

5.3 AIR QUALITY

5.3.1 INTRODUCTION

This section describes the existing regulatory and environmental setting and analyzes the proposed General Plan and Barstow International Gateway (BIG), collectively referred to as “Project” or “proposed Project,” for its potential to conflict with or obstruct implementation of the applicable air quality plan; result in cumulatively considerable net increase of any criteria pollutant for which the region is in nonattainment under an applicable federal or State ambient air quality standards (AAQS); expose sensitive receptors to substantial pollutant concentrations; or result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. This evaluation is based on the methodology recommended by the Mojave Desert Air Quality Management District (MDAQMD). The analysis focuses on air pollution from regional emissions and localized pollutant concentrations. Cumulative impacts related to air quality are based on the regional boundaries of the Mojave Desert Air Basin (MDAB). In this section, “emissions” refers to the actual quantity of pollutant, measured in pounds per day (lbs/day), and “concentrations” refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm), parts per billion, or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Where significant impacts remain despite compliance with the existing regulatory framework, feasible mitigation measures are recommended to avoid or reduce the Project’s potentially significant environmental impacts.

Proposed General Plan

Proposed General Plan–related information in this section regarding methodology and information is discussed in **Section 5.3.3: Methodology for Evaluating Impacts** and **Section 5.3.4: Environmental Setting**, respectively. Communitywide criteria air pollutant emissions modeling for the proposed General Plan is in the following study:

- *Proposed General Plan Air Quality and Greenhouse Gas Emissions Modeling*; **Appendix 5.3 GP-1: Air Quality and Greenhouse Gas Emissions Modeling**

Barstow International Gateway

BIG-related information in this section is based in part on the following study:

- *Barstow International Gateway Air Quality Technical Report*; see **Appendix 5.3 BIG-1: Air Quality Technical Report**

Summary of Findings: Proposed General Plan

Implementation of the proposed General Plan would not have the potential to substantially increase carbon monoxide (CO) hot spots at intersections in the vicinity of sensitive receptors in the City of Barstow (City) and its Sphere of Influence (SOI) (collectively, the proposed General Plan area). Additionally,

construction and operational odors impacts of the proposed General Plan would be less than significant. However, implementation of the proposed General Plan would result in the following potentially significant or significant and unavoidable air quality impacts.

Development of the land uses accommodated under the proposed General Plan would generate net emissions exceeding the MDAQMD operation-related regional significance thresholds for volatile organic compounds (VOC), nitrogen oxides (NO_x), and carbon monoxide (CO). In addition, construction activities associated with development of the land uses accommodated under the proposed General Plan may also generate emissions that exceed the MDAQMD construction-related regional significance thresholds. Projects exceeding the MDAQMD regional significance thresholds are considered to cumulatively contribute to the nonattainment designations of the MDAB. In addition, because implementation of the proposed General Plan would exceed the MDAQMD regional significance thresholds, it could contribute to an increase in frequency or severity of air quality violations and delay attainment of AAQS or interim emission reductions in an air quality management plans (AQMPs). Therefore, the proposed General Plan would conflict with the AQMPs.

The application of State and MDAQMD rules and regulations and implementation of the proposed General Plan goals, policies, and actions would contribute to reducing construction- and operation-related criteria air pollutants generated from energy, area, and mobile sources to the extent feasible. Incorporation of Mitigation Measures (**MM**) **GP AQ-1** and **MM GP AQ-2** would also contribute to reducing criteria air pollutants. Implementation of these rules, goals and policies, and mitigation could contribute to reducing construction- and operation-phase regional air quality impacts of future individual projects to a less than significant level. However, the proposed General Plan would result in significant and unavoidable construction- and operation-related regional air quality impacts. Buildout of the proposed General Plan could expose sensitive receptors to substantial concentrations of TACs as development of certain land uses accommodated by the proposed General Plan could result in new sources of TACs near existing or planned sensitive receptors. Review of development projects by MDAQMD for permitted sources of air toxics (e.g., industrial facilities, dry cleaners, and gasoline dispensing facilities) would ensure that health risks are minimized. Individual development projects would be required to achieve the incremental risk thresholds established by MDAQMD, and TACs would be less than significant. Though individual projects would achieve the project-level risk threshold of 10 ppm, if feasible they would contribute to the higher levels of cancer risk in the MDAB on a cumulative basis. Thus, implementation of the proposed General Plan would generate TACs that could contribute to elevated levels in the MDAB.

Therefore, this EIR acknowledges that these air quality impacts are both significant and unavoidable.

Summary of Findings – Barstow International Gateway

BIG would affect local air quality due to construction and operational activities. During construction, emissions from equipment, dust generation, and vehicles would likely exceed air quality thresholds, even with mitigation efforts such as dust control, use of low-emission equipment, and renewable diesel. Operational impacts would include emissions from locomotives, a small number of heavy-duty trucks, and on-site equipment, contributing to higher levels of pollutants like nitrogen oxides and particulate matter.

Despite mitigation measures like renewable diesel use, electric cargo handling equipment, and a solar farm, some pollutant levels would remain above regulatory thresholds, which may result in potential health risks. Overall, despite implementation of various mitigation measures, the BIG project would result in significant air quality impacts with respect to consistency with applicable air quality management plans and with construction and operational emissions.

5.3.2 REGULATORY SETTING

5.3.2.1 Federal

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (U.S. EPA) is responsible for establishing the National Ambient Air Quality Standards (NAAQS), enforcing the Federal Clean Air Act (FCAA, 42 United States Code (USC) § 7401), and regulating transportation-related emission sources under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The U.S. EPA also establishes vehicular emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet stricter emission standards established by the California Air Resources Board (CARB).

Federal Clean Air Act

The Federal Clean Air Act (FCAA), codified in Title 42, Chapter 85 of the USC, was initially established by the United States Congress in 1970 and substantially revised in 1977 and 1990. The FCAA requires the U.S. EPA to establish and periodically update the primary and secondary NAAQS for the following criteria air pollutants: ozone (O₃), nitrogen dioxide (NO₂), CO, sulfur dioxide (SO₂), particulate matter (PM) with diameters of 10 and 2.5 micrometers or less (PM₁₀, PM_{2.5}, respectively), and lead (Pb). Primary standards are designed to protect public health, including sensitive individuals, such as children and the elderly, whereas secondary standards are designed to protect public welfare, such as visibility and crop or material damage. Applicable NAAQS and California Ambient Air Quality Standards (CAAQS) (discussed further in **Section 5.3.2.2: State**) are summarized in **Table 5.3-1: CAAQS and NAAQS**.

Table 5.3-1: CAAQS and NAAQS			
Pollutant	Averaging Time	State Standards ^{1, 2}	National Standards ^{3, 4, 5}
Ozone (O ₃) ⁶	1 Hour	0.09 ppm (180 µg/m ³)	NA
	8 Hour	0.070 ppm (137 µg/m ³)	0.070 ppm (137 µg/m ³)
Particulate Matter (PM ₁₀) ⁷	24-Hour	50 µg/m ³	150 µg/m ³
	Annual Arithmetic Mean	20 µg/m ³	NA
Fine Particulate Matter (PM _{2.5}) ⁷	24-Hour	NA	35 µg/m ³
	Annual Arithmetic Mean	12 µg/m ³	9.0 µg/m ³
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)
Nitrogen Dioxide (NO ₂) ⁸	1 Hour	0.18 ppm (339 µg/m ³)	0.100 ppm ¹⁰
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)

Table 5.3-1: CAAQS and NAAQS

Pollutant	Averaging Time	State Standards^{1, 2}	National Standards^{3, 4, 5}
Sulfur Dioxide (SO ₂) ⁹	1 Hour	0.25 ppm (655 µg/m ³)	0.075 ppm (196 µg/m ³)
	24 Hour	0.04 ppm (105 µg/m ³)	0.14 ppm (365 µg/m ³)
	Annual Arithmetic Mean	NA	0.03 ppm (80 µg/m ³)
Lead (Pb) ^{10, 11}	30-Day Average	1.5 µg/m ³	NA
	Calendar Quarter	NA	1.5 µg/m ³
	Rolling 3-Month Average	NA	0.15 µg/m ³
Sulfates (SO ₄ ⁻²)	24 Hour	25 µg/m ³	NA
Hydrogen Sulfide (H ₂ S)	1 Hour	0.03 ppm (42 µg/m ³)	NA
Vinyl Chloride (C ₂ H ₃ Cl) ¹⁰	24 Hour	0.01 ppm (26 µg/m ³)	NA

ppm = parts per million; µg/m³ = micrograms per cubic meter; mg/m³ = milligrams per cubic meter; NA = not applicable

Notes:

¹ California standards for O₃, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter (PM₁₀, PM_{2.5}, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

² Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25° C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25° C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

³ National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

⁴ Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

⁵ National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

⁶ On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

⁷ On February 7, 2024, the national annual PM_{2.5} primary standard was lowered from 12.0 µg/m³ to 9.0 µg/m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15.0 µg/m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

⁸ To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

⁹ On June 2, 2010, a new 1-hour SO₂ standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO₂ national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

¹⁰ The ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

¹¹ The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Source: California Air Resources Board. 2024 (July). *Table of Ambient Air Quality Standards*.

Based on monitoring of ambient concentrations, areas where concentrations of regulated pollutants exceed the applicable NAAQS are designated as “nonattainment areas” (see **Table 5.3-2: Federal and State Ambient Air Quality Attainment Status of the MDAB** later in this section). The severity of nonattainment is classified as (ranging from least to worst air quality) “marginal,” “moderate,” “serious,” “severe,” or “extreme.” Nonattainment areas that are classified as “serious” or worse are required to

develop AQMPs which include specific emission reduction strategies to meet interim milestones in implementing emission controls and improving air quality. The U.S. EPA can withhold certain transportation funds from states that fail to comply with the planning requirements of the act.

Mobile Source Air Toxics

In addition to the criteria pollutants for which there are NAAQS, the U.S. EPA regulates mobile source air toxics. In February 2007, the U.S. EPA finalized a rule (Control of Hazardous Air Pollutants (HAPs) from Mobile Sources, February 9, 2007 [40 Code of Federal Regulations [CFR] Parts 59, 80, 85, and 86]) to reduce HAPs from mobile sources. The rule limits the benzene content of gasoline and reduces toxic emissions from passenger vehicles and gas cans. The U.S. EPA estimates that in 2030 this rule would reduce total emissions of mobile source air toxics by 330,000 tons and volatile organic compound (VOC) emissions (precursors to O₃ and PM_{2.5}) by more than 1 million tons. The latest revision to this rule occurred in October 2008. This revision added specific benzene control technologies that the previous rule did not include. There are no NAAQS or CAAQS for mobile source air toxics. Specifically, U.S. EPA has not established NAAQS for HAPs.

National Emission Standards for Hazardous Air Pollutants

Pursuant to the FCAA, the U.S. EPA established the National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61), technology-based source-specific regulations limiting allowable emissions of HAPs. Among these sources include asbestos-containing building materials. National Emission Standards for HAPs include requirements pertaining to the inspection, notification, handling, and disposal of asbestos-containing building materials associated with demolition and renovation of structures.

Emission Standards for Off-road Diesel Engines

To reduce emissions from off-road diesel equipment, the U.S. EPA established a series of cleaner emission standards for new off-road diesel engines (40 CFR Part 89). Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards were phased in from 2001 to 2006. Tier 3 standards were phased in from 2006 to 2008. Tier 4 standards, which generally require add-on emission control equipment to attain them, were phased in from 2008 to 2015. These standards apply to construction and cargo-handling equipment, but not locomotives.

Emission Standards for Locomotives

To reduce emissions from switcher and line-haul locomotives, the U.S. EPA established a series of increasingly stricter emission standards for new or remanufactured locomotive engines (40 CFR Parts 85, 89, and 92). The standards have been adopted by the U.S. EPA in two regulatory actions. On December 17, 1997, the U.S. EPA adopted the first emissions regulation for railroad locomotives, requiring locomotive engines manufactured or remanufactured from 1973 to 2001 to meet Tier 0 standards, 2002 to 2004 to meet Tier 1 standards, and 2005 and later to meet Tier 2 standards. Subsequently, on March 14, 2008, the U.S. EPA adopted more stringent emissions regulation for railroad locomotives. The regulation sets new emissions standards for newly-built and remanufactured locomotive engines. The standards for newly-built locomotive engines are implemented in two tiers: Tier 3 standards took effect

in 2011 and 2012 and Tier 4 standards took effect in 2015. The regulation also sets new emissions standards for remanufactured Tier 0, 1, and 2 locomotive engines, which was fully implemented by 2010.

Emission Standards for Heavy-Duty Trucks

To reduce emissions from heavy-duty diesel trucks, U.S. EPA established a series of increasingly stricter emission standards for new engines, starting in 1988 (40 CFR § 86.1811-04). The U.S. EPA promulgated the final standards with the 2007 Heavy-Duty Highway Rule. Beginning with model year 2007, the PM emission standard of 0.01 gram per horsepower-hour is required for all new on-road, heavy-duty diesel engines. Since 2010, the NO_x and nonmethane hydrocarbon standards of 0.20 gram per horsepower-hour and 0.14 gram per horsepower-hour, respectively, have been fully applicable to new on-road, heavy-duty diesel engines. The U.S. EPA released the Greenhouse Gas (GHG) Emissions Standards for Heavy-Duty Vehicles – Phase 3 in March 2024. The final rule is effective as of June 21, 2024. The final rule promulgates new GHG emissions standards for model year 2032 and later heavy-duty highway vehicles, phasing in starting with model year 2027 for heavy-duty vehicles (40 CFR §§ 86, 1036, 1037, 1039, 1054, and 1065).

In response to President Trump’s “Unleashing American Energy” Executive Order (EO), published on January 20, 2025, the U.S. EPA announced its intention to reconsider regulations and actions that rely on the 2009 GHG Endangerment Finding (Endangerment Finding) on March 12, 2025, including the GHG Emissions Standards for Heavy-Duty Vehicles – Phase 3.

Non-road Diesel Fuel Rule

The U.S. EPA’s Non-road Diesel Fuel Rule (40 CFR Title Part 89) sets sulfur limitations for non-road diesel fuel, including fuel used in locomotives and marine vessels (though not for the marine residual fuel used by very large engines on oceangoing vessels). This rule applies to line-haul locomotives; the California Diesel Fuel Regulations (described below) generally preempt this rule for other sources such as switcher locomotives, construction equipment, and cargo-handling equipment. Under this rule, the diesel fuel used by line-haul locomotives was limited to 500 ppm starting June 1, 2007; and was further limited to 15 ppm starting January 1, 2012.

Highway Diesel Fuel Rule

With this rule (40 CFR 80 Subpart 1), the U.S. EPA set sulfur limitations for on-road diesel fuel to 15 ppm starting June 1, 2006.

Corporate Average Fuel Economy Standards

The National Highway Traffic and Safety Administration (NHTSA) is responsible for establishing vehicle standards and for revising existing standards. Compliance with federal fuel economy standards is not determined by individual vehicle model. Rather, compliance is determined based on each manufacturer’s average fuel economy for the portion of their vehicles produced for sale in the U.S. On June 7, 2024, the NHTSA finalized their Corporate Average Fuel Economy Standards (CAFE) standards for model years 2030 to 2035 (49 USC § 32902). The final rule requires an industry-wide fuel average of approximately 50.4 miles per gallon (mpg) for passenger cars and light-duty trucks and an industry fleet-wide average for heavy-duty pickup trucks and vans of roughly 2.851 gallons per 100 miles in model year 2035.

In response to President Trump’s “Unleashing American Energy” Executive Order, published on January 20, 2025, the U.S. EPA announced on March 12, 2025 of its intention to reconsider regulations and actions that rely on the 2009 Endangerment Finding. This includes the CAFE standards. On June 6, 2025, the NHTSA published an interpretive rule that establishes the NHTSA’s authority to revise the CAFE standards without consideration of EVs. Implementation of these standards remains uncertain.

5.3.2.2 State

CARB and California Clean Air Act

Approved in 1967, the Mulford-Carrell Air Resources Act¹ established CARB and the CAAQS; these standards are shown numerically in **Table 5.3-1**. Like the U.S. EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the California Clean Air Act (CCAA), areas are designated as nonattainment for a pollutant if air quality data shows that a CAAQS for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events such as wildfires, volcanoes, etc. are not considered violations of a CAAQS, and are not used as a basis for designating areas as nonattainment. The CAAQS, included with the NAAQS, are generally more stringent and apply to more pollutants than the NAAQS; see **Table 5.3-1**. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates.

California is divided into 15 air basins. Responsibility for the management and control of air pollutant standards, emissions, and plans is delegated to 35 Air Pollution Control Districts (APCD) or Air Quality Management Districts (AQMD). The General Plan area and BIG footprint are located in the MDAB under the jurisdiction of the MDAQMD.

The CCAA requires APCDs and AQMDs in the State to aim to achieve and maintain CAAQS by the earliest practical date and to develop AQMPs and regulations specifying how the districts will meet this goal. California law does not require that CAAQS be met by specified dates as is the case with NAAQS. Rather, according to CARB, it requires incremental progress toward attainment. California law continues to mandate CAAQS, although attainment of the NAAQS has precedence over attainment of the CAAQS due to federal penalties for failure to meet federal attainment deadlines. The AQMPs also serve as the basis for preparation of the State Implementation Plan (SIP) for meeting NAAQS.

The CAAQS are generally stricter than NAAQS for the same pollutants; see **Table 5.3-1**. Similar to the federal process, the CAAQS are adopted after review by CARB staff of the scientific literature produced by agencies such as the Office of Environmental Health Hazard Assessment (OEHHA), the air monitoring methods, and atmospheric sciences appointed by the Office of the President of the University of California, and public review and comment. The CAAQS are set at levels determined to be protective of human health.

CARB is responsible for meeting requirements of the FCAA, administering the CCAA, and maintaining the CAAQS. CARB is also responsible for setting emission standards for vehicles sold in California and for other

¹ The Mulford-Carrell Air Resources Act was approved in 1967 and created the CARB, committing California to a unified, statewide approach to aggressively address the serious issue of air pollution in the State.

emission sources, such as consumer products and certain off-road equipment. CARB also establishes passenger vehicle fuel specifications.

State Implementation Plan

The FCAA requires all states to submit a SIP to the U.S. EPA. This Statewide SIP is often referred to as an “infrastructure” SIP. Infrastructure SIPs are administrative in nature and describe the authorities, resources, and programs a state has in place to implement, maintain, and enforce the federal standards. It does not contain any proposals for emission control measures.

In addition to infrastructure SIPs, the CCAA requires submissions of SIPs for areas that are out of compliance with the NAAQS. These area attainment SIPs are comprehensive plans that describe how an out-of-compliance area will attain and maintain the particular NAAQS standard(s) it does not conform to. Once an out-of-compliance area has attained the standard in question, a maintenance SIP is required for a period of time to ensure the area will continue to meet the standard.

