018	<0.005	0.0096
GA-5-8	Soil	<1	4.5	0.016	0.025	<0.005	0.016
GA-6-3.5	Soil	<1	6.0	0.031	0.051	<0.005	0.023
GA-6-12.5	Soil	<1	4.9	<0.005	0.0061	<0.005	0.010
GA-7-4.5	Soil	4.9	18	0.11	0.047	0.098	0.37
GA-7-5.5	Soil	2600	9400	120	4.5	89	310

* See Table 4.5-B for sample descriptions

Table 4.5-A
Summary of Analysis Results
From Excavations, Soil Borings, and Groundwater Samples*

ID Number	Sample Type	TPH Gasoline ppm	TPH Diesel ppm		Benzene ppm	Toluene ppm	Ethylbenzene ppm	Xylene ppm
GA-1	[redacted]	<0.03	[redacted]		<0.0003	<0.0003	<0.0003	<0.0003
GA-2		<0.03			<0.0003	<0.0003	<0.0003	<0.0003
GA-3		<0.03			<0.0003	<0.0003	<0.0003	<0.0003
GA-4		<0.03			<0.0003	<0.0003	<0.0003	<0.0003
GA-6		<0.03			<0.0003	<0.0003	<0.0003	<0.0003
EIP-2		<0.03			[redacted]	<0.0003	<0.0003	<0.0003
			May 9, 1991					
CDWP-1	Soil	<1	<1		<0.005	<0.005	<0.005	<0.005
CDWP-2	Soil	<1	<1		<0.005	<0.005	<0.005	<0.005
			May 15, 1991					
GA8-5'	Soil	<1	<1		<0.005	<0.005	<0.005	<0.005
GA8-10'	Soil	<1	<1		<0.005	<0.005	<0.005	<0.005
GA8-15'	Soil	<1	<1		0.017	0.018	<0.005	0.011
TR-1	Soil	<1	15	2	0.13	0.025	<0.005	0.013
GA9-5'	Soil	<1	1.4	2	<0.005	<0.005	<0.005	<0.005
GA9-10'	Soil	<1	<1		<0.005	<0.005	<0.005	<0.005
GA9-15'	Soil	<1	<1		0.019	0.02	<0.005	0.013
GA10-2.5'	Soil	<1	<1		<0.005	<0.005	<0.005	<0.005
GA10-5'	Soil	<1	1.2	2	0.006	0.005	<0.005	<0.005
GA10-10'	Soil	<1	<1		<0.005	<0.005	<0.005	<0.005
GA10-15'	Soil	<1	<1		<0.005	0.005	<0.005	0.005
GA11-2.5'	Soil	650	2700	3	27	19	19	85
GA11-5'	Soil	<1	1.2	4	<0.005	<0.005	<0.005	<0.005
GA11-10'	Soil	<1	<1		0.021	0.026	<0.005	0.022
GA12-2.5'	Soil	20	280	3	1.1	1.6	0.38	1.9
GA13-2.5'	Soil	230	720	3	12	10	8.2	36
GA13-5'	Soil	<1	84	5	<0.005	<0.005	<0.005	<0.005
GA13-10'	Soil	<1	<1		<0.005	<0.005	<0.005	<0.005
GA14-2.5'	Soil	5.5	23		1	0.064	0.14	0.6
GA14-5'	Soil	<1	2.4	4	0.16	<0.005	<0.005	<0.005
GA14-10'	Soil	<1	<1		<0.005	<0.005	<0.005	<0.005
GA15-2.5'	Soil	1.2	160	2	0.038	0.018	0.007	0.025

1 Lab report states that sample does not appear to contain gasoline.
2 Not diesel, high boiling point hydrocarbons.
3 Diesel and low and high boiling point hydrocarbons.
4 Not diesel, medium boiling point hydrocarbons.
5 Diesel and high boiling point hydrocarbons.

