REGIONAL PARKS

EAST BAY REGIONAL PARK DISTRICT

LETTER OF TRANSMITTAL

To: Department of Fish and Game Date: March 7, 1994

Attn: Mr. Mike Rugg

P.O. Box 47

Yountville, CA 94599

Subject: Creek and Soil Sampling at Redwood Regional Park, Oakland, CA

We are sending you herewith:

____Prints, ____Tracings, ____Working drawings,

____Specifications, ____Correspondence, ____Photographs,

XX Documents from our consultant, Engineering Science, dated March 2, 1994

For the following action:

X For your information, ____X For your records, ____For your review,

____For your action, ____Please return, ____Please retain one copy and return the others with corrections and comments,

Comments: If you have any questions, please call me at (510) 635-0135, Ext. 2311. Thank you.

Drawing Number	Date of original or revision	Copies	Description

Parkland Design Department

BY: WARREN GEE
Warren Gee

2950 Peralta Oaks Court • P.O. Box 5381 • Oakland CA 94605-0381 • 510-635-0135 • Fax 510-569-4319

ES ENGINEERING-SCIENCE

RECEIVED
MAR 03 1994
PARKLAND DESIGN

LETTER OF TRANSMITTAL

DATE	JOB NO.
3/2/94	NC367/723090

ATTENTION Mr. Warren Gee

RE: Redwood Regional Park Service Yard
UFST Investigation, Oakland, CA

TO East Bay Regional Parks District
Parklands Design Department
P.O. Box 5381
Oakland, California 94605-0381

GENTLEMEN:

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

Dated _____

COPIES	DATE	NO.	DESCRIPTION
2	3/2/94		Creek and Soil Sampling at Redwood Regional Park, Oakland, California

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ For checking ☐ Resubmit _____ copies for approval
☒ For your use ☐ Approved as submitted ☐ Design only, not for construction
☐ As requested ☐ Approved as noted ☐ Return _____ corrected prints
☐ For review and comment ☐ Returned for corrections ☐ _____
☐ For Your Action

REMARKS:

Warren,
we have submitted copies of the report to ACHCSA-DHM and RWQCB. We recommend that you submit a copy to the California Dept of Fish & Game, as well.

COPY TO J. Shin ACHCSA-DHM
L. Feldman RWQCB

SIGNED: B M Rücker

If enclosures are not as noted, please notify us at once. Bruce M. Rücker, Proj.Mgr.

ENGINEERING-SCIENCE, INC.

1301 Marina Village Parkway, Suite 200 • Alameda, California 94501 • (510) 769-0100 • Fax: (510) 769-9244

2 March 1994
Ref:723090 (NC367)

East Bay Regional Parks District
Parklands Design Department
P.O. Box 5381
Oakland, California 94605-0381
Attention: Mr. Warren Gee

Subject: Creek and Soil Sampling at Redwood Regional Park, Oakland, California

Dear Mr. Gee:

INTRODUCTION

This letter summarizes recent sampling activities conducted by Engineering-Science, Inc. (ES) at the East Bay Regional Park District (EBRPD) Redwood Regional Park Service Yard underground fuel storage tank (UFST) site in Oakland, California (project site). Figure 1 shows the location of the project site. The activities discussed herein follow previous site characterization and remediation activities associated with the former UFSTs conducted by ES at the project site, that were summarized in the ES report dated 16 December 1993 (ES 1993). The recent sampling was in accordance with the 27 January 1994 ES letter describing proposed sampling and analysis activities (ES 1994a).

An area of discolored soil with petroleum odor was observed by ES personnel in the eastern bank of Redwood Creek during the September and October 1993 initial site characterization (Figure 2) (ES 1993). At that time, field organic vapor analysis of a sample of the discolored soil indicated 42 and 37 parts per million per volume (ppmv) total ionizable and hydrocarbon vapors as measured by a photoionization detector (PID) and a total hydrocarbon vapor analyzer (THVA), respectively.

The Alameda County Health Care Services Agency - Division of Hazardous Materials (ACHCSA-DHM) letter of 10 January 1994 requested that EBRPD collect and analyze a sample of the creek surface water to assess the degree of impact on Redwood Creek by the contamination resulting from the former UFSTs. In addition, Ms. Juliet Shin of ACHCSA-DHM verbally requested (telephone conversation between Ms. Juliet Shin and Mr. Bruce Rucker of ES on 18 January 1994) that a sample of the discolored soil be collected and analyzed.

