EXCELTECH

WORK PLAN
SUPPLEMENTAL SOIL
INVESTIGATION

FOR

SHELL SERVICE STATION
230 WEST MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

Project No. 1847-2G
July 1990

Northern California Regional Office 41674 Christy Street, Fremont, CA 94538-3114 (415) 659-0404 Fax: (415) 651-4677

EXCELTECH

July 3, 1990

Alameda County Health Care Services
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Suite 200
Oakland, CA 94621

Attention: Mr. Gil Wistar

Subject: Work Plan for Supplemental Soil Investigation
Shell Service Station
230 West MacArthur Boulevard, Oakland, California
Exceltech Project No. 1847-2G

Dear Mr. Wistar:

As requested in your letter dated June 8, 1990, Exceltech, Inc., (Exceltech) is pleased to submit this plan for additional work at the site noted above (Figure 1). This work plan summarizes a proposed supplemental soil investigation to attempt to define the actual source and local limits of hydrocarbon constituents detected in groundwater samples collected from MW-4.

Background

After an initial leak was detected in the underground tank complex at the station, our firm installed, three groundwater monitoring wells (MW-1, MW-2, and MW-3) in July 1988. The installation was summarized in the Soil and Groundwater Investigation Report by Exceltech (then Ensco Environmental Services, Inc.) dated September 1988.

A monthly groundwater monitoring program was begun in October 1988. During this program, concentrations of total petroleum hydrocarbons as gasoline (TPHG), and benzene, toluene, ethyl benzene, and total xylenes (BTEX) in the groundwater decreased to below detection limits within an eight-month period. Monitoring was then conducted quarterly.

In July 1989, Exceltech submitted an additional work plan for shallow exploratory soil borings next to the pump islands to check for possible pipe line leaks. The results of the investigation indicated hydrocarbon concentrations next to the pump island located southwest of and closest to the underground gasoline storage tanks. In January 1990, Exceltech installed a fourth groundwater monitoring well (MW-4) downgradient from the same pump island. Quarterly monitoring of the groundwater since January has shown a level of between 2 and 4 parts per million (ppm) TPHG, and a benzene level of between 0.1 to 0.3 ppm in MW-4.

A shallow groundwater investigation was conducted on May 19, 1990, by CHIPS Environmental Services, Inc. under contract to Exceltech. The shallow groundwater investigation and results were summarized in the June 1990 quarterly report. A series of probes were drilled into the traffic lane adjacent to the Shell service station. The downgradient extent of TPHG and BTEX was

determined to be at approximately Point 3 (Figure 2) where all constituents tested for were below the laboratory detection limits.

Proposed Work

Exceltech proposes to drill three exploratory borings and install additional groundwater monitoring wells in two of the borings whose locations are based on the shallow groundwater survey results. One well will be located next to Point 3 and the other well will be placed across the street laterally from MW-4. The exploratory boring only will be drilled between the underground tank complex and the pump island located directly downgradient from MW-1 (Figure 2). An encroachment permit from the City of Oakland is required to install monitoring wells in the street. The permit requires proof of ownership documentation from Shell Oil Company. This work will also require two traffic lanes along West MacArthur Boulevard to be closed off. Due to restrictions imposed by the City of Oakland, this work will probably take place on the weekend.

Exploratory Drilling and Soil Sampling

Underground utilities have been located previously; however, the first five feet of the borings will be hand excavated to avoid damaging any underground utilities that may not have been located. Steel rebar was discovered in the concrete pavement during the shallow groundwater investigation. We will therefore employ a concrete cutting firm to drill through the 6-inch-thick pavement section. Two of the exploratory borings (wells) will be drilled to a depth of approximately 25 feet below the ground surface. The third exploratory boring will be drilled to a depth of approximately 15 feet.

The borings will be drilled with an Exceltech truck-mounted drill rig using hollow-stem continuous flight auger measuring 6-5/8 inches inside-diameter. The auger and other tools will be steam cleaned before drilling each boring to minimize the possibility of cross-contamination. Relatively undisturbed soil samples will be collected at approximately 5-foot intervals below the ground surface. The samples will be collected using a modified California split tube sampler fitted with internal 2-inch-diameter by 6-inch-long brass liners. When a boring is advanced to the desired sampling depth, the sampler will be lowered to the bottom of the hole and driven 1-1/2 feet ahead of the auger with a 140-pound, rig-operated hammer. The sampler will then be removed and disassembled.

An Exceltech geologist will select one brass liner containing a soil sample from each designated sampling interval. The sample will be capped, labeled, logged on a chain-of-custody record, and placed in an ice-cooled chest for transport to a state-certified laboratory for analysis. The geologist will also prepare a log of the subsurface conditions encountered during drilling based on observations of the other samples and classify the soil using the Unified Soil Classification System and Munsell Soil Color Charts.