* See Table 4.5-B for sample descriptions

Table 4.5-B
Description of Samples Collected At Site*

ID Number	Date	Description
T-1	12/20/90	Initial pipeline trench sample.
T-2	12/20/90	Initial pipeline trench sample.
T-3	12/20/90	Initial pipeline trench sample.
T-4	12/20/90	Initial pipeline trench sample.
T-5	12/20/90	Initial pipeline trench sample.
WS-1	12/20/90	Water sample from initial tank excavation.
WS-2	12/20/90	Water sample from initial tank excavation.
WS-3	12/20/90	Water sample from initial tank excavation.
P1	12/20/90	Soil sample from initial tank excavation.
P2	12/20/90	Soil sample from initial tank excavation.
P3	12/20/90	Soil sample from initial tank excavation.
P4	12/20/90	Soil sample from initial tank excavation.
Water Sample #1	12/26/90	Water sample collected from trench excavation pumpings.
Pipeline Spoils	12/26/90	Soil sample from pipeline excavation.
PL#1CD	12/26/90	Soil sample from pipeline trench.
PL#2CD	12/26/90	Soil sample from pipeline trench.
TPS#1	12/26/90	Tank excavation stockpile.
TPS#2	12/26/90	Tank excavation stockpile.
CDTP-1	1/14/91	Confirmation sample from completed tank excavation.
CDTP-2	1/14/91	Confirmation sample from completed tank excavation.
CDDPL-1-5	1/14/91	Confirmation sample from completed tank excavation.
CDPA-2	1/14/91	Stockpiled soils from tank excavation.
CDPA-1	1/14/91	Stockpiled soils from tank excavation.
CDDPL-2-5	1/14/91	Confirmation sample from pipe excavation.
CDDPL-3-5	1/14/91	Not applicable. Outside area of this report.
CDDPL-4-5	1/14/91	Not applicable. Outside area of this report.
CDTP3-14	2/4/91	Confirmation sample from completed tank excavation.
CDTP4-14	2/4/91	Confirmation sample from completed tank excavation.
CDTP6-14	2/4/91	Confirmation sample from completed tank excavation.
CDWP-1	5/9/91	Confirmation sample from completed tank excavation.
CDWP-2	5/9/91	Confirmation sample from completed tank excavation.
CDSP-1	2/4/91	Stockpiled soils from tank excavation.
CDSP-2	2/4/91	Stockpiled soils from tank excavation.
CDSP-3	2/4/91	Stockpiled soils from tank excavation.
CDSP-4	2/4/91	Stockpiled soils from tank excavation.
CDSP-5	2/4/91	Stockpiled soils from tank excavation.
CDSP-6	2/4/91	Stockpiled soils from tank excavation.
WSTB-1	2/4/91	No longer applicable. Interim sample from pipe excavation.
WSTA-1	2/4/91	No longer applicable. Interim sample from pipe excavation.
WSTT-1	2/4/91	No longer applicable. Interim sample from pipe excavation.
SPA-1	2/4/91	Not applicable. Interim sample outside area.
SPA-2	2/4/91	Not applicable. Interim sample outside area.

* See Tables 4.5-A and 4.6-A for analysis reports

Table 4.5-B
Description of Samples Collected At Site*

ID Number	Date	Description
West Tank Bottom	2/21/91	Holding water tank.
East Tank Bottom	2/21/91	Holding water tank.
West Tank Top	2/21/91	Holding water tank.
East Tank Top	2/21/91	Holding water tank.
CPSE	2/21/91	
CDWP-1	5/9/91	Final soil sample from bottom of trench excavation.
CDWP-2	5/9/91	Final soil sample from bottom of trench excavation.
GA-8-5	5/15/91	Soil sample from test hole outside concrete apron.
GA-8	5/15/91	Water sample from test hole outside concrete apron.
TR-1	5/15/91	Soil sample from apron area.
GA9-5	5/15/91	Soil sample from test hole in concrete apron area.
GA9-10	5/15/91	Soil sample from test hole in concrete apron area.
GA10-2.5	5/15/91	Soil sample from test hole in concrete apron area.
GA10-5	5/15/91	Soil sample from test hole in concrete apron area.
GA10-15	5/15/91	Soil sample from test hole in concrete apron area.
GA11-2.5	5/15/91	Soil sample from test hole in concrete apron area.
GA11-10	5/15/91	Soil sample from test hole in concrete apron area.
GA12-2.5	5/15/91	Soil sample from test hole in concrete apron area.
GA13-2.5	5/15/91	Soil sample from test hole in concrete apron area.
GA13-5	5/15/91	Soil sample from test hole in concrete apron area.
GA13-15	5/15/91	Soil sample from test hole in concrete apron area.
GA14-2.5	5/15/91	Soil sample from test hole in concrete apron area.
GA14-5	5/15/91	Soil sample from test hole in concrete apron area.
GA14-10	5/15/91	Soil sample from test hole in concrete apron area.
GA15-2.5	5/15/91	Soil sample from test hole in concrete apron area.
GA15-5	5/15/91	Soil sample from test hole in concrete apron area.
Fuel Disp	5/15/91	Soil sample from previous dispenser area.
CD-1	5/23/91	Stockpile of soils from pipe excavation.
CD-2	5/23/91	Stockpile of soils from pipe excavation.
CD-3	5/23/91	Stockpile of soils from pipe excavation.
CD-4	5/23/91	Stockpile of soils from pipe excavation.
CD-5	5/23/91	Stockpile of soils from pipe excavation.
CD-6	5/23/91	Stockpile of soils from pipe excavation.
BGW	5/2/91	Background water sample from nearby drainage ditch.
BGS-1	5/2/91	Background soil sample from railroad property.
BGS-2	5/2/91	Background soil sample from railroad property.

