Additional Site Assessment Work Plan
RINEHART OIL, INC. - OAKLAND TRUCK STOP
1107 5th Street, Oakland, California

28 March 2008
AGE-NC Project No. 03-1101

PREPARED FOR:

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1107 5th Street, Oakland, California

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1107 5th Street, Oakland, California

1.0. INTRODUCTION

At the request of Mr. Reed Rinehart of Rinehart Oil, Inc., *Advanced* GeoEnvironmental, Inc. (AGE) has prepared this *Additional Site Assessment Work Plan* for the site located at 1107 5th Street, Oakland, California. In a directive letter dated 25 January 2008 (Appendix A), Alameda County Environmental Health Services (ACEHS-DEP) required further vertical and lateral delineation of petroleum hydrocarbon contamination, both north and east of the site, resulting from an unauthorized release from underground storage tanks (USTs). The purpose of the proposed investigation is to assess the lateral and vertical extent of petroleum hydrocarbon-impacts to ground water both north of the site and east of the site.

2.0. SCOPE OF WORK

The scope of work includes the advancement of three soil borings: one in the northeastern portion of the site, another on the north side of 5th Street, and a final one to the east of Chestnut Street.

The ground water assessment will consist of the following tasks:

- Permitting and pre-field work activities;
- Advancement of three (3) cone penetrometer testing (CPT) probes at one on-site and two off-site locations;
- Collection and analysis of depth-discrete ground water samples from the CPT locations; and
- Report preparation.

2.1. PERMITTING AND PRE-FIELD WORK ACTIVITIES

All necessary encroachment, obstruction, and excavation permits will be obtained from the City of Oakland Office of Building and Planning and a water resources well permit will be obtained from the Alameda County Public Works Agency (ACPWA). Prior to mobilization, each CPT probe location will be clearly marked, and a utility clearance obtained through Underground Service Alert. The ACPWA will be contacted 48 hours prior to conducting investigation activities.

2.2. CONE PENETROMETER TESTING

AGE proposes to conduct vertical assessment of soil stratigraphy and impacts to ground water

utilizing CPT techniques. A 25-ton truck-mounted CPT rig is utilized to advance an electronic piezocone (CPTU) into the subsurface to total depth. As the CPTU is advanced, it provides a nearly continuous electronic log ("sounding") of subsurface soil resistence, friction, and pore water pressure, which are utilized to interpret subsurface stratigraphy and hydrogeologic characteristics, which are useful to identify permeable strata at various depths to target for collection of in-situ (depth-discrete) ground water samples. The initial boring will be a advanced to a depth of at least 90 feet below surface grade (bsg), to assist in targeting coarser-grained water-bearing zones for collection of deeper, discrete ground water samples; however, the total depth of the boring may vary according to geologic/hydrogeologic conditions encountered during drilling activities. At selected depth intervals during each CPT sounding, pore water pressure will be monitored to determine relative hydraulic conductivity and hydrostatic head (ground water level). CPT procedures are presented in Section 3.1.

2.3. IN-SITU GROUND WATER SAMPLING AND ANALYSIS

It is proposed that ground water samples will be collected from two depth-discrete intervals below 30 feet bsg in the two locations on the eastern portion of the site for the purpose of vertical assessment (Figure 2); the ground water samples will be collected from a boring other than the CPT sounding boring. It is proposed that the ground water samples will be collected at the first encountered water-bearing unit (water table interval) and from the two subsequent water-bearing intervals below 30 feet bsg (B-Zone and C-Zone) as identified from the CPT sounding data. Based on results of the previous CPT investigations in the area, it is anticipated that ground water samples will be collected at approximately 30 to 35 feet bsg, a undetermined depth between 35 and 60 feet bsg and the total depth of the CPT boring near 90 feet bsg. However, actual sampling intervals will be selected based on the results of the CPT soundings, which may be advanced deeper than 90 feet bsg, depending on subsurface conditions. In-situ ground water sample collection procedures are presented in Section 3.1.