All drill cuttings will be placed on and covered with plastic sheeting and left at the site until the submitted soil samples are analyzed. The two 25-foot exploratory borings will be converted to groundwater monitoring wells. The 15-foot exploratory boring will be grouted to the surface after soil samples have been collected.

Groundwater Monitoring Well Construction

The groundwater monitoring wells will be constructed of 4-inch-diameter, schedule 40 blank and slotted, flush-threaded polyvinyl chloride (PVC) pipe: no glues or solvents will be used. In each groundwater monitoring well, we will install a PVC well screen approximately 10 feet long with a minimum of three rows of 0.020-inch slots. The sand pack (No. 2/12) will be slowly poured in the annular space between the well and the boring wall to approximately 2 feet above the slotted screen section, where a bentonite seal approximately 1 foot thick will be placed. The remaining portion of annular space will be filled with grout to approximately 1 foot below the surface grade. The top of the well will be set in a traffic-rated water-tight vault box and a locking water-tight expansion plug to provide security.

Well Development

After construction, the wells will be developed by manually bailing or mechanically pumping the groundwater to: (a) remove residual silts and clays left from the drilling; and (b) to improve the hydraulic conductivity between the well and the natural formation. After development, each well will be allowed to recharge for at least 24 hours, enabling Exceltech to collect a representative groundwater sample.

Groundwater Sampling

Exceltech will collect the appropriate number of groundwater samples from each well based on the type of analysis to be performed. Before sampling the groundwater, an Exceltech sampling technician will field-check the monitoring wells by collecting a sample in a clear acrylic bailer to observe the presence of free-floating product, if any. If more than a 1/4-inch of floating product is observed, the Exceltech sampling technician will record only the depth to groundwater and the thickness of the floating product: no groundwater sample will be collected. Where no floating product is observed, the well will be purged of at least 4 well volumes of groundwater before sampling. Samples will be (a) collected with a clean bailer, (b) transferred to appropriate laboratory-supplied bottles, (c) labeled, (d) logged on a chain-of-custody record, and (e) placed in an ice-cooled chest for transport to a state-certified laboratory. A bailer blank and travel blank will be collected for analysis if applicable.

All water collected during well development will be placed in a Department of Transportation (DOT) approved drum and left on-site until laboratory results are completed.

Laboratory Analysis

The soil and groundwater samples collected will be used to ascertain the extent and level of possible petroleum hydrocarbon contamination. A California state-certified laboratory will analyze the samples using methods approved by the California Regional Water Quality Control Board (RWQCB) and the Environmental Protection Agency (EPA). Normal turnaround time for sample analysis for Shell work is five working days.

Soil

The soil samples collected from each of the three borings will be composited for laboratory analysis. Each of the three composited samples will be analyzed for the presence of TPHG and BTEX using method 8015/8020, and total lead and organic lead using the Department of Health Services method (DOHS).

Groundwater

The laboratory will analyze the groundwater samples for the presence of TPHG and BTEX using method 8015/8020. In addition, groundwater samples will be tested for Total Dissolved Solids (TDS) using method 160.1.

Surveying

The monitoring wells will be surveyed and a plot plan will be prepared. The survey, conducted with modern surveying equipment and methods, will ensure adequate accuracy so that the plans will portray data in a useful manner. The survey datum will be the same as used for the other well installations at this site.

Site Investigation Report Preparation

The investigation outlined in this work plan will be summarized in the next quarterly report, to be issued in September 1990. The report will include the field and laboratory methods used, data obtained, and conclusions and recommendations based on our findings.

Upon approval of this work plan and Proof of Ownership from Shell Oil Company for the Encroachment Permit, Exceltech will begin this phase of work. Please call if you have any questions.

Sincerely,
Exceltech, Inc.

Kay Pannell
Staff Geologist

Neil H. Zickefoose, C.E.G. 398
Senior Program Geologist

KP/NHZ/sw

cc: Mr. Lester Feldman,
California Regional Water Quality Control Board

LEGEND:

SITE LOCATION

BASE: USGS 7.5 MINUTE TOPOGRAPHIC SHEET

SCALE IN MILES

ensco environmental services, Inc.

