3.1.1 Air Quality

This section of the Program Environmental Impact Report (PEIR) summarizes the *Air Quality Technical Report* (HELIX 2021c; Appendix D), which was prepared in conformance with the *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements – Air Quality* (County 2007a) and Appendix G of the California Environmental Quality Act (CEQA) Guidelines.

3.1.1.1 *Existing Conditions*

Climate and Meteorology

The climate in Southern California, including the San Diego Air Basin (SDAB) (defined as "All of San Diego County")[1] is controlled largely by the strength and position of the subtropical high-pressure cell over the Pacific Ocean. Areas within 30 miles of the coast experience moderate temperatures and comfortable humidity. The general region possesses a mild climate tempered by cool sea breezes with light average wind speeds. This basin experiences warm summers, mild winters, infrequent rainfall, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. Precipitation occurs mostly during the winter and relatively infrequently during the summer (WRCC 2020).

Due to its climate, the SDAB experiences frequent temperature inversions (temperature increases as altitude increases, which is the opposite of general patterns). Temperature inversions prevent air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and the lower layer of the atmosphere, creating a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and nitrogen dioxide (NO_2) react under strong sunlight, creating smog. Light, daytime winds, predominantly from the west, further aggravate the condition by driving the air pollutants inland, toward the foothills. During the fall and winter, air quality problems are created due to carbon monoxide (CO) and NO_2 emissions. High NO_2 levels usually occur during autumn or winter on days with summer-like conditions.

San Diego County supports a wide range of climates, land uses, and habitat types. The San Diego County Air Pollution Control District (SDAPCD) identifies five distinct climate zones as occurring within the county: Maritime, Coastal, Transitional, Interior, and Desert. These climatic zones run nearly parallel to the coast, with each having its own specific characteristics (County 2008):

- The Maritime zone consists of the area from the coastline to 5 miles east. This climate zone is dominated by the influence of the Pacific Ocean. The humidity is high and temperatures are mild. Low clouds, fog, and dampness are common.

- The Coastal zone encompasses the area approximately 5 miles from the coast to 15 miles inland. The ocean's influence is diminished but is still significant. The prevailing climate is semi-arid to arid. The climate in this region experiences frequent summer morning fog, clouds, and moderate humidity.

[1] The San Diego Air Basin is defined in the California Code of Regulations, Title 17, Section 60110 (17 CCR 60110), as "All of San Diego County."

- The Transitional zone is approximately 20 to 25 miles inland from the coast. The conditions can include brief Coastal zone climate conditions but normally consist of a warm, dry climate. Daytime humidity is low. Summer temperatures may reach 100 degrees Fahrenheit (°F), while winter days average approximately 70°F with frosty mornings.

- The Interior zone is approximately 25 to 60 miles inland. This zone consists of topographical terrain that rises from 2,000 to 6,500 feet that produces dramatic contrasts in climate ranging from the 70s to the 90s.

- The Desert zone is approximately 60 miles inland and extends to the eastern border of the State. Temperatures in the desert can reach 80°F in the winter and 120°F in the summer.

Background Air Quality

Air quality is defined by ambient air concentrations of specific pollutants identified by the U.S. Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the general public. The SDAPCD operates a network of ambient air monitoring stations throughout the county. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS). The monitoring stations collectively measure the ambient concentrations of six criteria air pollutants: ozone (O_3), NO_2, sulfur dioxide (SO_2), CO, coarse particulate matter equal to or less than 10 microns in diameter (PM_{10}), and fine particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$).

Air quality is affected by a variety of existing sources in San Diego County. Light motor vehicles, diesel powered construction equipment, and commercial trucks are a source of oxides of nitrogen (NO_X) and reactive organic gases (ROGs), along with PM_{10} and $PM_{2.5}$ pollutants. Non-combustion sources of PM_{10} and $PM_{2.5}$ include fugitive dust from roads, construction, demolition, and earthmoving. Commercial and general aviation aircraft also generate emissions that affect air quality. O_3 is a secondary pollutant that is not emitted directly by sources, but rather is formed by a reaction between NO_X and ROGs in the presence of sunlight. Reductions in O_3 concentrations are dependent upon reducing emissions of these precursors. Major sources of O_3 precursors are motor vehicles and other mobile equipment, solvent use, and electric utilities operation.

Air Pollutants of Concern

Criteria Air Pollutants

Six air pollutants have been identified by the USEPA and California Air Resources Board (CARB) as being of concern both on a nationwide and Statewide level: ground-level O_3, CO, NO_2, SO_2, lead, and particulate matter (PM), which is subdivided into two classes based on particle size: PM_{10} and $PM_{2.5}$. These air pollutants are commonly referred to as “criteria air pollutants” because air quality standards are regulated using human health and environmentally based criteria. Criteria pollutants can be emitted directly from sources (primary pollutants; e.g., CO, SO_2, PM_{10}, $PM_{2.5}$, and lead), or they may be formed through chemical and photochemical reactions of precursor pollutants (secondary pollutants; e.g., O_3 and NO_2) in the atmosphere. The principal

precursor pollutants of concern, which can lead to the formation of secondary criteria pollutants, are ROGs also known as volatile organic compounds (VOCs)[2] and nitrogen oxides (NO_X).

The descriptions of sources and general health effects for each of the criteria air pollutants are shown in Table 3.1.1-1, *Summary of Common Sources and Human Health Effects of Criteria Air Pollutants*, based on information provided by the California Air Pollution Control Officers Association (CAPCOA 2018). Criteria pollutant precursors (ROG and NO_X) affect air quality on a regional scale, typically after significant delay and distance from the pollutant source emissions. Health effects related to O_3 and NO_2 are therefore the product of emissions generated by numerous sources throughout a region. As such, specific health effects from these criteria pollutant emissions cannot be directly correlated to the incremental contribution from a single project.