SITE CHARACTERIZATION ACTIVITIES

One soil and one "grab" surface water sample were collected by ES personnel on 9 February 1994. At the time of sampling, water in the creek was approximately eight inches deep and six feet wide. The area of visibly discolored soil extended from the creek water line to approximately three inches above the waterline, and was

approximately two feet long. Although the lateral and vertical extent of discolored soil below the creek waterline is not known, a soil sample collected for visual inspection from approximately six inches beneath the creek bed was also discolored and displayed petroleum odor.

ES collected one "grab" surface water sample from the creek approximately three feet downstream (south) of the area of discolored soil (Figure 2). That water sample was collected in clean glass containers appropriate to the laboratory analyses (1-500 ml amber glass for total petroleum hydrocarbons as diesel and kerosene [TPH-D and TPH-K] and 2-40 ml glass volatile organic analysis [VOA] vials for TPH as gasoline [TPH-G] and aromatic hydrocarbons [BTEX]).

Concurrent with the creek water sampling, ES collected one sample of the discolored soil from above the creek waterline. That sample was collected by driving a brass sampling tube (6-inch long by 2-inch diameter) into the soil. The tube was extracted from the soil and then sealed with Teflon (tradename) tape and non-reactive plastic caps.

The soil and "grab" surface water sampling containers were labeled, placed in a cooler with "blue ice" and transported under chain-of-custody the same day to an analytical laboratory certified by the State of California Environmental Protection Agency (CalEPA) Environmental Laboratory Accreditation Program (ELAP).

LABORATORY ANALYTICAL RESULTS

The soil and "grab" surface water samples were analyzed for contaminants of concern identified in previous site characterization/remediation activities, including:

- TPH as gasoline (TPH-G), TPH as diesel (TPH-D) and TPH as kerosene (TPH-K) by the State of California Department of Toxic Substances Control (DTSC)/Leaking Underground Fuel Tank (LUFT) Manual method (equivalent to modified EPA method 8015)
- Aromatic hydrocarbons (including benzene, toluene, ethylbenzene and total xylenes [BTEX]) by EPA Method 8020/602.

Table 1 summarizes the laboratory analytical results of the soil and "grab" surface water samples collected on 9 February 1994. Certified analytical laboratory reports and the associated chain-of-custody record are included as Attachment A.

Discussion

The soil sample collected from the area of discolored soil contained 3 milligrams per kilogram (mg/kg, equivalent to 3,000 micrograms per kilogram [μg/kg]) TPH-D; TPH-G and BTEX components were not detected. TPH-K was not reported due to an observed overlap of hydrocarbon ranges (Attachment A). The soil sample collected 4 October 1993 from exploratory boring B15 (located approximately 40 feet upgradient of the creek bank soil sample) at a depth of 17 feet bgs contained 1,900 mg/kg TPH-G, 1,300 mg/kg TPH-K and 23 mg/kg BTEX (ES 1993). These data indicate that soil

contamination in the bank of Redwood Creek is minor relative to residual soil contamination detected in nearby, below ground surface soil samples.

The "grab" water sample collected from the creek approximately three feet downstream of the area of discolored soil contained 0.13 mg/L (equivalent to 130 µg/L) TPH-G; neither TPH-K nor TPH-D were detected. In addition, the aromatic hydrocarbons benzene, ethylbenzene and total xylenes were detected at concentrations of 0.0019, 0.0044 and 0.0032 mg/L, respectively. Toluene was not detected. The "grab" groundwater sample collected 4 October 1993 from exploratory boring B15 contained 16 mg/L TPH-G, 99 mg/L TPH-K and 1.16 mg/L BTEX.

These data suggest that surface water in Redwood Creek has been impacted by the former leaking UFSTs and associated residual soil contamination, but to a significantly lesser degree than the impact to groundwater. There are two potential sources of the detected creek water contamination, including contaminated groundwater flowing directly into the creek, and/or desorption of contaminants from the contaminated soil by the flowing creek water. The relative contributions from each possible source is not known.

The only contaminant detected in the "grab" creek water samples in excess of published regulatory agency "action levels" or guidelines is benzene at 0.0019 mg/L. The California maximum contaminant level (MCL) for benzene in drinking water is 0.001 mg/l. In addition, the water quality objective (WQO) for benzene in inland surface waters which are existing or potential sources of drinking water is 0.00034 mg/L and for "other waters" is 0.021 mg/L (California State Water Resources Control Board [SWRCB] 1991). These WQOs are based on 30-day average concentrations, however the current analytical results do not represent an average concentration over a 30-day period.

