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8 STATE OF CALIFORNIA

9 STATE WATER RESOURCES CONTROL BOARD
10

11 In the Matter of the Petition for Review by
12 Advanced Micro Devices, Inc. of the San
Francisco Bay Regional Water Quality
13 Control Board Letter Dated May 13, 2014
Issued Pursuant to Water Code Section 13267
14

**PETITION FOR REVIEW AND
REQUEST FOR HEARING**

California Water Code § 13320;
California Code of Regulations, Title 23,
§ 2050
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16
17 Petitioner Advanced Micro Devices, Inc. (“AMD”) submits this Petition for Review of a
18 letter directive issued by the California Regional Water Quality Control Board, San Francisco
19 Bay Region (“RWQCB”) entitled “Requirement for Vapor Intrusion Evaluation Workplan for
20 Subunit 3 of Operable Unit 1, Sunnyvale, Santa Clara County” (“Letter Directive,” with
21 attachments, included as Exhibit A). This Petition for Review is filed in accordance with Section
22 13320 of the California Water Code and Section 2050 of Title 23 of the California Code of
23 Regulations. Pursuant to California Code of Regulations, Title 23, Section 2050.5(d), Petitioner
24 requests that the State Water Resources Control Board (“SWRCB”) hold this Petition in
25 abeyance while Petitioner attempts to resolve the underlying dispute with the RWQCB.

26 1. Section 2050(a) requires that a petition for review contain certain items of
27 information. Each of the required items is set forth below.

28 2. Petitioner is AMD. Petitioner’s address is Advanced Micro Devices, Inc., Attn:

1 Brett Stringer, P.O. Box 3453, MS 5, Sunnyvale, CA 94088-3453, tel. (800) 538-8450, email:
2 brett.stringer@amd.com. Communications concerning this matter should be sent to Petitioner's
3 attorneys at the address provided in the caption of this Petition.

4 3. The RWQCB, through its Executive Officer, Bruce H. Wolfe, and Stephen Hill of
5 his staff, issued the Letter Directive on May 13, 2014.

6 4. The Letter Directive requires AMD to submit a vapor intrusion workplan in order
7 to "help Regional Water Board staff to further evaluate potential vapor intrusion concerns arising
8 in light of new USEPA guidance." Exhibit A at 1. The Letter Directive requires a workplan for
9 Subunit 3 of Operable Unit 1 in Sunnyvale, California, a site listed on the National Priorities List
10 pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of
11 1980 ("CERCLA").

12 5. The "USEPA guidance" referenced in the Letter Directive includes a December 3,
13 2013 letter from Region 9 of the United States Environmental Protection Agency ("EPA") to the
14 RWQCB with the subject "EPA Region 9 Guidelines and Supplemental Information Needed for
15 Vapor Intrusion Evaluations at the South Bay National Priorities List (NPL) Sites" (EPA Letter).
16 The EPA Letter is included as an attachment to the Letter Directive.

17 6. The EPA Letter purports to require that certain guidelines and supplemental
18 requirements be incorporated into vapor intrusion evaluation work plans for each of the sites
19 described in the EPA Letter, including the site that is the subject of the Letter Directive. Those
20 guidelines and requirements include, but are not limited to, the following: (i) the establishment of
21 interim, short-term Response Action Levels (RALs) and guidelines for trichloroethene ("TCE")
22 in indoor air; (ii) new residential and commercial/industrial screening levels for tetrachloroethene
23 ("PCE") in indoor air; (iii) guidelines for indoor air sampling of residential buildings;
24 (iv) guidelines for indoor air sampling of commercial buildings; (v) a requirement to sample
25 indoor air at all on-site buildings, regardless of the relative potential for vapor intrusion in those
26 buildings; and (vi) a requirement to define the offsite vapor intrusion study area as the area
27 bounded by the estimated TCE shallow-zone groundwater contamination greater than 5 µg/L
28 (collectively, the "EPA Guidelines").

1 7. The Letter Directive requires AMD to submit a workplan for additional vapor
2 intrusion evaluation consistent with the EPA Guidelines (“Workplan”).

