Appendix FEIR-2

Health Risk Assessment

HEALTH RISK ASSESSMENT

1000 Seward Project

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1.0 Executive Summary

1.1 Findings

This report provides an analysis of potential health risk impacts related to the proposed construction and operation of the 1000 Seward Project (Project) in the City of Los Angeles, California. The analysis identified the baseline condition around the Project and evaluated the incremental change in health risk concentration exposure from diesel exhaust/diesel particulate matter (DPM) emitted by heavy-duty construction equipment during construction and limited heavy-duty delivery trucks during operation[1] of the Project. The findings of the analysis are as follows:

- For carcinogenic exposures (construction and operational emissions), the increase in risk is calculated to be 7.0 in one million for residential uses, which is less than the applicable threshold of 10 in one million for sensitive receptors in close proximity to the Project Site, resulting in a less than significant impact.

- For chronic non-carcinogenic exposures (construction and operational emissions), the increase in the respiratory hazard index was estimated to be less than the applicable threshold of one for sensitive receptors in close proximity to the Project Site, resulting in a less than significant impact.

[1] *The Project would not support any land uses or activities that would involve the use, storage, or processing of carcinogenic toxic air contaminants. In addition, the proposed land uses would not generally involve the use of heavy-duty diesel trucks with the exception of occasional moving trucks, trash trucks or delivery trucks.*

2.0 Introduction

The Project would include the development of new office, restaurant, and retail uses totaling 150,458 square feet. Specifically, the Project would develop 136,842 square feet of office uses, 11,152 square feet of restaurant uses (of which 6,100 square feet may be used for an entertainment use on the 9th floor), and 2,464 square feet of retail uses. To be clear, this is not the type of project that the regulatory agencies, or the applicable regulatory laws require to produce a Health Risk Assessment (HRA) for adequate disclosure of potential air quality impacts pursuant to the California Environmental Quality Act (CEQA).

The California Air Pollution Control Officers Association (CAPCOA) Guidance Document for Health Risk Assessments for Proposed Land Use Projects (2009) (CAPCOA HRA Guidance) provides lead agencies with guidance regarding when and how an HRA should be prepared. It bases the risk assessment methodology on the procedures developed by the California Office of Environmental Health Hazard Assessment (OEHHA) to meet the mandates of the Air Toxics "Hot Spots" Information and Assessment Act (AB 2588). The CAPCOA HRA Guidance states that

> "[t]here are basically two types of land use projects that have the potential to cause long-term public health risk impacts: Type A – land use projects with toxic emissions that impact receptors; and Type B land use projects that will place receptors in the vicinity of existing toxic sources. Type A project examples are combustion related power plants, gasoline dispensing facilities, asphalt batch plants, warehouse distribution centers, quarry operations, and other stationary sources that emit toxic substances. Type B project examples are project that place receptors near stationary sources, high traffic roads, freeways, rail yards, and ports."

Note that the Project does not qualify as either a Type A or Type B project. Therefore, per the CAPCOA HRA Guidance in effect when the Draft EIR for the Project was prepared, the lead agency did not include an HRA in the Draft EIR. Accordingly, this HRA was done voluntarily for informational purposes only to supplement the administrative record and respond to comments, and further demonstrates that even if an HRA was necessary (which it was not) the Project would not have a significant air quality impact.

The OEHHA adopted the Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments (2003 Guidance Manual) in October of 2003. The Guidance Manual was developed by OEHHA, in conjunction with the California Air Resources Board (CARB), for use in implementing the Air Toxics “Hot Spots” Program

(Health and Safety Code Section 44360 et. seq.). The Air Toxics "Hot Spots" Program requires stationary sources to report the types and quantities of certain substances routinely released into the air. The goals of the Air Toxics "Hot Spots" Program are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to reduce those significant risks to acceptable levels.

OEHHA adopted a new version of the Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments (2015 Guidance Manual) in March of 2015.[2] CARB acknowledges that the Guidance Manual does not include guidance for projects prepared under the auspices of CEQA and that it would be "handled by individual [Air Pollution Control] Districts."[3] As noted by CARB,

> "The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly) was enacted in September 1987. Under this, stationary sources are required to report the types and quantities of certain substances their facilities routinely release into the air. Emissions of interest are those that result from the routine operation of a facility or that are predictable, including but not limited to continuous and intermittent releases and process upsets or leaks…
>
> The Act requires that toxic air emissions from stationary sources (facilities) be quantified and compiled into an inventory according to criteria and guidelines developed by the ARB, that each facility be prioritized to determine whether a risk assessment must be conducted, that the risk assessments be conducted according to methods developed by OEHHA..."[4]

As reported above, applicability is associated with commercial and industrial operations. There are two broad classes of facilities subject to the AB 2588 Program: Core facilities and facilities identified within discrete industry-wide source categories. Core facilities subject to AB 2588 compliance are sources whose criteria pollutant emissions

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[2] *Office of Environmental Health Hazard Assessment, Air Toxicology and Epidemiology, Adoption of Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. March 6, 2015, www.oehha.ca.gov/air/hot_spots/hotspots2015.html.*

[3] *CARB, Risk Management Guidance for Stationary Sources of Air Toxics, July 23, 2015, p. 19, www.arb.ca.gov/toxics/rma/rmgssat.pdf.*

[4] *CARB, Overview of the Air Toxics "Hot Spots" Information and Assessment Act https://ww2.arb.ca.gov/overview-air-toxics-hot-spots-information-and-assessment-act, accessed October 13, 2021.*

(particulate matter, oxides of sulfur, oxides of nitrogen, and volatile organic compounds) are 25 tons per year or more as well as those facilities whose criteria pollutant emissions are 10 tons per year or more but less than 25 tons per year. Industry-wide source facilities are classified as smaller operations with relatively similar emission profiles (e.g., auto body shops, gas stations and dry cleaners using perchloroethylene). It is apparent that the emissions generated from the construction and subsequent occupancy of a mixed-use development project are not classified as core operations nor subject to industry-wide source evaluation.