Selected ground water samples will be analyzed by a California Department of Public Health (CDPH)-certified laboratory for the following:

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX), by EPA Method 8260B;
- Total petroleum hydrocarbons as diesel (TPH-d), by EPA Method 8015M;
- Total petroleum hydrocarbons as gasoline (TPH-g), by EPA Method 8015M; and
- Fuel additives including MTBE, di-isopropyl ether (DIPE), ethyl tertiary-butyl ether (ETBE), tertiary-amyl methyl ether (TAME), tertiary-butyl alcohol (TBA), 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB), by EPA Method 8260B.

Laboratory reports of ground water analyses, testing methods, laboratory quality assurance/quality control (QA/QC) reports, and sample chain-of-custody documentation will be presented in a report with findings and recommendations. Electronic deliverable format (EDF) files of the laboratory analytical results will be submitted to the State of California GeoTracker database.

2.4. REPORT PREPARATION

Upon completion of field work and receipt of final laboratory analysis, a report will be prepared presenting the findings of the additional ground water assessment. The report will include a description of the work performed, results and findings of the sampling and analysis, and conclusions and applicable recommendations. The report will be in a format acceptable to the ACEHS-DEP, and will be reviewed and signed by a California Professional Geologist.

3.0. FIELD PROCEDURES

All field procedures will be overseen by an AGE representative under the supervision of a California Geologist. Procedures for the CPT investigation, ground water sampling, sample shipment, equipment decontamination, and boring destruction are outlined below.

3.1. CONE PENETROMETER TESTING

The CPT test will be performed in accordance with ASTM Standard D3441. CPT soil borings will be advanced utilizing a 25-ton truck-mounted CPT rig equipped with 1.5-inch diameter hollow-stem push rods. The CPT rig utilizes a hydraulic ram to advance a CPTU attached to the push rods. The CPTU measures cone bearing (tip resistence), sleeve friction, and dynamic pore water pressure at 5-cm intervals during penetration; at selected depth intervals, pore water pressure can be monitored to estimate relative hydraulic conductivity and hydrostatic head. Utilizing the CPTU measurements, the *Hogentogler Co.* computer program, or similar programs, can interpret general lithology types, based on the *CPT Soil Behavior Classification System* (Robertson, P.K., Campanella, R.G, Gillespie, D, and Greig, J., 1986), and display the interpreted lithologies on a continuous CPT boring log.

3.2. IN-SITU GROUND WATER SAMPLE COLLECTION

At each CPT location, depth-discrete (in-situ) ground water sampling will be conducted in a separate and co-located boring (a twin boring) adjacent to the initial CPT sounding location. Depth-discrete ground water samples will be collected from selected depths based on the CPT-lithologic data

identifying potential hydrostratigraphic units. In-situ ground water samples will be collected from selected relatively permeable saturated intervals using a hydropunch-equivalent sampler. A stainless steel hydropunch-equivalent sampling tool will be attached to hollow-stem push rods and advanced in a closed position to the desired sampling interval. Subsequently, the push rod and sampler will then be retracted approximately three feet, exposing the sampler inlet screen and allowing ground water to flow into the sampler. Ground water samples will be collected utilizing a ½-inch diameter stainless steel bailer. Samples will be drawn and collected in such a manner that agitation and exposure of the ground water to the atmosphere is minimal.

3.3. SAMPLE HANDLING

Each preserved soil and ground water sample container will be labeled with the boring and/or well location, depth, time, date, and sampler's initials. Ground water samples will be collected into laboratory supplied containers. Ground water samples for BTEX, TPH-g, and fuel additive analysis will be collected into respective laboratory-supplied, 40-ml volatile organic analysis (VOA) vials without a preservative. Samples for TPH-d analysis will be collected into laboratory-supplied 1-liter amber glass containers. Following collection, the soil and ground water samples will be appropriately labeled, placed on ice, and kept in a cooler until delivered to the laboratory for analysis. Chain-of-custody protocols will be used to document sample custody transfer from the field to the analytical laboratory. A chain-of-custody form will accompany the samples.