SIPs are not single documents. They are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, State regulations, and federal controls. Many of California’s SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations, and limits on emissions from consumer products. State law makes CARB the lead agency for all purposes related to SIPs. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB forwards those revisions to the U.S. EPA for approval and publication in the Federal Register. The latest SIPs for the MDAB are described in **Section 5.3.2.3: Regional.**

Toxic Air Contaminants

The California Air Toxics Program, administered by CARB, is an established two-step process of risk identification and risk management to address potential health effects from exposure to toxic substances in the air. In the risk identification step, CARB and OEHHA determine if a substance should be formally identified, or “listed” as a toxic air contaminant (TAC) in California. In the risk management step, CARB reviews emission sources of an identified TAC to determine whether regulatory action is needed to reduce risk. Based on results of that review, CARB has promulgated a number of Airborne Toxic Control Measures, both for stationary and mobile sources, including On-Road and Off-Road Vehicle Rules. These Airborne Toxic Control Measures include measures such as limits on heavy-duty diesel motor vehicle idling and emission standards for off-road diesel construction equipment to reduce public exposure to diesel particulate matter (DPM) and other TACs. These actions are also supplemented by the Assembly Bill (AB) 2588 Air Toxics “Hot Spots” program and Senate Bill (SB) 1731, which require facilities to report their air toxics emissions, assess health risks, notify nearby residents and workers of significant risks if present, and reduce their risk through implementation of a risk management plan.

Tanner Air Toxics Act and Air Toxics Hot Spot Information and Assessment Act

Public exposure to TACs is a significant environmental health issue in California. In 1983, the California legislature enacted a program to identify the health effects of TACs and reduce exposure to them. The California Health and Safety Code defines a TAC as “an air pollutant which may cause or contribute to an

increase in mortality or in serious illness, or which may pose a present or potential hazard to human health” (17 California Code of Regulations [CCR] § 93000). A substance that is listed as a HAP pursuant to section 112(b) of the FCAA (42 USC § 7412[b]) is a TAC. Under State law, the California Environmental Protection Agency, acting through CARB, is authorized to identify a substance as a TAC if it is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through AB B 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics “Hot Spot” Information and Assessment Act of 1987). AB 1807 set up a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an “airborne toxics control measure” for sources that emit that TAC. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate “toxics best available control technology” to minimize emissions. To date, CARB has established formal control measures for 11 TACs that are identified as having no safe threshold.

Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the AQMD or APCD. High-priority facilities are required to perform a health risk assessment (HRA), and if specific thresholds are exceeded, are required to communicate the results to the public through notices and public meetings.

CARB has promulgated the following specific rules to limit TAC emissions:

- **13 CCR Chapter 10 § 2485: Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling.** Regulation generally restricting on-road diesel-powered commercial motor vehicles with a gross vehicle weight rating of greater than 10,000 pounds from idling more than five minutes.
- **13 CCR Chapter 10 § 2480: Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools.** Generally restricts a school bus or transit bus from idling for more than five minutes when within 100 feet of a school.
- **13 CCR § 2477 and Article 8: Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate.** Regulations established to control emissions associated with diesel-powered TRUs.

1998 Fleet Average Emissions Memorandum of Mutual Understanding

California adopted the 1994 California State Implementation Plan (1994 SIP) to attain the federal O₃ air quality standard in the South Coast Nonattainment Area and certain other areas of California. The 1994 SIP control measure M14 assumes that cleaner locomotives will operate in California and the Ports of Los Angeles and Long Beach. CARB, Class I freight railroads operating in the South Coast Air Basin (SCAB) (BNSF Railway [BNSF] and Union Pacific Railroad), and the U.S. EPA signed a Memorandum of Mutual Understanding (MOMU) in July 1998. The goal of the MOMU was a fleet average in the SCAB equivalent to U.S. EPA’s Tier 2 locomotive standard for NO_x by 2010. The railroads demonstrated that they have not exceeded Fleet Average Target for the preceding year by operating locomotive fleets that on average meet a Tier 2 NO_x emissions standard by 2010 and through 2030. Under the MOMU, early reductions

were bankable, and the two railroads made use of this feature by building up emissions credits toward the 2010 fleet-wide average. BNSF is meeting fleet average agreement as of 2021.

2005 CARB/Railroad Statewide Agreement

On June 30, 2005, CARB entered into a pollution reduction agreement with Union Pacific Railroad and BNSF. The agreement's key elements include a Statewide idling-reduction program, HRAs for all major rail yards, and community and air district involvement in the preparation of risk assessments, enforcement of Agreement provisions, and evaluation and development of measures to further reduce impacts on local communities. The agreement is also intended to maximize the use of low sulfur diesel in locomotives fueled in California, establish a Statewide visible emissions reduction and repair program, provide a detailed evaluation of advanced control measures, and include an assessment of remote sensing technology to identify high-emitting locomotives. Railroads committed to implementing numerous actions to reduce pollutant emissions from rail operations throughout the State. In addition, the railroads prepared designated rail yard emissions inventories that CARB used for CARB rail yard-specific HRAs of exposure to DPM. When fully implemented, the agreement is expected to achieve a 20 percent reduction in locomotive DPM emissions near rail yards. To do this, BNSF has:

- Phased-out non-essential idling and installed idling reduction devices on California-based locomotives, resulting in a reduction in idling earlier than what is required by regulation.
- Maximized the use of ultra-low sulfur (15 ppm) diesel fuel by January 1, 2007, for locomotives fueled in California, six years before such fuel was required by regulation.
- Implemented a system-wide Opacity Management Plan which identifies black smoke from locomotives and schedules these locomotives for repairs.
- Identified and expeditiously repaired locomotives with excessive smoke and ensured that at least 99 percent of the locomotives operating in California passed smoke inspections.

The southern California Major Class I rail yards covered in the agreement include BNSF's Hobart, Watson, San Bernardino, Commerce Eastern, and Sheila Street yards. As required by the Railroad Statewide Agreement, BNSF has submitted an *Idling, Visible Emission Reduction Plan, Review of Impacts of Air Emissions*, and *Assessment of TACs*, among other elements, for the designated yards. CARB inspects the rail yards yearly for compliance.

California Diesel Fuel Regulations

CARB's California Diesel Fuel Regulations (13 CCR §§ 2281 – 2285, 2299-2299.5) set sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles. Although originally excluded from the rule, harbor craft and intrastate locomotives were later included by a 2004 rule amendment. Under this rule, diesel fuel used in motor vehicles was originally limited to 500 ppm sulfur and ultimately to 15 ppm beginning September 1, 2006. A federal diesel rule similarly limited sulfur content nationwide for on-road vehicles to 15 ppm beginning October 15, 2006. Diesel fuel used in intrastate locomotives (switch locomotives) was limited to 15 ppm sulfur starting January 1, 2007.

Heavy-Duty Diesel Truck Idling Regulation

This CARB rule (13 CCR § 2485) requires that heavy-duty trucks idle for no longer than five minutes at a time. However, truck idling for longer than five minutes while queuing is allowed if the queue is beyond 100 feet from any homes or schools.

Measures to Reduce Emissions from Goods Movement Activities

In April 2006, the CARB approved the *Emissions Reduction Plan for Ports and Goods Movement in California*. The *Emissions Reduction Plan for Ports and Goods Movement in California* proposes measures that would reduce emissions from the main sources associated with port cargo handling activities, including ships, harbor craft, terminal equipment, trucks, and locomotives. The *Goods Movement Plan* includes discussion of Hobart and intermodal container transfer facilities. In December 2006, CARB approved the *Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards* (Title 13, CCR § 2479) as amended in 2009, which is designed to use best available control technology to reduce diesel PM and NO_x emissions from mobile cargo-handling equipment at ports and intermodal rail yards. Since January 1, 2007, the regulation has imposed emission standards on new and in-use terminal equipment that vary by equipment type. The regulation also includes recordkeeping and reporting requirements.

CARB Portable Diesel-Fueled Engines Air Toxic Control Measure

Effective September 12, 2007, all portable engines having a maximum rated horsepower of 50 brake horsepower and greater and fueled with diesel shall comply with this regulation and meet weighted fleet average PM emission standards (17 CCR § 93116.1). The first fleet standard compliance date was in 2013 with incremental compliance dates set through 2020.

Requirements for Intrastate Locomotive Fuel Use

CARB approved new requirements for intrastate locomotive fuel use on November 18, 2004 (17 CCR § 2299). Effective January 1, 2007, diesel fuel sold for diesel-electric locomotives operating in California is subject to all of the requirements of Title 13 CCR §§ 2281 (sulfur content), 2282 (aromatic hydrocarbons content), and 2284 (lubricity) applicable to vehicular diesel fuel and is treated under those sections as if it were vehicular diesel fuel. Intrastate locomotives are defined as locomotives that spend at least 90 percent of their time on an annual basis operating and refueling within California boundaries.

In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, CARB adopted a regulation to reduce diesel PM and NO_x emissions from in-use (existing) off-road heavy-duty diesel vehicles in California (13 CCR § 2449). The regulation applies to self-propelled diesel-fueled vehicles that cannot be registered and licensed to drive on-road, as well as two-engine vehicles that drive on the road, with the limited exception of two-engine sweepers. Examples include loaders, crawler tractors, skid steers, backhoes, forklifts, airport ground support equipment, water well drilling rigs, and two-engine cranes. Such vehicles are used in construction, mining, and industrial operations. The regulation does not apply to stationary equipment or portable equipment such as generators. The off-road vehicle regulation establishes emissions performance requirements, establishes reporting, disclosure, and labeling requirements for off-road vehicles, and limits unnecessary idling.

In-Use Locomotive Regulation

CARB adopted the In-Use Locomotive Regulation on April 27, 2023 (13 CCR § 2478). Implementation of the regulation would reduce emissions from locomotives operating in California by requiring locomotive operators to fund a spending account based on the public health costs to Californians from locomotive emissions and activity levels. Locomotive operators may use funds held in the spending account to purchase cleaner locomotive technologies. The regulation prohibits locomotives with engine build dates 23 years and older from operating in California starting in 2030. The In-Use Locomotive Regulation, starting in 2030, also requires that switch, industrial and passenger locomotives with original engine build dates of 2030 or later operate in a zero-emission (ZE) configuration in California. Additionally, in 2035, line haul locomotives with original engine build dates of 2035 or later must operate in a ZE configuration in California. The regulation will achieve emission reductions that will minimize health risk associated with exposure to toxic and criteria pollutants, help meet federal air quality standards, and support California's GHG reduction goals. The regulation also increases the use of ZE technology in the off-road sector and support the goals of Executive Order N-79-20.

As the In-Use Locomotive Regulation would be more stringent than federal standards, CARB needed to obtain approval from the U.S. EPA. On January 13, 2025, CARB withdrew their requests for FCAA waivers from the U.S. EPA needed to support four recently adopted vehicle emissions regulations: (1) the Advanced Clean Fleets (ACF) Regulations; (2) the In-Use Locomotive Regulations; (3) part of the Commercial Harbor Craft and Ocean-Going Vessels At-Berth Regulations; and (4) part of the TRU Engine Standards Regulations. Therefore, these regulations will not be implemented.

CARB Statewide Truck and Bus Regulation

In December 2008, CARB adopted the Statewide Truck and Bus Regulation that requires installation of PM retrofits on all on-road heavy-duty trucks and buses beginning January 1, 2012, and replacement of older trucks starting January 1, 2015 (13 CCR § 2025). By January 1, 2023, all vehicles need to have model year 2010 engines or equivalent.

California Drayage Truck Regulation

CARB adopted a drayage truck regulation (13 CCR § 2027) effective December 2009 to reduce emissions of diesel PM, NO_x, and other air contaminants from all on-road class 7 and class 8 diesel-fueled trucks that transport cargo to and from California's ports and intermodal rail yards. The regulation requires owners to register their trucks in the Drayage Truck Registry and to comply with emissions standards by a phase-in schedule. As of January 1, 2023, this regulation ended and all affected vehicles need to comply with the CARB Statewide Truck and Bus Rule, which requires all drayage trucks and other regulated vehicles in this category to have model year 2010 engines or equivalent.

CARB Advanced Clean Truck Regulation

CARB adopted the Advanced Clean Trucks (ACT) Regulation (13 CCR § 1963) in June 2020 requiring manufacturers to transition from diesel trucks and vans to ZE trucks beginning in 2024. By 2045, every new truck sold in California is required to be ZE. The goal of the ACT regulation is to achieve NO_x and GHG emission reductions through advanced clean technology, and to increase the penetration of the first wave

of ZE heavy-duty technology. The ACT Regulation accelerates the transition of ZE medium-and heavy-duty vehicles from Class 2b to Class 8. The regulation has two components including a manufacturer sales requirement, and a reporting requirement:

- **ZE Truck Sales:** Manufacturers who certify Class 2b through 8 chassis or complete vehicles with combustion engines are required to sell ZE trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, ZE truck/chassis sales need to be 55 percent of Class 2b – 3 truck sales, 75 percent of Class 4 – 8 straight truck sales, and 40 percent of truck tractor sales.
- **Company and Fleet Reporting:** Large employers including retailers, manufacturers, brokers, and others would be required to report information about shipments and shuttle services. Fleet owners, with 50 or more trucks, would be required to report about their existing fleet operations. This information would help identify future strategies to ensure that fleets purchase available ZE trucks and place them in service where suitable to meet their needs.

The ACT regulation was granted a separate waiver in 2023 by the Biden administration. On May 22, 2025, the U.S. Senate voted to revoke the waiver granted by the Biden administration for California’s ACT rule (as well as the ACC II program and Heavy-Duty Omnibus regulation). On June 12, 2025, President Trump formally nullified California’s ACT rule and ACC II program (Congressional Resolutions H.J. Res 87 and H.J. Res 88, respectively). California currently has no authority to implement ACT.

CARB Advanced Clean Fleets Regulation

CARB adopted the ACF Regulation (13 CCR § 2013, 2014, & 2015) in April 2023, requiring the use of ZEVs for targeted fleets and that manufacturers only produce ZEV trucks starting in 2036. The ACF regulation was adopted to complement the recently adopted ACT regulation to help advance the introduction of ZE technology into California’s trucks and bus fleets. By 2050, the ACF regulation is expected to introduce 1,690,000 ZEVs into the California fleet and result in \$26.5 billion in statewide health benefits from improved air quality. This regulation will help contribute to the goals set by EO N-79-20 (described further below) and will help achieve emission reductions outlined in the State Implementation Plan, SB 350, AB 32, SB 32, and AB 32. The regulation has four components including a manufacturer sales mandate, drayage fleets requirements, high priority and federal fleets phase-in, and state and local agency procurement requirement.

On January 13, 2025, CARB withdrew their requests for FCAA waivers from the U.S. EPA needed to support four recently adopted vehicle emissions regulations: (1) the ACF Regulations; (2) the In-Use Locomotive Regulations; (3) part of the Commercial Harbor Craft and Ocean-Going Vessels At-Berth Regulations; and (4) part of the Transport Refrigeration Unit Engine Standards Regulations. In addition, on September 25, 2025, CARB repealed the ACF drayage truck requirements (13 CCR § 2014) and the high priority and federal fleet requirements (13 CCR § 2015 through 2015.6). California currently has no authority to implement ACF.

California Surplus Off-Road Opt-In for NO_x

The Surplus Off-Road Opt-In for NO_x Program was originally adopted with the Statewide regulation for Use Off-Road Diesel Vehicles (Off-Road Rule) in 2008 and applies to any AQMD or APCD whose governing

board elected to opt into the provision of the program. The Surplus Off-Road Opt-In for NO_x Program requires applicable fleets to meet a more stringent fleet average NO_x target than the statewide Off-Road Rule on a compliance schedule

Senate Bill 535

SB 535 directs 25 percent of the proceeds from the GHG Reduction Fund (i.e., funds from the AB 32 cap-and-trade program) to go to projects that provide a benefit to disadvantaged communities (as identified by the OEHHA mapping). These funds must be used for programs that further reduce GHG emissions. Funding programs that reduce GHG emissions would also potentially reduce exposure to other emissions including criteria pollutants and TACs.

OEHHA has developed CalEnviroScreen 4.0, which is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce scores for every census tract in the State. The scores are mapped so that different communities can be compared. An area with a high score is one that experiences a much higher pollution burden than areas with low scores. It should be noted that the CalEnviroScreen scores are not an expression of health risk, and do not provide quantitative information on increases in cumulative impacts for specific sites or projects. Further, as a comparative screening tool, the results do not provide a basis for determining when differences between scores are significant in relation to public health or the environment.

California Asbestos Control Measures

CARB has adopted two Airborne Toxic Control Measures for controlling naturally occurring asbestos (NOA) — the Asbestos Airborne Toxic Control Measure for Surfacing Applications (CCR, Title 17, § 93106) and the Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations (CCR, Title 17, § 93105). The U.S. EPA is also responsible for enforcing regulations relating to asbestos renovations and demolitions; however, U.S. EPA can delegate this authority to State and local agencies. CARB and local air districts have been delegated authority to enforce the Federal National Emission Standards for HAPs regulations for asbestos.

5.3.2.3 Regional

California is divided into APCDs/AQMDs. These agencies are county or regional governing authorities that have primary responsibility for controlling air pollution from stationary sources. CARB and local air districts are also responsible for developing clean air plans to demonstrate how and when California will attain AAQS established under both the FCAA and CCAA. For the areas in California that have not attained air quality standards, CARB works with air districts to develop and implement State and local attainment plans. In general, attainment plans contain a discussion of ambient air quality data and trends; a baseline emissions inventory; future year projections of emissions, which account for growth projections and already adopted control measures; a comprehensive control strategy of additional measures needed to reach attainment; an attainment demonstration, which generally involves complex modeling; and contingency measures. Plans may also include interim milestones for progress toward attainment. The

MDAB is managed by the MDAQMD. The MDAQMD is geographically the second largest of the State's 35 air districts. MDAQMD operates and maintains six monitoring stations (Barstow, Hesperia, Phelan, Trona, Twentynine Palms, and Victorville) in its 20,000-square-mile jurisdiction. In general, MDAQMD is the agency responsible for ensuring that the NAAQS and CAAQS are attained and maintained in the MDAB and is responsible for:

- Adopting and enforcing rules and regulations concerning air pollutant sources.
- Issuing permits for stationary sources of air pollutants.
- Inspecting stationary sources of air pollutants.
- Responding to citizen complaints.
- Monitoring ambient air quality and meteorological conditions.
- Awarding grants to reduce motor vehicle emissions.
- Conducting public education campaigns.

Mojave Desert Air Quality Management District

The MDAQMD has jurisdiction over the air quality in proposed General Plan area, inclusive of the BIG footprint. MDAQMD is the air pollution control agency for San Bernardino County's (County) High Desert and Riverside County's Palo Verde Valley. MDAQMD implements air quality programs required by federal and State mandates, enforces rules and regulations based on air pollution laws and educates businesses and residents about their role in protecting air quality and the risks of air pollution.

The MDAQMD is the agency responsible for preparing the AQMP for the MDAB. It has adopted the following attainment plans for nonattainment pollutants that are applicable within the Project area.

