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ENVIRONMENT

Re: Work Plan Addendum for Additional Assessment
76 (Former BP) Service Station No. 11126
1700 Powell Street
Emeryville, California 94608
ACEH Case # RO0000066

"I declare that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct."

Date:
August 2, 2010

Submitted by:

ARCADIS U.S., Inc

Hollis E. Phillips, PG
Project Manager

Contact:
Hollis E. Phillips

Phone:
415.374.2744 ext 13

Email:
Hollis.phillips@arcadis-us.com

Our ref:
GP09BPNA.C044

ARCADIS
Infrastructure, environment, buildings

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Paresh Khatri
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6557
510.567.6700

Subject:
Work Plan Addendum for Additional Assessment
76 (Former BP) Service Station No. 11126
1700 Powell Street
Emeryville, California 94608

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Dear Mr. Khatri:

ARCADIS has prepared this Work Plan (WP) addendum in response to the comments received in the directive from Alameda County Environmental Health (ACEH) issued on July 10, 2009 (Attachment A) for the Former BP service station No. 11126 (Figure 1). The ACEH directive was written in response to the *Work Plan for Additional Assessment and Extension Request* which was submitted by Stantec Consulting Corporation (Stantec) on June 1, 2009. The Stantec WP proposed the installation of one offsite monitoring well and three onsite soil borings to six feet below ground surface (bgs). The ACEH directive indicated because there was potentially two gradient directions that one monitoring well was likely not sufficient to provide offsite plume characterization. The directive also indicated because historic groundwater levels have ranged between four and ten feet bgs soil borings should be advanced beyond six feet bgs to evaluate residual source contamination. Additionally the directive indicated a preferential pathway study should be conducted. Information on previous investigations is discussed in Attachment A of *Quarterly Groundwater Monitoring Progress Report Second Quarter 2009* (Stantec 2009)

Based on the original WP and the ACEH directive ARCADIS proposes to conduct cone penetrometer testing (CPT) with laser induced fluorescence (LIF) and a ultra-violet optical screening tool (UVOST) to evaluate both the offsite groundwater and onsite soil. Additionally, ARCADIS will conduct a Preferential Pathway Study to assess the probability of on-site contaminants migrating off-site via potential conduits.

SCOPE OF WORK

Offsite Groundwater Investigation

The proposed scope of work (SOW) for the offsite groundwater investigation will consist of the advancement of two CPTs to a depth of approximately 25 feet bgs at the locations shown on Figure 2. One location is located to the west of the site on the Denny's property and one location is located to the southwest of the site on Powell Street. These locations are approximate and the actual locations will be determined in the field based on the presence of subsurface infrastructure. CPTs provide detailed lithologic data that can be used to identify permeable zones. CPTs will be conducted using a piezocone connected by stainless steel rods to a hydraulic system that pushes the piezocone through the soil. The piezocone measures friction, tip resistance, and pore pressure, which are logged and used to evaluate soil types on a nearly continuous geologic log.

Hydropunch™ technology will be used to collect up to three depth-discrete groundwater samples from targeted permeable intervals based on the CPT results. A CPT rig will be used to advance the Hydropunch™ rods to the bottom of the desired sampling interval. The rods will then be retracted, exposing an encased filter screen and allowing groundwater to infiltrate hydrostatically from the formation into the inlet screen. A small-diameter bailer will be lowered through the rods into the screen interval for sample collection. Upon filling, the bailer will be retrieved and the groundwater will be decanted into the appropriate laboratory-supplied sample containers. Upon completion of sample collection, the equipment will be retracted and the borehole grouted with neat cement grout.

All samples will be transported to a California-certified analytical laboratory via a ground courier, dropped off at the laboratory by the field technician, or shipped to the laboratory via FedEx. Chain-of-Custody protocol will be followed. Groundwater samples will be analyzed for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and xylenes (collectively BTEX), fuel oxygenates [methyl-tert butyl ether (MTBE), di-isopropyl ether (DIPE), tert amyl methyl ether (TAME), ethyl tert-butyl ether (ETBE), tert butyl alcohol (TBA) and ethanol], and lead scavengers [1,2-dichloroethane (1,2-DCA) and ethylene dibromide (EDB)] by United States Environmental Protection Agency (EPA) Method 8260B.

