Weiss Associates Environmental and Geologic Services

5500 Shellmound Street, Emeryville, CA 94608-2411 Fax: 510-547-5043 Phone: **510-450-6000**

March 7, 1996

Jennifer Eberle
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Re: **Soil Characterization Workplan**
Shell Service Station
WIC #204-5510-0204
350 Grand Avenue
Oakland, California
WA Job #81-0701

Dear Ms. Eberle:

On behalf of Shell Oil Products Company (Shell), Weiss Associates (WA) has prepared this workplan to pre-characterize soil scheduled to be excavated around the underground fuel tanks and associated piping at the Shell service station referenced above (Figure 1). The purpose of the in situ soil characterization is to obtain pre-approval from an appropriate landfill facility to accept the excavated soil associated with the tank removal. As you know, Shell has scheduled to replace the existing tanks shortly and due to space limitations at the site, Shell has opted to characterize the soil for offsite disposal prior to the tank excavation. WA's proposed sampling plan and scope of work are presented below.

Proposed Sampling Plan

WA estimates approximately 2,000 cubic yards of soil will be excavated during the tank removal and replacement. Currently, there are four tanks: three 10,000-gallon gasoline and one 10,000-gallon diesel. They are due to be replaced with two 15,000 gasoline tanks. WA proposes drilling twelve (12) soil borings to about 18 ft below ground surface (bgs) at the locations shown on Figure 2. To obtain a density of approximately one composite sample for every 200 cubic yards of soil, WA will collect 1 sample every 5 feet beginning at 3 ft depth from each of the twelve borings for a total of 48 samples. WA will direct the analytical laboratory to composite the four samples collected from each boring for a total of 12 composite samples. The 12 four-point composite soil samples will be analyzed according to Shell's minimum required testing for disposal of soil which may contain gasoline and/or diesel (Attachment A). The potential offsite disposal facility has already approved this soil sampling plan as satisfying their soil characterization requirements for disposal at their facility (Attachment B). Our standard field procedures for soil boring and soil sampling are included as Attachment C.

Proposed Scope Of Work

The specific tasks we will perform for this project include:

- Preparing a site specific health and safety plan and locating underground and overhead utilities;
- Obtaining all necessary drilling permits from Zone 7 Water Agency.
- Drilling 12 soil borings and collecting 4 soil samples from each boring for laboratory analyses;
- Screening soil samples in the field for volatile hydrocarbons with a portable photo-ionization detector (PID);
- Analyzing selected soil samples as outlined in Attachment A;
- Backfilling the borings with cement grout; and
- Tabulating the analytic data and submitting the data to a landfill for their review.

If soil cuttings are generated, they will be stored onsite until the underground storage tanks are removed at which point they will be transported offsite with the excavated soil. The soil analytic results, quantity of soil excavated, transporter, and final destination of the soil will be reported in the tank removal report.

WA will proceed with the boring program as soon as we receive permits from Zone 7 Water Agency. [redacted] Please call either of the undersigned at (510) 450-6000 if you have any questions or comments.

Sincerely,
Weiss Associates

Brian Busch
Environmental Scientist

James W. Carmody, C.H.G.
Senior Project Hydrogeologist

REGISTERED GEOLOGIST
JAMES WILLIAM CARMODY
No HG217
CERTIFIED
HYDRO-
GEOLOGIST
STATE OF CALIFORNIA

Attachments: Figures
A - Hazardous Waste Procedures
B - Landfill Approval of Sampling Plan
C - Standard Field Procedures

cc: Jeff Granberry, Shell Oil Products Company, P.O. Box 4023, Concord, California 94524
Wyman Hong, Zone 7 Water Agency, 5997 Parkside Drive, Pleasanton, California, 94588
Lynette Smith, Forward Inc., P.O. Box 6336, 1145 W. Charter Way, Stockton, California, 95206