The intent in developing the 2015 Guidance Manual was to provide HRA procedures for use in the Air Toxics Hot Spots Program or for the permitting of new or modified stationary sources. As noted above, the Project is not a new or modified stationary source that requires air quality permits to construct or operate. Air districts are to determine which facilities will prepare an HRA based on a prioritization process. The 2015 Guidance Manual provides recommendations related to cancer risk evaluation of short-term projects. As discussed in Section 8.2.10 of the 2015 Guidance Manual, "[t]he local air pollution control districts sometimes use the risk assessment guidelines for the Hot Spots program in permitting decisions for short-term projects such as construction or waste site remediation." Thus, to be conservative, this HRA was prepared in part to analyze potential construction impacts, even though short-term projects that would require a permitting decision by South Coast Air Quality Management District (SCAQMD) typically would be limited to site remediation (e.g., stationary soil vapor extractors) and would not be applicable to the Project. The 2015 Guidance Manual does not provide specific recommendations for evaluation of short-term use of mobile sources (e.g., heavy-duty diesel construction equipment). In addition, potential operational impacts, despite the fact that no considered stationary source is part of the Project's land uses, were assessed for informational purposes given the limited use of heavy-duty trucks associated with occasional moving trucks, trash trucks and delivery trucks.

OEHHA's 2015 Guidance Manual provides Age Sensitivity Factors (ASFs) to account for potential increased sensitivity of early-in-life exposure to carcinogens. For risk assessments conducted under the auspices of AB 2588, a weighting factor is applied to all carcinogens regardless of purported mechanism of action. In comments presented to the SCAQMD Governing Board (Meeting Date: June 5, 2015, Agenda No. 28) relating to toxic air contaminant exposures under Rules 1401 (New Source Review of Toxic Air Contaminants), use of the 2015 OEHHA guidelines and their applicability for projects subject to CEQA, as they relate to the incorporation of early-life exposure adjustments, it was reported that:

> The Proposed Amended Rules are separate from the CEQA significance thresholds. The Response to Comments Staff Report PAR 1401, 1401.1, 1402, and 212 A - 8 June 2015 SCAQMD staff is

> currently evaluating how to implement the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will evaluate a variety of options on how to evaluate health risks under the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will conduct public workshops to gather input before bringing recommendations to the Governing Board.

The SCAQMD, as a commenting agency, has not conducted public workshops nor developed policy relating to the applicability of applying the 2015 OEHHA guidance for projects prepared by other public/lead agencies subject to CEQA.

To emphasize variability in methodology for conducting HRAs, regulatory agencies throughout the State of California including the Department of Toxic Substances Control (DTSC) which is charged with protecting individuals and the environment from the effects of toxic substances and responsible for assessing, investigating and evaluating sensitive receptor populations to ensure that properties are free of contamination or that health protective remediation levels are achieved have adopted the U.S. Environmental Protection Agency's (USEPA's) policy in the application of early-life exposure adjustments.

Specifically, USEPA guidance relating to the use of early life exposure adjustments (*Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens, EPA/630/R-003F*) are considered when carcinogens act "through the mutagenic mode of action." As reported:

> The Agency considered both the advantages and disadvantages of extending the recommended, age dependent adjustment factors for carcinogenic potency to carcinogenic agents for which the mode of action remains unknown. EPA recommends these factors only for carcinogens acting through a mutagenic mode of action based on a combination of analysis of available data and long-standing science policy positions that set out the Agency's overall approach to carcinogen risk assessment, e.g., the use of a linear, no threshold extrapolation procedure in the absence of data in order to be health protective. In general, the Agency prefers to rely on analyses of data rather than on general defaults. When data are available for a susceptible lifestage, they should be used directly to evaluate risks for that chemical and that lifestage on a case-by-case basis. In the case of nonmutagenic carcinogens, when the mode of action is unknown, the data were judged by EPA to be too limited and the modes of action too diverse to use this as a category for which a general default adjustment factor approach can be applied. In this situation per the Agency's *Guidelines for Carcinogen Risk*

> *Assessment*, a linear low-dose extrapolation methodology is recommended. It is the Agency's long-standing science policy position that use of the linear low-dose extrapolation approach (without further adjustment) provides adequate public health conservatism in the absence of chemical-specific data indicating differential early-life susceptibility or when the mode of action is not mutagenicity.