Toxic Air Contaminants

Pollutants of concern also include toxic air contaminants (TACs), which are defined by CARB and are different from criteria pollutants. TACs are a diverse group of air pollutants that may cause or contribute to an increase in deaths or in serious illness or that may pose a present or potential hazard to human health. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage or short-term acute effects such as eye watering, respiratory irritation (a cough), runny nose, throat pain, and headaches. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For carcinogenic TACs, there is no level of exposure that is considered safe, and impacts are evaluated in terms of overall relative risk expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

Sensitive Receptors

CARB and the California Office of Environmental Health Hazard Assessment identify the following groups of individuals as the most likely to be affected by air pollution: adults over 65 years old, children under 14, infants (including in utero in the third trimester of pregnancy), and people with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis (CARB 2005; OEHHA 2015). Examples of sensitive receptors include residences, schools, hospitals, and daycare centers. Due to the nature of the Integrated Vector Management Program (IVMP or Proposed Project) occurring throughout San Diego County, sensitive receptors are within the Service Area.[3]

[2] CARB defines and uses the term ROGs while the USEPA defines and uses the term VOCs. The compounds included in the lists of ROGs and VOCs and the methods of calculation are slightly different. However, for the purposes of estimating criteria pollutant precursor emissions, the two terms are often used interchangeably.

[3] Service Area is synonymous with Assessment Area, which is defined in the Engineer's Report (County 2022a) as the area in which an annual levy provides funding for essential vector control services, including those properties that may request and/or receive direct and more frequent service and are located within the scope of the vector surveillance area. As such, Native American reservation land, as a Sovereign Nation, is excluded from the Service Area along with federally owned lands that receive minimal to no services.

3.1.1.2 *Regulatory Setting*

Federal and State

The USEPA is responsible for enforcing the federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish NAAQS, which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for criteria pollutants. Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere. The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. CARB has established the more stringent CAAQS for the six criteria pollutants through the California Clean Air Act of 1988, and has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Table 3.1.1-2, *California and National Ambient Air Quality Standards*, shows the federal and State ambient air quality standards.

Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be "non-attainment areas" for that pollutant. As of August 3, 2018, the SDAB has been classified as a non-attainment area in the NAAQS for 8-hour O_3. The SDAB is also currently classified as a non-attainment area under the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. The SDAB is an attainment area for the NAAQS and CAAQS for all other criteria pollutants (SDAPCD 2020a). The current federal and State attainment status for SDAB is shown in Table 3.1.1-3, *Federal and State Air Quality Designation*.

CARB is the State regulatory agency with authority to enforce regulations to both achieve and maintain the NAAQS and CAAQS. The local air district has the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations. The SDAPCD is the local agency responsible for the administration and enforcement of air quality regulations in San Diego County.

Local

The CAA requires that regional planning and air pollution control agencies prepare regional air quality plans to outline the measures by which both stationary and mobile sources of pollutants can be controlled to achieve all standards by the deadlines specified in the act. The SDAPCD and San Diego Association of Governments (SANDAG) are the agencies responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The SDAPCD prepared an *Attainment Plan for San Diego County (Attainment Plan)* (SDAPCD 2020b) demonstrating how the SDAB will further reduce air pollutant emissions to attain the current NAAQS for O_3. The *Attainment Plan*, in combination with those from all other California non-attainment areas with serious (or worse) air quality problems, is submitted to CARB, which develops the California *State Implementation Plan* (SIP). The most recent *Attainment Plan* was approved by the SDAPCD Board on October 14, 2020, and by CARB on November 19, 2020.

The *Attainment Plan* relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the county, to project

future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emissions projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County as part of the development of the County's *General Plan* (County 2011b).

The SIP relies on the same information from SANDAG to develop emissions inventories and emissions reduction strategies that are included in the attainment demonstration for the air basin.

Integrated Vector Management Program Best Management Practices

The IVMP follows the best management practices (BMPs) described in State guidance documents, such as the *Best Management Practices for Mosquito Control in California* (CDPH 2012), *Best Management Practices for Mosquito Control on California State Properties* (CDPH 2008b), and *California Mosquito-Borne Virus Surveillance and Response Plan* (CDPH 2021), which detail best integrated vector management practices for vector control and vector-borne disease prevention. In addition, the County integrates BMPs into the IVMP serving as a comprehensive management framework for implementation of individual activities. BMPs implemented as part of the IVMP demonstrate the County's commitment to avoid or minimize impacts to the maximum extent feasible. The following BMPs have been developed by the VCP in combination with the above-referenced sources and will be implemented to reduce air pollutant emissions:

- B3: Vehicles will only be driven on existing roadways, access roads, and existing unpaved access paths. Vehicles driven on levees to travel near aquatic areas (such as tidal marshes, sloughs, or channels) for surveillance or treatment activities will travel at speeds slow enough to avoid or minimize noise and the production of dust, typically 15 miles per hour or less.

- B8: Engine idling times will be minimized by shutting off equipment and vehicles when not in use to the extent feasible.

- B9: Vehicles and equipment will be maintained in accordance with manufacturer's specifications, including mufflers, engine operation, and tire inflation pressure, to minimize rolling resistance.

- B10: Vegetation trimming or removal, when necessary to provide access to vector habitat for surveillance and control activities, will be conducted by hand using handheld tools rather than gas-powered equipment or heavy machinery to minimize negative environmental effects.

- B14: Where heavy equipment or machinery is necessary, measures will be taken, such as reducing turns by track-type vehicles, taking a minimum number of passes with equipment, identifying multiple points of entry, driving vehicles at low speed, and avoiding or minimizing operating on open mud and other soft areas.

In addition to the aforementioned BMPs, the County also engages in other environmentally friendly practices that further reduce potential air emissions, such as the following:

- The Vector Control Program (VCP) assigns geographic locations, defined by continuous census tracts, to individual Certified Vector Control Technicians. Each geographic

location is referred to as a "district." Work is assigned to each district, which defines the routine work area for Certified Vector Control Technicians within a specific geographic area, thereby reducing mileage driven, which reduces fuel consumption and vehicle emissions.