BB/JWC:all

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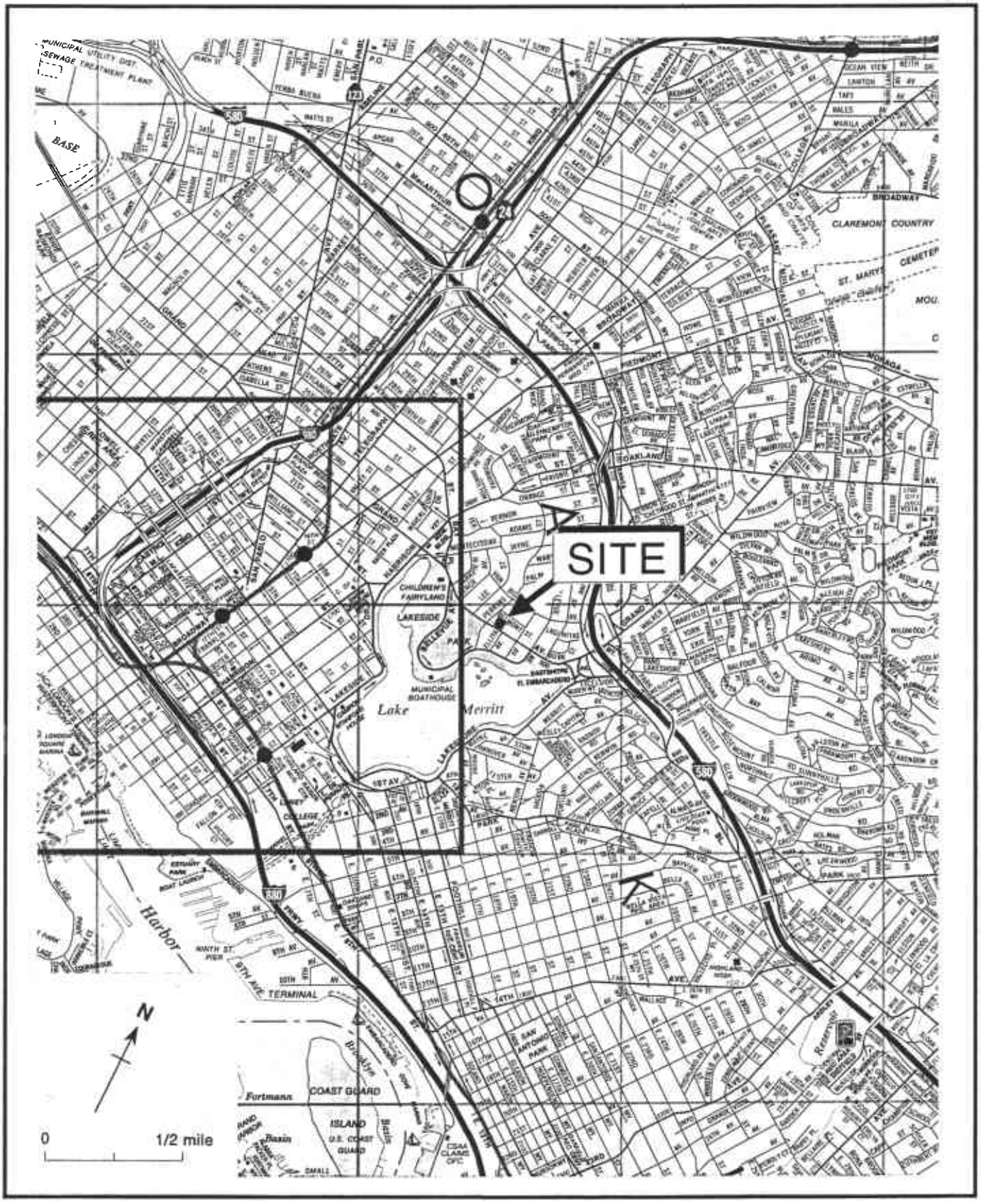

Figure 1. Site Location Map - Shell Service Station WIC #204-5510-0204, 350 Grand Avenue, Oakland, California