Onsite Soil Investigation

Five CPT-LIF equipped with UVOST will be advanced in the vicinity of MW-9 and outside previously excavated areas to evaluate the potential presence of remaining source area at the site. The CPT-LIF UVOST characterizes stratigraphy and

petroleum hydrocarbons in soils. The CPT-LIF UVOST can delineate hydrocarbon contamination as free phase and residual contaminant concentrations in the subsurface, both above and below the water table. CPT-LIF UVOST is being proposed rather than the collection of discrete soil samples, because source is generally immobile non-aqueous phase liquid (NAPL), not total petroleum hydrocarbon (TPH) adsorbed to soil particles.

CPT-LIF UVOST uses laser to produce light that is pulsed down a fiber optic cable to a window on the side of the CPT probe. The pulsed light causes petroleum hydrocarbons in the soil to fluoresce. The emitted fluorescence travels through a second fiber optic cable to a detection system within the CPT rig. Relative concentration and product "fingerprints" are then presented in real-time. Since fluorescence intensity is proportional to petroleum hydrocarbon concentration, CPT-LIF UVOST can effectively delineate the vertical and lateral extent of contaminant distribution. At a minimum, one soil sample will be collected from each boring in order to verify the UVOST results. Soil sample locations will be based on the highest concentrations detected by the UVOST. However, in order to provide a correlation between UVOST results and laboratory results for a wide spectrum of contamination, soil samples will also be collected from less-contaminated locations.

Any investigation derived waste will temporarily be stored in California Department of Transportation approved 55 gallon steel drums on-site pending characterization and proper disposal.

In conjunction with the subsurface work a Preferential Pathway Study will be completed. Utility and well surveys will be completed by contacting the appropriate agencies for information regarding the site and the surrounding areas.

Pre-Field Activities

Prior to any field work, ARCADIS will complete pre-field activities, including obtaining access to investigation locations off-site, county permitting, utility clearance, and completing a Site-specific health and safety plan (HASP).

Access Coordination

ARCADIS will obtain an agreement to access Denny's parking lot located to the west of the Site.

Permits

ARCADIS will obtain the required encroachment permits from the City of Emeryville and drilling permits from Alameda County Environmental Health Services.

Subsurface Utility Clearance

Prior to initiating field activities, ARCADIS will mark the CPT-LIF UVOST locations, contact Underground Service Alert (USA) at least 48 hours prior to initiation of field work, and contract with a private utility locator to determine whether the proposed boring locations are clear of potential subsurface obstructions. Additionally all locations will be hand augered to five feet bgs.

Health and Safety

A Site-specific HASP that meets Occupational Safety and Health Administration (OSHA) requirements set forth in 29 CFR 1910.120 for hazardous waste operations and emergency response will be written prior to the start of field work.

Following the completion of the field work, ARCADIS will submit a report documenting the findings. The report will include CPT logs, soil and groundwater analytical results, certified laboratory analytical reports and chain-of-custody documentation, conclusions, and recommendations for future work if deemed necessary. The report describing the field work, the preferential pathway report, and all data obtained during this investigation will be electronically uploaded into the SWRCB Geotracker Database (www.swrcb.geotracker.ca.gov). Documentation of the electronic data format (EDF) submittals will be included in the final report.

Schedule

Upon approval of this WP and obtaining access to the Denny's parking lot, ARCADIS is prepared to initiate on-site investigation activities with field work beginning approximately three to four weeks after regulatory approval (or being granted access).