3 8. The RWQCB’s issuance of the Letter Directive was inappropriate and improper,
4 and the Letter Directive should be set aside or reversed, for reasons that include, but are not
5 limited to, the following: (i) the short-term RALs for TCE in indoor air, which the Letter
6 Directive purports to require the RWQCB to use, have not been adopted as regulation or official
7 guidance by EPA, the SWRCB, or any other agency, and, therefore, are not legally binding;
8 (ii) the Letter Directive’s requirement that the Workplan include vapor intrusion evaluation of all
9 buildings overlying the 5 µg/L TCE shallow zone groundwater contour, pursuant to the EPA
10 Guidelines, is arbitrary, capricious and unreasonable and not supported by best available science;
11 (iii) the RWQCB’s reliance on the EPA Guidelines is improper at a CERCLA Superfund site
12 because the EPA Guidelines are not consistent with the final remedy for the site adopted by EPA
13 and the RWQCB; (iv) Water Code Section 13267 is not a proper regulatory mechanism for
14 requiring the vapor intrusion investigation called for in the Letter Directive; (v) the Letter
15 Directive does not comply with the requirements of Water Code Section 13267; and (vi) the
16 Letter Directive violates Water Code Section 13360.

17 9. Petitioner will submit to the SWRCB as an amendment to this Petition a complete
18 statement of points and authorities in support of this Petition, including additional facts
19 supporting the reasons stated above, and additional reasons why the Letter Directive was
20 inappropriate and improper.

21 10. Petitioner is aggrieved by the Letter Directive because it has been directed to
22 respond to the Letter Directive, and it will incur substantial costs in doing so. Petitioner will
23 submit to the SWRCB as an amendment to this Petition a more complete statement of the manner
24 in which Petitioner is aggrieved by the Letter Directive.

25 11. Petitioner requests that the SWRCB set aside and reverse the Letter Directive or
26 direct the RWQCB to set aside and reverse the Letter Directive.

27 12. Petitioner has provided a list of persons known by the RWQCB to have an interest
28 in the subject matter of this Petition as Exhibit B. Petitioner may submit as an amendment to this

1 Petition additional information on persons known by the RWQCB to have an interest in the
2 subject matter of this Petition.

3 13. A copy of this Petition for Review and the attached Exhibits A and B have been
4 sent to the RWQCB.

5 14. The Letter Directive was issued without notice or a hearing by the RWQCB.
6 Petitioner has, however, raised the substantive issues and objections raised in this Petition with
7 RWQCB staff in meetings, telephone calls, and emails. Petitioner has also communicated its
8 objection to the Letter Directive to the RWQCB by sending a copy of this Petition to the
9 RWQCB, and has scheduled a further meeting to discuss the issues raised in this Petition with
10 RWQCB and EPA staff. Petitioner reserves its right to provide supplemental evidence not
11 previously provided to the RWQCB pursuant to Section 2050.6.

12 15. Petitioner will submit to the SWRCB as an amendment to this Petition a copy of
13 its request to the RWQCB for preparation of the RWQCB's record concerning the Letter
14 Directive.

15 16. If Petitioner's attempts to resolve this matter informally with the RWQCB are
16 unsuccessful, Petitioner will so notify the RWQCB and requests that the SWRCB hold a hearing
17 at which Petitioner can present additional evidence to the SWRCB. Petitioner will submit to the
18 SWRCB as an amendment to this Petition statements regarding evidence as appropriate under
19 Section 2050.6.

20 Dated: June 12, 2014

Respectfully submitted,

BARG COFFIN LEWIS & TRAPP, LLP

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23 By: 
R. MORGAN GILHULY

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25 Attorneys for Petitioner Advanced Micro Devices,
26 Inc.
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EXHIBIT A



EDMUND G. BROWN JR.
GOVERNOR



MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

San Francisco Bay Regional Water Quality Control Board

May 13, 2014
File No. 43S0084 (MS)

Advanced Micro Devices
Attn: Brett Stringer (brett.stringer@amd.com)
1 AMD Place
Sunnyvale, CA 94088-3453

SUBJECT: Requirement for Vapor Intrusion Evaluation Workplan for Subunit 3 of Operable Unit 1, Sunnyvale, Santa Clara County

Dear Mr. Stringer:

This letter requires Advanced Micro Devices (AMD) to submit a vapor intrusion evaluation workplan for Subunit 3 of Operable Unit 1 (Site) by **June 30, 2014**. As explained below, this information will help Regional Water Board staff to further evaluate potential vapor intrusion concerns arising in light of new USEPA guidance.