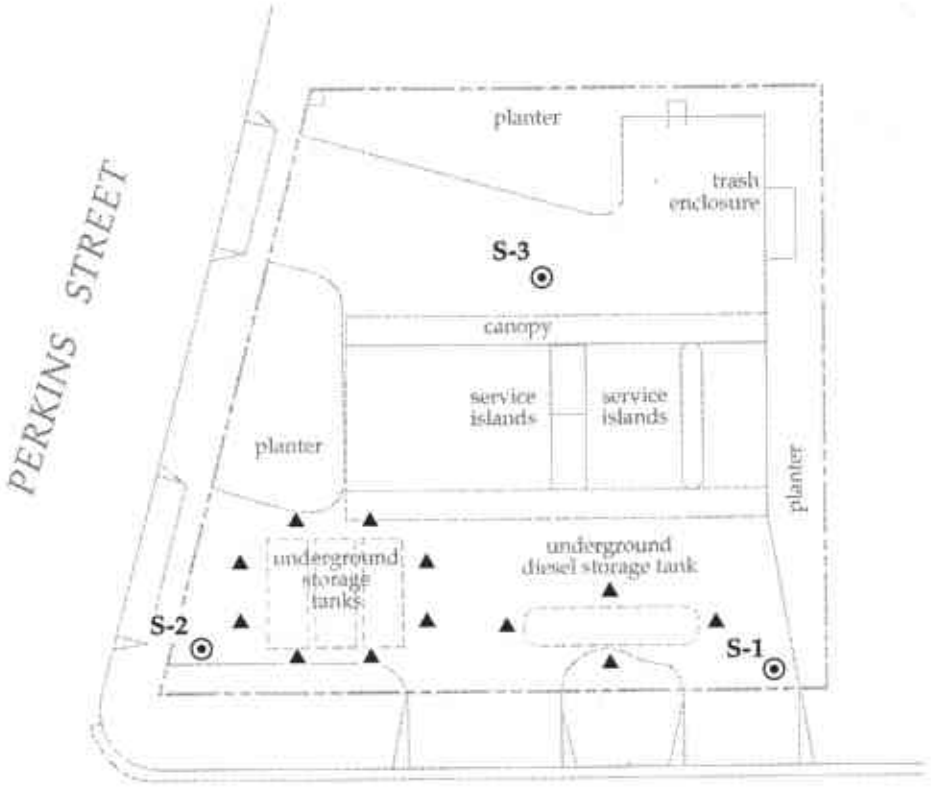

Figure 2. Proposed Soil Borings and Existing Monitoring Well Locations - Shell Service Station WIC #204-5510-0204, 350 Grand Avenue, Oakland, California

ATTACHMENT A

HAZARDOUS WASTE PROCEDURES

ISSUED DATE: 02/17/95
CANCELS ISSUE: 11/01/92
ISSUED BY: RLG

MATERIAL: CALIFORNIA **UNDERGROUND STORAGE TANK (UST)**
SOIL CONTAMINATED WITH GASOLINE/DIESEL

MINIMUM REQUIRED TESTING

TPH = TOTAL PETROLEUM HYDROCARBONS, DHS GC-FID MOD 8015
GASOLINE OR DIESEL AS REQUIRED.
BTXE = EPA 8020
CAM METALS = TTLC ALL:
STLC ON ALL TTLC METALS 10 X STLC MAXIMUM,
TTLC LEAD =>13 MG/KG REQUIRES ORGANIC ANALYSIS,
EP TOX METALS FOR STLC METALS AT OR ABOVE
STLC REGULATORY LEVEL.

AQUATIC BIOASSAY (FISH TOX) IS ONLY TO BE RUN ON SAMPLES WITH GREATER THAN 5000 PPM TPH. COMPOSITE A MAXIMUM OF 4 SAMPLES. AQUATIC BIOASSAY (FISH TOX) = PART 800 OF "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER (15TH EDITION)"

LABORATORY INSTRUCTIONS (MINIMUM GUIDELINES ONLY)

- 8015/8020 TO BE BILLED AS "COMBO" WITHOUT EXCEPTION
- TPH REQUIRED ON ALL SAMPLES.
- ALL OTHER TESTS REQUIRED TO BE RUN ON COMPOSITE(S). MAX. 4 SAMPLES PER COMPOSITE.
- ORGANIC ANALYSIS REQUIRED FOR TTLC LEAD OF 13 MG/KG OR GREATER.
- STLC REQUIRED FOR METALS WITH TTLC VALUE 10 X STLC MAXIMUM.
- LABORATORY IS TO SUPPLY QA/QC INFORMATION WITH ALL ANALYTICAL REPORTS.
- MAIL OR FAX ALL ANALYSIS TO PERSON REQUESTING ANALYSIS. **DO NOT FAX** OR MAIL ANALYSES TO RON GEMEINHARDT OR THE WASTE DISPOSAL COORDINATOR UNLESS SPECIFICALLY REQUESTED.
- QUESTIONS REGARDING ANALYSIS CONTACT RON GEMEINHARDT AT (714) 520-3385.

