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By Alameda County Environmental Health at 3:37 pm, Apr 23, 2014

April 18, 2014

Mr. Jerry Wickham
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Perjury Statement-**
Work Plan for Additional Sub-Slab Attenuation Factor Testing
Searway Property (SLIC Case No. RO0002584)
649 Pacific Avenue
Alameda, California

Dear Mr. Wickham,

"I declare under penalty of perjury, that the information and / or recommendations contained in the attached document or report is true and correct to the best of my knowledge."

Timber Dell Properties, LLC

Donald W. Lindsey, member

April 23, 2014
Trinity Project: 103.001.001

Mr. Jerry Wickham
Alameda County Health Care Services Agency
Environmental Health Services, Environmental Protection
1131 Harbor Parkway, Suite 250
Alameda, CA 94502-6577

Re: *Work Plan for Additional Sub-Slab Attenuation Factor Testing*
Searway Property
649 Pacific Avenue
Alameda, California

Dear Mr. Wickham:

This letter, prepared by Trinity Source Group, Inc. (Trinity) on behalf of Timber Del Properties, LLC, presents a *Work Plan for Additional Sub-Slab Attenuation Factor (AF) Testing (Work Plan)* for the subject site. In 2010, Trinity conducted site testing to determine a site-specific AF for the slab foundation of the at the subject site (Figures 1 and 2). Trinity now proposes to conduct additional testing to verify the initial results.

The AF is used to evaluate potential vapor intrusion from sub-slab materials to indoor air. Environmental Screening Levels (ESLs) [1] are divided by the AF to determine a site-specific screening level. If the sub-slab vapor concentrations are consistently less than the site-specific screening levels, then case closure may be recommended.

The initial site-specific AF was determined using radon gas measurements following the methods described by McHugh, et al. (2008)[2]. The work performed is detailed in the *Revised Sub-Slab Attenuation Factor Determination Work Plan* (*Work Plan)*, dated April 5, 2010. Radon gas measurements will be used to verify the previously determined AF, following the same methods.

BACKGROUND

A Sub-Slab Vapor Depressurization System (SSVD) was installed and operated at the subject site following sub-slab vapor testing performed during 2007, which indicated elevated concentrations of volatile organic compounds (VOCs) in the sub-slab vapor. The SSVD was designed, permitted and installed during July and August 2008, and started operation in September 2008. The site layout and extraction well locations components are shown on Figure 3.

[1] Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater (November 2007, updated December 2013), San Francisco Bay Regional Water Quality Control Board, California EPA, http://www.waterboards.ca.gov/sanfranciscobay/esl.htm.

[2] McHugh, Thomas E., Hammond, Douglas E., Nickels, Tim, and Hartman, Blayne, "Use of Radon Measurements for Evaluation of Volatile Organic Compound (VOC) Vapor Intrusion," *Environmental Forensics*, 9:107-114, 2008. http://dx.doi.org/10.1080/15275920801888491

The SSVD system includes two horizontal sub-slab extraction wells, with pipe runs trenched to nearby walls. The pipe runs continue up to the first floor ceiling, where they are manifolded together and connected to an exhaust fan equipped with a flow meter, then discharged through the roof and a 3-foot stack. The SSVD is performing as expected with the removal of VOCs and depressurization of the sub-slab area.

In order to terminate the SSVD operation and pursue site closure, indoor air VOC concentrations must be below applicable indoor air screening levels derived from the previously-referenced ESL document. The indoor air concentrations are compared to site-specific screening levels calculated by dividing the site-specific AF into the applicable indoor-air ESL. (The default AF prescribed by the California Department of Toxic Substances Control [DTSC] is 0.05.)

In the April 5, 2010 Work Plan, Trinity recommended sampling for radon to determine a site-specific AF for the slab foundation of the building at the site (Figure 2) by determining the difference between sub-slab and indoor radon concentrations. The work plan was approved in a letter from the Alameda County Health Care Services Agency (ACHCSA), dated May 19, 2010. Trinity completed the work and documented it in the September 20, 2010 *Sub-Slab Attenuation Factor Determination Summary Report*. The site-specific AF result was calculated to be 0.000412.

ACHCSA issued a letter dated September 9, 2013, in response to Trinity's recommendation to conduct intermittent operation of the SSVD system. ACHCSA noted that the site-specific AF is in the lowest range of AFs compiled by EPA. Therefore, ACHCSA indicated that the site-specific AF should be applied conservatively, or additional testing could be done to confirm the AF. Trinity proposes to conduct an additional radon sampling event to confirm the AF. The event is proposed for September 2014 to account for potential seasonal variations in sub-slab attenuation characteristics.