Background

AMD has conducted indoor air and preferential pathway sampling at the Site since 2011. Some of the sampling events were conducted with the building heating, ventilation, and air conditioning (HVAC) systems turned off, and some with HVAC systems on. During the most recent indoor air sampling event in February 2014, with the HVAC systems turned on, trichloroethene (TCE) was detected at a concentration of 3.5 micrograms per cubic meter (ug/m^3) in the 1160 Kern Avenue building. This level exceeded the USEPA Regional Screening Level (RSL) of $3 \text{ ug}/\text{m}^3$ for indoor air in industrial and commercial buildings. Based on groundwater monitoring conducted in October 2013, the maximum concentration of TCE in shallow groundwater monitoring wells located at the Site was 220 micrograms per liter (ug/L). This level is more than USEPA's TCE groundwater screening level for vapor intrusion of $5 \text{ ug}/\text{L}$.

We appreciate the vapor intrusion evaluation work completed to date at this Site. However, new technical information prompts us to require additional information to further evaluate potential vapor intrusion.

We previously sent a letter to AMD on January 3, 2014 that required a vapor intrusion evaluation report for Subunit 2. AMD submitted its vapor evaluation report on February 28, 2014, and an addendum to the report on March 31, 2014.

New USEPA Requirements

USEPA recently issued the following documents:

- 2013 Office of Solid Waste and Emergency Response (OSWER) *External Review Draft – Final Guidance for Assessing and Mitigating the Vapor Intrusion Pathway from the Subsurface to Indoor Air*
- December 3, 2013, *USEPA Region 9 Guidelines and Supplemental Information Needed for Vapor Intrusion Evaluations at South Bay National Priority List Sites* (“Guidelines” for short, see Attachment #1)

The Guidelines contain new vapor intrusion evaluation requirements, including the following:

- Short-term removal action levels for TCE in indoor air
- Residential indoor air sampling during cold weather
- Commercial indoor air sampling with the HVAC system turned off
- Vapor intrusion evaluation in residential and commercial buildings where groundwater-TCE levels exceed 5 ug/L

Need for a Workplan

In light of this new information, there is a need for additional vapor intrusion evaluation at this NPL Site consistent with the Guidelines. You are required to submit a workplan by **June 30, 2014**, that addresses the following items:

- Cold weather residential indoor air sampling during winter 2014/2015
- Commercial indoor air sampling with the HVAC system turned off in the off-property buildings
- Vapor intrusion evaluation in residential and commercial buildings where TCE concentrations in groundwater exceed 5 ug/L
- Comparison of indoor air sampling results to the TCE short-term removal action levels and USEPA’s updated long-term TCE screening levels

This requirement for a workplan is made pursuant to Water Code section 13267, which allows the Regional Water Board to require technical or monitoring program reports from any person who has discharged, discharges, proposes to discharge, or is suspected of discharging waste that could affect water quality. Attachment #2 provides additional information about section 13267 requirements. Any extension in the above deadline must be confirmed in writing by Regional Water Board staff.

If you have any questions, please contact Max Shahbazian of my staff at (510) 622-4824, or by e-mail [mshahbazian@waterboards.ca.gov]

Sincerely,



Digitally signed by Stephen Hill
Date: 2014.05.13 15:17:12
-07'00'

Bruce H. Wolfe
Executive Officer

Attachments:

- 1) Guidelines
- 2) Water Code section 13267 Fact Sheet

cc w/Attachments: Mailing List

MAILING LIST
Subunits 2 and 3 of Operable Unit 1
Advanced Micro Devices
Sunnyvale, California

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Oakland, CA 94612



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 9

**75 Hawthorne Street
San Francisco, CA 94105**

December 3, 2013

Stephen Hill, Chief
Toxics Cleanup Division
California Regional Water Quality Control Board – SF Bay Region
1515 Clay Street #1400
Oakland, CA 94612

SUBJECT: EPA Region 9 Guidelines and Supplemental Information Needed for Vapor Intrusion Evaluations at the South Bay National Priorities List (NPL) Sites

Dear Mr. Hill:

The United States Environmental Protection Agency (EPA) Region 9 appreciates the opportunity to work with the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) in conducting vapor intrusion evaluations at the following Regional Water Board-lead National Priorities List (NPL) or Superfund sites in the South San Francisco Bay Area (South Bay Sites) where trichloroethene (TCE) or tetrachloroethene (PCE) are contaminants of potential concern:

- AMD 901/902/TRW Microwave/Phillips and Offsite Operable Unit Combined Sites in Sunnyvale
- AMD 915 DeGuigne Drive Site in Sunnyvale
- Monolithic Memories Site (also known as AMD 1165/1175 Arques Avenue Site) in Sunnyvale
- Fairchild Semiconductor Site in South San Jose
- Hewlett Packard 620-640 Page Mill Road Site in Palo Alto
- Intersil/Siemens Site in Cupertino and Sunnyvale
- National Semiconductor Site (also known as Texas Instruments Site) in Sunnyvale
- Synertek Building 1 Site in Santa Clara
- Teledyne/Spectra-Physics Sites in Mountain View