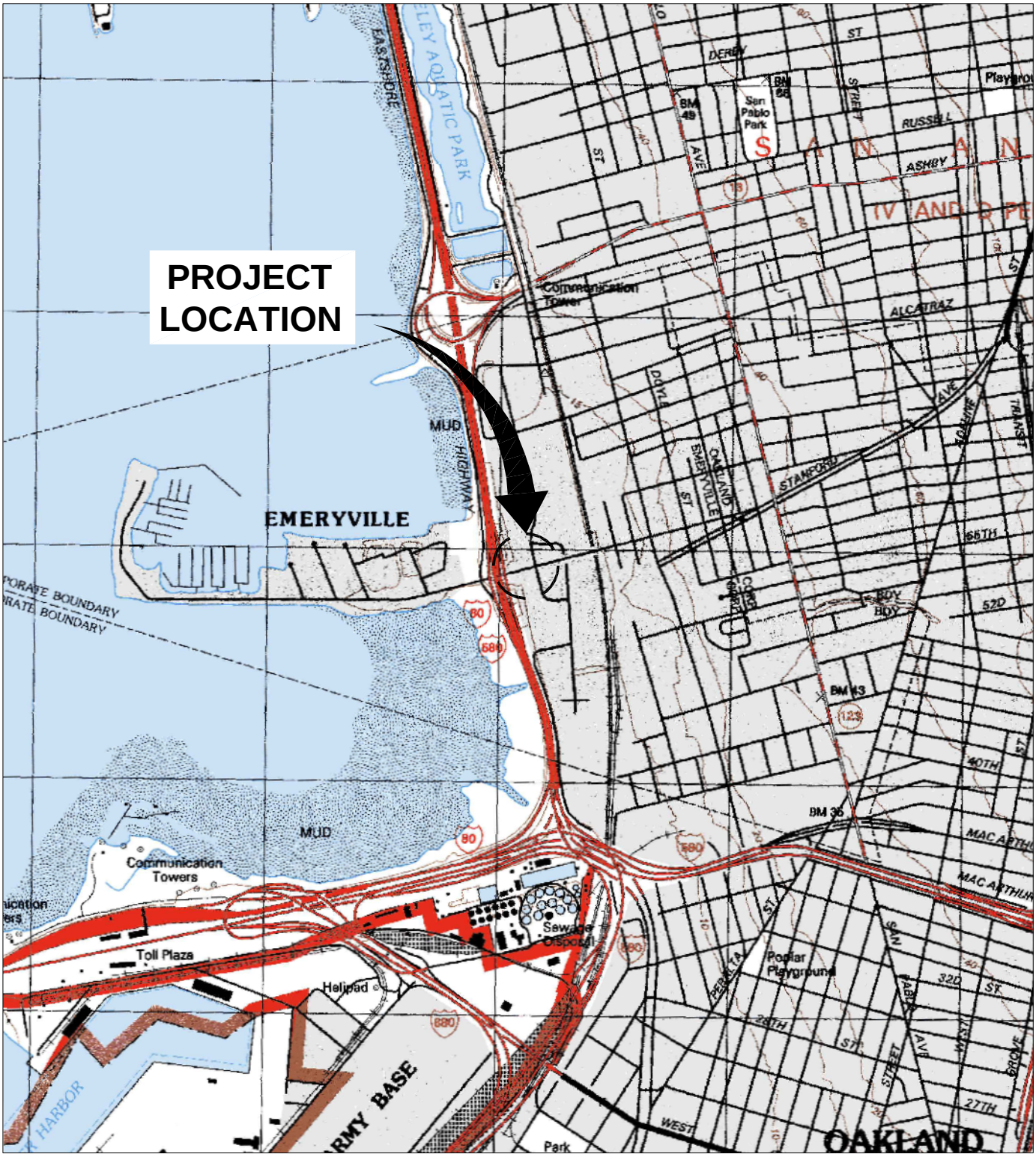
Sincerely,

ARCAIDIS-US, Inc

Hollis E. Phillips, PG
Project Manager

Attachments: Figure 1 – Site Vicinity Map

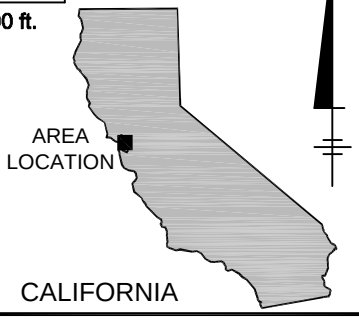
Figure 2 Proposed CPT locations



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., OAKLAND WEST, CALIFORNIA, 1993.

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.