O₃ Attainment Plans

- 2023: Federal 70 Parts Per Billion O₃ Attainment Plan (Western Mojave Desert (MD) Nonattainment Area MDAQMD Federal 70 PPB O₃ Attainment Plan (Western Mojave Desert Nonattainment Area). The MDAQMD Federal 70 PPB O₃ Attainment Plan for the 2008 8-hour O₃ NAAQS was adopted on January 23, 2023, and covers the BIG footprint, parts of the County and Antelope Valley within the Western Mojave Desert. The MDAQMD Federal 70 PPB O₃ Attainment Plan includes enforceable emission limits, a monitoring program, a permitting program, and contingency measures to attain the federal 2008 8-hour O₃ standard. The MDAQMD Federal 70 PPB O₃ Attainment Plan addresses several state and federal planning requirements and incorporates new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and meteorological air quality models. The document also demonstrated conformity with the Southern California Association of Governments' (SCAG) 2024 – 2050 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) activity data, discussed further below. The document demonstrates that the MDAQMD will meet the 70 ppb 8-hour O₃ NAAQS by August 2033 (MDAQMD, 2023).
- 2018: Federal Negative Declaration (8-Hour O₃ Standard) for One Control Techniques Guideline Categories

- 2018: Federal Negative Declaration (8-Hour O₃ Standard) for Two Control Techniques Guidelines Categories
- 2015: 8-Hour O₃ Reasonably Available Control Technology SIP Analysis: MDAQMD
- 2015: Federal Negative Declaration (8-Hour O₃ Standard) for Nineteen Control Techniques Guidelines Categories
- 2008: Federal 8-Hour O₃ Attainment Plan (Western MD Nonattainment Area)
- 2006: MDAQMD 2006 8-hr O₃ Reasonably Available Control Technology SIP Analysis
- 2004: 2004 O₃ Attainment Plan (State and Federal)
- 1996: Triennial Revision to the 1991 Air Quality Attainment Plan
- 1994: Reasonable Further Progress Rate-of-Progress Plan
- 1994: Post 1996 Attainment Demonstration and Reasonable Further Progress Plan
- 1991: 1991 Air Quality Attainment Plan

PM Attainment Plans

- 2005: MDAQMD Schedule for District Measures to Reduce PM Pursuant to H&S Code 39614(d)
- 1995: MD Planning Area Federal PM Attainment Plan
- **Final Mojave Desert Planning Area Federal Particulate Matter 10 (PM₁₀) Attainment Plan.** On January 20, 1994, the U.S. EPA re-designated a portion of the Mojave Desert² as a nonattainment area with respect to the NAAQS for PM₁₀ (MDAQMD, 1995, p. 6). This nonattainment area covers a vast geographical region, including the urban areas of Victor Valley and Barstow, the Morongo Basin, along with the rural desert environs reaching to the Nevada and Arizona state lines. The PM₁₀ Attainment Plan was prepared in July 1995 to provide a complete description and submittal to U.S. EPA of the PM₁₀ attainment planning elements which the MDAQMD will implement to bring the nonattainment area into compliance with federal law. Most importantly, the PM₁₀ Attainment Plan serves as a planning tool for reducing PM₁₀ pollution. The PM₁₀ Attainment Plan sets forth an air quality improvement program for the region which will be implemented by both the public and private sector of the community (MDAQMD, 1995, p. 3).

Table 5.3-2: Federal and State Ambient Air Quality Attainment Status of the MDAB lists the attainment status for various criteria air pollutants in the MDAB. Areas that meet the AAQS are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. Areas for which there are insufficient data available are designated unclassified. As shown in the table, the proposed General Plan area is a federal nonattainment area for O₃ and PM₁₀ and a State nonattainment area for O₃, PM₁₀, and PM_{2.5}. The area is classified as attainment or unclassified for lead, visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride.

² The nonattainment area covers a vast geographical region, including areas of Victor Valley and Barstow, the Morongo Basin, along with the rural desert environs reaching to the Nevada and Arizona state lines.

Table 5.3-2: Federal and State Ambient Air Quality Attainment Status of the MDAB		
Pollutant	State	Federal
Ozone (O ₃) (1 Hour Standard)	Non-attainment	No Federal Standard
Ozone (O ₃) (8 Hour Standard)	Non-attainment	Severe Non-Attainment
Particulate Matter (PM _{2.5}) (24 Hour Standard)	–	Unclassified/Attainment
Particulate Matter (PM _{2.5}) (Annual Standard)	Non-attainment	Unclassified/Attainment
Particulate Matter (PM ₁₀) (24 Hour Standard)	Non-attainment	Non-attainment
Particulate Matter (PM ₁₀) (Annual Standard)	Non-attainment	Non-attainment
Carbon Monoxide (CO) (1 Hour Standard)	Attainment	Unclassified/Attainment
Carbon Monoxide (CO) (8 Hour Standard)	Attainment	Unclassified/Attainment
Nitrogen Dioxide (NO ₂) (1 Hour Standard)	Attainment	Unclassified/Attainment
Nitrogen Dioxide (NO ₂) (Annual Standard)	Attainment	Unclassified/Attainment
Sulfur Dioxide (SO ₂) (1 Hour Standard)	Attainment	Unclassified/Attainment
Sulfur Dioxide (SO ₂) (24 Hour Standard)	Attainment	Unclassified/Attainment
Lead (Pb) (30 Day Standard)	Attainment	Unclassified/Attainment
Lead (Pb) (3 Month Standard)	Attainment	Unclassified/Attainment
Sulfates (SO ₄₋₂) (24 Hour Standard)	Attainment	No Federal Standards
Hydrogen Sulfide (H ₂ S) (1 Hour Standard)	Non-attainment	No Federal Standards
Source: Mojave Desert Air Quality Management District. (ND). <i>Mojave Desert AQMD Attainment Status</i> . https://www.mdaqmd.ca.gov/home/showpublisheddocument/1267/636337468837000000		

MDAQMD Rules

The MDAQMD has adopted rules to limit air emissions. Many of these rules were put in place as required measures specified in the various SIPs and air quality plans. This evaluation considered seven MDAQMD rules for regulation of fugitive dust and emissions from fossil fuel combustion. Excerpts of these rules are presented below:

Rule 201: Permit to Construct, and Rule 203, Permit to Operate. This rule requires that new or replacement equipment (stationary sources) that generate air pollutant emissions obtain a permit from the MDAQMD prior to their installation (Rule 201) and operation (Rule 203).

Rule 401: Visible Emissions. A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

- As dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the U.S. Bureau of Mines, or
- Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection (a) of this rule.

Rule 402: Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Rule 403: Fugitive Dust Control

- Any person shall not cause or allow the emissions of fugitive dust from any transport, handling, construction, or storage activity so that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source. (Does not apply to emissions emanating from unpaved roadways open to public travel or farm roads. This exclusion shall not apply to industrial or commercial facilities).
- A person shall take every reasonable precaution to minimize fugitive dust emissions from wrecking, excavation, grading, clearing of land and solid waste disposal operations.
- A person shall not cause or allow PM to exceed 100 µg/m³ when determined as the difference between upwind and downwind samples collected on high volume samplers at the property line for a minimum of five hours.
- A person shall take every reasonable precaution to prevent visible PM from being deposited upon public roadways as a direct result of their operations. Reasonable precautions shall include, but are not limited to, the removal of PM from equipment prior to movement on paved streets or the prompt removal of any material from paved streets onto which such material has been deposited.
- Subsections (a) and (c) shall not be applicable when the wind speed instantaneously exceeds 40 kilometers (25 miles) per hour, or when the average wind speed is greater than 24 kilometers (15 miles) per hour. The average wind speed determination shall be on a 15-minute average at the nearest official air-monitoring station or by wind instrument located at the site being checked.
- The provisions of this rule shall not apply to agricultural operations.

Rule 404: PM Concentration

- A person shall not discharge into the atmosphere from any source, PM except liquid sulfur compounds, in excess of the concentration at standard conditions, shown in Table 404(a). Where the volume discharged is between figures listed in the table, the exact concentration permitted to be discharged shall be determined by linear interpolation.

- The provisions of this rule shall not apply to emissions resulting from the combustion of liquid or gaseous fuels in steam generators or gas turbines.
- For the purposes of this rule, emissions shall be averaged over one complete cycle of operation or one hour, whichever is the lesser time period.

Rule 405: Solid PM Weight

- A person shall not discharge into the atmosphere from any source, solid PM including Pb and Pb compounds, in excess of the rate shown in Table 405(a). Where the process weight per hour is between figures listed in the table, the exact weight of permitted discharge shall be determined by linear interpolation.
- For the purposes of this rule, emissions shall be averaged over one complete cycle of operation or one hour, whichever is the lesser time period.

Rule 409: Combustion Contaminants. A person shall not discharge into the atmosphere from the burning of fuel, combustion contaminants exceeding 0.23 gram per cubic meter (0.1 grain per cubic foot) of gas calculated to 12 percent of carbon dioxide (CO₂) at standard conditions averaged over a minimum of 25 consecutive minutes.

Rule 431: Sulfur Content of Liquid Fuels. This rule limits the sulfur content in diesel and other liquid fuels for the purpose of reducing the formation of sulfur oxides and particulates during combustion and of enabling the use of add-on control devices for diesel-fueled internal combustion engines. The rule applies to all refiners, importers, and other fuel suppliers such as distributors, marketers, and retailers, as well as to users of diesel, low-sulfur diesel, and other liquid fuels for stationary-source applications in the MDAQMD. The rule also affects diesel fuel supplied for mobile sources.

Rule 1113: Architectural Coatings. Rule 1113 limits the quantity of VOCs in architectural coatings. This rule is applicable to any person who supplies, sells, offers for sale, manufactures, blends or repackages any Architectural Coating for use within the MDAQMD as well as any person who applies or solicits the application of any architectural coating within the MDAQMD. The rule designates a maximum of 50 grams of VOC per liter for flat coatings.

Regulation XIII: New Source Review. This rule sets forth the requirements for the preconstruction review of all new or modified facilities (stationary and area sources) to ensure that (1) new sources do not interfere with the attainment and maintenance of the AAQS; (2) that is no net increase in the emissions of any nonattainment air pollutant from new or modified major facilities which emit or have the potential to emit any nonattainment air pollutant in an amount greater than or equal to the in MDAQMD Rule 1303(B)(1); (3) the construction or modification of facilities subject to New Source Review comply with the preconstruction review requirements for TACs set forth in MDAQMD Rule 1320; and (4) the construction or modification of facilities subject to this Regulation or District Regulation XVI: Prevention of Significant Deterioration comply with the preconstruction review requirements set forth in MDAQMD Rule 1600.

Southern California Association of Governments

On April 4, 2024, Southern California Association of Governments' (SCAG) Regional Council adopted Connect SoCal 2024 (2024 – 2050 Regional Transportation Plan/Sustainable Communities Strategy). Connect SoCal charts a course for closely integrating land use and transportation so that the region can grow smartly and sustainably. The strategy was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses and local stakeholders within Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. The overarching accessibility vision of the SCAG's Regional Transportation Plan, Connect SoCal, includes technologies and Intelligent Transportation Systems aimed at expanding accessibility, relieving congestion, and reducing emissions. Connect SoCal is a long-range vision plan that balances future mobility and housing needs with economic, environmental, and public health goals. Connect SoCal subgoals relevant to the Project include supporting investments that result in improved safety and air quality and minimized GHG emissions (Mobility); integrating the region's development pattern and transportation network to improve air quality, reduce GHG emissions, and enable more sustainable use of energy and water (Environment); conserving the region's resources (Environment); improve access to jobs (Economy); and advancing a resilient and efficient goods movement system that supports the economic vitality of the region, attainment of clean air, and quality of life for our communities (Economy).

South Coast Air Quality Management District

Although the BIG is within the MDAQMD's jurisdiction, it would affect truck and train movements that also occur within the South Coast Air Quality Management District's (South Coast AQMD) jurisdiction. The South Coast AQMD is the air pollution control agency for Orange County and the non-desert/urban portions of Los Angeles, Riverside, and San Bernardino counties. Its primary responsibility is ensuring that State and federal AAQS are attained and maintained in the SCAB. The South Coast AQMD developed the 2022 AQMP for the SCAB, with input from SCAG and CARB. The AQMP is a comprehensive plan that includes control strategies for stationary and area sources, as well as for on-road and off-road mobile sources. SCAG has the primary responsibility for providing future growth projections and the development and implementation of Transportation Control Measures.³

CARB, in coordination with federal agencies, provides the control element for mobile sources. The 2022 AQMP, adopted by the South Coast AQMD Governing Board on December 2, 2022, was developed to address the requirements for meeting the 2015 8-hour O₃ standard. The 2022 AQMP builds upon measures already in place from previous AQMPs. It also includes a variety of additional strategies such as regulation, accelerated deployment of available cleaner technologies (e.g., ZE technologies, when cost-effective and feasible, and low NO_x technologies in other applications), best management practices, co-benefits from existing programs (e.g., climate and energy efficiency), incentives, and other FCAA measures to achieve the 2015 8-hour O₃ standard. The 2022 AQMP incorporates the latest scientific and

³ A TCM is any measure that is specifically identified and committed to in the applicable implementation plan for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use, changing traffic flow, or congestion conditions.

technological information and planning assumptions, including the Connect SoCal 2024 and updated emission inventory methodologies for various source categories.

The South Coast AQMD 2022 AQMP includes the following Transportation Control Measures and Reasonably Available Control Measures⁴ that are relevant to the Project:

Measure 7.19: Programs to Encourage Goods Movement by Rail. This measure involves programs to encourage goods movement by rail and indicates that this is being implemented by CARB.

Measure 7.20: Divert Trucks from Nonattainment Areas. This measure aims to divert trucks from nonattainment areas by requiring pass-through trucks to choose routes away from the SCAG region.

5.3.2.4 Local

County of San Bernardino Countywide Plan

The County adopted the Countywide Plan (CWP) in October 2020. The CWP Policy Plan addresses the physical, social and economic issues facing the County's unincorporated portions. The CWP includes the following the air quality-related goals and policies relevant to air quality as shown in **Table 5.3-3: Countywide Plan Policy Plan – Relevant Air Quality Goals and Policies**. For applicability of the above CWP goals and policies to the Project, see **Section 5.0: Environmental Analysis**.

Table 5.3-3: Countywide Plan Policy Plan – Relevant Air Quality Goals and Policies	
Goal or Policy	
LAND USE ELEMENT	
Goal LU-2	Land Use Mix and Compatibility. An arrangement of land uses that balances the lifestyle of existing residents, the needs of future generations, opportunities for commercial and industrial development, and the value of the natural environment.
Policy LU-2.7	Countywide jobs-housing balance. We prioritize growth that furthers a countywide balance of jobs and housing to reduce vehicle miles traveled, increase job opportunities and household income, and improve quality of life. We also strive for growth that furthers a balance of jobs and housing in the North Desert region and the Valley region.
Policy LU-2.10	Unincorporated commercial development. We intend that new commercial development in the unincorporated areas serve unincorporated residential areas, tourists, and/or freeway travelers. We encourage new commercial development to be concentrated to enhance pedestrian circulation and reduce vehicular congestion and vehicle miles traveled, with new development directed into existing centralized areas when possible.
Policy LU-2.12	Office and industrial development in the region. We encourage office and industrial uses in the unincorporated Valley region in order to promote a countywide jobs-housing balance.
NATURAL RESOURCES ELEMENT	
Goal NR-1	Air quality that promotes health and wellness of residents in San Bernardino County through improvements in locally-generated emissions.
Policy NR-1.1	Land use. We promote compact and transit-oriented development countywide and regulate the types and locations of development in unincorporated areas to minimize vehicle miles traveled and greenhouse gas emissions.

⁴ Reasonably Available Control Measures are measures which may be applicable to a wide range of sources including stationary sources and mobile sources.

Table 5.3-3: Countywide Plan Policy Plan – Relevant Air Quality Goals and Policies	
Goal or Policy	
Policy NR-1.2	Indoor air quality. We promote the improvement of indoor air quality through the California Building and Energy Codes and through the provision of public health programs and services.
Policy NR-1.3	Coordination on air pollution. We collaborate with air quality management districts and other local agencies to monitor and reduce major pollutants affecting the county at the emission source.
Policy NR-1.4	Military coordination on air quality. We collaborate with the military to avoid or minimize impacts on military training and operations from air pollution and haze.
Policy NR-1.5	Sensitive land uses. We consider recommendations from the California Air Resources Board on the siting of new sensitive land uses and exposure to specific source categories.
Policy NR-1.6	Fugitive dust emissions. We coordinate with air quality management districts on requirements for dust control plans, revegetation, and soil compaction to prevent fugitive dust emissions.
Policy NR-1.7	Greenhouse gas reduction targets. We strive to meet the 2040 and 2050 greenhouse gas emission reduction targets in accordance with state law.
Policy NR-1.8	Construction and operations. We invest in County facilities and fleet vehicles to improve energy efficiency and reduce emissions. We encourage County contractors and other builders and developers to use low-emission construction vehicles and equipment to improve air quality and reduce emissions.
Policy NR-1.9	Building design and upgrades. We use the CALGreen Code to meet energy efficiency standards for new buildings and encourage the upgrading of existing buildings to incorporate design elements, building materials, and fixtures that improve environmental sustainability and reduce emissions.
RENEWABLE ENERGY & CONSERVATION ELEMENT	
Goal RE-1	Energy Conservation and Efficiency. The County will pursue energy efficiency tools and conservation practices that optimize the benefits of renewable energy.
Policy RE-1.1	Continue implementing the energy conservation and efficiency measures identified in the County of San Bernardino Greenhouse Gas Emissions Reduction Plan.
Policy RE-1.2	Optimize energy efficiency in the built environment. RE 1.2.1: Support low- to no-cost retrofits to improve energy efficiency of existing homes through grant and loan programs. RE 1.1.2: Encourage property owners to participate in a PACE program for access to energy efficiency retrofit financing. RE 1.2.3: Encourage utilities to expand free to low-cost audit and retrofit programs in the built environments. RE 1.2.4: Work with utilities (Southern California Edison (SCE), Southern California Gas Company (SCG), etc.) to identify retrofit opportunities with short payback periods, such as variable-speed pool pumps, building air sealing, and attic insulation, for County use in conducting focused energy efficiency outreach. RE 1.2.5: Collaborate with community partners to promote the benefits of energy efficiency to County residents, businesses, and industries. RE 1.2.6: Encourage new development to comply with the optional energy efficiency measures of the CALGreen Code. RE 1.2.6: Encourage new development to comply with the optional energy efficiency measures of the CALGreen Code.
Policy RE-1.3	Promote the local economic benefits of energy efficiency retrofits. RE 1.3.1: Support workforce development and certification for green trades.

