



CH2M  
6 Hutton Centre Drive  
Suite 700  
Santa Ana, CA 92707  
O +1 714 429 2000  
F +1 714 429 2050  
www.ch2m.com

Mr. Paul Cho, P.G.  
California Regional Water Quality Control Board, Los Angeles Region  
320 W. 4th Street, Suite 200  
Los Angeles, California 90013

May 25, 2017

**Re: Response to the Office of Environmental Health Hazard Assessment (OEHHA) Comments on Revised Human Health Risk Assessment for No Further Action Determination for Shallow Soil at the Eastern 15-Acre Parcel, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard, Norwalk, California**

Dear Mr. Cho,

On behalf of SFPP, L.P. (SFPP), an operating partner of Kinder Morgan Energy Partners, L.P. (Kinder Morgan), CH2M has prepared this letter to present responses to the Office of Environmental Health Hazard Assessment (OEHHA) May 1, 2017, comments on the *Revised Human Health Risk Assessment for No Further Action Determination for Shallow Soil at the Eastern 15-Acre Parcel, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard, Norwalk, California*, dated March 27, 2017.

OEHHA's comments are presented below in bold, followed by the CH2M response in italics. Although assessment of the 15-acre parcel has been conducted both by SFPP and DLA Energy (formerly Defense Energy Support Center), and the subject document was jointly prepared, for this round of comments, CH2M (on behalf of SFPP) and The Source Group, Inc. (SGI), a division of Apex Companies, LLC (on behalf of DLA Energy) are submitting responses under separate cover. However, CH2M and SGI coordinated the response approach for consistency.

#### General Comments

- **Four additional soil vapor probes and soil borings were added onto the Site investigation in February 2017. Detections at these locations were under screening levels.**

*Response: Noted.*

- **Residential screening levels were also employed in the review. All 2017 detections were below residential screening levels. The application of residential screening levels is not overly conservative given that there are residential houses located off-site directly across from the Site.**

*Response: Noted. See below for a response regarding offsite residences.*

- **The following regulatory levels were used for screening at the Site: SFRWQCB ESLs, DTSC SLs, USEPA RSLs.**
  - **ESLs are typically only applicable for SF region sites.**

*Response: Noted.*

## Human Health Risk Assessment

- **Exposure point concentrations (EPCs) for soil and soil gas were below the human health screening levels.**

*Response: Noted.*

- **Appendix F of this report provides the risk characterization. However, only tables with calculations from the 2016 data were included.**

*Response: Risks have been updated to include the 2017 soil vapor data as described below.*

- **Using the 2016 data, risk and hazard characterization for soil vapor were  $2 \times 10^{-6}$  and  $9 \times 10^{-2}$ , respectively.**

*Response: Risk assessment calculations prepared by SGI and reviewed by CH2M incorporate the 2017 soil gas data. These calculations used the maximum detected soil gas concentration in samples SVM-27, SVM-21, SVM-22, and SVM-23. For nondetected results, a proxy value of one-half the detection limit was used to estimate an EPC. Estimated cancer risks based on residential land use were  $2 \times 10^{-7}$  for soil vapor at 5 feet below ground surface (bgs) and  $8 \times 10^{-7}$  for soil vapor at 10 feet bgs. These are below a  $1 \times 10^{-6}$  target risk level, which is below the de minimis level used by OEHHA. Estimated noncancer hazard indices were 0.03 for soil vapor at 5 feet bgs and 0.2 for soil vapor at 10 feet bgs. These are below 1, which is less than the de minimis level used by OEHHA. These risks are based on the assumption that a hypothetical resident is potentially exposed to the volatile organic compounds in soil gas by a vapor intrusion (VI) pathway. A summary table presenting these updated results is attached to this letter.*

- **This was above the *de minimis* target cancer risk threshold. OEHHA conducted several point calculations and supports these values.**

*Response: Noted. See the previous response with 2017 soil gas sampling results. Note that the land use anticipated for the 15-acre parcel is not residential – risks for a nonresidential land use would be lower than presented in this updated assessment.*

- **Adding risks from soil exposure would increase this cumulative risk.**

*Response: Soil sampling results were presented in CH2M's report, which was Attachment B to the March 27, 2017, combined letter (see Table 2 in Attachment B). The concentrations detected are significantly below the DLA Energy cleanup goals. Based on these results, contributions to risks from soil exposure would not produce a cumulative cancer risk higher than  $1 \times 10^{-6}$  or higher than a noncancer hazard index of 1.*