* See Tables 4.5-A and 4.6-A for analysis reports

4.6 EXCAVATED SOILS

The soils that have been excavated during the tank and product line removal are currently stockpiled on site. Table 4.6-A summarizes the data from samples collected directly from the stockpiles and data from soils that were sampled in place and subsequently excavated and stockpiled. TPH values in the excavated soils range from below the detection limit of 1 ppm to a maximum of 5,300 ppm. Eighty percent of the excavated soil samples have TPH values of less than 250 ppm. The maximum benzene value is 1.2 ppm. (Per conversation with M. Campos, 8/14/91, the soils have been aerating and now have been shown to contain less than 75 ppm TPH.)

In addition to the excavated soils, water was also removed from the excavation. The analysis data from this water is included in Table 4.6-A. TPH values in the water samples range from a minimum of 0.23 ppm to a maximum of 290 ppm. Eighty-five percent of the water samples have TPH values of less than 0.73 ppm. The maximum benzene value is 1.10 ppm.

Table 4.6-A
Summary of Analysis Results From Stockpiled Soils, Soils That Were Excavated After Being Sampled, and Holding Water Tanks*

ID Number	Sample Type	TPH Gasoline ppm	TPH Diesel ppm	Benzene ppm	Toluene ppm	Ethylbenzene ppm	Xylene ppm
			December 26, 1990				
Water Sample #1	Water	230	290	1.10	1.50	0.30	1.80
Pipeline Spoils	Soil	890	5300	0.91	0.79	7.7	44
PL#1CD	Soil	66	80	0.11	0.12	0.13	0.75
TPS#1	Soil	<1	3.2	0.006	0.009	<0.005	0.013
TPS#2	Soil	<1	8.9	0.01	0.013	<0.005	0.014
PL#2CD	Soil	<1	10	0.015	0.014	<0.005	0.022
			January 14, 1991				
CDPA-2	Soil	<1	4.1	<0.005	<0.005	<0.005	<0.005
CDPA-1	Soil	<1	<1	<0.005	<0.005	<0.005	<0.005
			February 4, 1991				
CDSP-1	Soil	2.3	19	0.022	.0.23	<0.005	0.013
CDSP-2	Soil	120	440	0.051	<0.5	<0.5	0.85
CDSP-3	Soil	14	110	<0.05	0.071	<0.005	<0.005
CDSP-4	Soil	15	170	0.10	0.14	<0.05	<0.05
CDSP-5	Soil	16	130	<0.05	<0.05	<0.05	<0.05
CDSP-6	Soil	67	620	1.20	1.60	<0.25	1.30
SPA-1	Soil	30	83	<0.10	0.14	<0.10	0.53
SPA-2	Soil		17				
SPB-1	Soil	1.6		0.016	0.023	<0.005	0.018
WSTB-1	Soil	330	890	31	7.7	1.4	31
WSTA-1	Soil	60	370	0.78	1.5	1.5	4.7
WSTT-1	Soil	240	720	5.7	6.1	2.8	18
			February 21-22, 1991				
West Tank	Water	<0.03	0.42	<0.0003	<0.0003	<0.0003	<0.0003
East Tank	Water	0.2	0.73	0.0046	0.0073	0.0043	0.0024
SP-1	Soil	33	1000	<0.12	<0.12	<0.12	<0.12
Loading Dock 1	Soil	3.9	52	0.12	<0.005	0.30	0.11
CNEP-1	Soil	<1		<0.005	<0.005	<0.005	0.007
CNEP-2	Soil	<1		0.0051	0.010	<0.005	0.010

* See Table 4.5-B for sample descriptions

Table 4.6-A
Summary of Analysis Results From Stockpiled Soils, Soils That Were Excavated After Being Sampled, and Holding Water Tanks*