EPA recognizes and appreciates all of the vapor intrusion work activities conducted to date at these sites. Pursuant to recent discussions with EPA Region 9, the Regional Water Board, and the potentially responsible party (PRP) representatives on planned upcoming vapor intrusion work activities, EPA

Region 9 is providing this letter to outline EPA's recommended TCE interim short-term indoor air response action levels and guidelines and clarify the use of California-modified indoor air screening levels that should be applied when assessing and responding to TCE and PCE subsurface vapor intrusion into indoor air.

In addition, this letter includes, as outlined in the Attachment, additional information and specific requirements for vapor intrusion evaluations for the South Bay Sites, consistent with the "multiple-lines-of-evidence" approach in EPA's 2013 Office of Solid Waste and Emergency Response (OSWER) *External Review Draft – Final Guidance for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Sources to Indoor Air*. In reviewing the multiple lines of evidence that have been collected for the South Bay Sites, EPA Region 9 has identified data gaps that must be filled to fully evaluate the potential for vapor intrusion into buildings overlying the South Bay Sites' contamination.

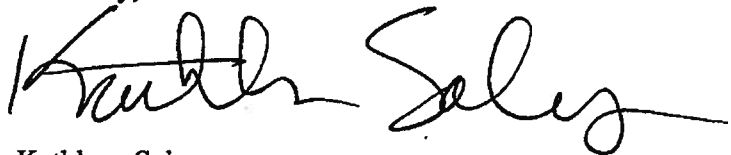
EPA Region 9 recommends that the following guidelines and supplemental information be incorporated, as appropriate, into existing and future Vapor Intrusion Evaluation Work Plans (Work Plans) for each of the South Bay Sites:

- Interim TCE Indoor Air Short-term Response Action Levels and Guidelines
- PCE Indoor Air Screening Levels
- Residential Building Sampling Approach – Multiple Rounds of Sampling including Colder Weather and Crawlspace Sampling
- Commercial Building Sampling Approach – Building Ventilation System (HVAC)-Off, HVAC-On and Pathway Sampling
- On-Property Study Area Building Sampling
- Phased Approach and Clarification of Vapor Intrusion Off-Property Study Areas to Include Buildings Overlying 5 µg/L TCE Shallow-Zone Groundwater Contamination

EPA Region 9 will continue to provide technical vapor intrusion and community involvement and outreach support for the South Bay Sites.

If you have any technical questions, please contact Melanie Morash of my staff at (415) 972-3050 or by e-mail to morash.melanie@epa.gov.

Sincerely,



Kathleen Salyer
Assistant Director, Superfund Division
California Site Cleanup Branch

Attachment: EPA Region 9 Guidelines and Supplemental Information for VI Evaluations

Attachment: EPA Region 9 Guidelines and Supplemental Information Needed for Vapor Intrusion Evaluations at the South Bay National Priorities List (NPL) Sites

EPA Region 9 recommends that the following guidelines and supplemental information be incorporated, as appropriate, into existing and future Vapor Intrusion Evaluation Work Plans (Work Plans) for each of the South Bay NPL Sites, primarily with subsurface trichloroethene (TCE) and tetrachlorethene (PCE) contamination.

The additional information and specific requirements requested are consistent with the “multiple-lines-of-evidence” approach in EPA’s 2013 Office of Solid Waste and Emergency Response (OSWER) *External Review Draft – Final Guidance for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Sources to Indoor Air*.

In reviewing the multiple lines of evidence that have been collected for the South Bay Sites, EPA Region 9 has identified data gaps that must be filled in order to fully evaluate the potential for vapor intrusion into buildings overlying the subsurface contamination at each individual South Bay Site.

Item #1 – Interim TCE Indoor Air Short-term Response Action Levels and Guidelines

In September 2011, EPA published its *Toxicological Review of Trichloroethylene in Support of the Integrated Risk Information System (IRIS)*. Recent findings on TCE conclude that women in the first trimester of pregnancy are one of the most sensitive populations to TCE short-term inhalation exposure due to the potential for heart malformation for the developing fetus.

