ARC™

Document Solutions

Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Re: ARC Document Solutions (Formerly City Blue Print)
RWQCB Case#01-0210
1700 Jefferson St
Oakland CA, 94612

ARC has directed Applied Water Resources Corporation (AWR) to provide, on our behalf, professional environmental consulting services to the best of their ability. To the best of my knowledge, the information in this report is accurate and all local Agency and/or Regional Water Quality Control Board regulations and guidelines have been followed.

This report was prepared by AWR and ARC has relied on their advice and assistance. I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Sincerely,

Matt Westbrock - Asst. Corp. Controller
Authorized Representative

Attachment: Report

APPLIED WATER RESOURCES
CORPORATION

2363 Mariner Square Drive, Suite 245, Alameda, CA 94501
510 671 2090

February 24, 2017

Mr. Mark Detterman
Alameda County Department of Environmental Health-LOP
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: Work Plan Addendum
1700 Jefferson Street, Oakland, California

Dear Mr. Detterman:

On behalf of ARC and based on our phone conversations, this letter workplan is an addendum to the previously approved *2013 Conceptual Site Model and Work Plan for 1700 Jefferson Street, Oakland, California, Foundation Depth Survey Report, and December 2015 Work Plan Addendum*.

This addendum adjusts the sampling locations in the courtyard north of the Site. Data collected during the 2016 investigation indicates a potential risk to indoor air at the apartment building adjacent to the Site. In addition, due to the inconsistences of benzene concentrations in the ground water and soil vapor on the south side of 18th Street, there is evidence that concentrations found in MW-5 may not be solely associated with the Site and there may be an off-site contributor.

This addendum includes the following:

- Figure 1 shows the additional borings proposed to be advanced.
- Table 1 identifies for each boring location the media to be sample and provides the types of wells proposed to be constructed.

<u>Soil and Ground Water</u>
All drilling will be performed by a licensed drilling contractor using a remote access hollow stem auger and a split spoon sampler. Soil samples will be collected continuously in D2, D3, and D6 and every 5 feet in the remaining locations. Soil will be described with regard to soil type, relative moisture, and color in accordance with the Unified Soil Classification System and screened using a Photo Ionization Detector (PID) for volatile organic compounds and if contamination is observed based on the PID readings, a soil sample will be collected in EPA method 5035 compliant terracore sampling containers and analyzed for total petroleum hydrocarbons as gasoline (TPHg)

and benzene, toluene, ethylbenzene, xylenes (BTEX) and naphthalene by EPA method 8015/8020.

Grab ground water samples will be collected using a 1-inch diameter PVC well casing and screen. The PVC will be inserted into the borehole and the augers will be raised approximately 1 foot to allow ground water to enter the PVC. Ground water grab samples will be collected within the casing using dedicated tubing with a check valve, or a peristaltic pump. The ground water samples will be collected into laboratory-supplied containers for the analysis of TPHg and BTEX by EPA Method 8015/8020.

Ground water monitor wells are proposed to be installed in four locations to approximately 15 feet below the surface of the courtyard. The monitor wells will be approximately 0.75" to 1" in diameter. The number of monitor wells and locations are subject to change based on field observations and data.

Soil Vapor

The courtyard was measured to be approximately 13 feet below ground surface (bgs) during the recent site visit on February 23, 2017. Appendix A presents foundation plans that were given to AWR from the property owner. Foundation footings appear to extend to approximately 5 feet below courtyard or about 18 feet below street level. The LTCP requires soil vapor samples be collected 5 feet below the foundation of the building, or 23 feet bgs, however ground water has been measured at 22 to 24 feet bgs in nearby wells. It is proposed that soil vapor samples be collected from the sandy zone that yield ground water, but no more than approximately 6 feet below the surface of the courtyard to minimize intrusion of moisture into soil vapor samples. The depth of the soil vapor well may be shallower if ground water is found higher than 22 feet bgs.