If the AF determined from the proposed event is similar to the initial site-specific AF (i.e., within one order of magnitude), then Trinity will consider the AF to be confirmed, and will use the average of these two AF calculations in determining the site-specific attenuated screening levels. When VOC concentrations fall below the site-specific attenuated screening levels, Trinity will recommend rebound monitoring of sub-slab VOC concentrations. If concentrations remain below the attenuated screening levels, then Trinity will recommend site closure.

If the determined AF does not confirm the initial AF, then Trinity will propose a second additional radon sampling event to further constrain the site-specific AF.

DETERMINATION OF SITE-SPECIFIC AF USING RADON

The site-specific AF will be determined by comparing sub-slab and indoor concentrations of a tracer gas, radon in this case. Radon has been used as such a tracer gas, because it is naturally-occurring, detectable in most locations, and indoor sources of radon are typically not present.

As described by McHugh, *et al.,* in the previously-referenced article, the AF is determined "as the ratio of the measured concentration of the chemical of concern in indoor air (Cb; corrected by subtracting the ambient air concentration) divided by the measured concentration of the chemical in soil gas (Cs; i.e., AF=Cb/Cs)."

Accordingly, the following scope of work calls for collecting and analyzing samples of sub-slab gas, indoor air, and ambient air, in order to determine Cb and Cs. These results will be used to calculate the site-specific AF.

SCOPE OF WORK

The scope of work to be performed will consist of the following work tasks:

- Trinity will turn off the SSVD 14 days prior to sub-slab and indoor air vapor testing to allow sub-slab and indoor radon concentrations to equilibrate.
- Trinity will notify the site tenants (Kelly Moore Paints and East Ocean Seafood Restaurant) at least 48 hours before sampling.
- A minimum of seven days after SSVD shutdown, three sub-slab vapor points (VS-5, VS-19 and VS-3) will be sampled for radon. These locations were selected because they have historically high VOC concentrations. These are the same locations that were sampled during the initial radon testing event.
- During the same sampling event, three indoor air samples will be collected at the same locations as were sampled during the initial radon testing event.
- During the same event, an outdoor ambient air sample will be collected for radon analysis.
- Proposed sampling locations are shown on Figure 2
- Collected samples for radon analysis will be shipped to the University of Southern California Department of Geosciences laboratory.
- The SSVD system will be restarted after sample collection.
- The AF will be calculated using the radon analytical results as follows:
    - The three sub-slab sample results will be averaged to determine the Cs, soil gas radon concentration.
    - The three indoor air sample results will be averaged.
    - The ambient sample result will be subtracted from the indoor sample average concentration, to determine the Cb, the corrected indoor air radon concentration.
    - The AF will be determined by dividing Cb by Cs; AF = Cb/Cs
- A report describing the procedures and results of the sampling event and calculations will be prepared.

SAMPLING PROCEDURES

The sampling procedures are described below:

- Three sub-slab gas probes (VS-5, VS-19 and VS-3) will be sampled in 500-milliliter (ml) Tedlar bags using a portable vacuum pump and a vacuum chamber. Sample bags will be filled by fitting sample bags to the sample tubing inside the vacuum chamber. The vacuum chamber will then be sealed and the intake end of the sample tubing will be fitted to the sub-slab probe. The portable vacuum pump will be fitted to the outflow tubing of the vacuum chamber. The portable vacuum will then be switched on. The extraction of air from the vacuum chamber will create a vacuum, and sub-slab soil gas will slowly fill the sample bag. Once the 500-ml Tedlar bag is approximately 80% full, the vacuum pump will be shut off and the sample bag valve will then be closed. The sample will be labeled and packaged for shipment. Two sample bags will be collected from each sub-slab probe. The indoor air sample will be collected just above the floor surface near Probe VS-6, using the same equipment and procedure as described above.
- The outdoor ambient air sample will be collected outside in the parking lot, following the procedures described above.
- The samples will be logged onto chain-of-custody documents and packaged in a rigid container for overnight shipment to the laboratory.

LABORATORY METHODS

The three sub-slab vapor samples and the indoor and ambient air samples will be analyzed for radon using an alpha-scintillation counting method. The analysis will be performed by the University of Southern California Department of Geosciences laboratory.

REPORTING

Following receipt of the radon analytical results, Trinity will calculate the site-specific AF as described above. The new AF will be compared to the previously-determined AF as discussed above. Recommendations for further testing or modification of SSVD operation will be included. The results will be presented in a summary report including the procedures, laboratory reports, conclusions, and recommendations.

