Woodward-Clyde

LETTER OF TRANSMITTAL

June 18, 1996

TO: Mr. Barney M. Chan
Alameda County Department of Environmental Health
Hazardous Materials Division
1131 Harbor Bay Parkway, Suite 200
Oakland, CA. 94502

FROM: George Muehleck

RE: City of Oakland - Municipal Service Center, 7101 Edgewater Drive

SUBJECT: Work Plan for Additional Groundwater Characterization

REMARKS:

Attached is the Work Plan for Additional Groundwater Characterization at the City of Oakland - Municipal Service Center. The primary focus of this work is to evaluate if groundwater, impacted by petroleum hydrocarbons and its constituents, has migrated offsite and if so, estimate the concentration of TPH and its constituents in groundwater adjacent to and surface water within San Leandro Bay and Damon Slough.

If you have any questions, feel free to call Andrew Clark-Clough at the City of Oakland, (510)238-6361, Albert Ridley (510)874-3125 or George Muehleck (510)874-3080 at Woodward-Clyde.

cc: Andrew Clark-Clough, City of Oakland, Public Works Agency
Jeff Krohn, City of Oakland, Public Works Agency
Don Hwang, Alameda County Health Care Agency
Dan Schoenholz, Port of Oakland, Environmental Department
California Regional Water Quality Control Board, San Francisco Bay Region
Rhodora Del Rosario, Baseline Environmental Consulting
Albert Ridley, WCC
File

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Engineering & sciences applied to the earth & its environment

June 17, 1996
92C0414A

Mr. Barney M. Chan
Alameda County Department of Environmental Health
Hazardous Materials Division
1131 Harbor Bay Parkway, Suite 200
Alameda, California 94502

Re: City of Oakland - Municipal Service Center, 7101 Edgewater Drive, Oakland, California

Subject: Work Plan for Additional Groundwater Characterization

Dear Mr. Chan:

On behalf of the City of Oakland (City), Public Works Agency, Woodward-Clyde Consultants (WCC) is pleased to submit this work plan for additional groundwater characterization at the City's Municipal Service Center (MSC). This work is being coordinated with the Alameda County Health Care Services Agency (AHCSA) as part of the ongoing environmental investigation of the MSC Site. The AHCSA requested additional work in letters dated, March 19 and April 25, 1996. WCC submitted a letter, dated April 22, 1996, outlining planned work to remove potential source area tanks and piping, decommission the fuel distribution lines, remediate affected soil (as appropriate) and continue monitoring groundwater quality, flow direction and gradient on a quarterly basis. This work plan specifically addresses water quality issues with respect to possible impacts offsite and in San Leandro Bay, located directly southwest, and Damon Slough, located directly northwest of the MSC site (Figure 1).

The primary focus of this work is to evaluate if groundwater, impacted by petroleum hydrocarbons and its constituents, has migrated offsite and if so, estimate the concentration of TPH and its constituents in groundwater adjacent to and surface water within San Leandro Bay and Damon Slough. This will entail the following basic work elements.

- Installation of twelve soil borings / temporary well points between the MSC fence line and adjacent surface water to evaluate fill characteristics and groundwater quality adjacent to probable surface water discharge points.
- A water level survey incorporating the temporary well points and existing monitoring to further evaluate groundwater gradient and flow direction.
- Fate and transport analyses to estimate probable groundwater and surface water quality at surface water discharge points if groundwater at the proposed boring locations is impacted. If groundwater at the boring locations is not impacted WCC

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will evaluate the probable inland extent of impacted groundwater from site-specific source areas.

SCOPE OF WORK

Task 1 - Project Mobilization

Activities to be performed during project mobilization will include meeting with the City and AHCSA to coordinate work, procuring subcontractors, obtaining underground utility clearance, ordering supplies, and mobilizing sampling equipment. Since the borings are to be installed along the Martin Luther King Jr. Regional Shoreline Park (Park) bike path access agreements or requirements will be established prior to proceeding with field work. The Oakland MSC site Health and Safety Plan (H&S plan) (issue date March 30, 1993) which was included in the Focused Work Plan for Phase II Environmental Site Assessment and Remedial Action Plan, dated April 15, 1993, will be updated and implemented in accordance with OSHA regulations for the use of WCC and WCC subcontractor personnel.

Task 2 - Soil Borings / Temporary Well Points

Twelve soil borings / temporary well points (B-35 through B-46) are proposed in the locations indicated on Figure 1. These borings are located between the MSC site boundary and the shoreline along the Park bike path. Several factors were considered when selecting the proposed boring locations:

- Ability to evaluate if MSC site-related TPH and its constituents have migrated beyond the property boundary and if so the probable impact to adjacent surface water quality.
- Ability to more clearly evaluate groundwater flow direction and gradient at and adjacent to the MSC site. As shown on Figure 1 groundwater flow direction is only understood on the east side (the MW-5, 6 and 7 area) and west side (MW-1 and 2 area) of the site. More information on groundwater flow direction between B-38 and B-42 is necessary to establish probable TPH movement.