- Certified Vector Control Technicians use mobile phones to call customers and to access the County-produced Vector Mobile App. Real-time access to new work requests while in the field allows Certified Vector Control Technicians to conduct and complete additional work while remaining in the geographic area. When they are able to complete new work assignments while remaining in the current area, this eliminates the need to return at a later time, thereby reducing mileage driven, which reduces fuel consumption and vehicle emissions.

3.1.1.3 *Analysis of Project Effects and Determination as to Significance*

The *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements – Air Quality* (County 2007a) provides guidance for evaluating adverse environmental effects associated with air quality. However, these guidelines have not been updated to reflect the current CEQA Appendix G questions related to air quality. Therefore, the impact analysis that follows relies on Appendix G of the CEQA Guidelines. Based on guidance provided in Appendix G of the CEQA Guidelines, the Proposed Project would result in a significant impact if it would lead to any of the following:

1. Conflict with or obstruct implementation of the applicable air quality plan;

2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard;

3. Expose sensitive receptors (including but not limited to residences, schools, hospitals, resident care facilities, or daycare centers) to substantial pollutant concentrations; and/or

4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.It

To determine whether a project would result in a cumulatively considerable net increase of PM_{10} or the O_3 precursors, NO_X and ROG, project emissions may be evaluated based on the quantitative emissions thresholds established by the SDAPCD. County Guidelines identify as screening level thresholds the Air Quality Impact Analysis trigger levels for new or modified stationary sources from the SDAPCD Rules 20.2 and 20.3. County Guidelines also use the screening threshold of 55 pounds per day or 10 tons per year as a significance threshold for $PM_{2.5}$.[4]

For CEQA purposes, these screening criteria can be used as numeric methods to demonstrate that a project's total emissions would not result in a significant impact to air quality. The screening thresholds are included in Table 3.1.1-4, *Screening Level Thresholds for Air Quality Impact Analysis*.

[4] In October 2020, an updated to SDAPCD Rule 20.2 became effective, which includes Air Quality Impact Analysis threshold for $PM_{2.5}$ of 67 pounds/day. However, because this update has not been reflected in County Guidelines, and because the 55 pounds/day is more stringent, the 55 pounds/day threshold will be used for this PEIR.

The following sections analyze impacts from the IVMP's surveillance and monitoring, source reduction (i.e., physical control), and source treatment (i.e., biological and chemical controls). There would be no impact from the IVMP's public education and outreach and disease diagnostics activities; therefore, public education and outreach and disease diagnostics are not discussed further in this section.

Plan Conformance

Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines, the Proposed Project would have a potentially significant environmental impact if it would conflict with or obstruct the implementation of the applicable air quality plan.

Impact Analysis

As stated in the Regulatory Setting, SDAPCD prepared the *Attainment Plan* for San Diego County (SDAPCD 2020b) demonstrating how the SDAB will further reduce air pollutant emissions. The *Attainment Plan*, in combination with those from all other California non-attainment areas, is submitted to CARB, which develops the California SIP.

These plans accommodate emissions from all sources, including natural sources, through the implementation of control measures, where feasible, on stationary sources to attain the standards. Mobile sources are regulated by the USEPA and CARB, and the emissions and reduction strategies related to mobile sources are considered in the *Attainment Plan* and SIP.

The *Attainment Plan* relies on information from CARB and SANDAG, including projected growth in the county, mobile source, area source, and all other source emissions to project future emissions and determine the strategies necessary for the reduction of stationary source emissions through regulatory controls. CARB mobile source emissions projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and the county. As such, projects that propose development that is consistent with the growth anticipated by the local jurisdictions' General Plans would be consistent with the *Attainment Plan*.

The proposed IVMP would provide vector control services using a comprehensive strategy that includes surveillance and monitoring, source reduction (i.e., physical control), source treatment (i.e., biological and chemical controls), public education and outreach, and disease diagnostics. The IVMP would not generate growth, increase population or associated vehicle usage, or require the alteration of an existing land use designation through amendments to General Plans or changes to zoning.

In addition, the Proposed Project would be required to comply with all applicable SDAPCD Rules and Regulations. The emissions source categories associated with the proposed IVMP include small equipment, portable equipment, off-road vehicles, on-road vehicles, watercraft, and aircraft, all of which are mobile sources of non-attainment pollutants. As discussed in Section 3.1.1.1, these types of emissions sources are included in the SIP emissions inventory, required to meet CARB and USEPA non-road and on-road emissions standards applicable on the date of manufacture. The *Attainment Plan* also assesses the impact of all emissions sources and all control measures, including those under the jurisdiction of CARB (e.g., on-road motor vehicles, off-road vehicles and equipment, and consumer products). Therefore, the Proposed Project would

not conflict with or obstruct the implementation of the *Attainment Pla*n or applicable portions of the SIP. Impacts would be less than significant.

Conformance to Federal and State Ambient Air Quality Standards

Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines the Proposed Project would have a potentially significant environmental impact if it would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard.

Per *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements – Air Quality* (County 2007a), to determine whether a project would result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, project emissions may be evaluated based on the quantitative emissions thresholds established by the SDAPCD (as shown in Table 3.1.1-4).

Impact Analysis

Construction Impacts

Under the Proposed Project, the IVMP would continue to use a comprehensive and balanced approach to vector control. The IVMP does not include the construction or renovation of habitable structures, stationary sources, or infrastructure. Therefore, the Proposed Project would not result in construction activities and associated emissions.

Grading and vegetation clearing are analyzed further below under *Operational Impacts* since they are considered ongoing activities under the IVMP.

Operational Impacts

Implementation of the IVMP does not propose new development. Due to the scope and scale of IVMP activities, its emissions potential has been evaluated at a programmatic level based on the types of equipment that may be used during surveillance and monitoring, source reduction, and source treatment activities. Due to the programmatic nature of this document, the exact locations and extent of all activities to be conducted under the IVMP are not known at this time.