Table 5.3-3: Countywide Plan Policy Plan – Relevant Air Quality Goals and Policies	
Goal or Policy	
	RE 1.3.2: Provide networking opportunities to connect local contractors with energy efficiency retrofit programs such as the PACE program and Energy Upgrade California. RE 1.3.3: Encourage energy efficiency retrofit projects as components of adaptive re-use of historic structures.
Policy RE-1.4	Encourage residents and businesses to conserve energy. RE 1.4.1: Collaborate with utilities to support and learn from annual energy benchmarking reports that large energy users are conducting pursuant to AB 1103. RE 1.4.2: Collaborate with the CEC, utilities, and local partners to launch online energy tracking competitions.
Goal RE-2	Renewable Energy Systems. The County will be home to diverse and innovative renewable energy systems that provide reliable and affordable energy to our unique Valley, Mountain, and Desert regions.
Policy RE-2.1	Support solar energy generation, solar water heating, wind energy and bioenergy systems that are consistent with the orientation, siting and environmental compatibility policies of the General Plan. RE 2.1.1: Utilize renewable energy development standards in the Development Code to minimize impacts on surrounding properties.
Policy RE-2.2	Promote use of energy storage technologies that are appropriate for the character of the proposed location. RE 2.2.1: Encourage onsite energy storage with RE generation facilities, consistent with County Development Code requirements. RE 2.2.2: Encourage and allow energy storage facilities as an accessory component of RE generation facilities. RE 2.2.3: Establish thresholds for conditions under which energy storage facilities are a primary use and subject to separate permit processes. RE 2.2.4: Periodically review and encourage appropriate technology types for energy storage facilities. RE 2.2.5: Support state policies and efforts by utility companies to plan for and develop energy storage technologies through legislative advocacy and coordination with utility companies.
Policy RE-2.3	Encourage the use of feasible emerging and experimental renewable energy technologies that are compatible with County regulatory standards. RE 2.3.1: Monitor emerging renewable energy technologies and amend County development standards as needed to accommodate suitable new technology types. RE 2.3.2: Monitor improvements in existing renewable energy technologies, and consider allowing additional types of renewable energy facilities as they become compatible with County regulatory standards.
Policy RE-2.4	Identify and prioritize programs that support cost-effective and universal access to renewable energy. RE 2.4.1: Expand outreach and education efforts through the County’s online Community Development Toolkit on programs such as the availability of federal and state tax credits, participation in the PACE program, and other mechanisms to reduce the cost of renewable energy facilities for onsite use on new and existing buildings. RE 2.4.2: Educate developers about the County’s RE goals and policies, and encourage the inclusion of renewable energy facilities for onsite use in new developments. RE 2.4.3: Engage with residential developers to discuss and identify opportunities and incentives to expand onsite renewable energy facilities consistent with the goals and policies of this Element.

Table 5.3-3: Countywide Plan Policy Plan – Relevant Air Quality Goals and Policies	
Goal or Policy	
	RE 2.4.4: Encourage installation of renewable energy systems on rental properties, multi-family buildings, and buildings with multiple commercial tenants by working with property developers and owners, using tools such as green leases, split incentive programs, and the California Solar Initiative’s MASH program. RE 2.4.5: Encourage the pursuit of community choice aggregation programs in collaboration with other interested jurisdictions in the region. RE 2.4.6: Proactively coordinate RE programs with other jurisdictions in the County to promote countywide collaboration and consistency.
Policy RE-2.5	Support renewable energy systems that accelerate zero net energy (ZNE) through innovative design, construction, and operations of residences, businesses, and institutions that are grid-neutral and independent of centralized energy infrastructure. RE 2.5.1: Allow and encourage construction of new buildings designed to ZNE standards consistent with state programs. RE 2.5.2: Incorporate ZNE into outreach and educational strategies about renewable energy and energy efficiency. RE 2.5.3: Allow and encourage construction of new buildings or developments in remote locations with stand-alone energy systems not connected to the grid. RE 2.5.4: Encourage energy independence and resiliency, including zero net energy and stand-alone systems not connected to the grid, in County economic development presentations and outreach efforts. RE 2.5.5: Collaborate with incorporated cities and other jurisdictions to create region-specific ZNE programs and Community Development toolkit tools tailored to the climates and characteristics of each region to provide consistency and leverage resources.
Policy RE-2.6	Encourage energy efficiency through appropriate renewable energy systems. RE 2.6.1: Pursue and consider development incentives such as density bonuses and streamlined permitting for projects that install accessory renewable energy facilities. RE 2.6.2: Allow developers of nonresidential properties to reduce required on-site parking spaces below minimum standards when space equivalent to the parking space reduction is devoted to renewable energy generation and storage facilities designed to serve onsite energy needs. RE 2.6.3: Encourage solar energy generation on rooftops and on covered parking as the first priority for on-site energy generation.
Goal RE-3.1	Community-Oriented Renewable Energy. Community-oriented renewable energy facilities will be prioritized to complement local values and support a high quality of life in unincorporated communities.
Policy RE-3.1	Prioritize, facilitate, and encourage onsite accessory RE generation to serve the unincorporated county, with a primary focus on rooftop and parking lot solar energy generation. RE 3.1.1: Permit rooftop, parking lot, and similar accessory RE generation facilities that primarily serve on-site energy needs in all zoning districts, including micro-grid systems, with minimal regulation and permitting requirements.
Policy RE-3.2	Encourage community-oriented renewable energy (CORE) generation that primarily serves local uses in the county. RE 3.2.1: Specific standards shall be established and maintained for community-oriented RE generation facilities appropriate to the Valley, Desert, and Mountain regions. RE 3.2.2: Encourage through the regulatory system the establishment of local and regional organizations to pursue community-oriented RE production and storage.

Table 5.3-3: Countywide Plan Policy Plan – Relevant Air Quality Goals and Policies	
Goal or Policy	
	RE 3.2.3: CORE facilities shall be designed primarily to meet the needs of the local users, with an adequate overage margin to meet peak demands and defray the cost of the systems. RE 3.2.3: Encourage utilities and developers to establish community-shared solar programs that allow residents and businesses to purchase shares of the output of RE generation facilities to offset their electricity bills. RE 3.2.4: Provide information and educational opportunities in the Countywide Plan Community Development Tool Kit for local organizations pursuing the acquisition of Community-Oriented Renewable Energy (CORE). RE 3.2.5: Encourage utilization of micro-grid technologies to support the principle of “local production primarily for local consumption,” to enhance local energy security and to improve local costs of living and commerce. RE 3.2.6: Apply minimal discretion in the permit approval process for CORE facilities. RE 3.2.7: Encourage infrastructure, net metering and regulatory systems that support CORE facilities.
Policy RE-3.3	Promote an adaptive distributed energy infrastructure that sustains local communities and improves resiliency to grid failures and increasing energy prices. RE 3.3.1: Support research, planning and investment in accessory and community-oriented energy generation, distribution, and storage infrastructure by adapting regulatory tools to respond to rapidly evolving RE technologies. RE 3.3.2: Encourage new institutional campuses and large residential/commercial developments to include micro-grids with onsite renewable energy generation and energy storage systems.
Policy RE-3.4	Require renewable energy facilities developed in spheres of influence of incorporated cities to be compatible and consistent with standards of the sphere cities.
Policy RE-3.5	Incorporate resident, business owner, and stakeholder input into the development and implementation of County policies for renewable energy.
Policy RE-3.6	Encourage renewable energy facilities to meet community goals, including supporting community health, wellness, and recreational needs. RE 3.6.1: Include opportunities to incorporate public art and encourage design features that provide screening in renewable energy facilities on public spaces, nonresidential facilities, and multi-family buildings. RE 3.6.2: Encourage the use of renewable energy facilities as shade structures in parks and community centers, and over parking lots and parking structures.
Policy RE-3.7	Continue to foster local economic benefits of renewable energy facilities through community involvement. RE 3.7.1: Require CORE project development applications to be sponsored or co-sponsored by local users who will be the primary consumers of the energy generated by the projects. RE 3.7.2: Encourage RE generation facility developers to give preference to San Bernardino County residents in hiring for construction, operation, and decommissioning of the facility. RE 3.7.3: Encourage local community colleges, vocational schools, and workforce training centers to offer programs on renewable energy installation and maintenance. RE 3.7.4: Encourage innovation zones for manufacturers to locate and operate in the unincorporated county to research, construct, test, and distribute renewable energy technologies

Table 5.3-3: Countywide Plan Policy Plan – Relevant Air Quality Goals and Policies	
Goal or Policy	
TRANSPORTATION & MOBILITY ELEMENT	
Goal TM-3	Vehicle Miles Traveled. A pattern of development and transportation system that minimizes vehicle miles traveled.
Policy TM-3.1	VMT reduction. We promote new development that will reduce household and employment VMT relative to existing conditions.
Policy TM-3.2	Trip reduction strategies. We support the implementation of transportation demand management techniques, mixed use strategies, and the placement of development in proximity to job and activity centers to reduce the number and length of vehicular trips.
Goal TM-4	Complete Streets, Transit, and Active Transportation. On- and off-street improvements that provide functional alternatives to private car usage and promote active transportation in mobility focus areas
Policy TM-4.8	Local bicycle and pedestrian networks. We support local bike and pedestrian facilities that serve unincorporated areas, connect to facilities in adjacent incorporated areas, and connect to regional trails. We prioritize bicycle and pedestrian network improvements that provide safe and continuous pedestrian and bicycle access to mobility focus areas, schools, parks, and major transit stops.
Policy TM-4.9	Bike and pedestrian safety. We promote pedestrian and bicyclist safety by providing separated pedestrian and bike crossings when we construct or improve bridges over highways, freeways, rail facilities, and flood control areas. We monitor pedestrian and bicycle traffic accidents and promote safety improvements in unincorporated high-accident areas.
Source: County of San Bernardino. 2020. <i>Countywide Policy Plan</i> . https://countywideplan.sbcounty.gov/policy-plan/	

Codified Ordinances of the County of San Bernardino

The Codified Ordinances of the County of San Bernardino (County Code) regulations addressing air quality are provided below. For applicability of the County Code standards to the Project, **see Section 5.0**.

- **County Code § 63.0501: Adoption of California Energy Code.** Under this section, the 2022 California Energy Code contained in Part 6 of Title 24 of the CCR, is designated and adopted by reference as the Energy Code for the design and installation of energy systems for the unincorporated area of the County.
- **County Code § 63.1501: Adoption of California Green Building Standards (CALGreen) Code.** Under this section, the 2022 CALGreen Code, contained in Chapters 1-8 of Part 11 of Title 24 of the CCR, is designated and adopted by reference as the CALGreen Code for the unincorporated area of the County.
- **County Code § 83.01.040: Air Quality.** The purpose of the General Performance Standards chapter is to establish uniform performance standards for development within the County that promotes compatibility with surrounding areas and land uses. Performance standards are designed to mitigate the environmental impacts of existing and proposed land uses within a community. For air quality, these standards include those for equipment permit and inspection requirements, permits from AQMDs, and diesel exhaust emissions control measures.
- **County Code Chapter 83.14: Transportation Control Measures.** The purpose of this Chapter is to reduce vehicle trips thereby reducing air congestion and pollutants and improving air quality, to comply with State law, and to promote an improved quality of life. This Chapter is intended to

satisfy the legal requirements of Chapter 6 of the San Bernardino County Congestion Management Program.

City of Barstow 2015-2020 General Plan

The City adopted the City of Barstow 2015-2020 General Plan (2015 General Plan) in February 2015. The 2015 General Plan is the overarching guide for implementation of the Development Code, which defines development regulations and establishes zoning districts throughout the City. **Table 5.3-4: 2015 General Plan Relevant Goals and Policies** identifies applicable goals and policies from the 2015 General Plan. For applicability of the 2015 General Plan goals and policies to the Project, see **Section 5.0**.

Table 5.3-4: 2015 General Plan Relevant Goals and Policies	
Goal or Policy	
CIRCULATION ELEMENT	
Goal 3	Foster improved traffic flow and air quality by encouraging the use of non-motorized transportation, alternative fuel vehicles and multi-occupant vehicles.
Policy 3A	Encourage pedestrian travel by improving the means by which residents and visitors may walk throughout the community.
Policy 3B	Establish a network of bicycle routes as illustrated on Exhibit C-2.
Policy 3C	Encourage carpooling and the use of alternative fuel vehicles by city residents and employees.
Policy 3D	Implement incentives outlined in Municipal Code Chapter 19.49 – Design Guidelines such as relaxation of parking requirements, density bonuses and exceptions to building height and lot coverage requirements in exchange for on- or off-site provision of bicycle racks and/or storage facilities, bikeways, electric vehicle charging facilities, designated pedestrian pathways or other design features designed to foster alternatives to single-occupancy, internal combustion engine driven vehicle use.
RESOURCE CONSERVATION AND OPEN SPACE ELEMENT	
Goal 2	Ensure protection of air quality by reducing air pollution and emissions of pollutants.
Policy 2A	Work with the Mojave Desert Air Quality Management District, San Bernardino Association of Governments, San Bernardino County and neighboring jurisdictions to implement the federal O ₃ and PM ₁₀ & PM _{2.5} non-attainment plans and meet federal state air quality standards and reduce overall emissions from mobile and stationary sources.
Goal 5	Adhere to the environmental assessment process required under CEQA to communicate with other agencies and the public on the air quality impacts of development within the community.
Policy 5A	Communication of the impact of development on environmental quality with the impacted state and federal agencies as well as the general public in a clear and concise manner.
Goal 6	Provide programs and incentives to encourage residents, businesses and developers to reduce consumption and efficiently use energy resources.
Policy 6A	Educate the development community with regard to green building principles and other strategies for conserving natural resources.
Source Barstow, City of. 2015. <i>City of Barstow 2015-2020 General Plan</i> . https://www.barstowca.org/home/showpublisheddocument/5359/636607004808630000 .	

Code of the City of Barstow

The Code of the City of Barstow (Barstow Code) regulations addressing air quality are provided below (Barstow, City of, 2015). For applicability of the Barstow Code standards to the Project, see **Section 5.0**.

- **Barstow Code § 10.09.030: Trip reduction.** This section establishes objectives for trip reductions in the City of Barstow by identifying large employers to evaluate trip reduction strategies and supporting various transportation initiatives and land use regulations aimed at reducing vehicle emissions and promoting alternative modes of transportation.
- **Barstow Code § 10.09.040: Travel demand management.** This section identifies measures to implement strategies and programs which reduce traffic congestion, vehicle miles travelled (VMT), and/or vehicle trips, which result in reduction of mobile source emissions.
- **Barstow Code Title 15: Buildings and Construction.** This title includes various regulations concerning erection, construction, maintenance, etc. of all buildings and/or structures in the City.
- **Barstow Code § 15.08.010: Building Codes.** Codes adopted specify the various State Codes the City has adopted, including among others the 2019 California Energy Code (CCR, Title 24, Part 6) and the 2019 CALGreen Code (CCR, Title 24, Part 11).

5.3.3 METHODOLOGY FOR EVALUATING IMPACTS

5.3.3.1 Definition of Study Area

The study area is the geographic boundary in which the environmental investigations were conducted specific to each resource topic.

Proposed General Plan

The study area for the proposed General Plan is the City of Barstow and its SOI; see **Figure 3-1: Regional Vicinity Map** and **Figure 3-2: Local Vicinity Map in Section 3.0: Project Description**. The emissions inventory and forecast for the General Plan utilizes a community emissions accounting method that includes sources that are in the indirect and direct jurisdictional control of the City of Barstow (geographic region).⁵ The boundary for impacts is based on emissions generated within the air basin. For the General Plan, the city's community emissions are predominately within the MDAB; and therefore, the thresholds from the MDAQMD are used to evaluate air quality impacts. However, rail corridor emissions associated with the BIG project extend to areas within the SCAB.

Barstow International Gateway

The study area for direct and indirect impacts concerning air quality is the BIG footprint and the MDAB and the SCAB as a whole.

⁵ Emissions from permitted sources are excluded from the existing emissions inventory because the reductions associated with the Industrial sector are regulated separately by MDAQMD or are otherwise not under the jurisdiction of the City.

5.3.3.2 Methodology

Proposed General Plan

The General Plan community criteria air pollutant emissions inventory and forecast is based on activity data compiled for the proposed General Plan update and is included as **Appendix 5.3 GP-1**. The following is a summary of the land use assumptions used for the air quality analysis; see **Table 3-5: Proposed General Plan – 2048 Projections** in **Section 3.0: Project Description**. The modeling assumptions below are also summarized in **Table 5.3-4: 2015 General Plan Relevant Goals and Policies**.

- **On-Road Transportation.** The primary source of on-road mobile-source emissions (e.g., passenger cars and heavy-heavy duty trucks) is from the combustion of fuel (e.g., gasoline and diesel) from vehicle trips associated with land uses in the proposed General Plan area. On-road emissions are based on calendar year 2023 (Existing Year) and 2048 (Horizon Year) vehicle emissions data from CARB's Emission FACTor (EMFAC) 2021, version 1.0.2, for the County, MDAB subarea. Additionally, mobile-source emissions modeling is based on total passenger car VMT and Truck Miles Traveled (TMT) data provided by Fehr & Peers using the San Bernardino Transportation Analysis Model (SBTAM+) and origin-destination (O-D) approach. For the General Plan analysis, TMT represents the miles traveled for light-heavy duty trucks (LHDT), medium-heavy duty trucks (MHDT), and heavy-heavy duty trucks (HHDT) while VMT represents miles traveled for all other types of vehicles such as light duty automobiles (LDA). The total VMT and TMT provided includes the full trip lengths (i.e., internal-internal, internal-external, and external-internal trips) for land uses in the proposed General Plan area (origin-destination approach) and does not apply the recommendations of CARB's Regional Targets Advisory Committee (RTAC). Daily VMT from SBTAM+ is converted to annual VMT by multiplying the daily VMT by 347 days per year, which is consistent with CARB assumptions to account for less travel on weekend (CARB, 2008). Additionally, while the analysis considers TMT reductions that would occur under BIG, as described in Section 5.15, the TMT reductions would occur primarily within the SCAB and outside of California and not within the MDAB. However, the TMT reductions that occur within the MDAB have been modeled for BIG and are incorporated into the General Plan emissions inventory.
- **Area Sources, Consumer Products.** Area sources (i.e., VOCs) generated from use of consumer products and cleaning supplies are based on the California Emissions Estimator Model (CalEEMod), version 2022.1, default emission rates, which are applied to residential and non-residential land uses in the proposed General Plan area.
- **Building Energy.** Emissions associated with natural gas use for residential and non-residential land uses in the study area were modeled based on the average of the five-year (2019 to 2023) data provided by Southwest Gas and the CalEEMod Version 2022.1 default natural gas emissions factors. The five-year average is used to account for fluctuations in energy use. Forecasts are adjusted for increases in population for natural gas use and non-residential square footage for non-residential natural gas use in the proposed General Plan area. Daily emissions for building energy use are based on the daily average natural gas usage divided by 365 days per year.
- **BIG Emissions.** Emissions from rail activities and related are associated with BIG. The other residential and non-residential land uses of the proposed General Plan, in of themselves, do not

result in an increase in rail traffic. Rail traffic is regional and associated with pass-through traffic on the BNSF main line, activities at the existing BNSF rail yard, and future activities related to BIG. A community emissions inventory and forecast normally does not include sources outside of the jurisdiction's land use control. However, to account for rail emissions associated with proposed General Plan with the BIG project, the emissions from rail activities associated with BIG are integrated into the communitywide emissions analysis for the proposed General Plan. Please see the methodology below for the methodology used to estimate rail emissions for BIG.