EPA uses a level of concern for non-cancer effects as a ratio of the exposure concentration to a safe dose including an additional margin of safety, called a reference concentration (RfC). This ratio is defined as a Hazard Quotient and abbreviated “HQ”. The IRIS assessment derived an inhalation RfC for continuous inhalation exposure to TCE, which is 2 micrograms per cubic meter (2 $\mu\text{g}/\text{m}^3$).

Because this is a developmental effect, the critical period for exposure is considered to be within an approximate 3-week period in the first trimester of pregnancy during which the heart develops. Scientific information on the exact critical period of exposure for this health impact is not currently available; however, general risk assessment guidelines for developmental effects indicate that exposures over a period as limited as 24 hours¹ may be of concern for some developmental toxicants.

In light of this RfC information, EPA Region 9 is using health protective response action levels and guidelines to address short-term inhalation exposures to TCE in indoor air from the subsurface vapor intrusion pathway. The purpose of these interim response action levels and guidelines is to be protective of one of the most sensitive and vulnerable populations, women in their first trimester of pregnancy, because of the potential for cardiac malformations to the developing fetus during this short timeframe.

These guidelines identify women of reproductive age as the sensitive population of concern, rather than only pregnant women, because some women may not be aware of their pregnancy during the first trimester.

¹ U.S. EPA. Guidelines for Developmental Toxicity Risk Assessment. U.S. Environmental Protection Agency, Risk Assessment Forum, Washington, DC, EPA/600/FR-91/001, 1991

Assessment of TCE Inhalation Vapor Intrusion Exposure and Prompt Response Actions in Residential and Commercial/Industrial Buildings: The interim TCE indoor air short-term response action levels should be included in Vapor Intrusion Evaluation Work Plans (Work Plans) for assessing and responding to inhalation exposures to TCE in residential and commercial buildings caused by subsurface vapor intrusion at the South Bay Sites.

Interim TCE Indoor Air Short-Term Response Action Levels Residential and Commercial TCE Inhalation Exposure from Subsurface Vapor Intrusion South Bay NPL Sites	
<i>Exposure Scenario</i>	<i>Prompt Response Action Level (HQ=1)²</i>
Residential *	2 µg/m ³
Commercial/Industrial 8-hour workday	9 µg/m ³
10-hour workday (South Bay Sites) **	7 µg/m ³
<p>* The Residential HQ=1 prompt response action level is equivalent to the inhalation reference concentration (RfC) since exposure is assumed to occur continuously over a 24-hour period.</p> <p>** Commercial/Industrial prompt response action levels are calculated as the time-weighted average from the RfC - 9 µg/m³ for an 8-hour workday; 7 µg/m³ for a 10-hour workday. Based on input from commercial building owners and tenants, EPA Region 9 recommends use of the 10-hour workday for determining the appropriate response action levels for commercial/industrial buildings at the South Bay Sites. Time-weighted adjustments can be made as needed for workplaces with longer work schedules.</p> <p>Note: These prompt response action levels are near the lower end of the Superfund Health Protective Cancer Risk Range;³ thus, the Superfund Health Protective Risk Range for both long-term and short-term exposures is: 0.4 – 2 µg/m³ for residential exposures and 3 – 9 µg/m³ for 8-hour/day commercial/industrial exposures.⁴</p>	

TCE Indoor Air Concentration > Prompt Response Action Level (HQ=1): In the event the indoor air TCE concentration related to subsurface vapor intrusion is detected above the prompt response action levels (HQ=1), then interim mitigation measures should be evaluated and implemented quickly, and their effectiveness (defined as a reduction of the TCE indoor air concentration to below HQ=1 level) confirmed promptly (e.g., all actions completed and confirmed within a few weeks).

² There is a need to identify TCE exposures that exceed the HQ=1 level by a magnitude sufficient enough that a more urgent response is prudent; it is EPA Region 9 practice to take immediate action to address exposures at or above an HQ=3 level.

³ For cancer causing chemicals, the Superfund Health Protective Risk Range encompasses the range of concentrations EPA considers to be protective, from 1 to 100 in a million increased lifetime cancer risk. The level that falls into the most protective end of the risk range – 1 in a million increased lifetime risk – is what is used as the screening level for any particular chemical. After identifying the health protective levels, EPA then compares measured values to the lowest, most health-protective, end of the range. Although levels of exposure anywhere within the range may be acceptable, EPA’s goal for indoor air exposures to Superfund site-related chemicals is to keep exposures as low as reasonably possible within the Superfund Health Protective Risk Range.