Specifically, implementation of the IVMP includes operation of on-road fleet vehicles, watercraft, aircraft, off-road construction vehicles/equipment, portable equipment, and small equipment for the purpose of conducting surveillance, source treatment, and source reduction activities, which would result in air pollutant emissions, as evaluated below. A list of equipment, assumed usage, and emissions factor source is provided in Table 3.1.1-5, *Integrated Vector Management Program Equipment Usage (Daily).*

Surveillance and Monitoring

Surveillance and monitoring activities include evaluation of mosquito-breeding areas by conducting surveys via ground vehicles, aircraft (including piloted and drones[5]), watercraft, and remote sensing equipment; trapping of mosquitoes and rodents; and testing of collected samples for vector-borne diseases. Accordingly, all vehicles currently used or proposed under the IVMP were quantified, and their respective peak daily usage was estimated based on historical data or anticipated frequency. As shown in Table 3.1.1-5, surveillance and monitoring vehicles include medium-duty and light-duty ground fleet vehicles[6], helicopters and fixed-wing aircraft, and boat motors for watercraft. Using applicable emissions factors published by CARB and the USEPA, criteria pollutant emissions and O_3 precursors were calculated and are summarized in Table 3.1.1-6, *Summary of Air Quality Emissions,* and Table 3.1.1-7, *Estimated Daily Operational Emissions by Category,* based on the method of surveillance and application.

Source Reduction

The reduction of vector-breeding sources primarily involves physical control techniques that eliminate or reduce standing water that functions as mosquito-breeding habitat. These techniques include but are not limited to vegetation management, including trimming and removal of vegetation; removal of sediment; water control; and other maintenance activities. Accordingly, all equipment proposed for source reduction under the IVMP were quantified, and their respective peak daily usage was estimated based on anticipated frequency. As shown in Table 3.1.1-5, equipment intended for source treatment would include a tractor, tracked dozer, excavator, woodchipper, dump truck, all-terrain vehicle with plow, and aquatic weed harvester. Using applicable emissions factors published by CARB and the USEPA, criteria pollutant emissions and O_3 precursors were calculated and are summarized in Table 3.1.1-6, *Summary of Air Quality Emissions,* and Table 3.1.1-7, *Estimated Daily Operational Emissions by Category,* based on the method of surveillance and application.

Source Treatment

Source treatment, which includes biological and chemical controls used to manage and reduce vectors, can include the use of natural predators, parasites, or pathogens to reduce immature mosquito numbers (biological controls) and application of pesticides that target larvae (larvicides) or adult mosquitoes (adulticides). The primary technique employed by the VCP for biological controls is the application of mosquito fish in artificial mosquito-breeding sources such as ornamental ponds, rain barrels, horse troughs, neglected swimming pools, and spas to reduce the abundance of mosquitoes. As such, biological controls would not result in criteria pollutant emissions.

Chemical controls (i.e., pesticides) are applied through on-ground techniques such as by foot with backpack applicators, vehicle-mounted equipment, watercraft by Certified Vector Control Technicians, or by aircraft (including piloted and drones) when land-based methods are not practicable due to the size of the area to be treated or impediments to access. Accordingly, all equipment currently used or proposed for source treatment under the IVMP were quantified, and their respective peak daily usage was estimated based on historical data or anticipated frequency.

[5] For the purposes of this PEIR, “drone” is intended to generically mean a remotely piloted or unpiloted aircraft. As of this writing, the Federal Aviation Administration’s official terminology is Unmanned Aircraft Systems; however, Federal Aviation Administration is transitioning toward gender-neutral terminology such as drone operator, certificated remote pilot, model aircraft flyer, and advanced air mobility operator.

[6] Refer to Table 3.1.7-2 for a summary of fleet vehicle usage data.

As shown in Table 3.1.1-5, source treatment equipment includes hand sprayer/fogger, granular applicator, vehicle-mounted sprayer, and pond pump. Using applicable emissions factors published by CARB and the USEPA, criteria pollutant emissions and O_3 precursors were calculated and are summarized in Tables 3.1.1-6 and 3.1.1-7 based on the method of surveillance and application.

It is important to note that some equipment used by the VCP does not generate criteria pollutant emissions and were therefore excluded from this analysis, including hand-operated tools, attachments, battery-powered traps, and other equipment (see Appendix D for a listing of all equipment and activity schedules and equipment emissions data).

In addition to vehicles and equipment, the application of certain pesticides can emit VOCs. VOCs contained in some mosquito abatement and vector control materials would be emitted in relatively minor quantities through the evaporation of aqueous and aerosolized pesticides during application. First and foremost, many pesticide products used by the VCP are applied in a solid form and do not pose a risk of evaporation into the air (see Section 3.1.4, *Hazards and Hazardous Materials*, for further discussion of pesticide products and usage). In addition, not all VOCs are considered photochemically reactive. VOCs that are non-reactive or of negligible reactivity are exempted from the definition of VOCs used by air districts and the USEPA (USEPA 2009). The exempt compounds are specified in Code of Federal Regulations, Title 40, Section 51.100(s). Also, many products labeled for non-agricultural uses are often excluded from the regulations as well, but it depends on the specific product. Non-agricultural uses include (1) home use, (2) use in structural pest control, (3) industrial or institutional use, (4) control of an animal pest under the written prescription of a veterinarian, or (5) vector control.

For compounds that are not considered exempt, the VOC contribution of most pesticides can be estimated by knowing its “emissions potential,” which is a percentage of the product assumed to potentially contribute to atmospheric VOCs. To help determine this, the California Department of Pesticide Regulation (CDPR) developed a web-based tool for calculating VOC emissions. According to CDPR, “emissions potential” using this calculator may overestimate the VOC emissions under certain circumstances because they do not account for other factors that can influence emissions, such as application method or soil adsorption (CDPR 2022a).

