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ENVIRONMENT

Site Remedial Strategy Update
Former BP Service Station #11132
3201 35th Avenue
Oakland, California
ACEH Case #RO0000014

"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:
June 23, 2011

Submitted by:

ARCADIS U.S., Inc

Hollis E. Phillips, PG
Project Manager

Contact:
Hollis E. Phillips

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Our ref:
GP09BPNA.C112

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Infrastructure, environment, buildings

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Paresh Khatri
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject:
Site Remedial Strategy Update
Former BP Station #11132
3201 35th Avenue, Oakland, California
ACEH Case #RO0000014

ENVIRONMENT

Date:
June 23, 2011

Contact:
Hollis Phillips

Phone:
415.374.2744 x.13

Email:
Hollis.Phillips@arcadis-us.com

Our ref:
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Dear Mr. Khatri:

ARCADIS U.S., Inc (ARCADIS) has prepared this letter to summarize our recently updated remedial strategy and path forward at the Former BP Station #11132 located at 3201 35th Avenue, in Oakland, California (Site). Review of data collected during a dual phase extraction (DPE) pilot test conducted by Broadbent & Associates, Inc. (BAI) from May 11 to May 19, 2009 indicated significant site-wide water table drawdown, but minimal induced vacuum at monitoring locations. The pilot test was conducted during a period of high groundwater elevation. Review of current and historical groundwater data indicate a wide fluctuation in groundwater elevations. ARCADIS is of the opinion that DPE may be an effective remedial technology during seasonal groundwater elevation lows (August to November). Therefore ARCADIS would like to conduct a DPE pilot test during the dry season to evaluate its potential effectiveness.

Prior to conducting the DPE pilot test ARCADIS will conduct the cone penetrometer testing/ultraviolet optical screening tool (CPT/UVOST) investigation as described in the *CPT/UVOST Field Investigation Work Plan* dated April 28, 2011 and approved by Alameda County Environmental Health (ACEH) on June 17, 2011. During evaluation of the DPE data it was determined an additional CPT/UVOST location should be advanced in the source area near MW-2 (Figure 1). This additional CPT/UVOST data will be used to determine the location, screen interval, and total depth of the new extraction well (EW-1) for the DPE pilot test. The estimated location of EW-1 is shown in Figure 1. The CPT/UVOST data will also aid in determining the depth of contamination that will be targeted during the DPE pilot test. Only one DPE well will be installed for the pilot test.

The DPE pilot test will utilize a mobile system and would include the following trailer-mounted equipment: a liquid-ring blower, knockout tank, and a thermal oxidizer. Air and water will be extracted from the newly installed extraction well using an

approximate one-inch diameter stinger lowered into each well. The depth of the stinger will be adjusted periodically in order to maximize recovery of soil vapors. Based on the total depth of the extraction well a submersible pump may also be used to completely dewater the well casing. Extracted groundwater and soil vapors will be directed to a water knockout tank. Extractor vapors will be treated by the thermal oxidizer prior to discharge to atmosphere while groundwater will be transferred to an on-site holding tank, temporarily accumulated, until transportation to an appropriate facility for disposal/treatment. Once the well has been dewatered, the applied vacuum will be incrementally increased to achieve an optimal extraction rate (maximum air flow rate).

Pilot test performance will be measured in adjacent monitoring locations (VM-1, VM-2, SVE-1, OW-1, RW-1 and MW-2) by monitoring induced vacuum and changes in water levels. Induced vacuum will be measured by connecting a well cap fitted with a ball valve, tubing, and magnehelic differential pressure gauge to each monitoring location. Water level changes will be measured by deploying dedicated down-hole pressure transducers at each monitoring location. Periodic samples of extracted groundwater and soil vapor will also be collected and analyzed to assess extraction concentrations of contaminants of concern.

Upon completion of the pilot test a report with the findings will be submitted to ACEH. If you have any questions or comments regarding the contents of this letter, please contact Hollis Phillips of ARCADIS at 415.374.2744 ext. 13 or by e-mail at Hollis.Phillips@arcadis-us.com.