In 2006, the USEPA published a memorandum which provides guidance regarding the preparation of health risk assessments should carcinogenic compounds elicit a mutagenic mode of action.[5] As presented in the technical memorandum, numerous compounds were identified as having a mutagenic mode of action. For diesel particulates, polycyclic aromatic hydrocarbons (PAHs) and their derivatives, which are known to exhibit a mutagenic mode of action, comprise less than one percent of the exhaust particulate mass. To date, the USEPA reports that whole diesel engine exhaust has not been shown to elicit a mutagenic mode of action. [6]

Based on a review of relevant guidance on the applicability of the use of early life exposure adjustments to identified carcinogens, the use of these factors would not be applicable to this HRA as neither the Lead Agency nor SCAQMD have developed recommendations on whether these factors should be used for CEQA analyses of potential DPM construction or operational impacts. For this assessment, the HRA relied upon USEPA guidance relating to the use of early life exposure adjustment factors (Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens, EPA/630/R-003F) whereby adjustment factors are only considered when carcinogens act "through the mutagenic mode of action." Therefore, early life exposure adjustments were not considered in this HRA.

In addition, the *L.A. CEQA Thresholds Guide* (Thresholds Guide) states that "impacts from toxic air contaminants can occur during either the construction or operational phases of a project. During certain construction activities, potential releases of toxic air contaminants could occur during site remediation activities or during building demolition. Toxic air contaminants may also be released during industrial or manufacturing processes,

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[5] *United States Environmental Protection Agency, 2006. Memorandum - Implementation of the Cancer Guidelines and Accompanying Supplemental Guidance - Science Policy Council Cancer Guidelines Implementation Workgroup Communication II: Performing Risk Assessments that include Carcinogens Described in the Supplemental Guidance as having a Mutagenic Mode of Action.*

[6] *United States Environmental Protection Agency, National Center for Environmental Assessment, 2018. Integrated Risk Information System (IRIS). Diesel Engine Exhaust.*

or other activities that involve the use, storage, processing, or disposal of toxic materials."[7] Importantly, note that, the Thresholds Guide does not specifically recommend an HRA for short-term DPM emissions from construction activities or for operational activities when land uses are not "industrial or manufacturing processes, or other activities that involve the use, storage, processing, or disposal of toxic materials." The Thresholds Guide also sets forth the following factors for consideration on a case-by-case basis in making a determination of significance with regard to toxic air contaminants: the regulatory framework for the toxic material(s) and process(es) involved; the proximity of the toxic air contaminants to sensitive receptors; the quantity, volume, and toxicity of the contaminants expected to be emitted; the likelihood and potential level of exposure; and the degree to which project design will reduce the risk of exposure. Based on this information, the methodology utilized in the Draft EIR remains consistent with City of Los Angeles guidance, which indicates that preparation of an HRA was not required for the Project.

Also, CARB published and adopted the *Air Quality and Land Use Handbook: A Community Health Perspective*, which provides recommendations regarding the siting of new sensitive land uses near potential sources of air toxic emissions (e.g., freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline dispensing facilities).[8] SCAQMD adopted similar recommendations in its *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*.[9] Together, the CARB and SCAQMD guidelines recommend siting distances for both the development of sensitive land uses in proximity to Toxic Air Contaminates (TAC) sources and the addition of new TAC sources in proximity to existing sensitive land uses. When considering potential air quality impacts under CEQA, consideration is given to the location of sensitive receptors within close proximity of land uses that emit TACs. Both CARB and SCAQMD guidelines recommend conducting an HRA when siting new sensitive land uses (e.g., residential uses) within 500 feet of a freeway. Applied here, the Project does not site new sensitive land uses near existing sources of air toxic emissions since the Project Site is more than 500 feet from the closest freeways.

The primary sources of potential air toxics associated with Project operations include DPM from delivery trucks (e.g., truck traffic on local streets and idling on adjacent streets associated with occasional moving trucks, trash trucks and delivery trucks). However, these activities, and the land uses associated with the Project, are not considered land uses that generate substantial TAC emissions based on review of the air toxic sources listed in SCAQMD's and CARB's guidelines. It should be noted that the SCAQMD recommends that HRAs be conducted for substantial individual sources of DPM (e.g.,

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[7] *City of Los Angeles, CEQA Thresholds Guide, 2006, p. B.3-2.*

[8] *CARB, Air Quality and Land Use Handbook, a Community Health Perspective, April 2005.*

[9] *SCAQMD, Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning, May 6, 2005.*

truck stops and warehouse distribution facilities that generate more than 100 trucks per day or more than 40 trucks with operating transport refrigeration units) and has provided guidance for analyzing mobile source diesel emissions.[10] Based on this guidance, the Project is not considered these types of land uses and is not considered to be a substantial source of operational DPM warranting a refined HRA since daily truck trips to the Project Site would not exceed 100 trucks per day or more than 40 trucks with operating transport refrigeration units. In addition, the CARB-mandated ATCM limits diesel-fueled commercial vehicles (delivery trucks) to idle for no more than 5 minutes at any given time, which would further limit diesel particulate emissions.

Although a construction and operational HRA is not required for the reasons discussed above, for informational purposes only, this HRA has been prepared to provide a good faith and reasoned response to public comments and to provide the City with additional substantial evidence that demonstrates that the Project would not create a significant health risk impact.