PROCEDURE ORIGINAL DATE: 07/10/90
PROCEDURE REVISED DATE: 01/01/95

ATTACHMENT B

LANDFILL APPROVAL

FORWARD
INCORPORATED

P.O. Box 6336
1145 W. Charter Way • Stockton, CA 92506
(209) 466-4482 • (800) 204-4242 • FAX (209) 466-1067

March 5, 1996

Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608-2411

Attention: Brian Busch

RE: Soil Characterization Workplan for Shell Service Station
350 Grand Avenue, Oakland, CA
WA Job#81-0701
WIC #204-5510-0204

Dear Mr. Busch:

The Soil Characterization Workplan for the Shell Service Station at 350 Grand Avenue in Oakland is acceptable to profile the soil to our facility. ***FORWARD, INC.*** requires a representative sampling[1] of the waste prior to its acceptance for disposal. The sampling of the soil can be conducted while the soil is in place as long as the samples are representative of the waste as a whole. The analytical testing performed on these samples should include any constituents of concern based on generators knowledge, past uses of the site, known spills, or leaks of potential contaminants. For gas and diesel contaminated soil the minimum analytical required includes: TPH as gasoline by EPA Method 5030/8015, TPH as diesel by EPA Method 3550/8015, BTEX by EPA Method 8020, and total lead. In addition, the Waste Extraction Test on lead is required if the total amount is greater or equal to 50 mg/kg. The 96-Hour Aquatic LC50 (fish bioassay) is required if gasoline is greater or equal to 5900 mg/kg or if diesel is greater or equal to 20,000 mg/kg. Please consult ***FORWARD, INC.'s*** Waste Acceptance Procedures or contact our Technical Service Representative for further information on sampling requirements.

Thank you for the opportunity to do business together. Final acceptance of the soil will be contingent upon ***FORWARD, INC.*** obtaining from the generator or contractor a completed ***FORWARD, INC.*** Waste Profile Form, necessary analytical data and chain of custody documentation. Should you have any questions regarding soil acceptance, please do not hesitate to contact me at (800)204-4242.

Sincerely,

FORWARD, INC.

Seth P. Catalli
Account Manager

[1] In accordance with EPA Guidance Document SW-846, "Testing Methods for Evaluating Solid Waste", 3rd Edition, U.S. Environmental Protection Agency, 1986.

ATTACHMENT C

STANDARD FIELD PROCEDURES

STANDARD FIELD PROCEDURES

Weiss Associates (WA) has developed standard procedures for drilling and sampling soil borings and installing, developing and sampling ground water monitoring wells. These procedures comply with Federal, State and local regulatory guidelines. Specific procedures are summarized below.

SOIL BORING AND SAMPLING

Objectives/Supervision

Soil sampling objectives include characterizing subsurface lithology, assessing whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and collecting samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers. Split-barrel samplers lined with steam-cleaned brass or stainless steel tubes are driven through the hollow auger stem into undisturbed sediments at the bottom of the borehole using a 140 pound hammer dropped 30 inches. Soil samples can also be collected without using hollow-stem augers by progressively driving split-barrel soil samplers to depths of up to 20 ft.

Soil samples are normally collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Near the water table and at lithologic changes, the sampling interval may be less than five ft.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Analysis

After noting the lithology at each end of the sampling tubes, the tube chosen for analysis is immediately trimmed of excess soil and capped with teflon tape and plastic end caps. The sample is labelled, stored at or below 4°C, and transported under chain-of-custody to a State-certified analytic laboratory.

Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the stratigraphy and ground water depth to select soil samples for analysis.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe. If wells are completed in the borings, the well installation, development and sampling procedures summarized below are followed.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Wells are installed to monitor ground water quality and determine the ground water elevation, flow direction and gradient. Well depths and screen lengths are based on ground water depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and state and local regulatory guidelines. Well screens typically extend 15 ft below and 5 ft above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three to five ft thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two ft thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of cement with 3-5% bentonite.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security. The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

After 24 hours, the wells are developed using a combination of ground water surging and extraction. Surging agitates the ground water and dislodges fine sediments from the sand pack. After about ten minutes of surging, ground water is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of ground water are extracted and the sediment volume in the ground water is negligible. All equipment is steam-cleaned prior to use

and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Ground Water Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of ground water are purged prior to sampling. Purging continues until ground water pH, conductivity, and temperature have stabilized. Ground water samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labelled, placed in protective foam sleeves, stored at 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.