Table 5.3-5: Proposed General Plan Air Quality Modeling Assumptions

Emissions Source	Assumptions	Methodology or Model Used
On-Road Transportation (e.g., passenger vehicles & heavy-heavy-duty trucks, etc.)	For passenger car, vehicle fleet mix destination approach) from Fehr & Peers and a 50 percent reduction in the trip length for external-internal/internal-external trips, consistent with CARB's RTAC methodology. See Table 19 in Appendix 5.3 BIG-1 for a summary of TMT reductions.	CARB EMFAC2021 emissions data for calendar years 2023 and 2048.
Area Source – Consumer Products	Based on non-residential and residential building square footages. Total residential square footage based on number of households, and the mean weighted average residential square footage of homes based on United States Census data. See Table 3.5: Proposed General Plan – 2048 Projections for non-residential building square footage and number of households.	CalEEMod default VOC emission factor
Area Source – Off-Road Equipment	County emissions for light commercial, agricultural, and construction, and lawn and garden equipment apportioned to the General Plan area based on the City/County ratio for employment, farmland, construction permits issued, and population.	CARB OFFROAD
Building Energy	Based on the average of the five-year (2019 to 2023) natural gas usage data provided by Southwest Gas.	CalEEMod natural gas emission factors
Locomotive Emissions within BIG Footprint	See Table 16 and Table 17 in Appendix 5.3 BIG-1 for train assumptions.	U.S. EPA Emissions Factors for Locomotives (April 2009) Switcher Locomotives: CARB's Carl Moyer Program Guidelines (2017)
Corridor Emissions	Based on 2023 report for the 1998 MOU and adjusted for full conversion of Tier 0 and 1 to Tier 1+ and Tier 2 to Tier 2+ and Compound Annual Growth Rates (CAGR) provided by BNSF. CAGR and emissions for With BIG and Without BIG are found in Appendix B of the Corridor Emissions Analysis, which is located within Appendix B of Appendix 5.3 BIG-1 .	U.S. EPA Emissions Factors for Locomotives (April 2009)

Table 5.3-5: Proposed General Plan Air Quality Modeling Assumptions		
Emissions Source	Assumptions	Methodology or Model Used
	Annual Tier 4 purchases with associated Tier 1 replacements based on 5-year historical average purchase rates.	
Barstow Yard Switcher Elimination and Replacement	Annual fuel consumption of 50,000 gallons per switcher Six switchers replaced with Tier 4 engines, nine switchers removed	U.S. EPA Emissions Factors for Locomotives (April 2009) and CARB's Carl Moyer Program Guidelines (2017)
Source: See Appendix 5.3 BIG-1: Air Quality Technical Report.		

Impacts of the Environment on a Project

In 2016, the California Legislature passed SB 1000, Planning for Healthy Communities Act, to incorporate Environmental Justice into the local land use planning process. SB 1000 requires local governments to address pollution and other hazards that disproportionately impact low-income communities and communities of color in their jurisdictions. SB 1000 mandates that general plans address environmental justice but does not require CEQA analyses to address Environmental Justice issues. The EIR addresses air quality and health risk impacts to sensitive land uses of implementing the proposed General Plan.

Buildout of the proposed land use plan under the proposed General Plan could result in siting sensitive uses (e.g., residential) near sources of emissions (e.g., freeways, industrial uses, rail lines). Developing new sensitive land uses near sources of emissions could expose persons that inhabit these sensitive land uses to potential air quality-related impacts. However, the purpose of this environmental evaluation is to identify the significant effects of the proposed project on the environment, not the significant effects of the environment on the proposed project. *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (Case No. S213478). Therefore, CEQA does not require analysis of the potential environmental effects (e.g., potential inducing health risk impacts) from siting sensitive receptors associated with a project near existing sources, and this type of analysis is not provided in **Section 5.3.6: Project Impacts and Mitigation Measures**, other than for BIG. However, the proposed General Plan includes policies that would require future developments to include design features to minimize air quality impacts and to achieve appropriate health standards.

The following proposed General Plan policies are applicable.

- **Policy OSC-3.1. Sensitive land uses.** Approve development in a manner that ensures sensitive receptors are reasonably separated from mobile and stationary sources of pollution, taking into consideration guidance from the California Air Resources Board. Include measures as necessary and feasible to reduce or avoid exposure of existing and planned future sensitive receptors to air pollution levels that exceed state and federal standards.
- **Policy LU-1.1 Land use compatibility.** Require that new development be located, buffered, and designed to avoid or reduce (to an acceptable level), negative impacts on existing conforming uses and adjacent neighborhoods. Require that new residential development be located, buffered, and designed so as to not hinder the economic viability and continuity of areas planned for nonresidential uses.

- **Policy LU-1.4 Nonresidential west of 15/58.** Plan and prioritize undeveloped areas west of Highway 58 and Interstate 15 for non-residential uses to promote land use compatibility, protect and enhance residential neighborhoods, and maintain the viability of commercial and industrial businesses for the community's present and future economic viability. [EJ-P/AQ]
- **Policy LU-1.5 Industrial amendments.** Prohibit amendments to the Land Use Map for General Industrial within Central Barstow, which is where the vast majority of Barstow residents live, shop, recreate, worship, and go to school. Permit amendments to the Land Use Map for General Industrial within 500 feet of the Lenwood community only when associated with a specific plan that includes appropriate buffering.
- **Policy S-2.8 Healthy, resilient, and efficient buildings.** Encourage and pursue funding for improvements to existing residential and nonresidential buildings consistent with the latest state building code requirements for indoor air quality; energy efficiency; energy storage; disaster and severe weather resilience; and solar power. As funding is obtained, prioritize improvements for buildings that are both within 500 feet of a freeway or railroad and intended for use by residents or employees for at least eight hours a day.
- **Policy OSC-3.1. Sensitive land uses.** Approve development in a manner that ensures sensitive receptors are reasonably separated from mobile and stationary sources of pollution, taking into consideration guidance from the California Air Resources Board. Include measures as necessary and feasible to reduce or avoid exposure of existing and planned future sensitive receptors to air pollution levels that exceed state and federal standards.

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BIG construction and operational emissions sources were calculated based on BIG-specific activity levels. MDAQMD was consulted for the general analysis approach and methodology. See Appendix A: Air Quality and Greenhouse Gas Emissions Modeling Data of **Appendix 5.3 BIG-1**) for more information regarding the construction and operations assumptions used in this analysis, as well as the modeled emissions.

Construction Emissions

Construction emissions can vary substantially from day to day, depending on the level of activity, and the specific type of equipment used. Construction emissions result from on-site and off-site activities. On-site construction emissions principally consist of fugitive dust from ground disturbing activities, exhaust emissions from heavy-duty construction equipment and motor vehicle operation, and off-gassing from architectural coatings (painting) and paving. Off-site construction emissions are caused by motor vehicle exhaust from vendor delivery vehicles and worker trips. Additionally, off-site emissions would occur from trains hauling construction materials (e.g., ballast, rails, railroad ties, etc.). Total construction emissions are modeled based on the below assumptions.

Models

Criteria pollutant emissions from BIG demolition and construction were calculated using emission factors from CARB's OFFROAD2021 model (v1.0.3). The use of emission rates from the OFFROAD model captures the latest off-road construction assumptions, including emission inventories as well as equipment

population and activity data, collected by CARB. OFFROAD default load factors (the ratio of average equipment horsepower utilized to maximum equipment horsepower) and useful life parameters were used for emission estimates. Mobile-source emissions from worker vehicle trips and truck trips were calculated using VMT and TMT (heavy-duty truck miles traveled) estimates and appropriate emission factors from CARB's EMFAC2021 model (v1.0.2). EMFAC2021 emissions projections assumed implementation of the ACT Regulation and the Heavy-Duty Low NO_x Omnibus Regulation. These regulations were disapproved by Congressional Resolutions H.J. Res 87 and H.J. Res 89, respectively. The resolutions were signed by the President on June 12, 2025. These resolutions, along with H.J. Res. 88 (revoking federal light-duty vehicle GHG standards), limit the ability of CARB to enforce these California regulations that had been authorized by U.S. EPA waivers under the FCAA. CARB is currently evaluating the impact of the actions (H.J. Res 87, H.J. Res 88, and H.J. Res 89) under the Congressional Review Act, but has not yet provided emissions modeling guidance. Accordingly, emissions from trucks are overestimated in the EMFAC2021 model.

Fugitive dust emissions from dirt and aggregate handling were calculated using emission factors derived from equations from the U.S. EPA's *AP-42 Compilation of Air Emissions Factors*. Emissions from architectural coatings and paving were calculated using the methodology in the CalEEMod User Guide Appendix C: Emission Calculation Details for CalEEMod and emissions rates in the CalEEMod User Guide Appendix G: Default Data Tables. **Table 5.3-5: Regulations and Agreements Assumed in the Unmitigated Construction and Operational Emissions** summarizes the regulations that were assumed in the construction emissions unmitigated scenario.

Table 5.3-5: Regulations and Agreements Assumed in the Unmitigated Construction and Operational Emissions			
Off-Road Construction Equipment	On-Road Trucks	Trains	Fugitive Dust
Emission Standards for Non-road Diesel Engines – Tier 1, 2, 3, and 4 standards gradually phased in over all years (accounted for in emissions factor projections) due to normal construction equipment fleet turnover. California Diesel Fuel Regulations – 15 ppm sulfur starting 9/1/06. CARB In-Use Off-Road Diesel Vehicle Rule – Off-road mobile equipment powered by diesel engines 25 hp or larger must meet the fleet average or best available control	Emission Standards for Onroad Trucks – Engine emission standards gradually phased in due to normal truck fleet turnover and accounted for in emissions factor projections. California Diesel Fuel Regulations – 15 ppm sulfur starting September 1, 2006. Airborne Toxic Control Measure to Limit Diesel Fueled Commercial Motor Vehicle Idling – Diesel trucks are subject to idling limits starting 2/1/05. Port of Los Angeles Clean Truck Program – Heavy-	Emission Standards for Locomotives – Tiered engine emission standards gradually phased in due to normal locomotive fleet turnover and accounted for in emissions factor projections. 1998 Fleet Average Agreement – Fleet average emission factors for NO_x for linehaul locomotives operating in the South Coast area. 2005 CARB/Railroad Statewide Agreement – Reduced line haul locomotive idling times assumed to take effect starting in 2006.	MDAQMD Rue 403 Compliance – Properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour.

Table 5.3-5: Regulations and Agreements Assumed in the Unmitigated Construction and Operational Emissions

Off-Road Construction Equipment	On-Road Trucks	Trains	Fugitive Dust
technology (BACT) requirements for NO_x and PM emissions by March 1 of each year. CARB Portable Diesel-Fueled Engines Air Toxics Control Measure (ATCM) - Effective September 12, 2007, all portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel shall meet weighted fleet average PM emission standards. CARB Off-Road Large Spark Ignition Equipment Rule – LSI engines greater than 25 hp, powered by gasoline, LPG, or other alternative fuels to meet HC + NO_x requirement beginning January 1, 2009.	duty diesel drayage trucks calling on port terminals shall meet the U.S. EPA 2007 emission standards for on-road heavy-duty diesel engines (U.S. EPA, 2001) by 2012. CARB Statewide Truck and Bus Regulation – Installation of PM retrofits on all heavy-duty trucks beginning January 1, 2012 and replacement of older trucks starting January 1, 2015. By January 1, 2023, all vehicles need to have 2010 model year engines or equivalent.	Non-road Diesel Fuel Rule – 500 ppm sulfur starting June 2007 and 15 ppm sulfur starting January 1, 2012. Applies to all line-haul locomotives. California Diesel Fuel Regulations – 15 ppm sulfur starting January 1, 2007. Applies to all switch locomotives.	
Note: This table is not intended to be a comprehensive list of all potentially applicable regulations; rather, the table lists key regulations and agreements that quantifiably affect the emission calculations for BIG construction and assumed in the analysis. Emissions reductions are reflected in EMFAC emission factors for on-road vehicles and reflected in U.S. EPA locomotive emission factors.			

Construction Schedule

For analysis purposes, BIG construction is assumed to begin in third quarter 2025 and be completed by third quarter 2028, with an overall duration of approximately 34 months. Construction continuing into 2028 would include track and signal work, while equipment testing would occur at the intermodal facility. The anticipated construction phase timing is shown in **Table 5.3-6: BIG Construction Schedule**. During peak construction periods, work would be under way at several locations within the BIG footprint simultaneously, with overlapping construction of various elements.

Table 5.3-6: BIG Construction Schedule	
Phase	Approximate Number of Days
South Main Lines	
Demolition, Site Preparation, and Mobilization	39
Mass Grading	220
Bridges and Box Culverts	248
Fine Grading/ Place Subballast	25
Track and Signal Construction	151
Intermodal Facility	
Demolition, Site Preparation, and Mobilization	39
Mass Grading	165
Drainage and Underground	333
Bridges and Box Culverts	333
Fine Grading/Place Subballast	165
Buildings/Pavement	361
Track and Signal Construction	319
Block Swap Yard	
Demolition, Site Preparation, and Mobilization	39
Mass Grading	109
Drainage and Underground	277
Bridges and Box Culverts	277
Fine Grading/Place Subballast	361
Track and Signal Construction	389
North Main Lines	
Demolition, Site Preparation, and Mobilization	39
Mass Grading	109
Bridges and Box Culverts	109
Fine Grading/Place Subballast	53
Track and Signal Construction	179
Transload Warehouse Construction	
Warehouse Construction	319
Civil Site Improvements	263
33 kV Distribution	601
Solar Site	344
Source: Project construction schedule provided by Transsystems/Burns & McDonnell.	

Table 5.3-7: BIG Construction Assumptions Summary identifies the methodology, models used, and other construction assumptions described above. See **Appendix 5.3 BIG-1** for detailed construction assumptions used in this analysis, as well as the modeled emissions.

Table 5.3-7: BIG Construction Assumptions Summary		
Emissions Source	Assumptions	Methodology or Model Used
Off-Road Construction Equipment ¹	See Table 11 in Appendix 5.3 BIG-1 for equipment assumptions	CARB OFFROAD
Earthwork (fugitive dust)	26,000,000 cubic yards of balanced cut and fill, truck loading, and storage piles 2,000,000 cubic yards of subcut and soil	U.S. EPA AP-42 §§ 11.9 and 13.2
On-Road Hauling and Worker Vehicle Trips	See Table 12 in Appendix 5.3 BIG-1 for construction trip assumptions. Peak worker trips would occur during building construction and peak heavy-duty truck trips would occur during demolition, site preparation, and mobilization.	CARB EMFAC2021
Demolition	150,000 square feet of structures 36,000 square feet of concrete slab removal	U.S. EPA AP-42 §§ 11.9 and 13.2
Rail Deliveries (Locomotive Hauling and Idling)	80 trains for rail tie delivery 44 trains for welded rail delivery 315 trains for ballast delivery Total of approximately 439 trains over a 10-month construction period. Each train was assumed to idle 8 hours per day. Approximately 2 trains per day	U.S. EPA, Emission Factors for Locomotives, April 2009
Concrete and Asphalt Batch Plants	2.3 million cubic yards total over a 21-month period Three electrically powered concrete batch plants (1.9 million cubic yards total, approximately 3,500 cubic yards per day) One electrically powered asphalt batch plant Approximately 345,379 cubic yards (approximately 633 cubic yards per day)	U.S. EPA AP-42 § 11.12
Note: 1 Includes Demolition, Grading, Bridges and Box Culverts, Building Construction, Track and Signal Work, Solar Farm, and 33 kV Transmission Line		
Source: Author Compilation, 2025.		

Operational Emissions

Operational emission sources include rail yard equipment, stationary sources, area sources,⁶ locomotives, and truck and employee commute trips associated with the block swap yard, the intermodal facility, and transload facility. The following approximate building area was assumed for modeling purposes:

- **Intermodal Facility:** 150,000 square feet of building area
- **Transload Facility:** 9,000,000 square feet of building area

⁶ Area sources occur from consumer products, architectural coatings, and landscaping that were previously not present on the site.

Operational emission source assumptions were obtained from BNSF. Operational mobile source activity assumptions were based on traffic data within the BIG transportation analysis (see **Appendix 5.15 BIG-1: Barstow International Gateway CEQA Assessment – Transportation Analysis**). Typically, intermodal transport grows by approximately two percent per year. However, as discussed above, BIG would introduce a unique cross-dock intermodal operation which would present competitive benefits to suppliers compared to long-distance transport via heavy-duty truck. As such, BNSF anticipates that during this “initial transition period” after opening year and while suppliers transition supply chains to use BIG, a higher growth percentage than typical would occur. Following this initial transition period and through horizon year, BIG’s growth would continue at the normal approximately 2 percent per year. Therefore, the analysis evaluates BIG’s environmental impacts during Opening Year (2028), Interim Year (2033), and Horizon Year (2048) conditions.

Models

Criteria pollutant emissions from BIG operational line-haul locomotives were calculated using U.S. EPA emission factors (EPA-420-F-09-025). Since on-site switcher locomotives would only operate in California, these emissions were calculated with emissions factors from CARB’s 2017 Carl Moyer Program Guidelines. On-road mobile-source emissions from worker vehicle trips and truck trips were calculated using VMT and TMT estimates and appropriate emission factors from CARB’s EMFAC model. EMFAC2021 emissions projections assumed implementation of the ACT Regulation and the Heavy-Duty Low NO_x Omnibus Regulation. These regulations were disapproved by Congressional Resolutions H.J. Res 87 and H.J. Res 89, respectively. The resolutions were signed by the President on June 12, 2025. These resolutions, along with H.J. Res. 88 (revoking federal light-duty vehicle GHG standards), limit the ability of CARB to implement and enforce these California regulations that had been authorized by U.S. EPA waivers under the FCAA. CARB is currently evaluating the impact of the actions (H.J. Res 87, H.J. Res 88, and H.J. Res 89) under the Congressional Review Act, but has not yet provided emissions modeling guidance.

Fugitive dust emissions from road dust were calculated using emission factors derived from equations from the U.S. EPA’s *AP-42 Compilation of Air Emissions Factors*. Off-road equipment emissions were calculated using emission factors from CARB’s OFFROAD model. The use of emission rates from the OFFROAD model captures the latest off-road construction assumptions, including emission factors, established by CARB. OFFROAD default load factors (the ratio of average equipment horsepower utilized to maximum equipment horsepower) and useful life parameters were used for emission estimates. Emissions from area, energy, water use, solid waste, and refrigerant emissions were calculated using the methodology in the CalEEMod User Guide Appendix C: Emission Calculation Details for CalEEMod and emissions rates in the CalEEMod User Guide Appendix G: Default Data Tables; see **Appendix 5.3 BIG-1. Table 5.3-5** that Table 5.3-5: Regulations and Agreements Assumed in the Unmitigated Construction and Operational Emissions summarizes the regulations that were assumed and factored into emissions and factored into emissions factor projections in the operational emissions unmitigated scenario.