- **Although the 2017 data included more up to date information and a more extended assessment, tables for the 2017 calculated risks and hazards were not included in Appendix F. Therefore OEHHA could not confirm these cumulative risks and hazards.**

*Response: See previous response.*

## Conclusions

- **OEHHA agrees that the 2017 detections were below screening levels.**

*Response: Noted.*

- **Of the cancer risks and hazards provided, OEHHA confirms that the cumulative risk for the 2016 investigation was above the residential target risk threshold, but below that for the commercial workers.**

*Response: Noted.*

- **Considerations for off-site residential exposure are recommended.**

*Response: SFPP performed soil vapor monitoring and assessed potential VI pathways at the south-central and southeastern offsite areas of the SFPP Norwalk Pump Station. This investigation incorporated the results of a VI assessment and human health risk assessment conducted by Geomatrix in 2006. These results were submitted in a letter report to the Regional Water Quality Control Board (RWQCB) on November 30, 2012 (Results of Soil Vapor Monitoring at the South-Central and Southeastern Offsite Areas of the SFPP Norwalk Pump Station, Norwalk, California). An additional round of soil vapor sampling was performed in August 2013, and results were submitted in a letter report to the RWQCB on February 18, 2014 (Results of August 2013 Soil Vapor Monitoring at the South-Central and Southeastern Offsite Areas of the SFPP Norwalk Pump Station, Norwalk, California). The conclusions from these studies were that VI pathways to offsite locations were unlikely to pose significant human health risks, and that aerobic soil conditions in the areas sampled appear to limit the potential for petroleum VI from groundwater.*

- **OEHHA could not confirm the calculated cumulative risks and hazards for the updated 2017 investigation because these were not provided**

*Response: Updated risk assessment results based on the 2017 soil gas data are attached.*

If you have any questions regarding this letter and the response to comments, please contact Eric Davis/CH2M at 213.228.8262.

Regards,

CH2M HILL Engineers, Inc.



Eric Davis  
Project Manager



John Lowe, CIH  
Vapor Intrusion Consultant

**Attachment:**

Supplemental Risk Assessment Calculations Using February 2017 Soil Vapor Data (SGI Table titled "Risk Characterization for Soil Vapor for Residential Exposure Scenario - Offsite South (SVM-27, SVM-21, SVM-22, SVM-23")

**Distribution:**

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**DRAFT**  
**Risk Characterization for Soil Vapor for Residential Exposure Scenario - Offsite South (SVM-27, SVM-21, SVM-22, SVM-23)**  
 Defense Fuel Support Point - Norwalk  
 Norwalk, California

Chemical	Soil Gas Screening Level (SL) <sup>1</sup>				Site Data - Soil Gas at 5 feet bgs			Site Data - Soil Gas at 10 feet bgs		
	Soil Gas SL Based on Carcinogenic Effects (µg/m <sup>3</sup> )	Soil Gas SL Based on Noncarcinogenic Effects (µg/m <sup>3</sup> )	Target Cancer Risk (unitless)	Target Noncancer Hazard Index (unitless)	EPC <sub>soil gas</sub> <sup>2</sup> (µg/m <sup>3</sup> )	Cancer Risk <sup>3</sup> (unitless)	Noncancer Hazard Index <sup>4</sup> (unitless)	EPC <sub>soil gas</sub> <sup>5</sup> (µg/m <sup>3</sup> )	Cancer Risk <sup>3</sup> (unitless)	Noncancer Hazard Index <sup>4</sup> (unitless)
Acetone	---	16,000,000	1 E-06	1 E+00	40	---	3 E-06	62	---	4 E-06
Benzene	48	1,600	1 E-06	1 E+00	2.2	5 E-08	1 E-03	20	4 E-07	1 E-02
Toluene	---	160,000	1 E-06	1 E+00	24	---	2 E-04	300	---	2 E-03
Ethylbenzene	560	520,000	1 E-06	1 E+00	6.7	1 E-08	1 E-05	99	2 E-07	2 E-04
m,p-Xylene	---	52,000	1 E-06	1 E+00	26	---	5 E-04	370	---	7 E-03
o-Xylene	---	52,000	1 E-06	1 E+00	10	---	2 E-04	130	---	3 E-03
2-Butanone (MEK)	---	2,600,000	1 E-06	1 E+00	11	---	4 E-06	31	---	1 E-05
(6) Carbon Disulfide	---	365,000	1 E-06	1 E+00	<b>3.1</b>	---	---	11	---	3 E-05
(7) 1,3-Dichlorobenzene	---	65,000	1 E-06	1 E+00	170	---	3 E-03	210	---	3 E-03
Ethanol	---	---	1 E-06	1 E+00	220	---	---	110	---	---
(8) 4-Ethyltoluene	---	160,000	1 E-06	1 E+00	3.3	---	2 E-05	46	---	3 E-04
(6,9) Isopropanol	---	15,500,000	1 E-06	1 E+00	31	---	2 E-06	24	---	2 E-06
4-Methyl-2-Pentanone	---	1,600,000	1 E-06	1 E+00	<b>3.1</b>	---	2 E-06	<b>3.1</b>	---	2 E-06
Tetrachloroethene	240	18,000	1 E-06	1 E+00	37	2 E-07	2 E-03	52	2 E-07	3 E-03
Trichloroethene	240	1,000	1 E-06	1 E+00	<b>1.4</b>	6 E-09	1 E-03	<b>1.4</b>	---	---
(6) 1,2,4-Trimethylbenzene	---	3,650	1 E-06	1 E+00	12	---	3 E-03	120	---	3 E-02
(7) 1,3,5-Trimethylbenzene	---	21,000	1 E-06	1 E+00	3.3	---	2 E-04	42	---	2 E-03
(7,10) 2,2,4-Trimethylpentane	---	21,000	1 E-06	1 E+00	440	---	2 E-02	3,000	---	1 E-01
(6) Cyclohexane	---	3,150,000	1 E-06	1 E+00	63	---	2 E-05	260	---	8 E-05
<b>Total</b>						<b>2 E-07</b>	<b>3 E-02</b>	<b>Total</b>	<b>8 E-07</b>	<b>2 E-01</b>