[10] *SCAQMD, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis, 2003.*

3.0 Health Risk Assessment

3.1 Project Description

The Project includes the development of a ten story-mixed use office building on a 34,152 square-foot (0.78-acre) site located at 1000 and 1006 Seward Street; 1003, 1007, and 1013 Hudson Avenue; and 6565 Romaine Street (Project Site) in the Hollywood Community Plan area of the City of Los Angeles (City). The 34,152 square-foot (approximately 0.78-acre) Project Site is bounded by an approximately 64-foot tall parking structure and multi-family residential buildings to the north, a 76-foot tall office building and an above-grade parking structure to the west, industrial uses to the south, and multi-family residential buildings to the east.

The Project would include the development of new office, restaurant, and retail uses totaling 150,458 square feet. Specifically, the Project would develop 136,842 square feet of office uses, 11,152 square feet of restaurant uses (of which 6,100 square feet may be used for an entertainment use on the 9th floor), and 2,464 square feet of retail uses. The proposed uses would be located within a single nine-story building (with an additional rooftop level for mechanical equipment and an outdoor tenant terrace) with a maximum height of 127.5 feet to the top of the highest occupiable level and a maximum height of 155 feet to the top of the mechanical equipment level.

Certain activities would emit DPM from heavy-duty trucks and heavy-duty equipment used during construction and to a lesser extent heavy-duty trucks accessing the Project Site during operation of the Project associated with occasional moving trucks, trash trucks and delivery trucks. CARB and OEHHA have classified DPM as a carcinogen. Existing adjacent uses consist of residential uses located north of the site.

3.2 The Assessment Process

The risk assessment process provided in OEHHA's 2003 Guidance Manual consists of four basic steps: (1) hazard identification; (2) exposure assessment; (3) dose-response assessment; and (4) risk characterization.[11] In the first step, hazard identification involves determining the potential health effect which may be associated with emitted pollutants. The purpose is to identify qualitatively whether a pollutant is a potential human carcinogen or is associated with other types of adverse health effects. Depending on the chemical,

[11] *Office of Environmental Health Hazard Assessment, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, August 2003, Page 1-6.*

these health effects may include short-term ailments or chronic diseases. The dose-response assessment is designed to characterize the relationship between the amount or dose of a chemical and its toxicological effect on the human body. Responses to toxic chemicals will vary depending on the amount and length of exposure. For example, short-term exposure to low concentrations of chemicals may produce no noticeable effect, but continued exposure to the same levels of chemicals over a long period of time may eventually cause harm. The purpose of the exposure assessment is to estimate the extent of exposure to each substance for which risk will be evaluated. This involves emission quantification, modeling of environmental transport, identification of chemicals of concern, identification of exposure routes, identification of exposed populations, and estimation of long-term exposure levels. Risk characterization is an integration of the health effects and public exposure information developed for emitted pollutants to provide a quantitative probability of adverse health effects.

3.3 Source Identification and Characterization

3.3.1 Source Identification

As indicated above, the primary source of potential air toxics associated with the Project is DPM from heavy-duty trucks and heavy-duty construction equipment used during construction and to a lesser extent heavy-duty trucks accessing the Project Site during operation of the Project associated with occasional moving trucks, trash trucks and delivery trucks. The SCAQMD recommends that an HRA be conducted for substantial sources of long-term DPM operational sources (e.g., truck stops and warehouse distribution facilities) and has provided guidance for analyzing mobile source diesel emissions.[12] While Project construction and operation would not represent a long-term source of DPM emissions[13], the SCAQMD Guidance was used for purposes of modeling parameters and assumptions.

3.3.2 Source Characterization

Construction

As described in detail in Section II, Project Description, of the Draft EIR, Project construction would commence with demolition of the existing uses, followed by grading and excavation for the subterranean parking garages. Building foundations would then be placed, followed by building construction, paving/concrete installation, and landscape installation. Project construction is anticipated to occur over approximately 24 months. It is

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[12] *SCAQMD, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions, August 2003.*

[13] *Project construction is short term—24 months. Moreover, the Project is commercial and office uses, none of which are associated with significant heavy-duty truck use or significant DPM emissions.*

estimated that approximately 55,000 cubic yards (cy) of soil would be hauled from the Project Site during the grading and excavation phase.

Total DPM emissions over the duration of Project construction were calculated using the SCAQMD recommended California Emissions Estimator Model (CalEEMod) and consistent with the methodology for calculating criteria pollutant emissions provided in Section IV.A, Air Quality, of the Draft EIR. The calculations of the emissions generated during Project construction activities reflect the types and quantities of construction equipment and haul trucks that would be used to complete the proposed construction activities. As the assumptions used in the air quality analysis were developed to characterize a worst-case peak day of construction by phase, equipment usage assumptions were modified to reflect average daily use.

CalEEMod calculates annual emissions based on worst-case conditions occurring on a daily basis. This scenario would not represent real world conditions as construction activities and equipment would not be expected to operate at 100 percent on an average daily basis. Construction surveys prepared for CARB have documented that on a typical construction site, daily average equipment hours range from 2 to 7.5 hours depending on the type of equipment.[14] Therefore, an adjustment was taken into account which assumes that annual average emissions would conservatively represent 80 percent of a worst-case day.

As an example, the heavy-duty construction equipment mix provided in the air quality analysis for the foundation phase reflects all equipment needed for the largest concrete pour day. Thus, average daily DPM emissions from building foundation would be substantially less since maximum pour days would not occur every day during that phase.