BIG trains would travel along a Corridor defined as the rail line operated by BNSF between the San Pedro Ports and Needles Station at approximately the California/Arizona border. A Corridor Emissions Model (CEM) was developed to quantify corridor specific mass emissions (i.e., air emissions associated with the

BNSF locomotives operating on the Corridor). The western portion of the Corridor is located within the jurisdiction of the South Coast AQMD (within the SCAB), and the eastern portion is within the jurisdiction of the MDAQMD (within the MDAB). The BNSF Summit rail station delineates the boundary between the South Coast AQMD and MDAQMD along the Corridor. The CEM specifically evaluates air emissions from rail movements along the entirety of the Corridor under both a “Proposed Project” condition (i.e., BIG obtains all necessary approvals and is built) and a “No Project” condition (i.e., BIG is not built).

Moving emissions (i.e., emissions associated with each train movement within the Corridor) are calculated by multiplying the gross tonnage of the train (freight plus locomotive weight) and the total miles the train traveled through the Corridor to produce the gross ton-mile (GTM). The gross ton-mile is combined with the fuel efficiency of the train, which accounts for the direction the train is traveling using a positive or negative grade slope of the Corridor. Lastly, the model calculates a composite emission factor using the U.S. EPA Locomotive Line-Haul Tier Emission Factors.

Idling emissions are emissions within the Corridor for all locomotives under minimum operating conditions (idling throttle position) while stationary. For this calculation, each line-haul locomotive is assumed to produce 25 horsepower during idling, with a brake-specific fuel consumption rate of 20.8 brake horsepower hour per gallon (U.S. EPA: Emission Factors for Locomotives, 2009).

Train count data is based on actual train data from the last quarter of 2022 and the first three quarters of 2023 as these were the most recent available data at the time environmental analysis commenced. Growth rates were applied to the existing train counts for future year data. Growth is based on a compounded annual growth rate (CAGR) derived from the historical change in container volumes associated with train trips (see the CAGR data prepared by EnSafe, which can be found in Appendix B [BNSF CAGRs used in BIG] of EnSafe’s BNSF Barstow International Gateway Corridor Emissions Analysis. EnSafe’s corridor emissions analysis is located within Appendix B of **Appendix 5.3 BIG-1**).

The changes in emissions associated with moving trains closer or farther from sensitive receptors near the BIG footprint is included in construction emissions dispersion modeling given these changes would occur during the construction period.

Table 5.3-8: BIG Operational Assumptions Summary provides the methodology, models used, and other operational assumptions for all operational analysis years. Appendix A: Air Quality Modeling to **Appendix 5.3 BIG-1** provides detailed operational emissions used in this analysis, as well as the modeled emissions.

Table 5.3-8: BIG Operational Assumptions Summary		
Emissions Source	Assumptions	Methodology or Model Used
Equipment and Stationary Sources	See Table 14 and Table 15 in Appendix 5.3 BIG-1 for electric and diesel equipment assumptions	CARB OFFROAD
Area and Energy Sources	Based on 150,000 square feet of intermodal facility buildings and 9.0 million square feet of warehouse building area	CalEEMod Consumption Rates
Locomotive Emissions within BIG Footprint	See Table 16 and Table 17 in Appendix 5.3 BIG-1 for locomotive assumptions.	U.S. EPA Emissions Factors for Locomotives (April 2009)

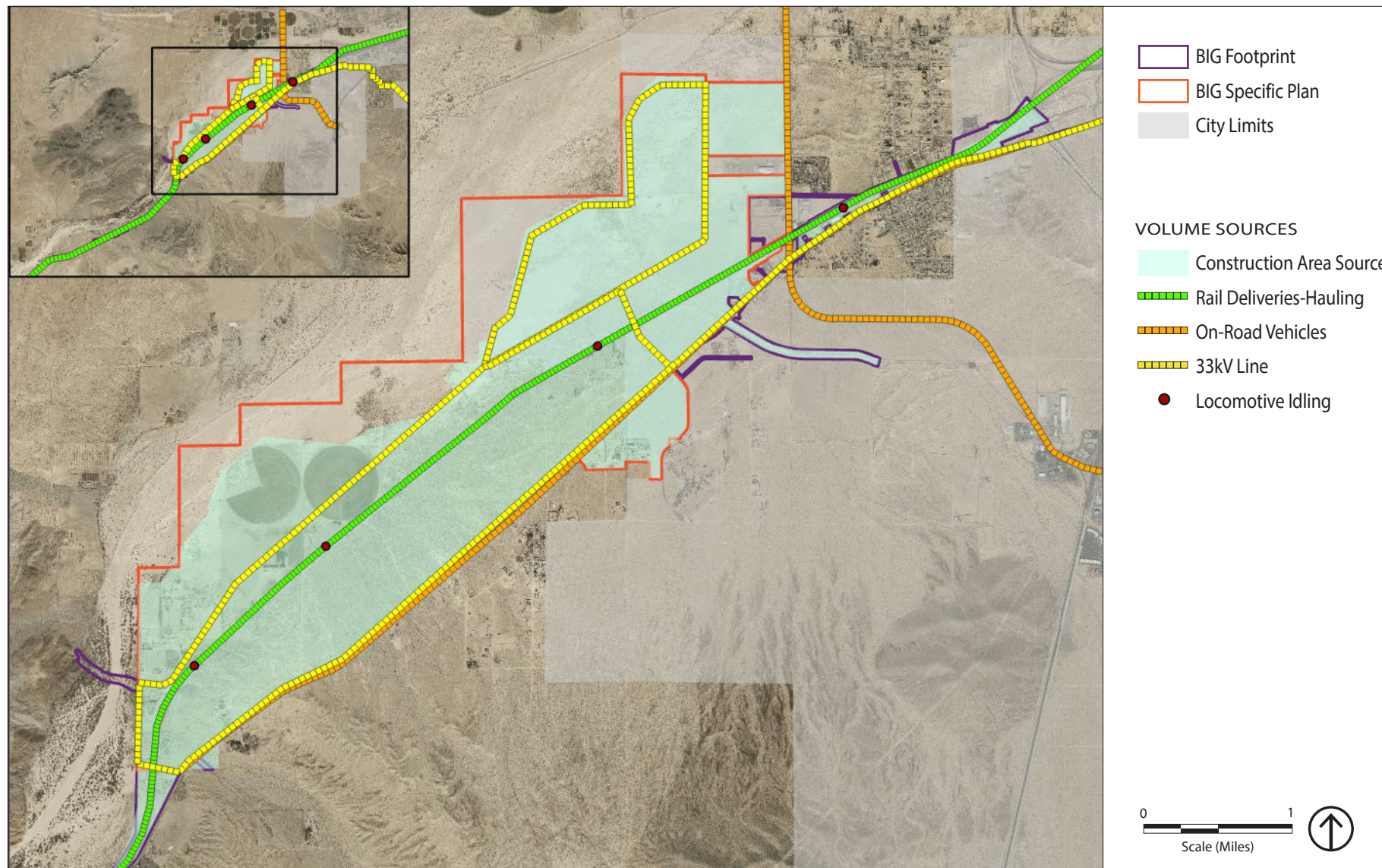
Table 5.3-8: BIG Operational Assumptions Summary		
Emissions Source	Assumptions	Methodology or Model Used
		Switcher Locomotives: CARB's Carl Moyer Program Guidelines, (2017)
Other Mobile Sources (Passenger Cars)	See Table 18 in Appendix 5.3 BIG-1 for mobile source assumptions.	CARB EMFAC2021
California Road Network TMT Improvements	See Table 19 in Appendix 5.3 BIG-1	CARB EMFAC2021
Rail Corridor Emissions	Based on 2023 report for the 1998 MOU and adjusted for full conversion of Tier 0 and 1 to Tier 1+ and Tier 2 to Tier 2+ and Compound Annual Growth Rates (CAGR) provided by BNSF. CAGR and emissions for With BIG and Without BIG are found in Appendix B of the Corridor Emissions Analysis, which is located within Appendix B of Appendix 5.3 BIG-1 . Annual Tier 4 purchases with associated Tier 1 replacements based on 5-year historical average purchase rates.	U.S. EPA Emissions Factors for Locomotives (April 2009) BNSF Barstow International Gateway Corridor Emissions Analysis (see Appendix 5.3 BIG-1 , Appendix B).
Barstow Yard Switcher Elimination and Replacement	Annual fuel consumption of 50,000 gallons per switcher Six switchers replaced with Tier 4 engines, nine switchers removed	U.S. EPA Emissions Factors for Locomotives (April 2009) and CARB's Carl Moyer Program Guidelines, (2017)
Source: Appendix 5.3 BIG-1 Air Quality Technical Report , 2025.		

Dispersion Modeling

Dispersion modeling of CO, NO_x, PM₁₀, and PM_{2.5} emissions was performed to estimate maximum off-site ground-level air pollutant concentrations and health risks from BIG construction and operations emissions using the American Meteorological Society/U.S. EPA Regulatory Model (AERMOD), version 24142. Dispersion modeling was performed for construction years 2025 through 2028, Opening Year 2028, Interim Year 2033, and Horizon Year 2048. The construction and operational sources used in AERMOD are summarized in **Table 5.3-9: Dispersion Modeling Assumptions – BIG** and depicted in **Figure 5.3-1: Source Representation in AERMOD Construction Sources – BIG** and **Figure 5.3-2: Source Representation in AERMOD Operational Sources – BIG**. Corridor emissions improvements are not included in the BIG dispersion modeling as those emissions would primarily occur outside of the BIG footprint and were calculated separately. Corridor emissions are analyzed in the impact analysis.

Table 5.3-9: Dispersion Modeling Assumptions – BIG

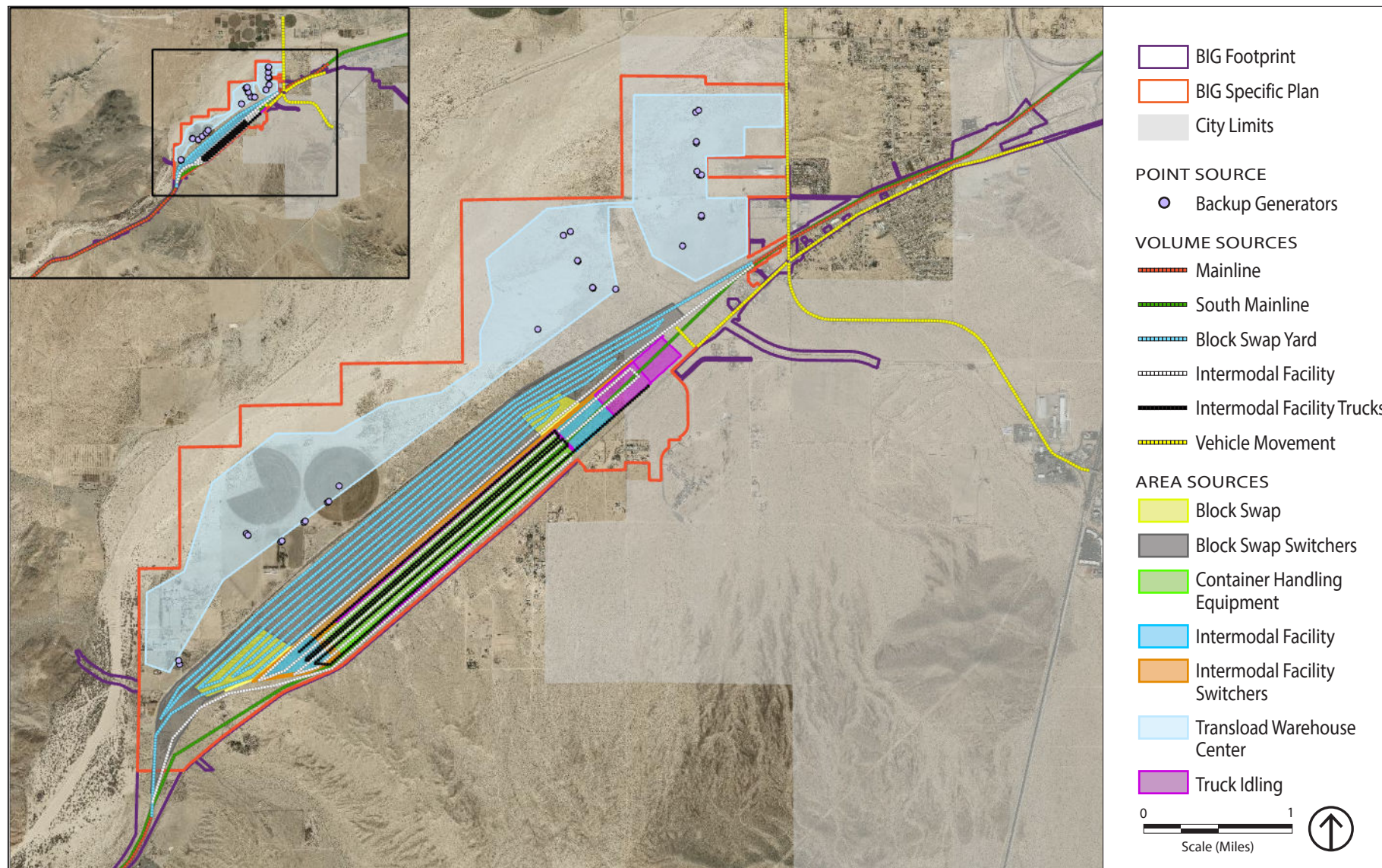
Emissions Source	Geometric Configuration ¹	Assumptions/Methodology/Model
Construction		
Construction (Off-Road Equipment, Concrete Batch Plants, Rail Deliveries)	Line-Volume Sources	Operating within on-site construction disturbance areas, Configured per U.S. EPA’s AERMOD User’s Guide
Rail Deliveries (Locomotive Idling)	Point Sources	Exhaust based on U.S. EPA Emissions Factors for Locomotives Point sources used for idling, AERMOD sources were configured based on CARB rail studies and AERMOD guidance
Pass-by Trains on North/South Mainlines	Line-Volume Sources	Modeled with exhaust based on U.S. EPA Emissions Factors for Locomotives
Railway Excavation and Removal	Line-Volume Sources	The existing main line was modeled to calculate the metals released during the removal. A release height of 0 meters was modeled, with a plume width of 9 meters, or the width of the track corridor plus 50 feet on each side.
Construction (earthwork)	Area Sources	The model includes 17 area polygons, each representing a different parcel. The release height modeled was 1 meter (3.28 feet) to account for release of materials while construction equipment was relocating. Data was pulled from the Phase II Environmental Site Assessments reports prepared.
Operations		
Linehaul Locomotive Operations	Line-Volume Sources	Modeled with exhaust based on U.S. EPA Emissions Factors for Locomotives
Stationary and Cargo Handling Equipment, Truck Emissions		
Switcher Operations and Idling Linehaul Idling	Area Sources	OFFROAD, and EMFAC
Transload Facility Operations		Modeled exhaust based on U.S. EPA Emissions Factors for Locomotives and CARB’s Carl Moyer Program Guidelines (2017)
Barstow Railyard Switcher Replacement		
Notes: The emissions sources are defined as follows: ¹ Point source: a single identifiable local source of emissions; it is approximated in the AERMOD air dispersion model as a mathematical point in the modeling region with a location and emission characteristics such as height of release, temperature, etc. (example: a stack or vent). ² Line source: a series of volume sources (volume sources are a three-dimensional source of diffuse air pollutant emissions comprised of an area of emissions released at a height above ground) along a path (example: vehicular traffic along a roadway segment) . Line sources (i.e., multiple volume sources) are also used to represent some construction activities. ³ Area source: Area sources are used to model releases that occur over an area.		
Source: Author Compilation, 2023.		



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: Sources are shown for illustration purposes and are not to scale.

Figure 5.3-1
Source Representation in AERMOD Construction Sources - BIG



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: Sources are shown for illustration purposes and are not to scale.

Figure 5.3-2
Source Representation in AERMOD Operational Sources - BIG

Construction emission rates in grams per second were calculated from the total annual exhaust emissions reported in CalEEMod during construction. Annual operational emissions were converted to grams per second and these emissions rates were input into AERMOD. The predicted ambient concentrations from construction and operations were compared to the NAAQS and CAAQS. Dispersion modeling details and model outputs are provided in Appendix A to **Appendix 5.3 BIG-1**. The modeling and analysis were prepared in accordance with Appendix W to Part 51, Title 40, the User's Guide for AERMOD, and the OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines.

The dispersion modeling used meteorological data from the Barstow-Daggett Airport Meteorological Station (data from 2015, 2016, 2018, 2019, 2020) located approximately 19 miles east of the BIG footprint. Data from the National Elevation Data set, available from the U.S. Geological Survey, were utilized to import the elevation information for sources and receptors. Construction and operations pollutant concentrations were estimated near the BIG footprint and surrounding area. AEROMOD regulatory default options and rural dispersion algorithm were used in the analysis.⁷ The modeled concentrations were compared with the applicable NAAQS, CAAQS, and health-related guidelines to determine the level of impacts. The ambient concentrations obtained through dispersion modeling were subsequently used in the HRA.

TACs and Health Risk Sources and Modeling

Human health risks associated with BIG TAC emissions from construction and operations were estimated following the *Air Toxics Hot Spots Program Risk Assessment Guidelines* developed by the OEHHA within the California Environmental Protection Agency (CalEPA). The methodology of the 2015 OEHHA guidance is described in detail below. In general, the assumptions used in the guidance are very conservative because in addition to assuming all receptors begin their exposure to project-related toxic contaminants prior to birth (i.e., third trimester in utero) when the individual receives a higher dose of contaminants due to higher breathing rates, the cancer risk assessment assumes that an individual would be located outdoors in the same location and continuously exposed to project-related toxic contaminants for a duration of 30 years, with no consideration of time spent indoors.

The objectives of the HRA process are to analyze the potential health risks posed by a project which are expressed in a statistical measure in order to inform the public and decision makers of the potential health effects associated with a project's emissions of TACs. The HRA includes an evaluation of the following types of health effects: individual incremental cancer risk, population cancer burden, and chronic noncancer hazard index (HI).

- Individual incremental cancer risk (referred to hereafter simply as "individual cancer risk") is the additional probability for a person to develop cancer after long-term exposure to individual project-related toxic contaminants. The exposure duration is assumed to be 30 years for a resident or sensitive receptor, and 25 years for an off-site worker. "Incremental" in this context means the added probability that a project would result in an individual to develop cancer after

⁷ Per the U.S. EPA's AERMOD User's Guide, AERMOD implements the following default options: elevated terrain algorithms requiring input of terrain height data; stack-tip downwash (except for building downwash cases); the calms processing routines; the missing data processing routines.