Since total pounds of product used per year is reported to CDPR, the total calculated VOC emissions for each product can be determined from the estimate of active ingredients. For the Proposed Project, VOC emissions were estimated for all pesticides used by the VCP in 2018 (i.e., baseline year) using the calculator template provided by the CDPR. Using the CDPR’s online calculator and based on 2018 usage, pesticides were estimated to generate approximately 3,232.16 pounds of VOC emissions for the calendar year (8.86 pounds per day), as shown in Table 3.1.1-8, *Annual Volatile Organic Compound Emissions from Pesticides*. VOC contributions of this level are well below ROG (VOC) operational thresholds contained in Table 3.1.1-4 of 75 pounds per day and 13.7 tons per year and are therefore considered not significant.

Furthermore, CARB and the CDPR developed a plan to track and reduce pesticide sources of VOCs as part of the California SIP to meet the O_3 emissions standards. The CDPR is responsible for agricultural and commercial structural pesticide products, and CARB is responsible for pesticides in consumer products. Specifically, the CDPR must track and control VOC emissions in five specific regions that do not attain O_3 standards (Sacramento Metro, San Joaquin Valley, South Coast, Southeast Desert, and Ventura). Most notably, San Diego County is not subject to the California Environmental Protection Agency’s or CDPR’s annual monitoring or reporting requirements related to VOC emissions from pesticide application (CDPR 2022b; CDPR 2021a).

In conclusion, as analyzed above and as shown in Tables 3.1.1-6 and 3.1.1-7, emissions of criteria pollutants and O_3 precursors during IVMP implementation would not exceed the daily screening thresholds. Therefore, the Proposed Project's operational emissions would not result in a violation of the NAAQS or CAAQS, and impacts would be less than significant.

Impacts to Sensitive Receptors

Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements – Air Quality* (County 2007a), the Proposed Project would have a potentially significant environmental impact if it would expose sensitive receptors (including but not limited to residences, schools, hospitals, resident care facilities, or daycare centers) to substantial pollutant concentrations.

The following guidelines of significance are used by the County to address the above question:

- Would the project place sensitive receptors near CO hotspots or create CO hotspots near sensitive receptors?

- Would project implementation result in exposure to TACs resulting in a maximum incremental cancer risk greater than 1 in 1 million without application of Toxics Best Available Control Technology or a health hazard index greater than 1 and, thus, be deemed as having a potentially significant impact?

Impact Analysis

As discussed in Section 3.1.1.1, *Existing Conditions*, criteria pollutants that would be generated by the Proposed Project are associated with some form of health risk. Existing models have limited sensitivity to small changes in criteria pollutant concentrations; attempting to correlate the small amount of regional project-generated criteria pollutants to specific health effects or additional days of non-attainment would not yield meaningful results. Due to the wide geographic nature of the IVMP activities and their short-term, temporary application at any particular location, no quantifiable risk to sensitive receptors or the general public would be posed by regional program-related emissions. Consequently, an analysis of impacts on human health associated with project-generated regional ROG and NO_X emissions is not included in this assessment. Localized pollutants generated by a project can, however, directly affect nearby sensitive receptors. Consistent with the current State practice and published guidance by CAPCOA (2018), the analysis in this assessment focuses only on those localized pollutants with the greatest potential to result in a significant, material impact on human health, which are TACs (including diesel particulate matter [DPM]) and locally concentrated CO (i.e., CO hot spots).

CO Concentrations (CO Hotspot Analysis)

CO hotspots are most likely to occur at heavily congested intersections where idling vehicles increase localized CO concentrations. The County Guidelines call for a CO hotspot analysis if a project would:

- Place sensitive receptors within 500 feet of a signalized intersection with a level of service (LOS) of E or F, with peak-hour trips exceeding 3,000 vehicles; or

- Cause intersections to operate at LOS E or F, with peak-hour trips exceeding 3,000 vehicles.

The Proposed Project includes implementation of surveillance and monitoring, source reduction (i.e., physical control), source treatment (i.e., biological and chemical controls), public education and outreach, and disease diagnostics for the purpose of protecting public health, well-being, and economic effects from vectors throughout San Diego County. The Proposed Project does not include the construction or placement of sensitive receptors. Furthermore, as detailed in Section 3.1.7, *Transportation/Traffic*, traffic generated by the Proposed Project would largely consist of sporadic trips associated with ongoing maintenance and monitoring efforts and would likely consist of one or two vehicles traveling to and from individual sites minimizing the potential that the Proposed Project would cause intersections to operate at LOS E or F. Thus, there would be no potential for a CO hotspot to be created. Impacts would be less than significant.

Toxic Air Contaminants

Under the Proposed Project, the IVMP would continue to provide vector control services using a comprehensive strategy. Implementation of the IVMP does not include the construction or renovation of habitable structures, stationary sources, or infrastructure. Therefore, for the purpose of this analysis, the Proposed Project does not include construction or operation of stationary sources of TACs. Ongoing implementation would result in the use of heavy-duty equipment and vehicles. These vehicles and equipment could generate the TAC DPM. Generation of DPM from equipment and vehicles typically occurs in a localized area for short periods of time. Because activities and subsequent emissions vary depending on the location and activity being performed, the emissions to which nearby receptors are exposed would also vary. The dose (of TAC) to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance in the environment and the extent of exposure a person has with the substance; a longer exposure period to a fixed amount of emissions would result in higher health risks. Current models and methodologies for conducting health risk assessments are best suited for evaluation of long duration TAC emissions with predictable schedules and locations. These assessment models do not correlate well with the highly variable nature of the Proposed Project. Because the Proposed Project would result in variable emissions occurring throughout the county, the dose of any individual receptor is expected to be minimal. Additionally, the Proposed Project would implement the IVMP BMPs that would further reduce air pollutant emissions. Specifically, limiting vehicle travel to existing roadways and paths (BMP B3), limiting of idling time (BMP B8), properly maintaining vehicles and equipment (BMP B9), using handheld tools where feasible (BMP B10), and minimizing the use of heavy equipment and machinery (BMP B14). Therefore, the Proposed Project would not generate substantial emissions of TACs.