Beneficial uses of surface water quality in California are used to establish water quality standards and discharge probibitions (California Regional Water Quality Control Board - San Francisco Bay Region [RWQCB 1992]). There are no listed beneficial uses for Redwood Creek. However, there are listed beneficial uses for Upper San Leandro Reservoir (located approximately 4,000 feet south of the project site), into which Redwood Creek flows. Existing beneficial uses for Upper San Leandro Reservoir include: water contact recreations; municipal and domestic supply; warm and cold fresh water habitats; wildlife habitat; and fish spawning. Potential beneficial uses include non-contact water recreation.

RECOMMENDATIONS

The following recommendations are based on the results of data collected by ES during the current and previous investigations at the site.

- Implement the groundwater characterization and monitoring program previously recommended (ES 1993). The objective of that investigation is to evaluate the magnitude and spatial extent of groundwater contamination associated with the former UFSTs.
- Implement a quarterly sampling and analysis program of Redwood Creek surface water. The objective of that task is to monitor impacts to surface water quality resulting from leakage of the former USTS.
- Submit the results of this investigation to ACHSA-DHM, RWQCB and the California Department of Fish and Game for their review.

We trust that this submittal meets your needs. Please call if you have questions or require further information.

Very truly yours,

ENGINEERING-SCIENCE, INC.

Bruce M. Rucker

Bruce M. Rucker
Project Manager

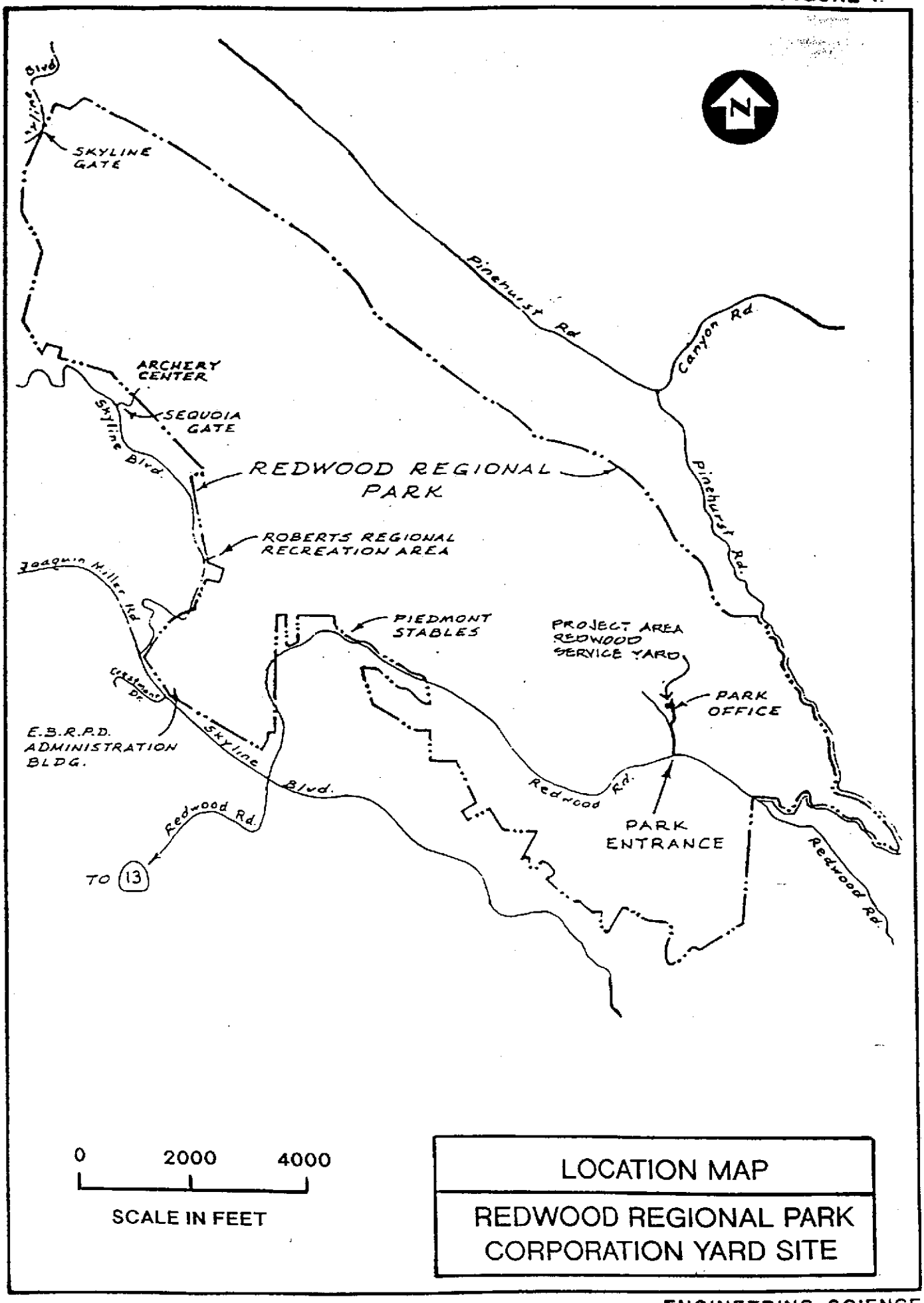
Frederick T. Stanin, R.G.
Technical Director