Each soil vapor point or well will be installed by a licensed drilling contractor using a rotary hammer drill with flighted augers in a 2-inch diameter boring using a ¼" vapor sampling implant with an expendable implant anchor in the bottom of the boring. Soil vapor samples will be collected after 48 hours with summa canisters within a helium shroud in accordance with DTSC's Soil Gas Advisory (July 2015)

Soil vapor will be analyzed for VOCs by EPA Method TO-15 and for fixed gases by ASTM D1946. Following collection, all samples will be appropriately labeled with the sample ID, date and time of collection, and sampler's initials. The samples will be transported to the laboratory under standard chain-of-custody procedures.

Upon completion of all sampling and data collection activities, soil vapor points will be removed in accordance with Alameda County requirements and soil vapor wells will be sealed and secured within a traffic-rated monitoring well box.

Sub-Slab Sampling

Each sub-slab soil vapor sampling point will consist of a VaporPin™ implanted into a 5/8-inch diameter hole drilled through the concrete slab using a rotary hammer drill. A protective cap will

be placed over the barbed sampling end. The implant will be left in place for approximately 20 minutes in order to allow the sub-slab soil vapor to reach equilibrium. The sub-slab soil vapor will be sampled and analyzed for VOCs by EPA Method TO-15. The sub-slab points will be secured in place for future sampling events. Standard Operating Procedures for the VaporPin™ are provided in Appendix B.

All soil vapor and sub-slab samples will sampled in accordance with the July 2015 DTSC Soil vapor Advisory and AWR SOP's that have been provided in previous reports.

We hope this Addendum meets your needs. Please call with your comments or questions.

Regards,

Applied Water Resources

Steve Michelson
Principal Geologist

Distribution List

Matthew Westbrook; Jeffery Grimes
ARC Document Solutions
1981 N. Broadway, Suite 385
Walnut Creek CA 94596