Odors

Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements – Air Quality* (County 2007a), the Proposed Project would have a potentially significant environmental impact if it would create objectionable odors affecting a substantial number of people.

Impact Analysis

SDAPCD Rule 51 (Public Nuisance) and California Health and Safety Code, Division 26, Part 4, Chapter 3, Section 541700, prohibit the emissions of any material that causes nuisance to a considerable number of people or endangers the comfort, health, or safety of the public. In addition, the County's Zoning Ordinance, Section 6318, states, "all commercial and industrial uses shall be so operated as to not emit matter causing unpleasant odors which are perceptible by the average person at or beyond any lot line of the lot containing said uses." Projects required to obtain permits from the SDAPCD, typically industrial and some commercial projects, are evaluated by SDAPCD staff for potential odor nuisance and conditions may be applied (or control equipment required), where necessary, to prevent occurrence of public nuisance.

According to CARB's *Air Quality and Land Use Handbook* (CARB 2005), land uses associated with odor complaints include agriculture (e.g., farming, livestock), public facilities (e.g., landfills, wastewater treatment), industrial (e.g., construction, rock quarries, power plants), and commercial (e.g., autobody shops, distribution centers). The Proposed Project does not include construction or operation of any of these uses.

Certain VOCs, sulfur compounds, and chlorine compounds found in some pesticides, fumigants, and organochlorines emit characteristic odors when they evaporate (volatilize) into air, even at very low concentrations well within safety limits. The human sense of smell (olfactory system) is sensitive to these types of compounds as a warning mechanism, and some individuals are more sensitive than others. As described previously, VOCs contained in vector control materials would be emitted in relatively minor quantities during application of aqueous pesticides. Of the aqueous pesticides listed in Table 3.1.5-1, *Vector Control Program Pesticide Use within Service Area: 2018–2021*, only one, VectoBac 12AS, has an odor described on its material safety datasheet as being "malt-like" but not unpleasant; all others are described as having no odor.

Ongoing implementation of various IVMP activities could potentially include diesel equipment operating at various sites or unburned hydrocarbons in equipment exhaust that may generate nuisance odors; however, since equipment would operate at various locations throughout each individual IVMP activity area, and because operation near existing sensitive receptors would be temporary and intermittent, impacts associated with odors would be less than significant.

3.1.1.4 *Cumulative Impact Analysis*

The geographic scope for the analysis of cumulative air quality impacts is the SDAB. It is appropriate to consider the entire air basin as air emissions can travel substantial distances and are not confined by jurisdictional boundaries; rather, they are influenced by large-scale climatic and topographical features. While some air emissions can be localized, such as a CO hotspots or odor, the overall consideration of cumulative air quality is typically more regional. By its very nature, air pollution is largely a cumulative impact.

The SDAB is a federal non-attainment area for O_3, and a State non-attainment area for PM_{10}, $PM_{2.5}$, and O_3. The non-attainment status of regional pollutants is a result of past and present development within the SDAB, and this regional impact is cumulative rather than attributable to any one source. Cumulative projects throughout the air basin would generate construction and operational air pollutant emissions that could contribute to significant cumulative air quality impacts. As discussed in the second threshold above (conformance to federal and state standards) the analysis is relevant to whether a project's individual emissions would result in a cumulatively considerable incremental contribution to the existing cumulative air quality

conditions. This threshold is designed to identify those projects that would result in significant levels of air pollution and to assist the region in attaining the applicable State and federal ambient air quality standards. If a project's emissions would be less than those threshold levels, the project would not be expected to result in a considerable incremental contribution to the significant cumulative impact.

Plan Conformance

The Proposed Project would not conflict with or obstruct the implementation of the *Attainment Plan* or applicable portions of the SIP. The *Attainment Plan* is the County's clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. By being consistent with the *Attainment Plan*, implementation of the IVMP would not result in a cumulatively considerable contribution to cumulative air quality plan conformance impacts.

Conformance to Federal and State Ambient Air Quality Standards

The Proposed Project's emissions would not exceed the County screening threshold levels that were designed to ensure attainment of the federal and State ambient air quality standards. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to federal and State ambient air quality standard impacts.

Impacts to Sensitive Receptors

As discussed previously, no exceedances of the CO standard or substantial generation of TACs would occur. The Proposed Project also would not result in hotspots or health impacts affecting a substantial number of people. These impacts would be less than significant and not cumulatively considerable.

Odors

As discussed previously, the Proposed Project would not result in the creation of objectionable odors affecting a substantial number of people. This impact would be less than significant and not cumulatively considerable.

3.1.1.5 *Significance of Impacts Prior to Mitigation*

In summary, the Proposed Project would result in air pollutant emissions during the ongoing implementation of the IVMP. The analysis evaluated the potential for adverse impacts to the ambient air quality due to project emissions. No construction is proposed as part of IVMP implementation. Operation of on-road fleet vehicles, watercraft, aircraft, portable equipment, and small equipment would result in emissions of criteria pollutants from engine exhaust. As detailed in Section 3.1.1.3, the Proposed Project would not conflict with or obstruct the implementation of the *Attainment Plan* or applicable portions of the SIP. The Proposed Project's emissions of criteria pollutants and O_3 precursors during IVMP implementation would not exceed the daily screening thresholds, and operational emissions would not result in a violation of the NAAQS or CAAQS. Air pollutant emissions impacts would be less than significant. The Proposed Project would not result in cumulatively considerable emissions of non-attainment air pollutants that would exceed the screening level thresholds. Impacts associated with exposure of sensitive receptors to substantial pollutant concentrations would be less than significant. Impacts from odors would be less than significant.

3.1.1.6 *Mitigation Measures*

Because the Proposed Project would not result in significant impacts, no mitigation is required.

3.1.1.7 *Conclusion*

The Proposed Project would have a less than significant project and cumulative impact with respect to air quality.