cc: J. Shin, ACHCSA-DHM
L. Feldman, RWQCB

REFERENCES

- California State Water Resources Control Board (SWRCB) 1991, California Inland Surface Waters Plan - Water Quality Control Plan for Inland Surface Waters of California, 11 April.
- Engineering-Science, Inc. (ES) 1993, Closure of Underground Storage Tanks and Initial Site Characterization at Redwood Regional Park Service Yard, Oakland, California, 16 December.
- ES 1994a, letter to Alameda County Health Care Services Agency summarizing proposed sampling activities at Redwood Creek, Redwood Regional Park Service Yard, Oakland, California, 27 January.
- Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) 1992, Water Quality Control Plan for the San Francisco Basin, 17 January.

FIGURE 1



LOCATION MAP

REDWOOD REGIONAL PARK
CORPORATION YARD SITE

ENGINEERING-SCIENCE

TABLE 1
SOIL AND "GRAB" SURFACE WATER SAMPLE ANALYTICAL RESULTS
REDWOOD CREEK

Redwood Regional Park Corporation Yard
Oakland, CA

Sample I.D.	TPH–G	TPH–K	TPH–D	Benzene	Toluene	Ethyl–benzene	Total Xylenes
Soil	concentrations in ug/kg						
CB–1	<1,000	(a)	3,000	<5	<5	<5	<5
Water	concentrations in ug/L						
CW–1	130	<50	<50	1.9	<0.5	4.4	3.2

TPH–G: Total petroleum hydrocarbons as gasoline by DTSC LUFT Manual method
TPH–D: Total petroleum hydrocarbons as diesel fuel by DTSC LUFT Manual method
TPH–K: Total petroleum hydrocarbons as kerosene by DTSC LUFT Manual method
BTEX analyzed by EPA Methods 602/8020
DTSC = California Department of Toxic Substances Control
LUFT = Leaking Underground Tank Manual
<5 : Not Detected above method reporting limit (MRL) of 5 ug/l
(a) Kerosene range not reported due to overlap of hydrocarbon ranges
ug/L and ug/kg are equivalent to parts per billion (ppb)

creek.wk1
03/01/94

ATTACHMENT A

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY RECORD

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

Engineering Science, Inc.
1301 Marina Village Parkway
Suite 200
Alameda, CA 94501

Date: 23-FEB-94
Lab Job Number: 114312
Project ID: 723090.05010
Location: EBRPD

Reviewed by: Teresa K Morrison

Reviewed by: Cheryl Glenn

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 114312
CLIENT: ENGINEERING-SCIENCE, INC.
PROJECT ID: 723090-05010
LOCATION: EBRPD

DATE SAMPLED: 02/09/94
DATE RECEIVED: 02/09/94
DATE EXTRACTED: 02/11/94
DATE ANALYZED: 02/17/94
DATE REPORTED: 02/23/94

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
114312-1	CB-1	**	3	1

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

** Kerosene range not reported due to overlap of hydrocarbon ranges.

QA/QC SUMMARY

RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 114312
CLIENT: ENGINEERING-SCIENCE, INC.
PROJECT ID: 723090-05010
LOCATION: EBRPD