Figures:
Figure 1 - Proposed Sampling Locations

Tables
Table 1 – Proposed Borings

Appendices:
Appendix A – Foundation Plans
Appendix B – Vapor Pin

FIGURES

APPLIED WATER RESOURCES

Figure 1

Proposed Boring Locations

581 18th Street, Oakland, CA

Proposed Boring Location

0 10 20

Feet

N

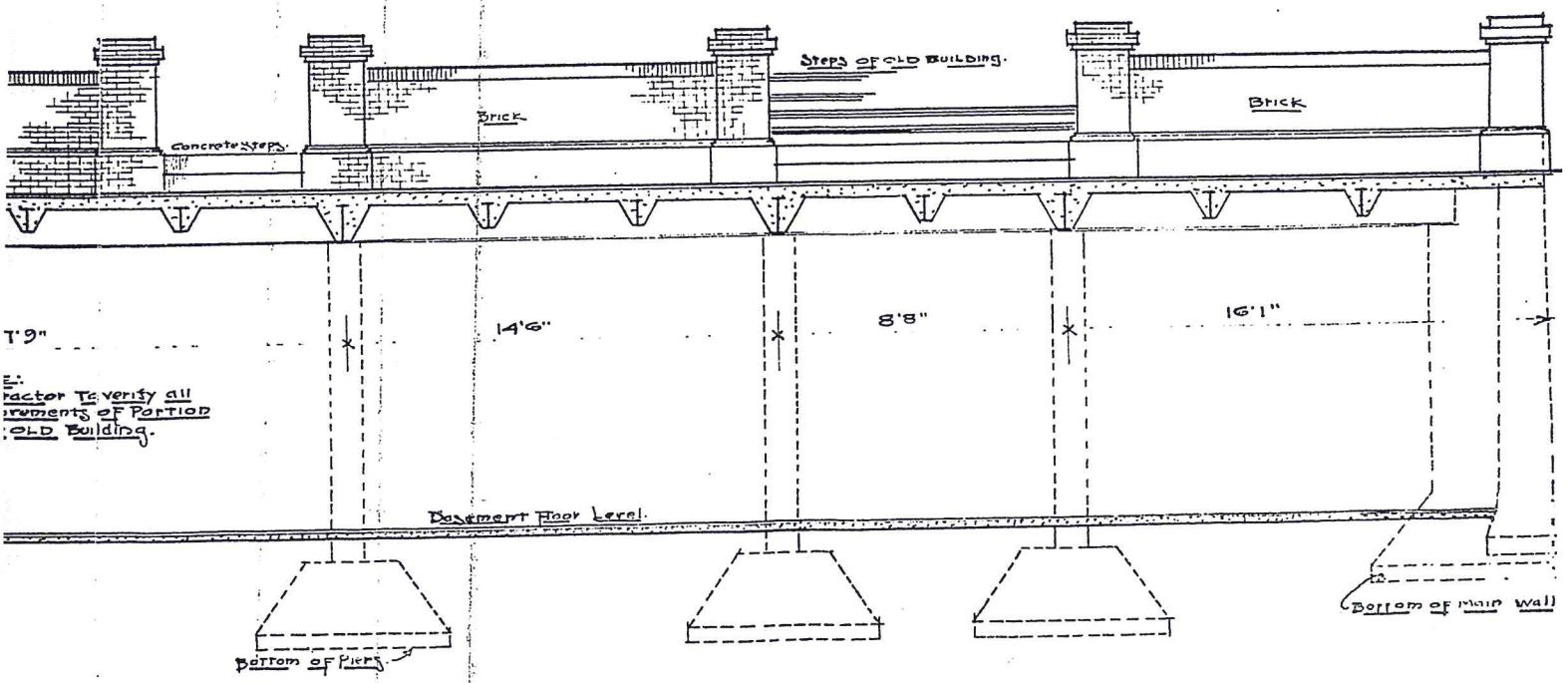
TABLE

Table 1
Proposed Borings
1700 Jefferson St, Oakland, CA

Boring ID	Ground Water	Well or Grab	Sub-Slab	Well or Grab	Soil Gas	Well or Grab
D1	X	Well	--	--	X	Well
D2	X	Well	X	Well	X	Well
D3	X	Grab	X	Well	X	Well
D4	X	Grab	X	Well	X	Well
D5	X	Well	--	--	X	Grab
D6	X	Well	--	--	X	Grab

Note: Dependent on field observations and data, some locations may or may not be converted into wells

APPENDIX A



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CHAS. F. MAU
ARCHITECT
MACDONOUGH BLD'G
OAKLAND CAL.

APPENDIX B

Standard Operating Procedure Installation and Extraction of the Vapor Pin®

Updated September 9, 2016

Scope:

This standard operating procedure describes the installation and extraction of the VAPOR PIN® for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the VAPOR PIN® for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled VAPOR PIN® [VAPOR PIN® and silicone sleeve(Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole **must** be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;
- VAPOR PIN® flush mount cover, if desired;
- VAPOR PIN® drilling guide, if desired;
- VAPOR PIN® protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the VAPOR PIN®.

Figure 1. Assembled VAPOR PIN®

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® drilling guide is recommended.

4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole **must** be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of VAPOR PIN® assembly into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the vapor pin to protect the barb fitting, and tap the vapor pin into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the vapor pin to avoid damaging the barb fitting.

Figure 2. Installing the VAPOR PIN®

During installation, the silicone sleeve will form a slight bulge between the slab and the VAPOR PIN® shoulder. Place the protective cap on VAPOR PIN® to prevent vapor loss prior to sampling (Figure 3).

Figure 3. Installed VAPOR PIN®

7) For flush mount installations, cover the vapor pin with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).

Figure 4. Secure Cover Installed

8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the VAPOR PIN®. This connection can be made using a short piece of Tygon™ tubing to join the VAPOR PIN® with the Nylaflow tubing (Figure 5). Put the

Nylaflow tubing as close to the VAPOR PIN® as possible to minimize contact between soil gas and Tygon™ tubing.

Figure 5. VAPOR PIN® sample connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the VAPOR PIN® via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.

Figure 6. Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the protective cap and flush mount cover until the next event. If the sampling is complete, extract the VAPOR PIN®.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the VAPOR PIN® (Figure 7). Turn the tool clockwise continuously, don't stop turning, the VAPOR PIN® will feed into the bottom of the installation/extraction tool and will extract from the hole like a wine cork, DO NOT PULL.

2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.

Figure 7. Removing the VAPOR PIN®

- Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the VAPOR PIN® in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, **STAINLESS – ½ hour, BRASS 8 minutes**

3) Replacement parts and supplies are available online.