Table 3.1.1-1
SUMMARY OF COMMON SOURCES AND HUMAN HEALTH EFFECTS OF CRITERIA AIR POLLUTANTS

Pollutant	Major Human Sources	Human Health Effects
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to O_3 and acid rain. Contributes to climate change and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Ozone (O_3)	Formed by a chemical reaction between ROGs and NO_X in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; and aggravates lung and heart problems. Damages plants; reduces crop yield. Damages rubber, some textiles, and dyes.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Produced by power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles, and other sources.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Sulfur Dioxide (SO_2)	A colorless, nonflammable gas formed when fuel containing sulfur is burned, when gasoline is extracted from oil, or when metal is extracted from ore. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, SO_2 converts to sulfuric acid which can damage marble, iron, and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Lead	Metallic element emitted from metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: CAPCOA 2018.
Notes: NO_X = nitrogen oxides; O_3 = ozone; ROG = reactive organic gas

Table 3.1.1-2
CALIFORNIA AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	Federal Standards	
			Primary[a]	Secondary[b]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	–	–
	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (147 µg/m^3)	Same as Primary
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	AAM	20 µg/m^3	–	–
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	–	35 µg/m^3	Same as Primary
	AAM	12 µg/m^3	12.0 µg/m^3	Same as Primary
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	–
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	–
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	–	–
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
	1 Hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)	–
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm (105 µg/m^3)	–	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	–
Lead	30-day Avg.	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m^3	
Visibility-Reducing Particles	8 Hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	**No Federal Standards**	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)		

Source: CARB 2016.
Note: More detailed information in the data presented in this table can be found at the CARB website (www.arb.ca.gov).
[a] National Primary Standards: The levels of air quality necessary, within an adequate margin of safety, to protect the public health.
[b] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
– = No Standard; µg/m^3 = micrograms per cubic meter; AAM = Annual Arithmetic Mean; km= kilometer; mg/m^3 = milligrams per cubic meter; ppm = parts per million

Table 3.1.1-3
FEDERAL AND STATE AIR QUALITY DESIGNATIONS

Criteria Pollutant	Federal Designation	State Designation
Ozone (O_3) (1-hour)	(No federal standard)	Non-attainment
Ozone (O_3) (8-hour)	Non-attainment	Non-attainment
Carbon Monoxide (CO)	Attainment	Attainment
Respirable Particulate Matter (PM_{10})	Unclassified	Non-attainment
Fine Particulate Matter ($PM_{2.5}$)	Attainment	Non-attainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(No federal standard)	Attainment
Hydrogen Sulfide	(No federal standard)	Unclassifiable
Visibility	(No federal standard)	Unclassifiable

Source: SDAPCD 2020a.

Table 3.1.1-4
SCREENING LEVEL THRESHOLDS FOR AIR QUALITY IMPACT ANALYSIS

Pollutant	Total Emissions		
Construction Emissions (pounds per day)			
Respirable Particulate Matter (PM_{10})	100		
Fine Particulate Matter ($PM_{2.5}$)	55		
Oxides of Nitrogen (NO_X)	250		
Oxides of Sulfur (SO_X)	250		
Carbon Monoxide (CO)	550		
Volatile Organic Compounds (VOCs)	75		
Operational Emissions			
	Pounds per Hour	**Pounds per Day**	**Tons per Year**
Respirable Particulate Matter (PM_{10})	---	100	15
Fine Particulate Matter ($PM_{2.5}$)	---	55	10
Oxides of Nitrogen (NO_X)	25	250	40
Oxides of Sulfur (SO_X)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead and Lead Compounds	---	3.2	0.6
Volatile Organic Compounds (VOCs)	---	75	13.7
Toxic Air Contaminant Emissions			
Excess Cancer Risk	1 in 1 million 10 in 1 million with T-BACT		
Non-Cancer Hazard	1.0		

Sources: County 2007a; SDAPCD Rules 20.2 and 20.3.
Notes: T-BACT = Toxics-Best Available Control Technology

Table 3.1.1-5
INTEGRATED VECTOR MANAGEMENT PROGRAM EQUIPMENT USAGE (DAILY)

Equipment Name	Equipment Type	Peak Daily Usage per Unit (hours)	Emissions Factor Source
Land Surveillance and Application/Management			
Dump Truck[1]	Dump Truck	6	CARB's OFF-ROAD
Caterpillar 320[1]	Excavator	4	CARB's OFF-ROAD
Polaris Sportsman[1]	ATV Quad with Plow	4	CARB's OFF-ROAD
John Deere 6420[1]	Tractor	4	CARB's OFF-ROAD
Caterpillar D3[1]	Tracked Dozer	4	CARB's OFF-ROAD
Woodchipper[1]	Processing Equipment	4	CARB's OFF-ROAD
Arrow ULV (gas)	Hand Sprayer/Fogger	4	CARB's OFF-ROAD
Colt ULV (gas)	Hand Sprayer/Fogger	4	CARB's OFF-ROAD
Maruyama	Granular applicator	2	CARB's OFF-ROAD
Buffalo turbine	Vehicle-mounted sprayer	2	CARB's OFF-ROAD
Skid Sprayer	Vehicle-mounted sprayer	2	CARB's OFF-ROAD
Fleet Vehicle [2]	Medium Duty Truck	79 miles	CARB's EMFAC
Fleet Vehicle [2]	Light Duty Truck	113 miles	CARB's EMFAC
Water Surveillance and Application/Management			
Marshmaster MM-1LX[1]	Aquatic Weed Harvester	1	CARB's OFF-ROAD
Pond Pump – WB15	Pond Pump	2	CARB's OFF-ROAD
Boat motor – 5 horsepower four stroke engine	Outboard Motor	3	CARB's PC2014
Boat motor – 9.9 horsepower four stroke engine	Outboard Motor	3	CARB's PC2014
Aerial Surveillance and Application/Management			
Bell 206B	Aircraft	8.5	USEPA AP-42
Robinson R44 Raven II	Aircraft	8.5	USEPA AP-42
Piper Chieftain	Aircraft	6	USEPA AP-42