DISTRIBUTION

A copy of this letter has been forwarded to:

Mr. Don Lindsey
Timber Del Properties, LLC
2424 Central Avenue
Alameda, CA 94501

Ms. Miranda Vega
The Mechanics Bank
1999 Harrison St., Suite 100
Oakland, CA 94612

Please call Trinity at (831) 426-5600 with any questions regarding this letter.

Sincerely,

TRINITY SOURCE GROUP, INC.

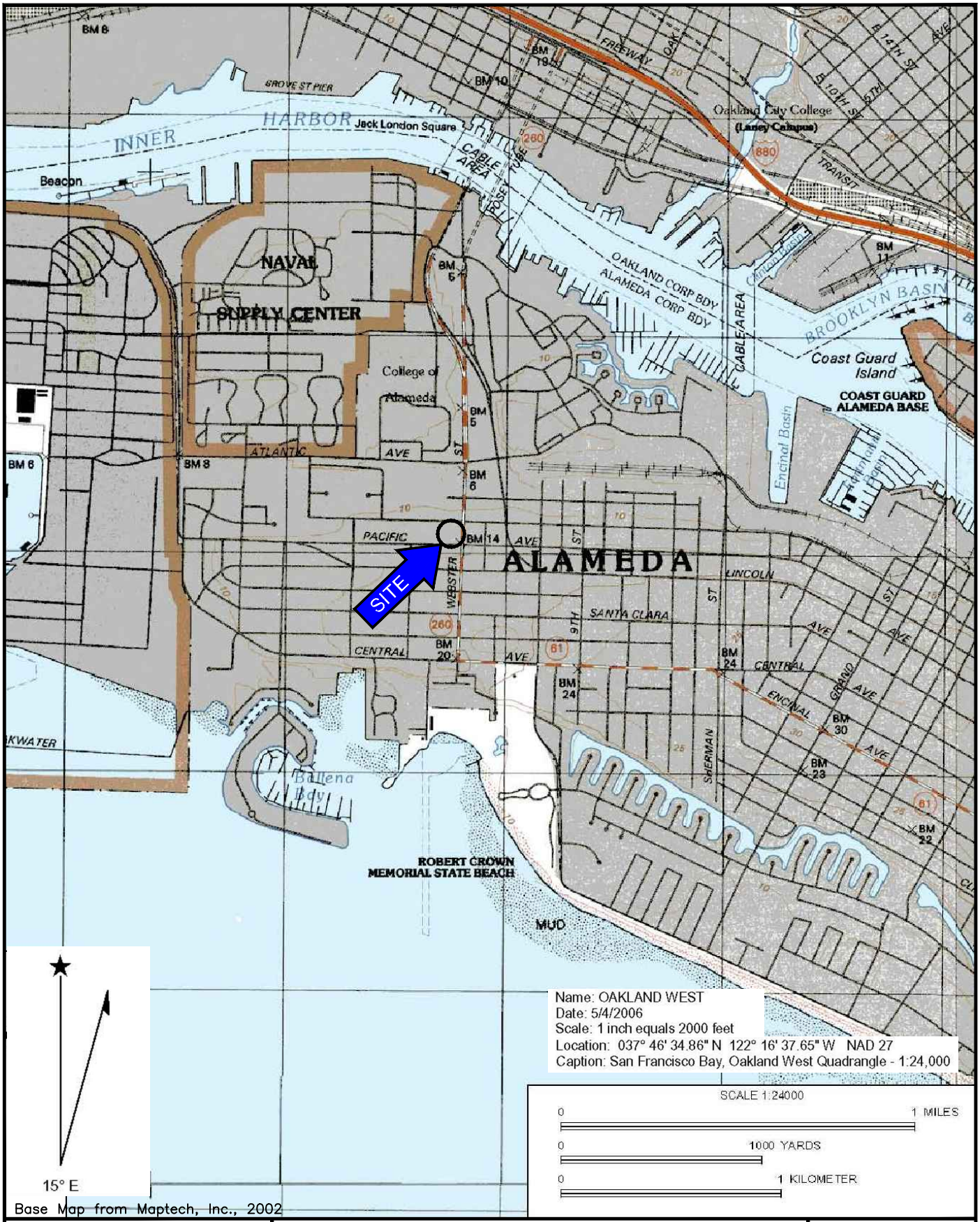
Information, conclusions, and recommendations made by Trinity in this document regarding this site have been prepared under the supervision of and reviewed by the licensed professional whose signature appears below.