The Project is expected to be completed by 2025. However, for purposes of conservatively analyzing construction impacts and to ensure that potential overlap of construction phases is accounted for, it was assumed that the Project would start construction in 2022. Based on SCAQMD factors, the construction equipment and truck fleet mix will emit less pollution in future years due to more stringent emissions control regulations. As construction activities for the Project are evaluated based on an earlier start date, the emissions presented are more conservative. If certain construction phases were to take place at later dates avoiding overlap, Project construction would be complete by 2025.

The calculation of DPM emissions was based on the 1000 Seward Construction Annual CalEEMod output file provided in Appendix A, Emissions Calculations, of this HRA.

[14] *California Air Resources Board, Characterization of the Off-Road Equipment Population, December 2008.*

It was assumed that all on-site (e.g., off-road equipment) equipment would be diesel and, therefore, on-site exhaust PM_{10} emissions were included in this HRA as DPM.

Operation

As discussed above, the Project will develop 136,842 square feet of office uses, 11,152 square feet of restaurant uses (of which 6,100 square feet may be used for an entertainment use on the 9th floor), and 2,464 square feet of retail uses.

A conservative estimate of the number of daily truck trips is provided below based on the National Cooperative Highway Research Program Truck Trip Generation Data.[15]

- Table D-2c of the NCHRP data (Trip Generation Summary—Daily Commercial Vehicle Trips per 1,000 sf of Building Space for Retail (includes restaurants)) provides an average of 0.324 truck trips per 1,000 sf or approximately 4.7 truck trips per day for the Project's commercial floor area. This assumes that all trucks would be diesel even though many retail/restaurant truck deliveries are from smaller gasoline or alternative energy source trucks (e.g., UPS or FedEx). The NCHRP data did not provide the percentage of trucks that would be equipped with a transportation refrigeration unit (TRU). For the purposes of this analysis, it was estimated that one of the trucks per day would be equipped with a TRU related to restaurant use.

- Table D-2d of the NCHRP data (Trip Generation Summary—Daily Commercial Vehicle Trips per 1,000 sf of Building Space for Office and Services (includes hotel) provides an provides an average of 0.039 truck trips per 1,000 sf or approximately 5.3 truck trips per day for the Project's office uses. It is conservatively assumed that all of these delivery trucks would be heavy-duty diesel trucks even though many residential truck deliveries are from smaller gasoline or alternative energy source trucks (e.g., UPS or FedEx).

Accordingly, the Project is conservatively estimated to generate approximately 10 trucks per day during operation of which one trucks associated with restaurant/retail land uses were assumed to include transportation refrigeration units (TRUs) or 10 percent of the 4.7 total trucks associated with restaurant/retail land uses.

Emissions from TRUs were estimated using the CARB Draft 2019 Emissions Inventory for Transportation Refrigeration Units.[16] Emissions from delivery trucks travelling

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[15] National Cooperative Highway Research Program (NCHRP) *Synthesis 298 Truck Trip Generation Data*, 2001

[16] *California Air Resources Board. Draft 2019 Update to Emissions Inventory for Transportation Refrigeration Units. October 2019.*

to and from the Project Site as well as idling were estimated using the CARB EMFAC2021 model.[17] Trucks travelling to/from the loading docks generate emissions through truck engine idling, TRU operation and travelling.

Importantly, note that, with respect to truck emissions associated with the operation of projects, the SCAQMD recommends that HRAs be conducted for substantial sources of DPM for developments that include truck stops and warehouse distribution facilities that generate more than 100 trucks per day or more than 40 trucks with operating TRUs. In other words, SCAQMD has identified an amount of truck trips per day that could warrant conducting an HRA to analyze emissions and health risks. Projects with truck trips below the aforementioned amounts should not be considered a substantial source of DPM and HRAs are neither recommended nor required by the applicable regulatory documents. As set forth above, operational truck use is well below both of these benchmarks.

Specifically, the Project is not considered to be a substantial source of operational DPM warranting an HRA because there are only 10 daily truck trips to the Project Site (of which one are assumed to be TRUs), which is far below the either more-than-100-trucks-per-day or more-than-40-TRU-trucks-per-day that indicate when a project could be considered a substantial DPM source. Nonetheless, operational health risks from use of operational delivery trucks for the Project was evaluated for informational purposes and included in this HRA.