3.4. EQUIPMENT DECONTAMINATION

All sampling tools used for sample collection will be thoroughly washed with a solution of Alconox and rinsed with clean water prior to use at each sampling location. All down-hole and probing equipment will be steam cleaned prior to advancement at each location. Decontamination rinseate disposal is presented in Section 3.5.

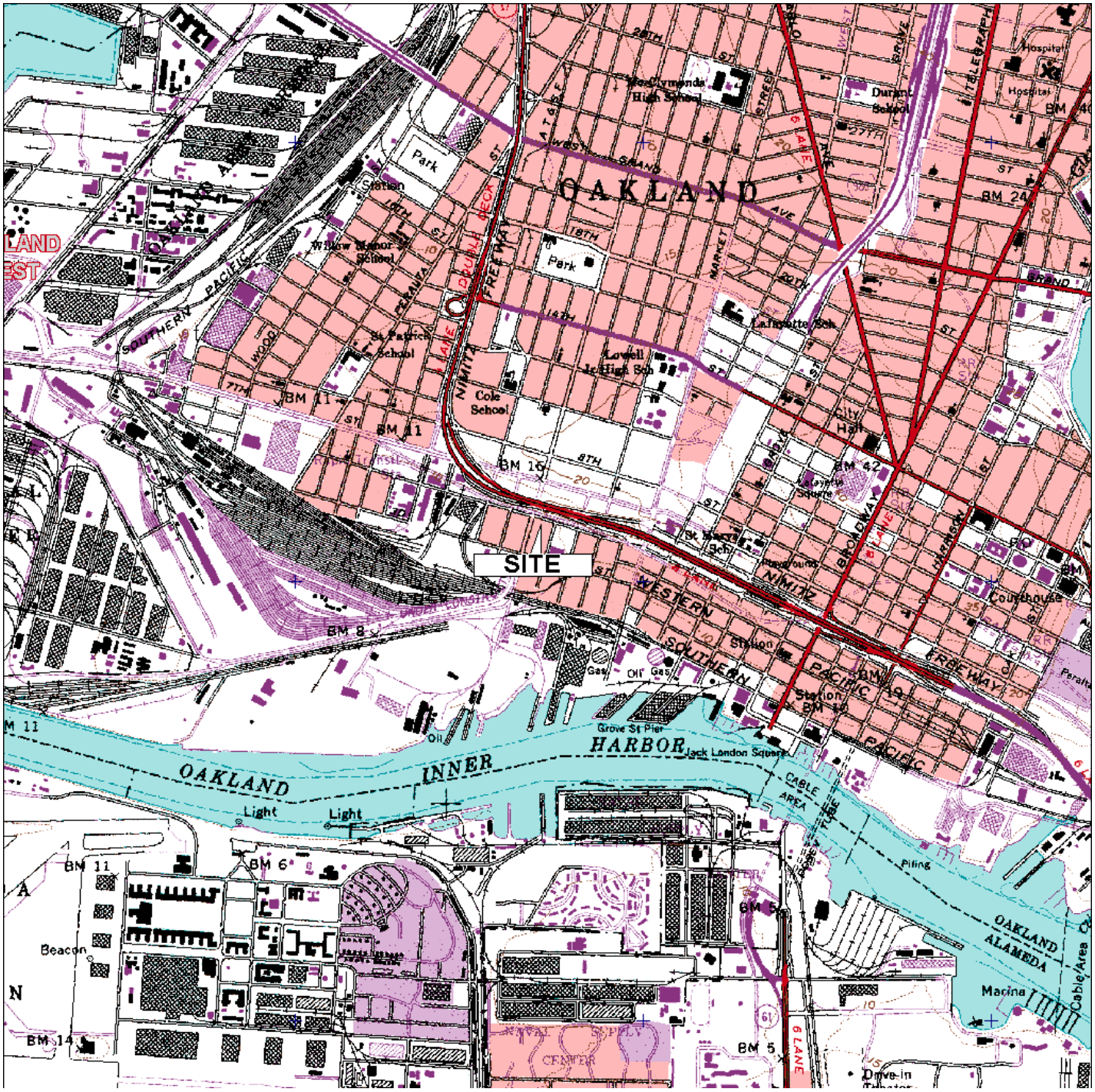
3.5. BORING DESTRUCTION

All soil borings will be permanently sealed to prevent vertical migration of potential contaminants. Soil borings and/or probe shall be destroyed by backfilling with cement-bentonite grout from the total depth to surface grade. Borings advanced below the ground water table will be backfilled with grout utilizing tremmie procedures. The ACPWA will be notified for grout inspection at least 48 hours prior to conducting grouting procedures.

3.6. WASTE DISPOSAL

Investigation-derived waste, including decontamination rinseate generated during CPT and well sampling activities, will be containerized in appropriately labeled Department of Transportation (DOT)-approved 55-gallon drums, and stored on-site pending disposal, or the CPT contractor will undertake the removal and disposal of the drums of rinseate.

FIGURES



OAKLAND WEST QUADRANGLE, CALIFORNIA
7.5 MINUTE SERIES (U.S. GEOLOGICAL SURVEY)

LOCATION MAP

RINEHART – OAKLAND TRUCK STOP
1107 5TH STREET
OAKLAND, CALIFORNIA

