

## TECHNICAL MEMORANDUM

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**TO** Geoff Blair, Associate Engineer  
City of San Jose Environmental Services Department

**CC** Kris Johnson, P.G., Andreas Wagner, CIH ROH

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### REVIEW OF RAMBOLL REPORT ON FENCELINE ASBESTOS AMBIENT AIR QUALITY SAMPLING DATA COLLECTED AT COMMUNICATIONS HILL 2 DEVELOPMENT, SAN JOSE, CA

Golder Associates Inc. (Golder) was contracted by the City of San Jose to review the report related to the fence line asbestos air quality sampling data that was prepared by Ramboll. The Ramboll report reviewed asbestos ambient air quality data collected by McCloskey Consultants, Inc. at the Communications Hill 2 Development in San Jose, California and estimated risk of potential asbestos exposure for the residents living in the area. Ramboll assessed that the estimated risk of exposure at the monitored locations are within or below the USEPA's acceptable risk range for the protection of human health. Golder independently reviewed the air quality sampling data found in the Ramboll report and arrived at a similar conclusion. Details of Golder's assessment are presented in this technical memorandum.

The following reports and memos were reviewed by Golder:

- *Memo regarding Recommendations for Enhanced Controls of Naturally Occurring Asbestos contained in Fugitive Dust related to Construction Activities at the Communications Hill Development II Phase 2, San Jose, CA, Ramboll, September 3, 2019*
- *Review of Fence Line Asbestos Ambient Air Quality Sampling Data Communications Hill Development, San Jose, CA, Ramboll, August 21, 2019*
- *Technical Support Document for Cancer Potency Factors: Methodologies for Derivation, Listing of Available Values, and Adjustments to Allow for Early Life Stage Exposures, California EPA OEHHA, May 2009*
- *Air Toxics Hot Spot Program Guidance Manual for Preparation of Health Risk Assessments Appendices A-F, California EPA OEHHA, May 2009*
- *Asbestos Dust Mitigation Plan Communications Hill 2 Phase I San Jose, McCloskey Consultants, Inc., February 27, 2015*

### Project Understanding

As understood from the Ramboll report, the Communications Hill 2 Development area is an approximately 300 acre site where residential homes are being built in three phases. Construction for Phase I, which includes 314 residential units in approximately 60 acres began in July 2015 and was completed in November 2017. Construction for Phase II began in November 2017 and is currently ongoing. Due to the presence of naturally-occurring asbestos (NOA) in the soil of the project site and the fact that construction activities have the potential to generate asbestos containing fugitive dust, the developer KB Home South Bay, Inc. (KB Home) required an

Asbestos Dust Mitigation Plan (ADMP) approved by the Bay Area Air Quality Management District (BAAQMD) and the California Air Resources Board (CARB). As part of the ADMP, fugitive dust control measures are being employed and perimeter monitoring for asbestos is being conducted.

Ambient air monitoring for airborne asbestos is being conducted at six locations (P1 through P6) within the Communication Hill site. Location P1 is being used as the baseline monitor as it is located upwind of the construction activities. Locations P2 through P6 are used for estimating exposure to current residents of Phase I and also other residential areas surrounding the project site. Ramboll has performed an assessment of the data collected at the monitoring locations for exposure of the people living in the area to health risks.

Monitor locations P2 and P4 were relocated to estimate exposure to Phase I residents possibly caused by the Phase II construction activities. The current locations of P2 and P4 are at the boundary between Phase I and Phase II. The current location of P4 is also near the northeast corner of the William Lewis Manly Park and therefore, data collected at this location is representative of asbestos levels in the park. Monitor location P6 is approximately 400 ft from the eastern corner of the Vieira Park. Since the location of the Vieira Park is upwind, data collected at location P6 may not be representative of asbestos levels in the park.

### **Ramboll Report Understanding**

Ramboll used the mean value of the data collected at each monitoring location and estimated associated cancer risks assuming the same exposure for the duration of monitoring at each location. The following were used in the cancer risk determination:

- An inhalation unit risk (IUR) of  $1.9E-04$  per 100 PCM fibers/ $m^3$  for asbestos. The IUR is defined by USEPA as the upper-bound excess lifetime cancer risk estimated to result from continuous exposure to an agent at the reference concentration. The asbestos IUR can be interpreted as 1.9 excess cancer cases expected to develop per 1,000 people if exposed daily for a lifetime to 100 PCM fibers per  $m^3$  of air.
- Exposure duration of 4.1 years for Locations P1, P3, P5, and P6. Locations P2 and P4 were moved due to start of Phase II construction. Therefore, there are two locations for each – P2a, P2b, P4a, and P4b. Exposure duration for P2a and P4a is 4.1 years. Exposure duration of P2b and P4b are 2.5 years and 2.1 years, respectively. The durations were estimated from the date of first occupancy until August 2019.
- A lifetime exposure of 70 years.
- Total risk = dose (sampling mean) X inhalation unit risk X fraction of lifetime exposure (exposure duration/lifetime of exposure).

Ramboll compared the estimated cancer risk for each location to the USEPA's recommended risk range of 1-in-10,000 to 1-in-1,000,000 for the protection of human health. In the 1989 Benzene NESHAP Rule, the USEPA sets an upper limit of acceptable risk at about a 1-in-10,000 (or 100-in-1 million) lifetime added cancer risk for the most exposed person. The benzene rule also set a target of protecting the most people possible to an individual lifetime risk level no higher than about 1-in-1 million. Since the estimated risk levels are within the range of recommended risk levels, the conclusion of the Ramboll report was that the exposure levels are within acceptable limits.