Source: County 2021c.
Notes:
[1] Equipment/vehicle is not part of VCP's existing inventory but is proposed under IVMP.
[2] Using County Department of Environmental Health and Quality's fleet vehicle data from calendar year 2019, an average daily mileage was determined (Medium Duty = 63.4, Light Duty = 90.7). Because this is an average, an additional 25% was conservatively added for the purposes of estimated peak mileage for this air quality analysis.
This table only includes equipment that is gas-powered. Equipment that is battery-operated is excluded since no air emissions would occur.
ULV = ultra-low volume

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Table 3.1.1-6
SUMMARY OF AIR QUALITY EMISSIONS

Program	Pollutant Emissions (pounds per day)					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Existing IVMP	13.61	98.24	77.65	0.18	2.54	1.86
Proposed Enhancements to IVMP[1]	2.78	38.90	10.71	0.03	0.80	0.80
Total Daily Maximum Emissions	**16.38**	**137.15**	**88.37**	**0.23**	**3.34**	**2.67**
Screening Level Thresholds	*75*	*550*	*250*	*250*	*100*	*55*
Exceed Thresholds?	***No***	***No***	***No***	***No***	***No***	***No***

Source: HELIX 2021c (Appendix D).
Notes: total emissions modeled may not precisely equal sum of subparts due to rounding. CO = carbon monoxide; NO_X = oxides of nitrogen; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; ROG = reactive organic gas; SO_X = oxides of sulfur; PM_{10} = particulate matter 10 microns or less in diameter

[1] See Table 3.1.1-5 for list of proposed equipment/vehicles.

Table 3.1.1-7
ESTIMATED DAILY OPERATIONAL EMISSIONS BY CATEGORY

Category	Pollutant Emissions (pounds per day)					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Land Surveillance and Application/Management	5.90	137.03	11.71	0.08	1.97	1.66
Water Surveillance and Application/Management	1.60	4.14	2.03	<0.01	0.33	0.33
Air Surveillance and Application/Management	0.02	0.31	74.63	0.15	1.04	0.68
Pesticides [1]	8.86	N/A	N/A	N/A	N/A	N/A
Total Daily Maximum Emissions	**16.38**	**137.15**	**88.37**	**0.23**	**3.34**	**2.67**
Screening Level Thresholds	*75*	*550*	*250*	*250*	*100*	*55*
Exceed Thresholds?	***No***	***No***	***No***	***No***	***No***	***No***

Source: HELIX 2021c (Appendix D).
Notes: Notes: total emissions modeled may not precisely equal sum of subparts due to rounding. CO = carbon monoxide; N/A = not applicable (no related emissions); NO_X = oxides of nitrogen; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; ROG = reactive organic gas; SO_X = oxides of sulfur; PM_{10} = particulate matter 10 microns or less in diameter

[1] See Table 3.1.1-8 for summary of pesticide-related VOC emissions. As noted in this chapter, CARB defines and uses the term ROGs, while the USEPA defines and uses the term VOCs. The compounds included in the lists of ROGs and VOCs and the methods of calculation are slightly different. However, for the purposes of estimating criteria pollutant precursor emissions, the two terms are used interchangeably.

Table 3.1.1-8
ANNUAL VOLATILE ORGANIC COMPOUNDS EMISSIONS FROM PESTICIDES

Product	CA Registration No.	VOC Emissions Potential	Primary Active Ingredient	Formulation Type	Application Total (pounds)	Total VOC Emissions (pounds)
Zoecon Altosid Briquets	2724-375-ZA	17.31	S-Methoprene	Pellet/Tablet/Cake/ Briquet	205.01	35.49
Zoecon Altosid Pellets	2724-448-ZA	2.82	S-Methoprene	Granular/Flake	206.50	5.82
Zoecon Altoside XR Extended Residual Briquets	2724-421-ZA	5.18	S-Methoprene	Pellet/Tablet/Cake/ Briquet	432.15	22.39
FourStar BTI CRG	85685-4-AA	3.7	Bacillus Thuringiensis (Berliner), subsp. Israelensis, Serotype H-14	Granular/Flake	2,308.35	85.41
CocoBear[1]	8329-93-AA	50	Mineral Oil	Oil	27.63 (gal)	100.01
MetaLarv S-PT Mosquito Growth Regulator Pellet	73049-475-AA	5.18	S-Methoprene	Pellet/Tablet/Cake/ Briquet	381.22	19.75
Mosquito Dunks	6218-47-ZB	5.18	Bacillus Thuringiensis (Berliner), Subsp. Israelensis, Serotype H-14	Pellet/Tablet/Cake/ Briquet	27.20	1.41
Mosquito Fish	N/A	N/A	N/A	organism	22,707 units	N/A
Natular G	8329-80-AA	3.7	Spinosad	Granular/Flake	10,100.63	373.72
VectoBac 12AS Biological Larvicide Aqueous Suspension	73049-38-AA	5.71	Bacillus Thuringiensis, subsp. Israelensis, Strain AM 65-52	Suspension	1.80 (gal)	0.91
VectoMax FG Biological Larvicide Fine Granule	73049-429-ZC	3.7	Bacillus Thuringiensis, subsp. Israelensis, Strain AM 65-52	Granular/Flake	69,902.15	2,586.38
VectoMax WSP Biological Larvicide	73049-429-ZA	1.15	Bacillus Thuringiensis, subsp. Israelensis, Strain AM 65-52	Soluble Powder	75.38	0.87
					TOTAL	**3,232.16 pounds/yr (8.86 pounds/day)**

Notes:
[1] In 2018, the VCP applied Golden Bear 1111; however, CDPR's VOC online calculator no longer offers Golden Bear calculations. Therefore, CocoBear was substituted as a comparable replacement in the VOC calculator.
Table represents all pesticides applied by the VCP in baseline calendar year 2018 according to pesticide use reports.
VOC emissions were determined using CDPR's online VOC calculator (https://apps.cdpr.ca.gov/voc-calculator/start.cfm), accessed 12/22/21.