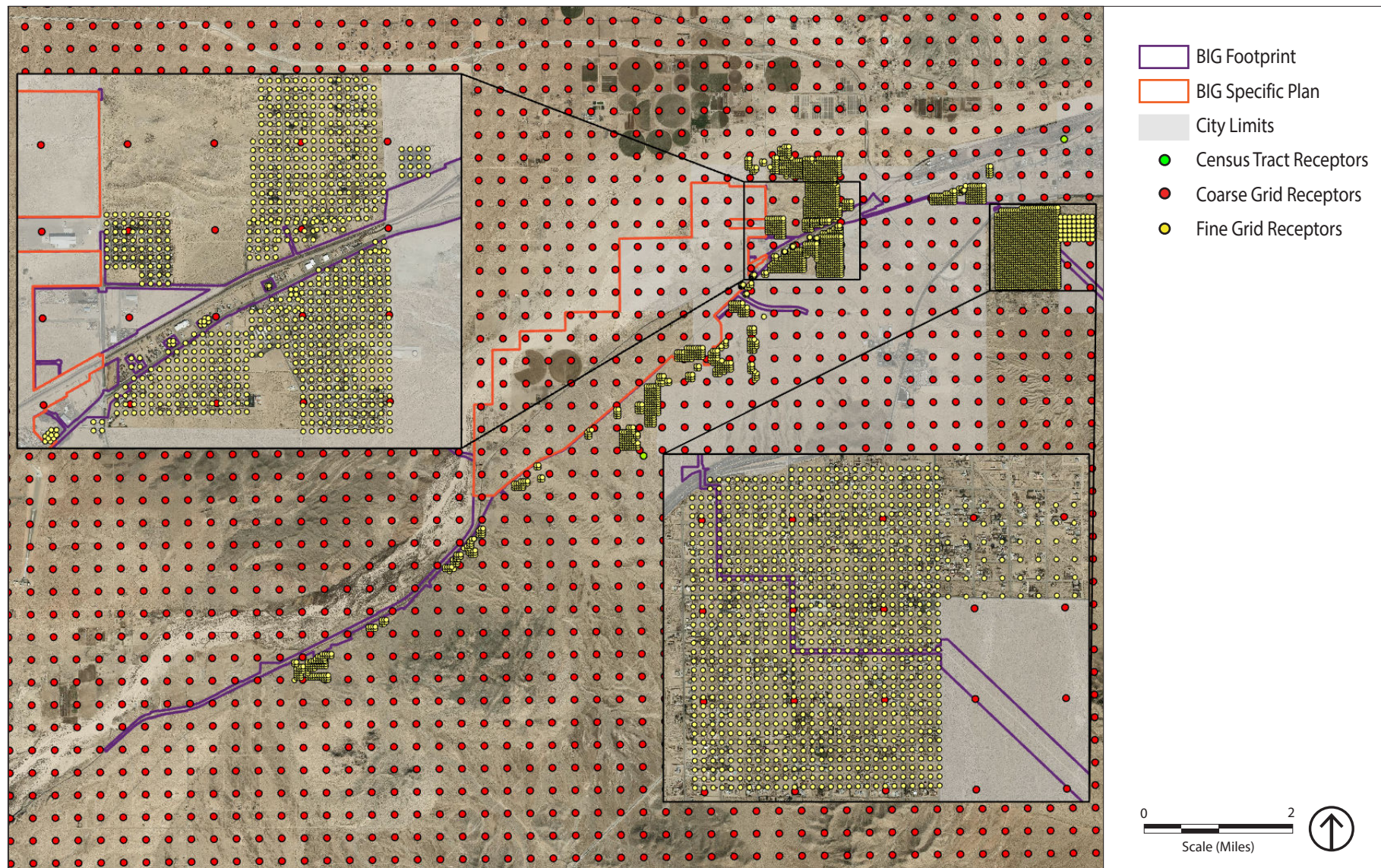
long-term exposure to a toxic contaminant without consideration of background concentrations or cancer risk potential in an area. The project-level incremental individual cancer risk threshold is 10 in one million. The 10 in one million threshold means that no more than ten individuals out of one million people at the same location with the same exposure may develop cancer due to long-term exposure of a given toxic contaminant. The individual cancer risk should not be interpreted as the number of people that will develop cancer from long-term exposure. Rather, it quantifies the likelihood that annual toxic contaminant concentrations may, or may not, result in an individual's chance of developing cancer if a million people were exposed continuously for a specified duration.

- Population cancer burden is the expected number of additional cancer cases in a population assuming a 70-year exposure duration to a project-related individual cancer risk equal to or greater than one in a million. This assumes that the population would be exposed to BIG contaminants continuously for 70 years beginning in the third trimester in utero. This is a conservative assumption because the exposure duration does not consider members of the population beginning their exposure as adults or members of the population being exposed to less than 70 years of BIG operations (i.e., households moving out of the area).
- The chronic noncancer HI (referred to hereafter simply as "chronic HI") is the ratio of annual average TAC concentrations to established Reference Exposure Levels (RELs). The chronic HI quantifies the likelihood that chronic noncancer health effects (e.g., cardiovascular disease, diabetes, and respiratory health illnesses, etc.). A chronic HI below 1.0 indicates that adverse noncancer health effects from long-term exposure are not expected.

As described above, the on-road vehicle emission factors were derived using EMFAC2021, stationary sources and cargo handling equipment emission factors were derived using OFFROAD, and locomotive emission factors were derived using U.S. EPA's Emissions Factors for Locomotives. **Appendix 5.3 BIG-1** (Table 22) summarizes BIG's TAC sources from construction and operations.

Receptors

The HRA modeled TAC concentrations and health effects at 6,093 locations (receptors) surrounding BIG (i.e., a minimum distance of 3.5 miles from the BIG footprint), including the locations of potential exposure for residents, off-site workers, and sensitive members of the public. Sensitive receptor locations include schools, child-care centers, elder care facilities, hospitals, and recreational areas; see **Table 5.3-14: Sensitive Receptors – BIG**. A receptor grid with 50 meter spacing was used over sensitive receptor locations, as depicted in **Figure 5.3-3: Centroid, Coarse, and Fine Receptor Grids – BIG – BIG**. It should be noted that MDAQMD does not provide guidance for dispersion modeling; therefore, the South Coast AQMD's receptor grid spacing was used. South Coast AQMD-recommended grid spacing ensures that impacts to surrounding areas can be accurately identified.



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: Sources are shown for illustration purposes and are not to scale.

Figure 5.3-3
Centroid, Coarse, and Fine Receptor Grids - BIG

Risk and Hazard Assessment

Cancer Risk. Based on OEHHA methodology, residential inhalation cancer risk from annual average concentrations is calculated by multiplying the daily inhalation dose, cancer potency factor, age sensitivity factor, frequency of time spent at home, and exposure duration divided by averaging time, yielding the excess cancer risk. These factors are discussed in more detail in **Appendix 5.3 BIG-1**. Table 22 in **Appendix 5.3 BIG-1** summarizes BIG's TAC sources from construction and operations. It also is important to note the OEHHA methodology includes conservative modeling assumptions: exposure duration is based on continual heavy-duty truck operation along nearby roadways while the majority of heavy-duty truck activity along roadways would occur during daytime hours, exposure of residential receptors begin during the third trimester in utero while that may only represent a fraction of the population in the surrounding area, and receptors would be located outdoors in the same location and continuously exposed to toxic contaminants for a duration of 30-years without consideration of time spent indoors. Pollutant emissions rates from contaminated soil were calculated by determining the daily amount of pollutant released, using the volume and density of contaminated soil, the dust release rate, and pollutant concentration, normalized by the total mass of disturbed soil. Exposure through inhalation (Dose-air) is a function of breathing rate, exposure frequency, and concentration of substance in the air. To estimate cancer risk, the dose was estimated utilizing OEHHA methodology.

Chronic Non-Cancer Hazard. Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance (see **Appendix 5.3 BIG-1**). The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated.

Health Risk Computation. This analysis examines project impacts resulting from BIG construction and operations from the commencement of construction in 2025 for a 30-year exposure duration for sensitive/residential receptors, 25-year exposure duration for worker receptors, and 9-year exposure duration for school-site student receptors, consistent with current OEHHA guidance. Because cancerous health risks result from long exposure periods, construction health risk and operational health risk are analyzed both separately and combined. The separate construction health risk analysis uses an exposure duration of the construction period (i.e., 2.8 years) with a third trimester in utero start age (see Table 24: Exposure Durations for Combined Risk Scenario in **Appendix 5.3 BIG-1** for exposure durations assumed in the analysis).

The HRA was used to evaluate potential health impacts to off-site sensitive populations from TACs generated by construction and operations. Methodologies applicable to BIG's size, as specified in the *Air Toxics Hot Spots Program Risk Assessment Guidelines*, were used to perform health risk calculations based on output from the AERMOD dispersion model. The HRA was combined for both construction and operations. The cancer risk estimates are based on a 95th percentile breathing rate 3rd trimester to 2 years and 80th percentile for other age groups, which OEHHA and CARB identify as providing health-protective estimates of exposure and risk for residential receptors.

For health effects resulting from long-term exposure, CARB considers DPM as representative of the total health risks associated with the combustion of diesel fuel. The three principal health effect endpoints evaluated are individual lifetime cancer risk, chronic non-cancer effects, and acute non-cancer effects.

Maximum predicted health risk values in the communities near BIG were compared to the maximum individual lifetime cancer risk threshold of 10 in one million.

Chronic and acute non-cancer effects are evaluated by calculating an HI. The HI is the sum of individual acute or chronic hazard quotients calculated for each substance. A hazard quotient is the estimated ground level concentration of a TAC divided by the REL. RELs are developed by OEHHA and represent the concentration of a TAC at or below the ground level concentration at which no adverse health effects are expected. A chronic non-cancer HI below 1.0, or an acute HI below 1.0 indicates that adverse non-cancer health effects from long-term or short-term exposure, respectively, are not expected. For evaluation of acute non-cancer health effects, the one-hour maximum average air concentration of each TAC over the period of assumed exposure is used. Conservatively, the acute exposure concentration was selected as the maximum average concentration from any single hourly period during BIG construction and operation. For evaluation of chronic non-cancer health effects, this analysis used a similarly conservative approach in that the exposure level over the entire exposure duration for each exposure scenario is assumed to be the maximum annual average concentration of each TAC for any single year over the period of exposure.

Population Cancer Burden. Population cancer burden is defined by OEHHA as an estimate of the number of cancer cases expected from a 70-year exposure to emissions. Whereas individual cancer risk represents the probability of a single exposed person to develop cancer, population cancer burden estimates the number of individuals that would be expected to develop cancer by multiplying the cancer risk (calculated using the conservative assumptions discussed above) by the exposed population. OEHHA notes that an estimate of the number of people exposed at various cancer risk levels can provide perspective on the magnitude of the potential public health threat posed by a facility. This approach provides a much easier way for the general public to interpret results when compared to cancer burden estimates.

The exposed population is defined as the number of persons within a facility's zone of impact, which is typically the area exposed to an incremental cancer risk of one in a million from BIG. Consistent with this definition, cancer burden was calculated by first identifying all population census tracts⁸ within BIG's zone of impact, multiplying the estimated incremental BIG cancer risk impact in the census tract by the population of the census tract and then summing all of products of population times estimated cancer risk in the zone of impact. Note that each census tract contributes to the cancer burden in proportion to its population and risk. For example, if a census tract has a relatively high estimated cancer risk, but no people living there, it will not contribute to the estimation of the cancer burden. The cancer burden was calculated assuming a 70-year exposure duration along with the appropriate exposure frequency, daily breathing rates, age sensitivity factors, and time at home factors appropriate to each age group. A cancer burden greater than 0.5 is considered a significant cancer impact.⁹

⁸ A census tract is a geographic region defined for the purpose of taking a census. These regions typically coincide with the limits of cities, towns, or other administrative areas. Each tract has a unique numeric code. The census tract centroid is the geographic center of the tract based on a weighted distribution of the population within the tract using the census blocks that comprise the tract. A census block is the smallest geographic unit used to tabulate population and each tract can be comprised of several blocks.

⁹ The cancer burden threshold in MDAQMD Rule 1520 (Control of Toxic Air Contaminants from Existing Sources) is used for this analysis as MDAQMD does not have a cancer burden CEQA threshold.

Odors

BIG's construction and operational odors are qualitatively evaluated based on the anticipated activity and distance to sensitive receptors. The MDAQMD regulates odors through Rule 402 (Nuisance). Rule 402 prohibits the discharge from any source of air contaminants or other material in such quantities which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. Typical land uses that generate odors include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding.

Valley Fever

Coccidioidomycosis, more commonly known as Valley Fever, is primarily a disease of the lungs caused by the spores of the *Coccidioides immitis* fungus. The spores can occur naturally in some soils and there is the potential that spores could be stirred up during excavation, grading, and earth-moving activities and inhaled into the lungs.

Valley Fever is endemic to the southwestern U.S., so fugitive dust emissions from a project could cause exposure to the spores. Reduction of the potential for exposure to dust and the spores can be accomplished by providing dust control, training, job hazard assessments, and personal protective respiratory equipment when appropriate. The County is not considered a highly endemic region for Valley Fever. A report prepared by the California Department of Public Health identified that only 263 of the 9,280 suspect, probable, and confirmed annual cases of coccidioidomycosis recorded for California in 2023 (through December 2023) occurred in the County.

The purpose of the Valley Fever analysis conducted for a project is to provide information regarding potential public health hazards related to exposure to *Coccidioides* spores and contracting Valley Fever. The analysis qualitatively evaluates how the project could complicate a possible environmental condition of the site that has the potential to affect people's health. State CEQA Guidelines Appendix G does not present significance thresholds for potential to contract reportable diseases such as Valley Fever, and neither has the MDAQMD developed such significance guidelines. The analysis presents relevant background information regarding Valley Fever, potential for BIG to result in the exposure of on-site workers, nearby residents, and visitors to potential health hazards, and identifies measures to reduce potential exposure.

Asbestos

Asbestos minerals occur in rock and soil as the result of natural geological processes, often in veins near earthquake faults in the coastal ranges and the foothills of the Sierra Nevada Mountains and other areas of California. NOA takes the form of long, thin, flexible, separable fibers. Natural weathering or human disturbance can break NOA down to microscopic fibers that are easily suspended in air. When inhaled, these thin fibers irritate tissues and resist the body's natural defenses. In addition, asbestos-containing materials may have been used in older buildings within BIG that would be demolished.

Asbestos is a known human carcinogen. It causes cancers of the lung and the lining of internal organs, as well as asbestosis and pleural disease that inhibit lung function. The U.S. EPA is working to address concerns about the potential impacts of NOA in several California areas. The California Geological Survey identifies ultramafic rocks in California to be the source of NOA. The California Geological Survey published *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos*. This study was used to determine if NOA would be within the BIG footprint.

Consistency with Air Quality Plans

A project would result in significant impacts if it conflicts with or delays implementation of any applicable attainment or maintenance plan. A project is conforming if it complies with all applicable MDAQMD rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). Consistency with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. An example of a project that is not consistent would be one that increases the gross number of dwelling units, increases the number of trips, or increases the overall VMT in an affected area (relative to the applicable land use plan).

Cumulative Effects

The MDAB is the study area for cumulative air quality effects. This represents the geographic limit for cumulative air quality since air emissions have a regional effect. Regionally, past, present, and foreseeable projects would contribute to increases in vehicle travel from long-term growth thereby worsening air quality. Cumulative growth in population, vehicle trips, and industrial activity could inhibit efforts to improve regional air quality and attain the NAAQS and CAAQS.

The MDAQMD's thresholds of significance analyze both direct and cumulative impacts. The *MDAQMD CEQA and Federal Conformity Guidelines* (CEQA Guidelines) state that cumulative impacts are similar to a project's direct and indirect impacts (MDAQMD, 2020). A given project has a cumulative impact with all other related projects, from the standpoint of each type of impact (cumulative construction emissions, area sources, solvent use, transportation emissions, congestion, etc.). The MDAQMD does not have separate thresholds for cumulative impacts and uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The MDAQMD considers projects that exceed the project-specific significance thresholds to be cumulatively considerable; thus, project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed project-specific thresholds are generally not considered to be cumulatively considerable.

5.3.4 ENVIRONMENTAL SETTING

Proposed General Plan

Topography

The MDAB includes the desert portion of Los Angeles and San Bernardino counties, the eastern desert portion of Kern County, and the northeastern desert portion of Riverside County. The MDAQMD has jurisdiction over stationary sources of air pollution within the County's High Desert and Riverside County's Palo Verde Valley, which includes the BIG footprint.

The MDAB is bound in the northwest by the Tehachapi Mountains, in the southwest by the San Gabriel Mountains, and in the south by the San Bernardino Mountains. To the north, the MDAB is defined by the San Bernardino-Inyo County boundary, to the northeast the California-Nevada state line, and to the east by the Colorado River. The San Gabriel and San Bernardino Mountains are high and rugged, with the highest peaks being 10,066 feet above sea level (Mt. San Antonio) and 11,503 feet (Mt. San Gorgonio), respectively. The MDAB generally lies at 3,000 to 6,000 feet elevation.

The MDAB is situated in a transitional zone between the Great Basin Desert to the north and the Sonoran Desert to the south (mainly between 34 and 38°N latitudes). The area is primarily a rain-shadow desert, meaning it experiences little rainfall because it is sheltered from prevailing rain-bearing winds (i.e., off the Pacific Ocean) by a range of mountains.

Climate and Meteorology

Air basins typically also share similar meteorological conditions. The MDAB's climatic conditions are very arid with moderate winters, with mean maximum temperatures in the 60s and lows in the 30s, and hot summers with mean maximum temperatures in July and August exceeding 100°F. The average rainfall in the BIG footprint is 4.1 inches annually.

The MDAB's weather patterns are generally influenced by moderately intense, anticyclonic circulation (associated with high pressure systems). In summer, a large subtropical high-pressure system off the coast of California keeps the MDAB sunny and dry; however, the presence of a thermal low-pressure area above the MDAB causes atmospheric transport from the Los Angeles Basin. During the winter months, the strength of the Pacific high-pressure area decreases, and 20 to 30 frontal systems may pass through the area annually. Some of these frontal systems are sufficiently strong enough to produce rain in the area. The most substantial large-scale phenomena affecting the MDAB's air quality are the transport winds from the south and the west. These winds are responsible for bringing O₃ and other pollutants through the mountain passes from the Los Angeles Basin and the San Joaquin Valley. Photochemical O₃ modeling conducted by the South Coast AQMD and CARB indicates that the MDAB would be in attainment of both standards without the influence of this transported air pollution from upwind regions. Additionally, the three stations closest to the MDAB, the source of the majority of transported O₃ and O₃ precursors, have the highest historical O₃ concentrations: Phelan, Hesperia and the Joshua Tree National Monument. The more distant or isolated stations (the City) have lower concentrations.

Valley Fever

The County is not considered a highly endemic region for Valley Fever as the latest report from the California Department of Public Health identified that 2.8 percent of the suspect, probable, and confirmed annual cases of coccidioidomycosis recorded for California in 2023 (through December 2023) occurred in the County (CDPH, 2023).

Toxic Air Contaminants

TACs are airborne substances that can cause short-term (acute) or long-term (i.e., chronic, carcinogenic, or cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes more than 200 compounds, including particulate emissions from diesel-fueled engines.

CARB has identified other air pollutants as TACs, which are pollutants that may cause serious, long-term effects. People exposed to TACs at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects. These health effects can include damage to the immune system as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory, and other health problems. By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs. Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. There are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most relevant to the Project being PM from diesel-fueled engines.

In 1998, CARB identified DPM as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particles are 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lungs. Long-term (chronic) inhalation of DPM is likely a lung cancer risk. Short-term (i.e., acute) exposure can cause irritation and inflammatory systems and may exacerbate existing allergies and asthma systems.