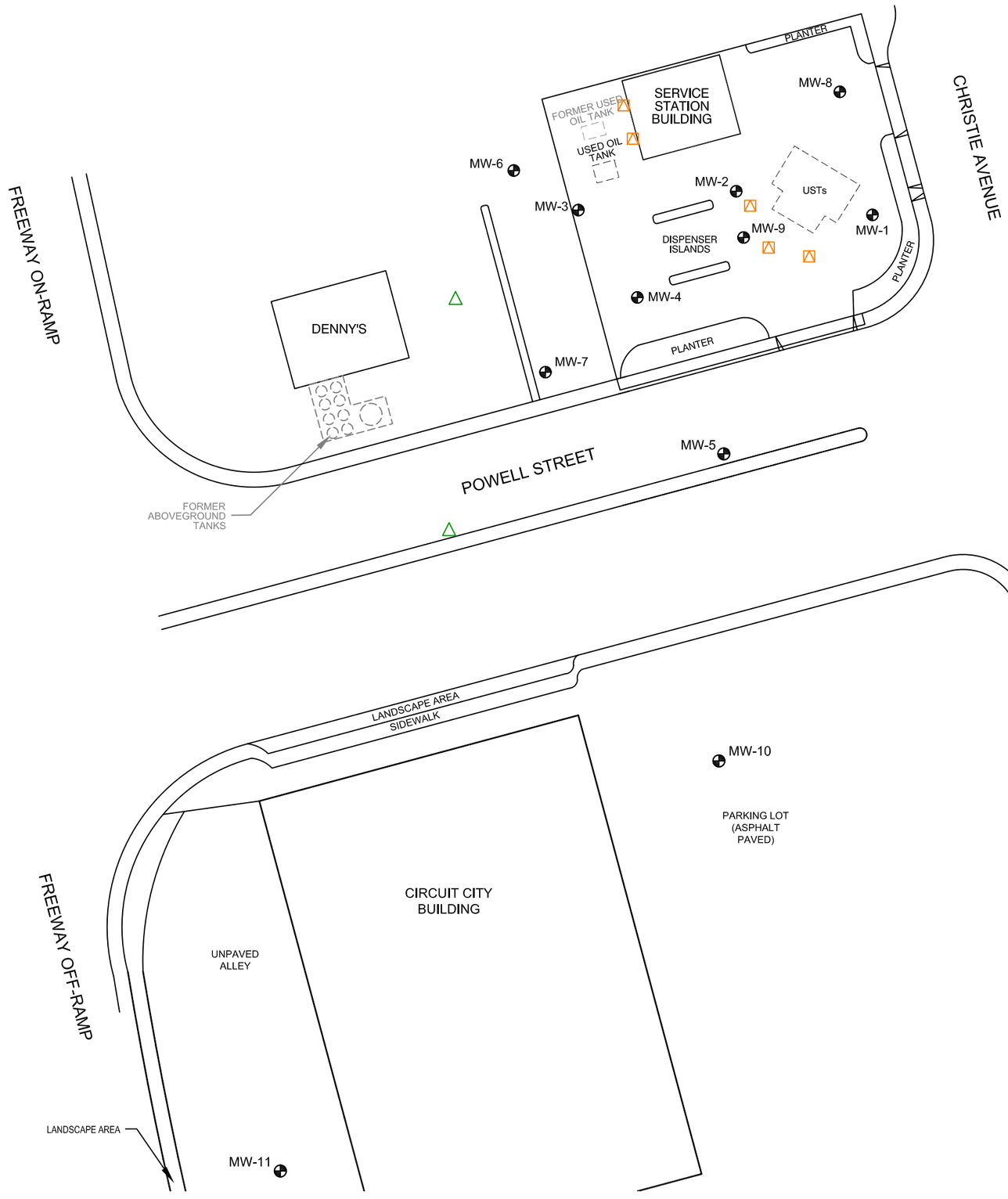


76 (FORMER BP) SERVICE STATION NO. 11126
1700 POWELL STREET
EMERYVILLE, CALIFORNIA

SITE VICINITY MAP

ARCADIS

FIGURE
1



LEGEND

MW-1 GROUNDWATER MONITORING WELL LOCATION

PROPOSED CPT BORING LOCATION

PROPOSED LOCATIONS FOR LASER INDUCED FLUORESCENCE WITH ULTRA–VIOLET OPTICAL SCREENING TOOL

NOTE:

BASE MAP PROVIDED BY SECOR, DATED 3/21/07, AT A SCALE OF 1"=50'.

0 50' 100'

GRAPHIC SCALE

76 (FORMER BP) SERVICE STATION NO. 11126
1700 POWELL STREET
EMERYVILLE, CALIFORNIA

SITE ASSESSMENT WORK PLAN ADDENDUM

PROPOSED BORING LOCATIONS

ARCADIS

FIGURE 2

CITY: PETALUMA, CA DIV/GROUP: ENV TEAM 2A DB: J. HARRIS LD:— PIC:— PM: H. PHILLIPS TM: KJ PRESTON LYR:(Opt)ON="OFF"="REF"
C:\Documents and Settings\jharris\Desktop\ENVCAD\GP09BPNA.C044.N0000\GP09BPNAC044-B02.dwg LAYOUT: 2 SAVED: 6/14/2010 2:39 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/29/2010 4:10 PM BY: HARRIS, JESSICA
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