**Notes:**

bgs = below ground surface.                      µg/m<sup>3</sup> = micrograms per cubic meter.  
 SL = screening level.                                ND = not detected.  
 EPC = exposure point concentration.            --- = not available or not applicable.

**Red font indicates a proxy value of half detection limit was used.**

<sup>1</sup> Unless otherwise noted, represents the San Francisco Regional Water Quality Control Board (SFRWQCB) Environmental Screening Level (ESL) based on noncarcinogenic or carcinogenic effects (SFRWQCB ESLs dated February 2016 revision 3).

<sup>2</sup> Value represents the maximum detected concentration in soil gas collected from 5 feet bgs.

<sup>3</sup> Represents the excess cancer risk, based on a target excess cancer risk of one-in-one million (1 x 10<sup>-6</sup>).

Excess Cancer Risk for compound *i* = Soil Gas EPC<sub>*i*</sub> x Target Cancer Risk of 1 x 10<sup>-6</sup> / Soil Gas SL<sub>*i*</sub>

<sup>4</sup> Represents the noncancer hazard, based on a target hazard quotient of one (1).

Hazard Quotient for compound *i* = Soil Gas EPC<sub>*i*</sub> x Target Noncancer Hazard Index of 1 / Soil Gas SL<sub>*i*</sub>

<sup>5</sup> Value represents the maximum detected concentration in soil gas collected from 10 feet bgs.

<sup>6</sup> SFRWQCB ESLs were not available; therefore, the U.S. Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) based on carcinogenic and noncarcinogenic effects were used, dated May 2016. USEPA RSLs have been developed for indoor air, but not soil gas. The residential soil gas SL is based on applying a DTSC default attenuation factor to the air SL. The resident air SL was divided by DTSC default attenuation factor of 0.002 (DTSC, 2011). The resulting value is the soil gas SL.

<sup>7</sup> SFRWQCB ESLs were not available; therefore, the Department of Toxic Substances Control (DTSC) Human and Ecological Risk Office Note 3 modified screening levels based on carcinogenic and noncarcinogenic effects were used, dated June 2016. DTSC-SLs have been developed for indoor air, but not soil gas. The residential soil gas SL is based on applying a DTSC default attenuation factor to the air SL. The resident air SL was divided by DTSC default attenuation factor of 0.002 (DTSC, 2011). The resulting value is the soil gas SL.

<sup>8</sup> SFRWQCB ESLs were not available for 4-ethyltoluene; therefore, the ESL for toluene was used.

<sup>9</sup> SFRWQCB ESLs were not available for isopropanol; therefore, the USEPA RSL for sec-butyl alcohol was used.

<sup>10</sup> SFRWQCB ESLs were not available for 2,2,4-trimethylpentane; therefore, the DTSC SL for 2,4,4-trimethylpentene was used.