Sincerely,
ARCADIS

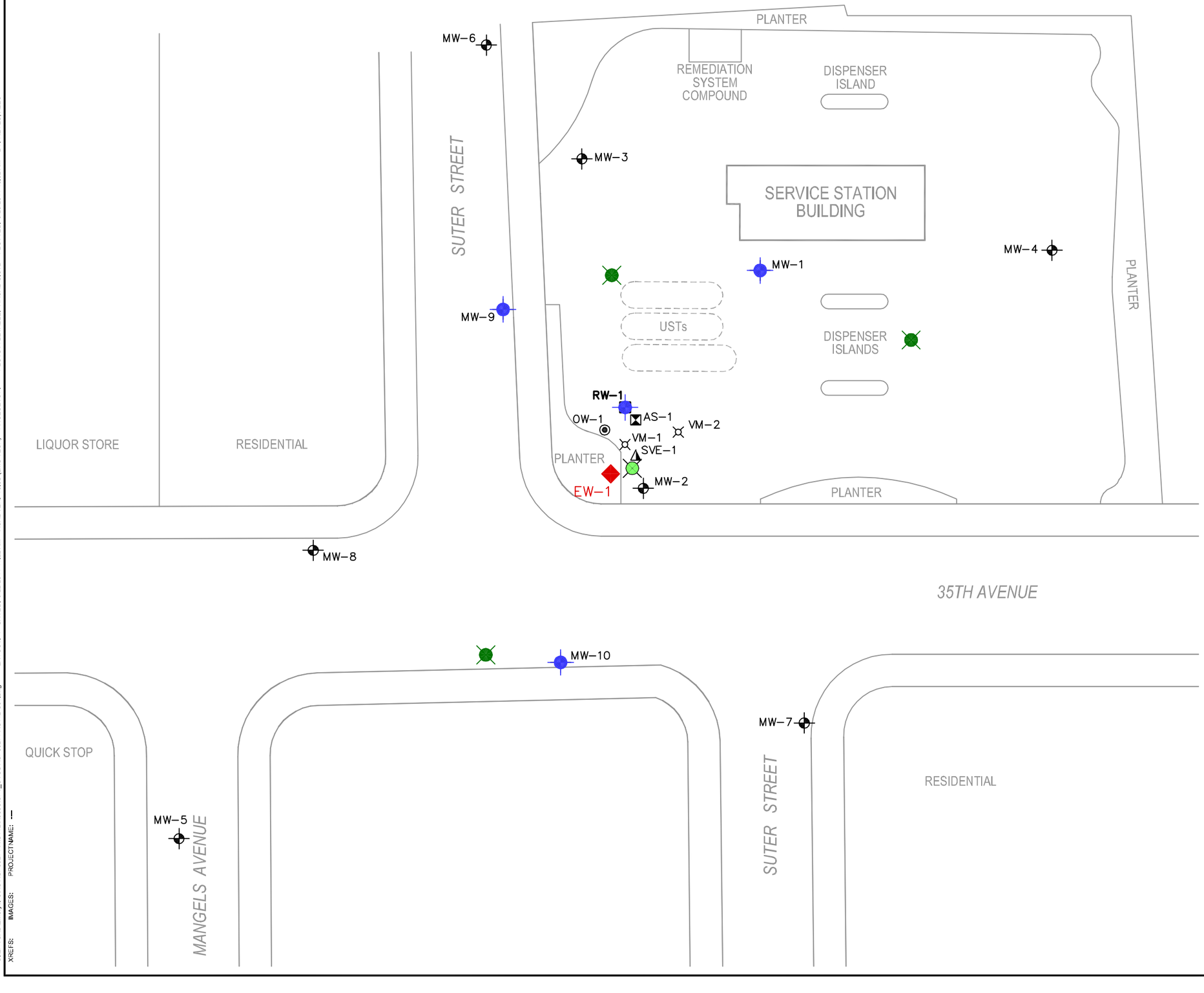
Hollis Phillips P.G.
Project Manager

Enc:

Figure 1-Site Plan with Proposed CPT/UVOST and Well Locations

References:

ARCADIS US, Inc. 2011. *CPT/UVOST Field Investigation Work Plan, Former BP Station #11132, 3201 35th Avenue, Oakland, California, ACEH Case #RO0000014*. April 2011



LEGEND

- MW-1 GROUNDWATER MONITORING WELL
- RW-1 GROUNDWATER RECOVERY WELL
- PROPOSED LOCATION OF CPT/UVOST (APRIL 28, 2011)
- NEWLY PROPOSED LOCATION OF CPT/UV/UVOST
- SHEEN/PRODUCT RECENTLY PRESENT
- EW-1 APPROXIMATE LOCATION OF PROPOSED EXTRACTION WELL
- AS-1 AIR SPARGE WELL (ARCADIS, 2010)
- OW-1 OBSERVATION WELL (ARCADIS, 2010)
- SVE-1 SOIL VAPOR EXTRACTION WELL (ARCADIS, 2010)
- VM-1 SOIL VAPOR MONITORING WELL (ARCADIS, 2010)
- CPT TO 40' BGS

NOTE:

BASE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 9/15/09, AT A SCALE OF 1"=50'.

0 30' 60'

GRAPHIC SCALE

FORMER BP STATION No. 11132
3201 35TH AVENUE
OAKLAND, CALIFORNIA
SITE REMEDIAL STRATEGY UPDATE

SITE PLAN WITH PROPOSED CPT/UVOST AND WELL LOCATIONS

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FIGURE 1