⁴ U.S. EPA Region 9 May 2013 Regional Screening Levels: <http://www.epa.gov/region9/superfund/prg/> Accessed November 2013.

Implementation of Interim Measures to Mitigate TCE Short-term Exposure: The following interim response actions (mitigation measures) should be considered along with how quickly they can be implemented to reduce exposure to below the TCE short-term response action levels:

- Increasing building pressurization and/or ventilation mechanically with fans or the building ventilation system by increasing outdoor air intake
- Installing and operating engineered, sub-floor exposure controls (sub-slab and/or crawlspace depressurization; or in some cases a soil vapor extraction system)
- Eliminating exposure by temporary relocation, which may be indicated when immediate response actions are warranted.

The following interim measures may also be considered, but may have limited effectiveness and require additional monitoring to verify their effectiveness:

- Sealing and/or ventilating potential conduits where vapors may be entering building
- Treating indoor air (carbon filtration, air purifiers)

Item #2 – PCE Indoor Air Screening Levels

EPA acknowledges that the California-modified indoor air screening levels for PCE differ from EPA's May 2013 Regional Screening Levels (RSLs) for PCE. EPA Region 9 would like to clarify that the California EPA Office of Health Hazard Assessment's PCE toxicity value should be used for all NPL sites within California, which includes the South Bay Sites.

Work Plans and reports should be prepared or revised, as appropriate, to evaluate indoor air sampling results using the California-modified indoor air screening level of $0.4 \mu\text{g}/\text{m}^3$ for residential exposures and $2 \mu\text{g}/\text{m}^3$ for commercial/industrial exposures. The Superfund Health Protective Risk Range for PCE is bounded by the 10^{-6} excess cancer risk (low end) and by the non-cancer $\text{HQ}=1$ (high end). Specifically, the Superfund Health Protective Risk Range for PCE is $0.4 - 40 \mu\text{g}/\text{m}^3$ for residential exposures and $2-180 \mu\text{g}/\text{m}^3$ for commercial/ industrial exposures.

Item #3 – Residential Building Sampling Approach – Multiple Rounds of Sampling including Colder Weather and Crawlspace Sampling

Recognizing the temporal and spatial variability of indoor air and subsurface concentrations, EPA generally recommends collecting more than one round of sampling and from multiple locations. In reviewing the multiple lines of evidence that have been collected for the South Bay Sites, EPA Region 9 has identified several data gaps that must be filled in order to complete the vapor intrusion evaluations at each site. Specifically, it appears that multiple rounds of indoor air sampling have not been collected. For some sites, sampling has not been conducted during colder weather months, nor have samples been collected from crawlspaces or basements, where such are present in buildings.

Research studies⁵⁶⁷⁸ have demonstrated that daily indoor air concentrations resulting from subsurface vapor intrusion can vary by two or more orders of magnitude in residential, passively ventilated structures. These studies also indicate that the highest indoor air concentrations usually occur when outdoor air temperatures are significantly lower than indoor air temperatures. Empirical indoor air data collected at passively ventilated buildings in the San Francisco Bay Area where multiple samples were collected indicate TCE indoor air concentrations from vapor intrusion up to two-to-three times higher during the colder months.

Work Plans should be revised to incorporate multiple rounds of sampling, including sampling during colder weather months (November through February, with January generally being the coldest month in the Bay Area), to assess the potential variability of indoor air contaminant concentrations during conditions when the potential for vapor intrusion may be higher. In addition, crawlspace, basement, and pathway sampling should be included, as appropriate, as part of the vapor intrusion investigation.

Finally, EPA Region 9 supports the use of longer-term passive samplers to help assess the temporal variability of indoor air vapor intrusion-related contaminant concentrations. The longer-term sampler provides a greater duration over which to average indoor air vapor intrusion levels for the purposes of completing the vapor intrusion evaluation, however EPA Region 9 is open to discussing sampling strategies for both the passive sampler and TO-15 canister.

Item #4 – Commercial Building Sampling Approach - Building Ventilation System (HVAC)-Off, HVAC-On and Pathway Sampling

Consistent with the multiple-lines-of-evidence approach recommended by EPA guidance, ongoing vapor intrusion evaluations at certain commercial buildings associated with some of the South Bay Sites have included soil gas, sub-slab soil gas, and/or potential preferential pathway sampling (such as near bathroom floor drains and from elevator shafts or mechanical rooms), as well as indoor air sampling during normal business hours with the building's heating, ventilation, and air conditioning (HVAC) systems operating.