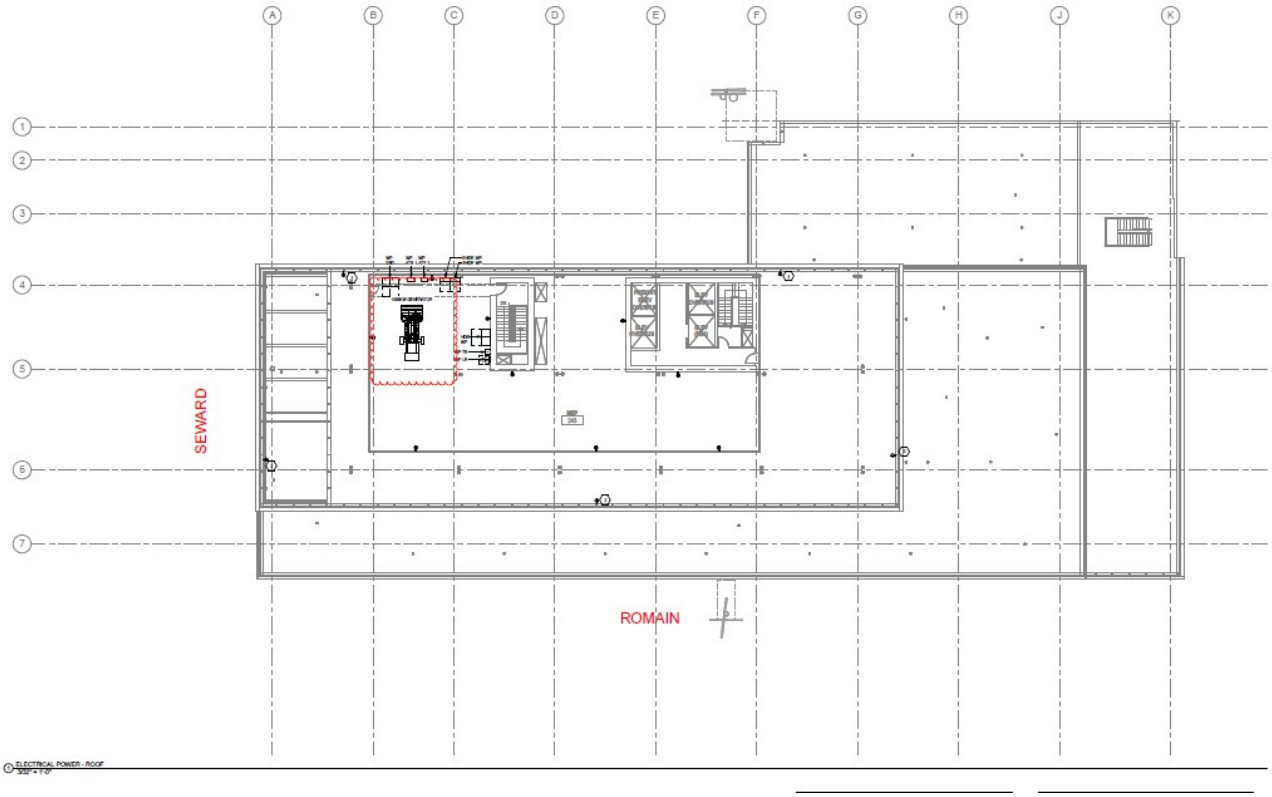
The Project also includes an emergency generator rated at 1,000 kw and would be located on the proposed building's roof level (See Figure 1). SCAQMD Rule 1470 allows emergency generators to operate for up to 200 hours per year and the rule was amended on October 1, 2021. Table 1 in SCAQMD Rule 1470 provides new PM emission standards for emergency generators located at sensitive receptors (e.g., residences) or within 50 meters from a sensitive receptor. Engines between 175 hp and 750 hp have a limit of 0.01 g/bhp-hr and greater than 750 hp a limit of 0.02 g/bhp-hr. Residential uses are located directly north of the Project Site and, therefore, an emission limit of 0.02 g/hp-hr is applicable to the proposed emergency generator. Although the generator is meant for emergency backup purposes, it was assumed that the generator would be run for 200 hours per year, which is the maximum allowed by SCAQMD Rule 1470.

Note also that, based on SCAQMD guidance, there is no quantitative analysis required for future cancer risk within the vicinity of the Project because it is consistent with the recommendations regarding the siting of new sensitive land uses near potential

[17] *Airborne Toxic Control Measure is set forth in title 13, CCR, section 2485 and requires that drivers of diesel-fueled commercial motor vehicles with gross vehicle weight ratings greater than 10,000 pound not idle the vehicle's primary diesel engine longer than five minutes at any location. 5-minute idle time applies to all heavy-duty truck – construction as well as operational trucks.*

sources of TAC emissions provided in the SCAQMD Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning.

Figure 1. Rooftop Emergency Generator Location



3.3.3 Baseline and Identification of Chemicals of Concern

The Draft EIR identified the baseline of conditions around the Project Site and the ambient levels of TACs. The SCAQMD released the fifth round of its Basin-wide Multiple Air Toxics Exposure Study (MATES V–Final Report) in August 2021. MATES V estimated the cancer risk from TAC emissions throughout the Basin by conducting a monitoring program, an updated emissions inventory of TACs, and a modeling effort to characterize health risks in the air basin. As part of MATES V, the SCAQMD prepared an interactive map that shows estimates of cancer risks in the Basin from ambient levels of TACs based on the modeling effort to provide insight into relative risks. The map reports estimated cancer risks for discrete two-kilometer-by-two-kilometer grid cells. The cancer risk estimates reported there should not be interpreted as actual rates of disease in the exposed population, but rather as estimates of potential risk, based on a number of conservative assumptions. In general, MATES V indicates that the highest cancer risks from TACs are found near shipping ports, goods movement sources, and near freeways and other transportation corridors. MATES V identifies that the Project Site falls in an

estimated range of 540 cancer risks per one million. A figure in Appendix E to this HRA shows the MATES V Total Cancer Risk around Project Site. Compared to previous studies of air toxics in the Basin, the MATES V study found decreasing air toxics exposure from the analysis done in the MATES V time period.