Debra J. Moser, PG, CEG, CHG
Senior Geologist

Attachments:

Figure 1 – Site Location Map
Figure 2 – Site Layout

FIGURES



Base Map from Maptech, Inc., 2002

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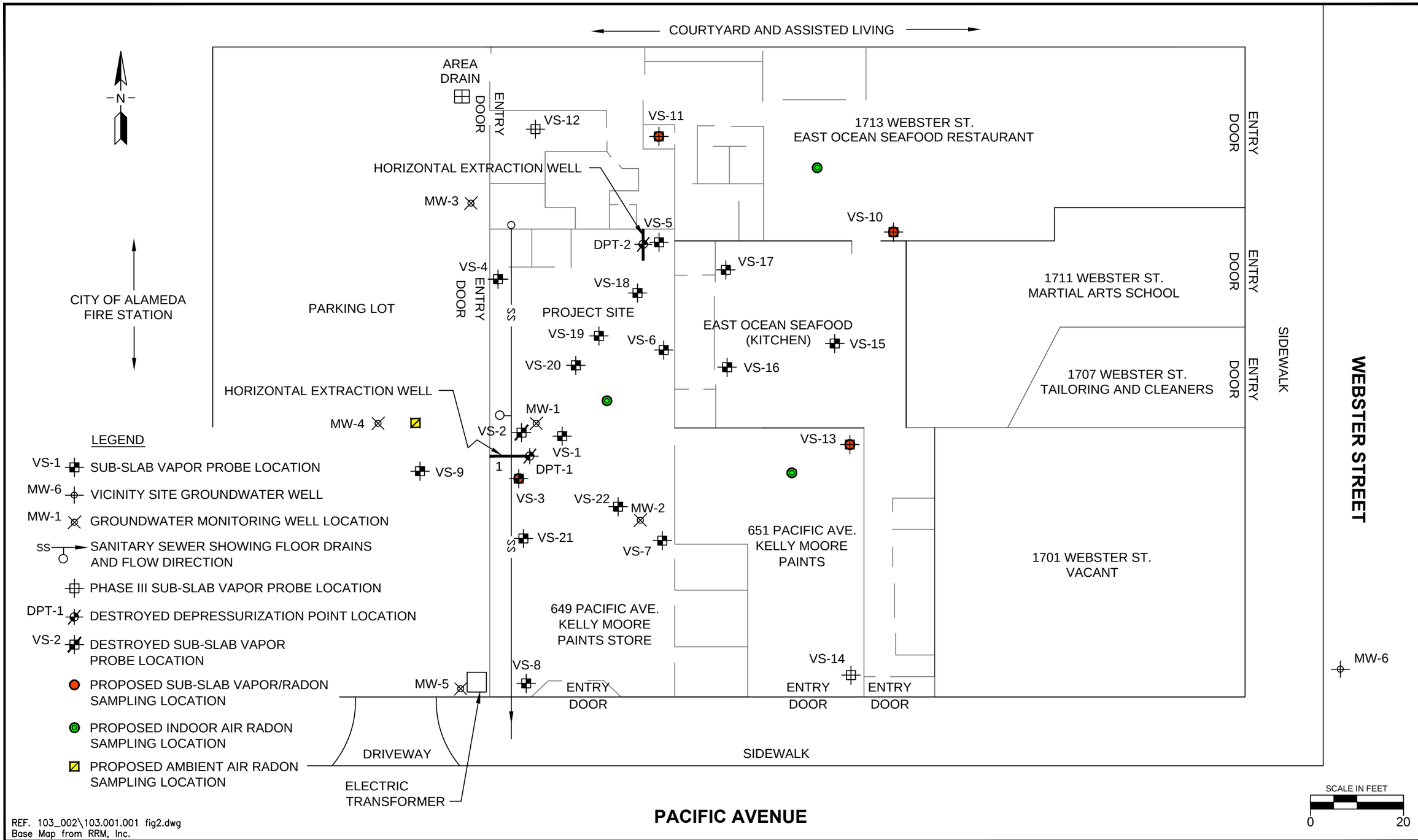
SITE LOCATION MAP

Searway Property
649 Pacific Avenue
Alameda, California

PROJECT:
103.001.001

FIGURE:
1

REF. 103_002\103.001.001 fig1.dwg



REF. 103_002\103.001.001 fig2.dwg
Base Map from RRM, Inc.

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SITE LAYOUT AND PROPOSED SAMPLING LOCATIONS

Searway Property
649 Pacific Avenue
Alameda, California

PROJECT: 103.001.001

FIGURE: 2