DATE SAMPLED: 02/09/94
DATE RECEIVED: 02/09/94
DATE ANALYZED: 02/20/94
DATE REPORTED: 02/23/94

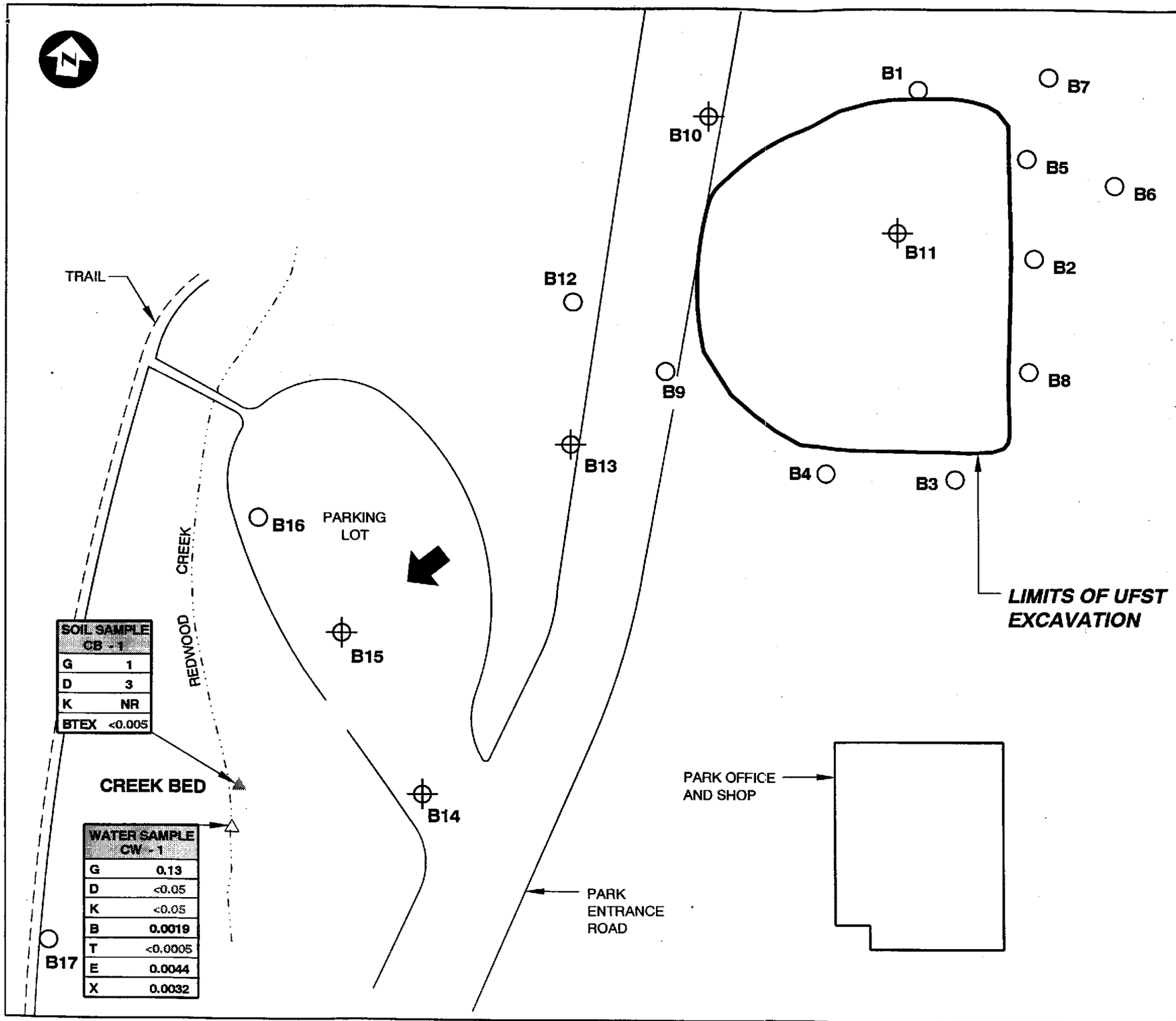
Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
114312-1	CB-1	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	94



LEGEND

- B7 — EXPLORATORY BOREHOLE B7
- B11 — EXPLORATORY BOREHOLE B11 WITH TEMPORARY WELL POINT
- INFERRED DIRECTION OF GROUNDWATER FLOW
- CW - 1 — SAMPLE I.D.
- G,D,K <0.005 — TPH ANALYTICAL RESULTS (mg/L OR mg/kg)
- BTEX <0.001 — BTEX ANALYTICAL RESULTS (mg/L OR mg/kg)
- <0.005 — NOT DETECTED ABOVE METHOD REPORTING LIMIT (MRL) OF 0.005 mg/kg OR mg/L
- NR — NOT REPORTED DUE TO OVERLAP OF HYDROCARBON RANGES
- ▲ — CREEK SOIL SAMPLING LOCATION
- △ — CREEK "GRAB" SURFACE WATER SAMPLING LOCATION

NOTES:

LOCATIONS AND DIMENSIONS OF ROADS, TRAILS AND PARKING LOT ARE APPROXIMATE

UFST=UNDERGROUND FUEL STORAGE TANK

SAMPLES COLLECTED 9 FEBRUARY 1994

0 10 20
SCALE IN FEET

CREEK SOIL AND "GRAB" SURFACE WATER SAMPLE ANALYTICAL RESULTS

REDWOOD REGIONAL PARK SERVICE YARD OAKLAND, CALIFORNIA

REV. 7 C273-11.DWG 03/02/94

ENGINEERING-SCIENCE, INC.