This HRA identifies the baseline condition and also identifies the actual additional risks due to certain emissions associated with the Project. Note that, as discussed above, the CAPCOA regulatory guidance adopted at the time the Draft EIR was prepared indicates that HRAs should assess Type A (toxic emissions) and Type B (placing receptors near existing toxic sources) projects within the CEQA context. This HRA presents the incremental health risks analysis even though the Project does not squarely qualify as either a Type A or Type B project. Accordingly, this voluntary HRA analysis is informational, and further informs the public and decision makers, but is not required pursuant to the laws in effect when the Draft EIR was prepared. Nonetheless, this HRA quantitatively evaluated DPM as a chemical of concern for potential health effects in two categories, carcinogenic and non-carcinogenic.

3.4 Exposure Quantification

Consistent with SCAQMD's Localized Significance Threshold Methodology (LST Guidelines), this HRA used USEPA's Regulatory Model AERMOD to assess the downwind extent of DPM concentrations from proposed construction and operational activities.[18] AERMOD accounts for a variety of refined, site-specific conditions that facilitate an accurate assessment of Project impacts. AERMOD's air dispersion algorithms are based upon a planetary boundary layer turbulence structure and scaling concepts, including the treatment of surface and elevated sources in simple and complex terrain.

Exhaust emissions from construction and operational equipment were treated as a set of side-by-side elevated volume sources. The release height was assumed to be 12 feet. This represents the mid-range of the expected plume rise from frequently used construction equipment and operational heavy-duty trucks during daytime atmospheric conditions. All construction exhaust emissions were assumed to take place over a 24-month (2 year) duration on weekdays between 7 A.M. to 3 P.M. (8-hour period). Operational exhaust emissions were assumed to take place 6-days per week between 7 A.M. to 3 P.M. (8-hour period) and included 15 minutes of idle time to account for ingress, egress, and travel on-site. [19] As discussed above, the exact model and specifications for the

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[18] *SCAQMD, Final-Localized Significance Threshold Methodology, 2008.*

[19] *SCAQMD, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis, 2003, www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis.*

emergency generator have not yet been determined. Emergency generator stack parameters was based on equipment of similar rating.[20] Emergency generator exhaust emissions were assumed to take place year round, 24 hours per day, with a limit of 200 hours per year. The emergency generator is expected to be placed on the Project rooftop and was modeled with a release height of 15 feet.

Air dispersion models require additional input parameters including local meteorology and receptors. Due to the sensitivity to individual meteorological parameters such as wind speed and direction, the USEPA recommends that meteorological data used as input into dispersion models be selected on the basis of relative spatial and temporal conditions that exist in the area of concern. In response to this recommendation, meteorological data from the SCAQMD Downtown Los Angeles monitoring station (Source Receptor Area 1) were used to represent local weather conditions and prevailing winds. Building downwash was accounted for using the AERMOD Building Profile Input Program (BPIP).

Cartesian receptor grids were used to represent adjacent and nearby sensitive land uses. The Cartesian receptor grids were placed at each sensitive use with a built in 25 meter spacing for the nearby residential uses. All receptors were placed at ground level, which is recommended by SCAQMD for AERMOD modeling. Elevations for both sources and receptors were provided by the U.S. Geological Survey (USGS) and included using the AERMOD terrain processor AERMAP.

DPM modeled concentrations were used to calculate cancer risk and chronic hazard index at each relevant receptor. A graphical representation of the source-receptor grid network is presented in Appendix C.

3.5 Risk Characterization

3.5.1 Carcinogenic Chemical Risk

Health risks associated with exposure to carcinogenic compounds at sensitive land uses in close proximity to the Project can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. Under a deterministic approach (i.e., point estimate methodology), the cancer risk probability is determined by multiplying the chemical's annual concentration by its unit risk factor (URF). The URF is a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It represents an upper bound estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one

[20] *Caterpillar, CAT C32 Diesel Generator Sets Specification Sheet*

microgram per cubic meter ($\mu g/m^3$) over a 70-year lifetime. The SCAQMD recommends a threshold of ten in one million cancer risk for evaluating carcinogenic impacts at sensitive receptors.[21]

The equation used to calculate the potential excess cancer risk is:

$$Risk_i = C_i \text{ X } CP_i \text{ X DBR X EVF}$$

Where:

$Risk_i$ = Lifetime Excess Cancer Risk from exposure to $chemical_i$
C_i = Representative Air Concentration for $chemical_i$ ($\mu g/m^3$)
CP_i = Cancer $Potency_i$ $(mg/kg\text{-}day)^{-1}$
DBR = Daily Breathing Rate (L/kg body weight-day)
EVF = Exposure Value Factor (unitless)

An estimate of an individual's incremental excess cancer risk from exposure to Project construction and operational DPM emissions is calculated by summing the chemical-specific excess cancer risks. In addition, cancer risk is evaluated based on the duration on which a sensitive receptor is exposed to DPM (exposure duration). Based on OEHHA guidelines, it is recommended that cancer risk analyses assume an exposure duration of 70-years for residential receptors.[22] The exposure duration takes into account the construction duration of 24 months during construction, and operational emissions occurring each year.

3.5.2 Non-Carcinogenic Chemical Risk

The potential for chronic non-carcinogenic health effects is evaluated by calculating the total hazard index (HI) for the Project construction and operational DPM emissions. This HI represents the sum of the hazard quotients (HQs) developed for each individual project-related chemical, where a HQ is the ratio of the representative air concentration of the chemical to the chemical specific non-cancer Reference Exposure Level (REL). The non-cancer RELs represent the daily average exposure concentration at (or below) which no adverse health effects are anticipated.