Advanced GeoEnvironmental, Inc.
of Northern California

PROJECT NO. AGE-NC-03-1101	FILE: LOCATION	FIGURE: 1
DATE: 27 SEPTEMBER 2004	DRAWN BY: MAC	

SITE PLAN

RINEHART – OAKLAND TRUCK STOP
1107 5TH STREET
OAKLAND, CALIFORNIA

Advanced GeoEnvironmental, Inc.
of Northern California

PROJECT NO. AGE-NC-03-1101 | FILE: OaklandSTR1107 | FIGURE: 2
DATE: 06 MARCH 2008 | DRAWN BY: MAC

BART AERIAL TRACKS

INTERSTATE 880 OVERPASS

5TH STREET

ADELINE STREET

PARKING

CPT-1

BUILDING

GATED PARKING

APARTMENTS

BUILDINGS

MW-16

MW-12

MW-13

MW-15

DRIVEWAY

P7

OZ20

OZ19

OZ18

B-1

P4

P4-W

OZ10

MW-8

SCALE

P3-W

P3

OZ17

B-2

OZ15

B-3

OZ9

OZ8

OZ7

OZ6

P2-W

P2

OZ14

MW-4

OZ5

MW-7

B-4

P6

P5

P5-W

PUMP ISLANDS

MW-5

FORMER USTs

OZ4

OZ13

OZ12

OZ11

B-5

MW-9

MW-6

MW-14

OZ3

OZ2

P1

P1-W

OZ1

MW-1

CURB

CURB

PUMP ISLANDS

CURRENT USTs

WALL

BUILDING

BUILDING

CPT-3

DRIVEWAY

CHESTNUT STREET

MW-3N

CPT-2

B-6

FENCE

MW-10

MW-11

DRIVEWAY

B-7

BUILDING

BUILDINGS

B-8

N

SCALE
0 40 80
FEET

LEGEND

- FORMER UNDERGROUND STORAGE TANK (UST) LOCATION
- EXISTING STRUCTURE
- MW-1 GROUND WATER MONITORING WELL LOCATION & DESIGNATION
- B-6 SOIL BORING LOCATION & DESIGNATION (JULY 2002)
- OZONE SPARGE WELL LOCATION
- SOIL BORING/HYDROPUNCH BORING LOCATION (JULY 2006)
- GEOPROBE SOIL BORING LOCATION (JULY 2006)
- CPT-1 CPT BORING LOCATION (SEPTEMBER 2007)
- PROPOSED CPT BORING LOCATION (current)