The soil borings will be advanced using Geoprobe direct push or a hollow stem auger drilling methods, depending upon the nature of fill along the bayfront. Fill with building or construction related debris might affect the ability to advance soil borings in the proposed locations. The expected depth of the borings is 8 to 10 feet below ground surface (bgs). This includes drilling to first encountered groundwater (6 to 8 feet bgs) and just beyond for installation of the temporary well point. Continuous core soil samples will be collected in order to characterize the fill. The cores will be logged according to the Unified Soil

Classification System (USCS) by WCC staff under the review of a California-registered geologist. The soil samples will also be screened with a flame-ionization detector (FID) to evaluate for possible presence of organic chemicals. The FID results will be included on the lithologic log with respect to background ambient air and soil sample readings.

Temporary well points will be installed in each of the soil borings. Temporary well points are proposed because it is probable that groundwater at the boring locations is tidally influenced, due to the close proximity to surface water. Use of temporary well points affords the ability to collect groundwater samples on an outgoing tide when surface water has a minimum affect on groundwater quality. The well points will be constructed with PVC casing and screen. The screened interval of the temporary well points will straddle the water table so that floating product, if present, can be detected. The well points will be backfilled with sand (to 1 foot above the top of the screened interval) and bentonite to land surface. The temporary well points will be surveyed in with respect to location and measuring point elevation. The well points will be removed after completion of groundwater sampling and water level surveys (approximately 1 week after installation). After removal of the temporary well points the borings will be backfilled from total depth to land surface with bentonite grout.

Chemical Analyses

Soil: At least 6 soil samples are proposed to be analyzed for Total Organic Carbon (TOC) following EPA Method 415.1/9060 in order to account for potential retardation of TPH and its constituents due to soil adsorption. This information will be incorporated into the fate and transport model, as appropriate. The samples will be collected from varying soil types within the estimated groundwater transport zone (6 to 8 feet bgs). Two samples each are proposed from the eastern (B-35 through 38), central (B-39 through 42) and western (B-43 through 46) portions of the study area. No other chemical analyses are proposed for soil samples.

Groundwater: Table 1 is a summary of the proposed analyses for the groundwater samples. Samples from borings B-35 through 40 are to be analyzed for TPH as gasoline and diesel fuel, and benzene, toluene, ethylbenzene and total xylenes (BTEX). TPH as diesel is not included in the analyses of groundwater samples from B-41 through B-46 because UST tank information and previous groundwater sampling do not indicate a presence of diesel fuel in groundwater in that portion of the study area.

Evaluation of Groundwater Gradient and Flow Direction

A water level survey will be conducted which will incorporate the temporary well points and existing monitoring wells. The groundwater survey should provide more data in the central

portion of the study area where groundwater flow direction is poorly understood. At least two rounds of water level measurements (one at low tide and one at high tide) will be completed. This information will be used to evaluate groundwater flow direction and gradient, possible tidal affects, and probable flow direction of TPH-impacted groundwater.

Task 3 - Fate and Transport Analyses

Data gathered during this and previous MSC Site investigations will be used evaluate MSC site-specific fate and transport of TPH and its constituents. This evaluation will be used to estimate probable groundwater and surface water quality at surface water discharge points if groundwater at the proposed boring locations is impacted. If groundwater at the boring locations is not impacted WCC will evaluate the probable extent of impacted groundwater from site-specific source areas.

Task 4 - Report Preparation

WCC will prepare a letter report summarizing the results of this investigation. This will include the results of the primary evaluations with respect to possible migration of onsite TPH impacted groundwater to offsite locations and to San Leandro Bay and Damon Slough. The report will include figures showing the location of the borings, groundwater contour maps, and the analytical results of soil and groundwater samples. Tables will include basic data on the borings, survey and water level data, analytical results and estimated concentrations at significant locations established by fate and transport modeling. The report will include recommendations for additional work, as necessary.

SCHEDULE

The following schedule should apply to this investigation after approval of the work plan by the AHCSA:

Weeks 1 through 4	Mobilization
Week 5	Field Work
Week 7	Receipt of Analytical Results
Week 10	Submittal of Draft Report to City of Oakland
Week 11	City of Oakland Review of Draft Report
Week 12	Incorporate City Comments and Finalize Report
Week 13	Submittal of Final Report to AHCSA

If you have any questions, feel free to call Andrew Clark-Clough at the City of Oakland, (510) 238-6361, Albert Ridley (510) 874-3125 or George Muehleck (510) 874-3080 at WCC.