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[21] *South Coast Air Quality Management District Air Quality Significance Thresholds. www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.*

[22] *Air Toxics Hot Spots Program Risk Assessment Guidelines. Office of Environmental Health and Hazard Assessment. August 2003*

The equations used to calculate the chemical-specific HQs and HIs are:

$HQ_i = C_i/REL_i$
$HI = \Sigma HQi$

Where:

HQ_i = Hazard Quotient for $chemical_i$
C_i = Average Daily Air Concentration for $chemical_i$ ($\mu g/m^3$)
REL_i = Noncancer Reference Exposure Level for $chemical_i$ ($\mu g/m^3$)
HI = Hazard Index

The SCAQMD recommends that the non-carcinogenic hazards of toxic air contaminants should not exceed a hazard index of 1.0 for either chronic or acute effects.[23] Acute effects are due to short-term exposure, while chronic effects are due to long-term exposure to a substance. For chronic and acute risks, the hazard index is calculated as the summation of the hazard quotients for all chemicals to which an individual would be exposed. The acute hazard index was not quantified since an inhalation REL has not been determined by the OEHHA for DPM at the time of preparation of this HRA or the Draft EIR.

3.6 Conclusions

The results from the health risk calculations provide an estimate of the potential risks and hazards to individuals through inhalation of Project construction DPM emissions over a 24-month duration. Consistent with OEHHA guidelines, health risk impacts from Project operational DPM emissions were assessed over a 70-year exposure duration for residential receptors. The estimated risks and hazards include: lifetime excess cancer risk estimates, and cumulative chronic HI estimates for the receptor locations of concern.

As shown in Appendix B and in Table 1 on page 19, the results of the HRA yields a maximum off-site individual cancer risk of 7.0 in a million for residential uses located north of the Project site (for combined construction and operational emissions)[24]. The maximum chronic risk of 0.06 occurs within this same residential receptor area. As the Project (construction and operational emissions, separate and cumulative) would not emit carcinogenic or toxic air contaminants that result in impacts which exceed the maximum individual cancer risk of ten in one million or the chronic index of 1.0, Project-related toxic emission impacts would be less than significant.

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[23] *South Coast Air Quality Management District Air Quality Significance Thresholds. www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.*

[24] *As combined emissions (construction and operations) are below significance thresholds, individual emissions (i.e., construction separate from operational emission) are necessarily below the significance thresholds and the thresholds are the same as between the two.*

Table 1
Health Risk Assessment (Combined Construction and Operational Emissions)

Risk	Significance Threshold	Calculated Risk	Significant Impact
Cancer Risk (Resident)	10 in 1 Million	7.0E-06 which denotes excess cases of cancer of 7.0 in one million	No
Non-Carcinogenic Risk (Maximum)	Chronic Index (HI) of 1.0	6.2E-02 which denotes an HI of 0.06	No

4.0 Uncertainty Assessment

Evaluating carcinogenic pollutant concentrations based on OEHHA methodology and SCAQMD Guidance has an implied uncertainty. These methodologies were developed to provide a conservative health risk estimate. The conservative nature of this methodology relies on a number of inputs designed to prevent an underestimation of risk. The following discusses the conservative nature of the risk assessment analysis assumptions utilized in this analysis.

The cancer risk from DPM occurs mainly through inhalation. Output from the dispersion analysis was used to estimate the DPM concentrations. The cancer risk estimate is then calculated based on those estimated DPM concentrations using the risk methodology promulgated by OEHHA. The risk assessment guidelines established by SCAQMD and included in the analysis are designed to produce conservative (high) estimates of the risk posed by DPM, due to the following factors:

- As a conservative measure, the SCAQMD does not recognize indoor adjustments for residential uses. However, studies have shown that the typical person spends approximately 87 percent of their time indoors, 5 percent of their time outdoors, and 7 percent of their time in vehicles. A DPM exposure assessment showed that an average indoor concentration was 2.0 $\mu g/m^3$, compared with an outdoor concentration of 3.0 $\mu g/m^3$.[25]

- OEHHA has a toxicity database that lists TACs and their URFs. A URF describes the cancer potency of a particular TAC and is used to estimate cancer risk.[4] Most of these URFs are extrapolated from animal studies based on continuous exposure to particular toxin. This method can have some significant uncertainties. For example, a chemical that is carcinogenic by one route of exposure is considered to be carcinogenic for all routes of exposure at its maximum potency. Also, it is not realistic for a receptor to be exposed to a continuous concentration of TACs over time. In reality, receptors are exposed to constantly changing concentration levels that would expose receptors to lower levels of TACs over time than analyzed in this analysis.

- The use of the SCAQMD meteorological data set and conservative exposure assumptions (e.g., assumes receptor would be located outside in the same location 24 hours per day for the entire construction duration) amongst others, likely also lead to overestimated risks.

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[25] *South Coast Air Quality Management District (SCAQMD), Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions, 2002.*

As such, uncertainty in the health risk analysis is conservative in nature and is designed to prevent undisclosed impacts to human health. Concentrations reported in this report represent a conservative scenario that is likely an over estimation of actual pollutant concentrations.