In reviewing these lines of evidence, EPA Region 9 has identified as a data gap the lack of HVAC-off sampling for certain commercial buildings, and recommends that pathway sampling, where such sampling has not yet been conducted, be included in the multiple-lines-of-evidence evaluation.

Because EPA needs to evaluate the potential for subsurface vapor intrusion into buildings without reliance on the indoor air ventilation system and understand the full range of possible exposure scenarios, Work Plans must be prepared or revised, as appropriate, to include indoor air sampling with the building ventilation systems turned off in addition to sampling commercial buildings under current

⁵ Schumacher, B., R. Truesdale, and C. Lutes. Fluctuation of Indoor Radon and VOC Concentrations due to Seasonal Variations. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R/12/673, 2012

⁶ Schumacher, B. and J. Zimmerman, U.S. EPA ORD, C. Lutes, ARCADIS, and R. Truesdale, RTI International. Indoor Air and Soil Gas Temporal Variability Effects on Sampling Strategies: Evidence from Controlled and Uncontrolled Conditions in an Indianapolis duplex. March 18, 2013 Association for Environmental Health and Sciences Foundation Conference: <https://iavi.rti.org/WorkshopsAndConferences.cfm>

⁷ Johnson, P. Arizona State University. Multi-Year Monitoring of a House Over a Dilute CHC Plume: Implications for Pathway Assessment using Indoor Air Sampling and Forced Under-Pressurization Tests. March 18, 2013 Association for Environmental Health and Sciences Foundation Conference: <https://iavi.rti.org/WorkshopsAndConferences.cfm>

⁸ Holton, C., H. Luo, Y. Guo, and P. Johnson, Arizona State University, K. Gorder and E. Dettenmaier, Hill Air Force Base. Long-term and Short-term Variation of Indoor Air Concentration at a Vapor Intrusion Study Site. March 22, 2012 Association for Environmental Health and Sciences Foundation Conference: <https://iavi.rti.org/WorkshopsAndConferences.cfm>

building operating conditions.

For HVAC-off sampling, sampling duration should begin a minimum of 36 hours following shut-down of the building ventilation systems (no outdoor air intakes into the building) and continue while HVAC systems remain off. Because there is a greater potential for elevated indoor air contaminant concentrations while the building ventilation is turned off, adequate notice must be provided to building management and potential occupants about the testing and the schedule for when the ventilation system will be shut off.

Item #5 – On-Property Study Area Building Sampling

At certain of the South Bay Sites, indoor air sampling was originally not required at specific On-Property Study Area (or former source area) commercial buildings that were thought to have a low potential for vapor intrusion (e.g., due to the presence of a vapor intrusion mitigation system such as a sub-floor vapor barrier or where living or workspaces are located above a ventilated underground parking garage).

However, vapor intrusion sampling has shown the potential for vapor intrusion to occur at buildings with existing vapor intrusion mitigation systems (for example, where the systems were damaged during building construction or renovation activities). For buildings overlying subterranean parking garages, preferential pathways such as elevator shafts and stairwells may also increase vapor intrusion potential into occupied living spaces.

EPA Region 9 would like to clarify that all On-Property Study Area buildings should be evaluated and sampled. For building space overlying subterranean parking, potential preferential pathways into the building indoor air space, such as elevator shafts and stairwells, should be evaluated.

Work Plans should be prepared or revised, as appropriate, to include pre-sampling walk-throughs to assess building and system conditions. These building surveys should identify if there are any conditions that may prompt any additional evaluation and sampling to assess the effectiveness of the vapor intrusion engineering controls of the buildings.

Item #6 – Phased Approach and Clarification of Vapor Intrusion Off-Property Study Areas to Include Buildings Overlying 5 µg/L TCE Shallow-Zone Groundwater Contamination

EPA supports the initial agreed upon prioritization of conducting vapor intrusion evaluations at commercial and residential buildings overlying higher TCE shallow A-zone groundwater contamination (greater than 50 µg/L for residential buildings and greater than 100 µg/L for commercial buildings). For those South Bay Sites where vapor intrusion evaluations have already begun, early project planning discussions culminated in a phased approach to delineating the Vapor Intrusion Off-Property Study Area, beginning with investigations in these higher concentration areas of the subsurface groundwater plumes.