ID Number	Sample Type	TPH Gasoline ppm	TPH Diesel ppm	Benzene ppm	Toluene ppm	Ethylbenzene ppm	Xylene ppm
			April 3, 1991				
CD-1	Soil	<1	3.3	0.0053	<0.005	<0.005	<0.005
CD-2	Soil	2.4	28	0.0082	0.0098	<0.005	0.0084
CD-3	Soil	2.7	48	0.49	0.1	0.029	0.15
CD-4	Soil	<1	2.2	0.1	0.12	<0.005	0.12
CDS-1M	Soil	8.8	97	0.048	0.065	<0.005	0.048
CDSO-2	Soil	6.2	130	0.046	0.054	<0.005	0.063
CDSO-3	Soil	5	29	0.078	0.09	<0.005	0.11
CDSO-4	Soil	5	63	0.041	0.05	<0.005	0.028
CDSO-5	Soil	13	200	0.016	0.21	0.049	0.24
CDSO-6	Soil	3.6	120	0.017	0.019	<0.005	0.02
CDSO-7	Soil	8.7	88	0.088	0.12	0.023	0.12
CDSO-8	Soil	5.7	55	0.025	0.028	<0.005	0.06
CDS-9	Soil	17	170	<0.005	<0.005	<0.005	0.057
CDS-10	Soil	2.2	120	0.011	0.01	<0.005	<0.005
CDS-11	Soil	4.8	140	<0.005	<0.005	<0.005	0.019
CDS-12	Soil	4.2	100	<0.005	<0.005	<0.005	0.019
CDS-13	Soil	2.3	81	<0.005	<0.005	<0.005	0.011
CDS-14	Soil	1.4	35	0.015	0.02	0.0056	0.021
CDS-15	Soil	1.8	75	0.018	0.012	0.0092	0.032
CDS-16	Soil	3	99	0.0088	0.0088	<0.005	0.014
East Tank Bottom	Water	<.15	0.51	0.0049	0.0084	0.0019	0.007
East Tank Top	Water	<.15	0.3	0.0045	0.008	0.0018	0.0066
West Tank Top	Water	<.12	0.23	0.0047	0.0061	0.0014	0.0052
West Tank Bottom	Water	<.08	0.29	0.0013	0.0059	0.0012	0.0049
SPSE	Water	<.03	0.23	0.0026	0.0029	0.0059	0.0033

* See Table 4.5-B for sample descriptions

5.0 SUMMARY

5.1 INTRODUCTION

The goal of this report was to summarize the results of the investigation and remediation efforts to date. As described in the preceding sections, the tanks, associated piping, and fuel dispensers have been removed. Contaminated soil in the vicinity of the tanks and product lines has also been excavated and will be disposed of at a Class III landfill.

5.2 REMAINING SOIL CONTAMINATION

The sampling efforts to date have identified two areas with soil contamination of potential concern. Shallow soil contamination was found under the central portion of the loading dock. One sample contained 2,700 ppm TPH (Diesel). All other samples taken from under the loading dock ranged from 720 ppm to below the detection limit. The second area of concern is the former location of the fuel dispenser. TPH (Diesel) was measured at 9,400 ppm in one borehole, and free oil is observable in the excavation. The source of the free oil at the dispenser location is not clear. The drilling logs indicate asphalt in the fill at this location to 5 feet below grade. The oil may or may not represent a waste disposed of here in conjunction with the placement of the fill.

Relatively low levels TPH and BTXE were observed in soils and in groundwater at other locations as described in Section 4.0. These levels are not considered significant at this time.

5.3 ADDITIONAL INVESTIGATION

The investigation plan for further delineation of the contamination will be forwarded in a subsequent document if required.

6.0 REFERENCES

1. A. D. Selditch and Associates, Inc., *Environmental Site Assessment - Catalina Business Park, San Leandro, CA.* June 28, 1990.

2. Golder Associates, Inc. *Underground Storage Tank Removal* (letter/report). March 15, 1991.

3. Golder Associates, Inc. *Soil and Water Sampling at Challenge Dairy* (letter/report). March 15, 1991.

4. Corrosion Engineering and Research Company, *Challenge Diary - 10,000 Gallon Underground Diesel Fuel Storage Tanks and Piping Failure Evaluation.* June 3, 1991.

5. J. M. Minney, Consulting Engineer. *Tank Excavation Closure Plan* (letter/report). June 26, 1991.