SITE LOCATION MAP

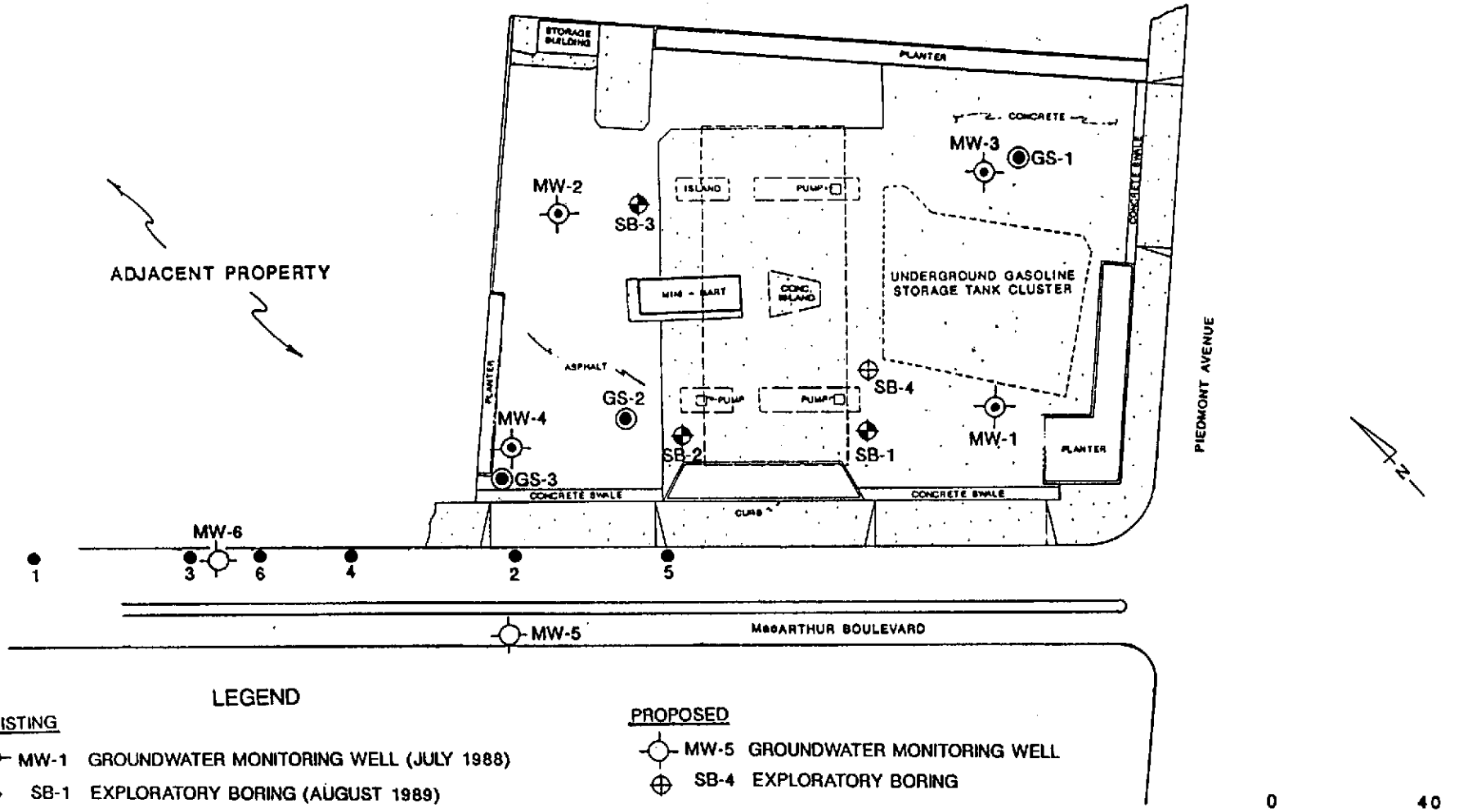
SHELL SERVICE STATION

230 MacARTHUR BOULEVARD

OAKLAND, CALIFORNIA

REVIEWED BY:	APPROVED BY:
K.P.	
JOB #: 1847G	DRAWN BY: SLS
DATE: 9-16-88	DRAWING #: FIG: 1

A-1847G-1



LEGEND

EXISTING

- MW-1 GROUNDWATER MONITORING WELL (JULY 1988)
- SB-1 EXPLORATORY BORING (AUGUST 1989)
- GS-1 SHALLOW GROUNDWATER SAMPLE POINT (OCTOBER 1989)
- 1 SHALLOW GROUNDWATER SAMPLE POINT (MAY 1990)

PROPOSED

- MW-5 GROUNDWATER MONITORING WELL
- SB-4 EXPLORATORY BORING

0 40

APPROX. SCALE IN FEET

EXCELTECH

SITE PLAN FOR PROPOSED WORK

SHELL SERVICE STATION

230 MacARTHUR BOULEVARD

OAKLAND, CALIFORNIA

REVIEWED BY:	APPROVED BY:
K. P.	
JOB #: 1847-2G	DRAWN BY: J.C.
DATE: 2/16/90	DRAWING #: FIG. 2