The groundwater contamination at the South Bay Sites is generally very shallow, ranging between approximately 5 feet below ground surface (bgs) to 35 feet bgs. Ongoing data collection efforts at other similar vapor intrusion sites in Region 9, as well as nationally, have shown vapor intrusion potential into buildings overlying lower groundwater TCE concentrations (less than 50 µg/L for residential buildings and less than 100 parts µg/L for commercial buildings), at levels exceeding health protective indoor air levels. Factors include, but are not limited to, location relative to source areas,

impacts due to seasonal fluctuations in groundwater levels, preferential pathways into a building and other building-specific characteristics that facilitate upward migration of subsurface vapors into interior living and work spaces.

The use of the TCE 5 µg/L groundwater concentration as defining the extent of the Vapor Intrusion Evaluation Study Area is reasonable, supported by use of EPA's vapor intrusion screening level calculator, the generic default groundwater-to-indoor air attenuation factor of 0.001 and the appropriate Henry's Law conversion, empirical data, and mathematical modeling.

Work Plans shall be prepared or revised, as appropriate, to define the Vapor Intrusion Off-Property Study Area as the area bounded by the estimated TCE shallow zone groundwater contamination area greater than 5 µg/L. A comprehensive evaluation of the multiple lines of evidence collected for each site should be used in determining the potential for vapor intrusion at particular buildings and whether additional investigation and response actions are warranted. Any proposal to exclude particular buildings from indoor air sampling must be supported by a robust, site- and building-specific multiple-lines-of-evidence analysis.

Where contaminants other than TCE drive the vapor intrusion investigation, a site-specific and contaminant-specific analysis following the multiple-lines-of-evidence approach should be used to derive a sufficiently health protective study boundary for the vapor intrusion evaluation.

EPA supports a phased multiple-lines-of-evidence approach in prioritizing vapor intrusion investigations, for example: (1) colder weather indoor air sampling event and commercial building HVAC-off and HVAC-on sampling within the original Off-Property Study Area; (2) data evaluation and identification of data gaps, with subsequent additional multiple-lines-of-evidence data collection and analysis; (3) targeted step-out's to specific commercial/residential buildings or streets overlying lower contaminant concentration contour lines; and finally (4) full step-out and building-specific evaluation to off-property vapor intrusion study boundary line, or 5 µg/L for TCE.

San Francisco Bay Regional Water Quality Control Board

**Fact Sheet – Requirements for Submitting Technical Reports
Under Section 13267 of the California Water Code**

What does it mean when the Regional Water Board requires a technical report?

Section 13267¹ of the California Water Code provides that "...the regional board may require that any person who has discharged, discharges, or who is suspected of having discharged or discharging, or who proposes to discharge waste...that could affect the quality of waters...shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires."

This requirement for a technical report seems to mean that I am guilty of something, or at least responsible for cleaning something up. What if that is not so?

The requirement for a technical report is a tool the Regional Water Board uses to investigate water quality issues or problems. The information provided can be used by the Regional Water Board to clarify whether a given party has responsibility.

Are there limits to what the Regional Water Board can ask for?

Yes. The information required must relate to an actual or suspected or proposed discharge of waste (including discharges of waste where the initial discharge occurred many years ago), and the burden of compliance must bear a reasonable relationship to the need for the report and the benefits obtained. The Regional Water Board is required to explain the reasons for its requirement.

What if I can provide the information, but not by the date specified?

A time extension may be given for good cause. Your request should be promptly submitted in writing, giving reasons.

Are there penalties if I don't comply?

Depending on the situation, the Regional Water Board can impose a fine of up to \$5,000 per day, and a court can impose fines of up to \$25,000 per day as well as criminal penalties. A person who submits false information or fails to comply with a requirement to submit a technical report may be found guilty of a misdemeanor. For some reports, submission of false information may be a felony.

Do I have to use a consultant or attorney to comply?

There is no legal requirement for this, but as a practical matter, in most cases the specialized nature of the information required makes use of a consultant and/or attorney advisable.

What if I disagree with the 13267 requirements and the Regional Water Board staff will not change the requirement and/or date to comply?

You may ask that the Regional Water Board reconsider the requirement, and/or submit a petition to the State Water Resources Control Board. See California Water Code sections 13320 and 13321 for details. A request for reconsideration to the Regional Water Board does not affect the 30-day deadline within which to file a petition to the State Water Resources Control Board.

If I have more questions, whom do I ask?

Requirements for technical reports include the name, telephone number, and email address of the Regional Water Board staff contact.

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¹ All code sections referenced herein can be found by going to <http://leginfo.legislature.ca.gov/faces/codes.xhtml>.

EXHIBIT B

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