Sincerely,

Albert P Ridley, C.E.G.
Project Manager

George Muehleck, R.G.
Senior Project Hydrogeologist

cc: Andrew Clark-Clough, City of Oakland, Public Works Agency
Jeff Krohn, City of Oakland, Public Works Agency
Don Hwang, Alameda County Health Care Services Agency
Dan Schoenholz, Port of Oakland, Environmental Department
California Regional Water Quality Control Board, San Francisco Bay Region
Rhodora Del Rosario, Baseline Environmental Consulting
File

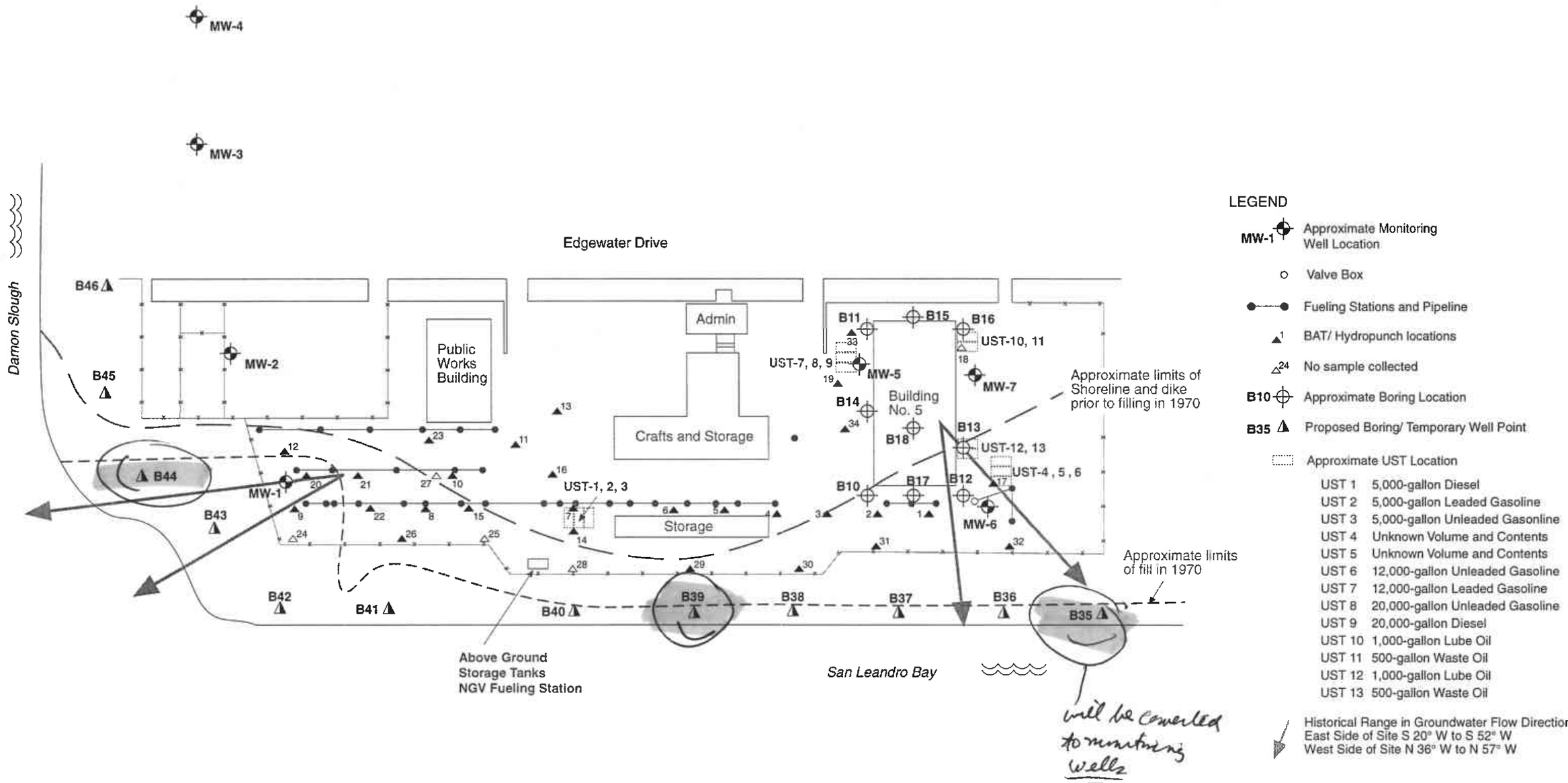
TABLE 1

PROPOSED ANALYSES
GROUNDWATER INVESTIGATION

Oakland Municipal Service Center

Location	Total Petroleum Hydrocarbons		BTEX[2] (8020)
	Gasoline (5030/8015)	Diesel[1] (3510/8015)	
B-35	✓	✓	✓
B-36	✓	✓	✓
B-37	✓	✓	✓
B-38	✓	✓	✓
B-39	✓	✓	✓
B-40	✓	✓	✓
B-41	✓	--	✓
B-42	✓	--	✓
B-43	✓	--	✓
B-44	✓	--	✓
B-45	✓	--	✓
B-46	✓	--	✓

Notes:
-- Not analyzed
Numbers shown in parentheses indicates the EPA method used for analyses
[1] EPA Method 3630M Silica Gel Cleanup
[2] BTEX = benzene, toluene, ethylbenzene and total xylene



10/29/95 update from G. Muehleck
9 of 12 temp well pts
· B35, 39, 44 not able to drill
will try to get hollow stem auger to drill the remaining 3 borings. will also take spls for TOC + parameters rec. for ftt Calcs

Project No. 92C0414A	City of Oakland Municipal Service Center	PREVIOUS AND PROPOSED INVESTIGATION LOCATIONS	Figure 1
Woodward-Clyde Consultants			

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