The air monitoring samples were analyzed using a method that uses Transmission Electron Microscopy (TEM), which can detect fiber structures that are less than 5 micrometers in length. The TEM method is the most sophisticated technology available for characterizing asbestos minerals and reports concentrations as structures per cubic centimeter (s/cc). The inhalation unit risk and the Office of Environmental Health and Hazard Assessment (OEHHA) hazard assessment procedure however uses asbestos concentrations that are based on counting fibers using the Phase Contrast Microscopy (PCM) method. The PCM method only counts fibers that are 2.5 micrometer or larger in diameter and the unit of measure is fibers per cubic centimeter (f/cc). It is therefore, required to convert the TEM based ambient concentration levels to PCM based concentration levels before estimating the risk of exposure. Ramboll used a conversion of 1 PCM fiber is equivalent to 320 TEM structures, which is provided by the OEHHA health risk assessment guidance.

**Golder Comments**

In general, Golder finds Ramboll's analysis of the ambient levels of asbestos data collected by McCloskey and the conclusions drawn by Ramboll as reasonable. The methodology used to estimate the cancer risks and the conversion factors used are based on the Office of Environmental Health Hazard Assessment (OEHHA) guidance for preparation of health risk assessments. As long as the BAAQMD approved dust mitigation procedures as outlined in the ADMP referenced in the McCloskey Consultants, Inc. Report dated February 27, 2015 are followed, the NOA exposure risk to the public and residents on or near the site should be minimized. On September 3, 2019 Ramboll provided recommendations for enhanced control of fugitive dust generated by construction activities, which if undertaken should further reduce the NOA containing fugitive dust exposure.

Using the same air monitoring data that Ramboll used, Golder performed additional risk assessments for specific population types, as requested by City staff. Detailed comments are presented below.

Using the mean value of the monitored concentrations at each location, Ramboll estimated cancer risks for adult population using the OEHHA health risk assessment procedure and determined that the risks are within acceptable range established by USEPA for the protection of human health. Golder performed the same analysis for infants, children, and adults and the exposure risk for background NOA and incremental exposure due to construction activities at other sampling locations are summarized below:

Monitor	Mean (100 PCM f/m <sup>3</sup> )	Exposure Duration (years)	Cancer Risk (excess cases)		
			Infant (3 <sup>rd</sup> trimester to 2 yrs)	Children (2 yrs to 16 yrs)	Adult (16 yrs to 70 yrs)
P1	8.0E-02	4.1	6-in-1 million	3-in-1 million	0.9-in-1 million
P2a	4.3E-01	4.1	3-in-100,000	1-in-100,000	4-in-1 million
P3	3.5E-01	4.1	2-in-100,000	9-in-1 million	3-in-1 million
P4a	2.3E-01	4.1	1-in-100,000	5-in-1 million	2-in-1 million
P5	2.3E-01	4.1	2-in-100,000	8-in-1 million	2-in-1 million

Monitor	Mean (100 PCM f/m <sup>3</sup> )	Exposure Duration (years)	Cancer Risk (excess cases)		
			Infant (3 <sup>rd</sup> trimester to 2 yrs)	Children (2 yrs to 16 yrs)	Adult (16 yrs to 70 yrs)
P6	1.3E-01	4.1	4-in-1 million	2-in-1 million	0.6-in-1 million
P2b	2.8E-01	2.5	1-in-100,000	4-in-1 million	1-in-1 million
P4b	2.5E+00	2.1	1-in-10,000	4-in-100,000	1-in-100,000

The background concentration at location P1 was subtracted from the average concentrations at other locations to determine the incremental exposure risks associated with construction activities. The age range for the infants and children are based on the OEHHA health risk assessment guidelines. The risks were determined following the OEHHA guidelines and includes an age sensitivity factor (ASF), which is an adjustment to account for toxicokinetic and toxicodynamic differences between children and adults and to account for potential greater contribution to cancers appearing later in life caused by potential early-life exposures. The OEHHA recommends an ASF of 10 for infants up to the age of 2 years and 3 for children from age 2 years to age 16 years. Note that the ASF is 1 for adults. Total risk was estimated using the following formula:

- Total risk = dose (sampling mean) X inhalation unit risk X fraction of lifetime exposure (exposure duration/lifetime of exposure) X ASF

As shown by the summary table, the exposure risk based on average monitored values for all age group populations are within the USEPA’s acceptable risk range of 1-in-1 million to 1-in-10,000. Note that the background (location P1) exposure risk is 6-in-1 million to almost 1-in-1 million for infants to adults. The maximum exposure risk was determined to be at the P4b location, which is the new location for the P4 monitor at the William Lewis Manly Park and for an exposure duration of 2.1 years for infants. This is a conservative analysis because the actual exposure to NOA containing fugitive dust inside the homes are expected to be much less. For example, if a person spends 1-8 hours a day at Manly Park and the remaining hours inside their home, the overall exposure risk for the person will be less than the risks estimated in this memorandum assuming continuous exposure.

Golder also agrees with Ramboll’s assessment that the concentration at specific sensitive receptors further away from the monitoring locations will be lower due to dispersion. Use of the values from the monitoring locations for assessing exposure risk to general population in nearby neighborhoods is therefore, conservative.

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