AAQS have been adopted at the State and federal levels for criteria air pollutants. In addition, both the State and federal government regulate the release of TACs. The Project is in the MDAB and is subject to the rules and regulations imposed by MDAQMD, the CAAQS adopted by CARB, and NAAQS adopted by the U.S. EPA. federal, State, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the Project are summarized in this section.

Contaminated soil is an environmental and public health concern, particularly at sites undergoing cleanup or redevelopment. When soil contains hazardous substances (e.g., Pb, arsenic, petroleum hydrocarbons, or VOCs), it may pose human health risks through direct contact, ingestion of dust or vapors, or through leaching into groundwater.

Air Pollutants of Concern

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and State laws. These regulated air pollutants are known as “criteria air pollutants” and are categorized into primary and secondary pollutants.

Primary air pollutants are emitted directly from sources. CO, ROG, NO_x, SO₂, PM₁₀, PM_{2.5}, and Pb are primary air pollutants. ROG and NO_x are criteria pollutant precursors and form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. For example, the criteria pollutant O₃ is formed by a chemical reaction between ROG and NO_x in the presence of sunlight. O₃ and NO₂ are the principal secondary pollutants. Sources and health effects commonly associated with criteria pollutants are summarized in **Table 5.3-10: Air Contaminants and Associated Public Health Concerns**.

Table 5.3-10: Air Contaminants and Associated Public Health Concerns		
Pollutant	Major Man-Made Sources	Human Health Effects
Particulate Matter (PM ₁₀ and PM _{2.5})	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; asthma; chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility.
Ozone (O ₃)	Formed by a chemical reaction between ROG or VOC ¹ and NO _x in the presence of sunlight. 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; aggravates lung and heart problems. Damages plants; reduces crop yield.
Sulfur Dioxide (SO ₂)	A colorless gas formed when fuel containing sulfur is burned and when gasoline is extracted from oil. 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, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
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 heart and lung problems. Can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms. Precursor to O ₃ . Contributes to global warming and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Lead (Pb)	Pb is a metal found naturally in the environment as well as in manufactured products. The major sources of Pb	Exposure to Pb occurs mainly through inhalation of air and ingestion of Pb in food, water, soil, or dust. It accumulates in the blood, bones, and

Table 5.3-10: Air Contaminants and Associated Public Health Concerns

Pollutant	Major Man-Made Sources	Human Health Effects
	emissions have historically been motor vehicles (such as cars and heavy-duty trucks) and industrial sources. Due to the phase out of leaded gasoline, metals processing is the major source of Pb emissions to the air today. The highest levels of Pb in air are generally found near Pb smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.	soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to Pb may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, Pb exposure is associated with damage to the nervous systems of fetuses and young children, resulting in learning deficits and lowered IQ.
Note: Volatile Organic Compounds (VOCs or Reactive Organic Gases [ROG]) are hydrocarbons/organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases including ROG and VOCs. Both ROG and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation). Sources: U.S. EPA. ND. Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.		

Area Designations

The AQMP provides the framework for air quality basins to achieve attainment of the State and federal AAQS through the SIP. Areas are classified as attainment or nonattainment areas for particular pollutants, depending on whether they meet AAQS. Severity classifications for O₃ nonattainment range in magnitude from marginal, moderate, and serious to severe and extreme.

- **Unclassified:** a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
- **Attainment:** a pollutant is in attainment if the CAAQS for that pollutant was not violated at any site in the area during a three-year period.
- **Nonattainment:** a pollutant is in nonattainment if there was at least one violation of a state AAQS for that pollutant in the area.
- **Nonattainment/Transitional:** a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

The attainment status for the MDAB and SCAB is shown in **Table 5.3-11: Attainment Status of Criteria Pollutants in the MDAB and SCAB**.

Table 5.3-11: Attainment Status of Criteria Pollutants in the MDAB and SCAB		
Pollutant	State	Federal
MDAB Attainment Status		
O ₃ – 1-hour	Nonattainment	No Federal Standard
O ₃ – 8-hour	Nonattainment	Nonattainment ¹
PM ₁₀	Nonattainment	Nonattainment ²
PM _{2.5}	Nonattainment ¹	Nonattainment ¹
CO	Unclassified/Attainment	Unclassified/Attainment
NO ₂	Attainment	Unclassified/Attainment
SO ₂	Attainment	Unclassified/Attainment
Pb	Attainment	Unclassified/Attainment
SCAB Attainment Status		
O ₃ – 1-hour	Nonattainment	No Federal Standard
O ₃ – 8-hour	Nonattainment	Nonattainment (Extreme)
PM ₁₀	Non-Attainment	Attainment (Maintenance)
PM _{2.5} – 24-hour	–	Non-Attainment (Serious)
PM _{2.5} – Annual	Non-Attainment	Non-Attainment (Moderate)
CO	Attainment	Attainment
NO ₂	Attainment	Attainment
SO ₂	Attainment	Unclassified/Attainment
Pb	–	Unclassifiable/Attainment
¹ Southwest corner of desert portion of San Bernardino County only		
² San Bernardino County portion only		
Source: CARB. 2025.		

Existing Ambient Air Quality

CARB monitors ambient air quality at approximately 250 air monitoring stations across the State. These stations usually measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The Barstow Monitoring Station is the closest to the BIG footprint. This station monitors O₃, CO, NO₂, and PM₁₀, but not PM_{2.5}. PM_{2.5} data is collected at the Victorville Monitoring Station. Local air quality data from 2022 to 2024 are provided in **Table 5.3-12: Ambient Air Quality Data** which lists the monitored maximum concentrations and number of exceedances of State or federal air quality standards for each year.

Table 5.3-12: Ambient Air Quality Data			
Criteria Pollutant	2022	2023	2024
Ozone (O₃)¹			
1-hour Maximum Concentration (ppm)	0.095	0.085	0.092
8-hour Maximum Concentration (ppm)	0.084	0.078	0.082
<i>Number of Days Standard Exceeded</i>			
CAAQS 1-hour (>0.09 ppm)	1	0	0
NAAQS 8-hour (>0.070 ppm)	13	16	24
Nitrogen Dioxide (NO₂)¹			
1-hour Maximum Concentration (ppm)	0.060	0.060	0.062
<i>Number of Days Standard Exceeded</i>			
NAAQS 1-hour (>0.100 ppm)	0	0	0
CAAQS 1-hour (>0.18 ppm)	0	0	0
Particulate Matter Less Than 10 Microns (Pm₁₀)¹			
National 24-hour Maximum Concentration	225.1	318.7	102.8
State 24-hour Maximum Concentration	*	*	*
State Annual Average Concentration (CAAQS=20 µg/m ³)	*	*	*
<i>Number of Days Standard Exceeded</i>			
NAAQS 24-hour (>150 µg/m ³)	6	3.1	0
CAAQS 24-hour (>50 µg/m ³)	*	*	*
Particulate Matter Less Than 2.5 Microns (PM_{2.5})¹			
National 24-hour Maximum Concentration	24.6	25.6	40.7
State 24-hour Maximum Concentration	24.6	25.6	40.7
<i>Number of Days Standard Exceeded</i>			
NAAQS 24-hour (>35 µg/m ³)	0	0	1
* Insufficient (or no) data available to determine the value. ¹ NAAQS = National Ambient Air Quality Standards; CAAQS = California Ambient Air Quality Standards; ppm = parts per million. ² µg/m³ = micrograms per cubic meter; – = not measured, * = insufficient data available ³ Measurements taken at the Barstow Monitoring Station at 301 E. Mountain View Street, Barstow, California 92311 (CARB# 36155) ⁴ Measurements taken at the Victorville-Park Avenue Monitoring Station at 14306 Park Avenue, Victorville, California 92392 (CARB# 92392), which is the closet monitoring station that measures PM_{2.5}.			
Source: All pollutant measurements are from the CARB Aerometric Data Analysis and Management system database except for CO, which were retrieved from the CARB Air Quality and Meteorological Information System.			

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Schools are also considered sensitive receptors, as children are present for extended durations and engage in regular outdoor activities. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory

functions, which can be impaired by air pollution. Noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as most of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

Existing Emissions

The existing on the ground land uses within the proposed General Plan area consist of a wide range of residential uses, industrial uses, commercial uses, public space, and open space (see “Existing (2023)” in **Table 3-5: Proposed General Plan – 2048 Projections**). These uses currently generate criteria air pollutant emissions from natural gas use for energy, heating, and cooking; vehicle trips associated with each land use; and area sources such as landscaping equipment and consumer cleaning products.¹⁰ **Table 5.3-13: Existing Proposed General Plan Area Criteria Air Pollutant Emissions Inventory For Baseline Year 2023**, shows the emissions associated with the existing land uses in the proposed General Plan area under baseline year 2023 conditions.

Table 5.3-13: Existing Proposed General Plan Area Criteria Air Pollutant Emissions Inventory For Baseline Year 2023						
Source	Criteria Air Pollutant Emissions					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Maximum Daily (pounds per day)						
On-Road Transportation ¹	56	880	2,821	14	100	41
Energy ²	10	173	104	1	14	14
Area Source – Offroad Equipment ³	141	158	3,030	<1	8	7
Area Source – Consumer Products ⁴	706	n/a	n/a	n/a	n/a	n/a
Maximum Daily Emissions	913	1,210	5,955	15	121	61
Annual (tons per year)						
On-Road Transportation	10	153	489	2	17	1
Energy	2	32	19	<1	2	2
Area Source – Offroad Equipment	26	29	553	<1	1	1
Area Source – Consumer Products	129	n/a	n/a	n/a	n/a	n/a
Annual Emissions Total	166	213	1,061	3	21	5
Notes: Emissions from permitted sources are excluded from the existing emissions inventory because the reductions associated with the Industrial sector are regulated separately by MDAQMD or are otherwise not under the jurisdiction of the City. The General Plan community inventory does not include the existing emissions associated with the existing BNSF yard as no changes are proposed.						
¹ Based on calendar year 2023 emissions data from EMFAC2021, Version 1.0.2, and daily VMT provided by Fehr & Peers. Transportation sector includes the full trip length for internal-internal trips and 50 percent trip length for external-internal/internal-external trips.						
² Based on average natural gas use of the five-year (2019 to 2023) usage data provided by Southwest Gas and the CalEEMod, version 2022.1, default natural gas emissions factors.						
³ Based on calendar year 2023 offroad equipment emissions data from OFFROAD2021, Version 1.0.2.						
⁴ Based on the CalEEMod, version 2022.1, default emission rates, which are applied to residential and non-residential land uses in the proposed General Plan area.						
Source: Appendix 5.3 GP-1: Air Quality and Greenhouse Gas Emissions Modeling and Appendix 5.3 BIG-1: Air Quality Technical Report .						

¹⁰ Emissions from permitted sources are excluded from the existing emissions inventory because the reductions associated with the Industrial sector are regulated separately by MDAQMD or are otherwise not under the jurisdiction of the City.

Barstow International Gateway

Toxic Air Contaminants

TACs are airborne substances that can cause short-term (acute) or long-term (i.e., chronic, carcinogenic, or cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes more than 200 compounds, including particulate emissions from diesel-fueled engines.

CARB identified DPM as a TAC. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of particles and gases produced when an engine burns diesel fuel. DPM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. DPM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of DPM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine. Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, light-headedness, and nausea. DPM poses the greatest health risk among the TACs. Almost all diesel exhaust is PM₁₀. Due to their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung. DPM is the primary TAC of concern for the health risk impact analysis contained herein because it is the most potent TAC emitted from diesel exhaust and includes hundreds of chemicals. Therefore, although DPM is a subset of PM₁₀ exhaust, this analysis conservatively assumes all PM₁₀ exhaust emissions are DPM.¹¹

Contaminated soil is an environmental and public health concern, particularly at sites undergoing cleanup or redevelopment. When soil contains hazardous substances (e.g., Pb, arsenic, petroleum hydrocarbons, or VOCs), it may pose human health risks through direct contact, ingestion of dust or vapors, or through leaching into groundwater. The primary pollutants of concern with regard to cancer potency factor or chronic/acute hazards were derived from the results of the Phase II Environmental Site Assessments sites within the BIG footprint and OEHHHA's 2009 *Technical Support Document for Cancer Potency Factors*.¹²

¹¹ More than 90 percent of DPM is less than 1 um in diameter and is a subset of PM_{2.5} and PM_{2.5} comprises a portion of PM₁₀. Thus, assuming PM₁₀ as the surrogate for DPM constitutes a conservative analysis. Source: CARB. ND. *Inhalable Particulate Matter and Health (PM_{2.5} and PM₁₀)*. <https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health#:~:text=Fine%20particulate%20matter%20is%20defined,comprises%20a%20portion%20of%20PM10>. CAPCOA and CARB. 2024 (July). *Non-Vehicular Diesel Engine Risk Assessment Guidance*. <https://ww2.arb.ca.gov/sites/default/files/classic/ab2588/2024%20DICE%20Screening%20Risk%20Guidelines.pdf>.

¹² Review of the federal, State, and local records, including a proprietary records summary provided by Environmental Data Resources, Inc. (EDR), a third-party provider of environmental and land use records, showed more than 100 listed properties within the respective American Society for Testing and Materials (ASTM) standard search distances for each database which varied between 0.25 miles and 1.0 miles. Most of these listed properties were reviewed and removed as they did not have the potential to create a significant hazard to the public or the environment based on the type of listing, information provided for the listing, gradient, and/or the distance between the listed property and the BIG footprint. However, the PG&E Hinkley Chromium Cleanup (PG&E Hinkley) site, a well-known and high-profile site involving contamination of groundwater by hexavalent chromium is located approximately between two to seven miles north, northeast, or northwest of the site (i.e., north of the Mojave River). Generally, the hexavalent chromium contamination from the PG&E Hinkley site has impacted groundwater in the area and PG&E provides drinking water to residents in the area surrounding the PG&E Hinkley site. There are ongoing remediation and groundwater monitoring programs, and an extensive amount of information is publicly available online. Recent plume maps and information can be reviewed here: <https://hinkleygroundwater.com/site-information/groundwater-monitoring-and-plume-maps/>. Review of the latest plume maps indicates that the groundwater flow direction in the PG&E Hinkley site is northerly, i.e., away from BIG. As a result, it does not appear that the PG&E Hinkley site has or would impact BIG.

These pollutants were present at detectable levels at one or more of the Phase II Environmental Site Assessments sites and have a Cancer Potency Factor assigned to them by Appendix A of OEHHA's 2009 *Technical Support Document for Cancer Potency Factors*. These pollutants additionally have a REL assigned to them by Appendix A, B, and C of OEHHA's 2015 *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments*. The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated with acute, 8-hour, or chronic exposure to the pollutant. Pollutants of concern include the following:

- Arsenic
- Beryllium
- Cadmium
- Cobalt
- Pb
- Nickel
- Benzene
- Chloroform
- Naphthalene
- Ethylbenzene
- Methylene Chloride
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Bis(2-ethylexyl)phthalate

Existing Pollution Burden

According to CalEnviroScreen, the BIG footprint and the surrounding residences are in Census Tract 6071011800, which is within the 62nd percentile. CalEnviroScreen uses environmental, health, and socioeconomic information to produce percentile scores for every census tract in the State. Each census tract receives scores for as many as 21 indicators (such as air quality emissions, children's Pb risk from housing, drinking water contaminants, pesticide use, toxic releases from facilities, traffic impacts, among others). For each indicator, the scores are put in order from highest to lowest. An area with a high score is one that experiences a higher pollution burden than areas with low scores. As noted above, CalEnviroScreen scores are not an expression of health risk, and do not provide quantitative information on increases in cumulative impacts for specific sites or projects. Further, as a comparative screening tool, the results do not provide a basis for determining when differences between scores are significant in relation to public health or the environment.

Senate Bill 535

Based on OEHHA mapping, the BIG footprint is adjacent to SB 535 designated disadvantaged communities in Census Tracts 6071009400, 6071009500, 6071011700, and 6071011900. As noted above, SB 535 prioritizes AB 32 cap-and-trade program funds to projects that provide a benefit to disadvantaged communities as identified by the OEHHA mapping. SB 535 does not include project specific requirements or prohibit developments in proximity to a designated community.

Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive receptors that are in proximity to localized sources of toxics are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The BIG

footprint is mainly surrounded land zoned for Rural Living, Resource/Land Management, Public Facility, and Right-of-Way. The sensitive land uses that have been analyzed herein are nearest to BIG identified in **Table 5.3-14: Sensitive Receptors – BIG** and shown in **Figure 5.3-4: Sensitive Receptor Locations**. **Table 5.3-14** is a list of sensitive receptors that have been analyzed and not a list of sensitive receptors that necessarily would be impacted.

5.3.4.2 BIG Footprint Baseline Emissions

The approximately 5,000-acre BIG footprint is in the western part of the City and southwestern part of the County; see **Figure 3-1: Regional Vicinity Map** and **Figure 3-2: Local Vicinity Map in Section 3.0: Project Description**. The BIG footprint is generally bordered by the Mojave River on the north, Historic Main Street (also referred to as National Trails Highway or Route 66) (hereinafter Main Street) on the south, Lenwood Road on the east, and Hinkley Road on the west. As a result of property acquisitions associated with BIG the majority of former residents within the BIG footprint have been relocated and many of the residences have been demolished. Additionally, approximately 93,724 square feet of non-residential land uses (i.e., commercial and industrial) are within the BIG footprint and would be demolished. To provide a conservative impact analysis, the emissions baseline for BIG is considered to be zero.

It is noted that train activity along the existing mainlines in the vicinity of BIG and along the corridor is anticipated to increase approximately 1.0-2.5 percent annually without BIG (EnSafe, 2025), and thus, future baseline train emissions would also increase. Specifically, future daily train volumes along the rail corridor would increase by the following percentages when compared to existing conditions:

- Year 2028 No BIG: 7.43 percent increase in daily train trips (which equates to an approximate 2.62 percent increase annually);
- Interim Year 2033 No BIG: 15.75 percent increase in daily train trips (which equates to an approximate 1.43 percent increase annually); and
- Horizon Year 2048 No BIG: 47.27 percent increase in daily train trips (which equates to an approximate 1.89 percent increase annually).

According to State CEQA Guidelines § 15125, where existing conditions change or fluctuate over time, and where it is necessary to provide the most accurate picture of a project's impacts, a lead agency may define existing conditions by referencing historic conditions, conditions expected when the project becomes operational, or both, supported with substantial evidence. Therefore, operational train emissions modeling was completed for future years without BIG (2028, 2033, and 2048) to establish future baseline train emissions and analyze incremental emissions increases directly attributable to BIG. Based on that data, use of existing conditions alone would be misleading and without informative value to decision-makers and the public. (See State CEQA Guideline § 15125(a)(2)). See State CEQA Guideline § 15125(a)(2) [“[a] lead agency may use projected future conditions (beyond the date of project operations) as the sole baseline for analysis only if it demonstrates with substantial evidence that use of existing conditions would be either misleading or without informative value to decision-makers and the public. Use of projected future conditions as the only baseline must be supported by reliable projections based on substantial evidence in the record”; see also *Neighbors for Smart Rail v. Exposition Metro Line Constr. Auth.* (2013) 57

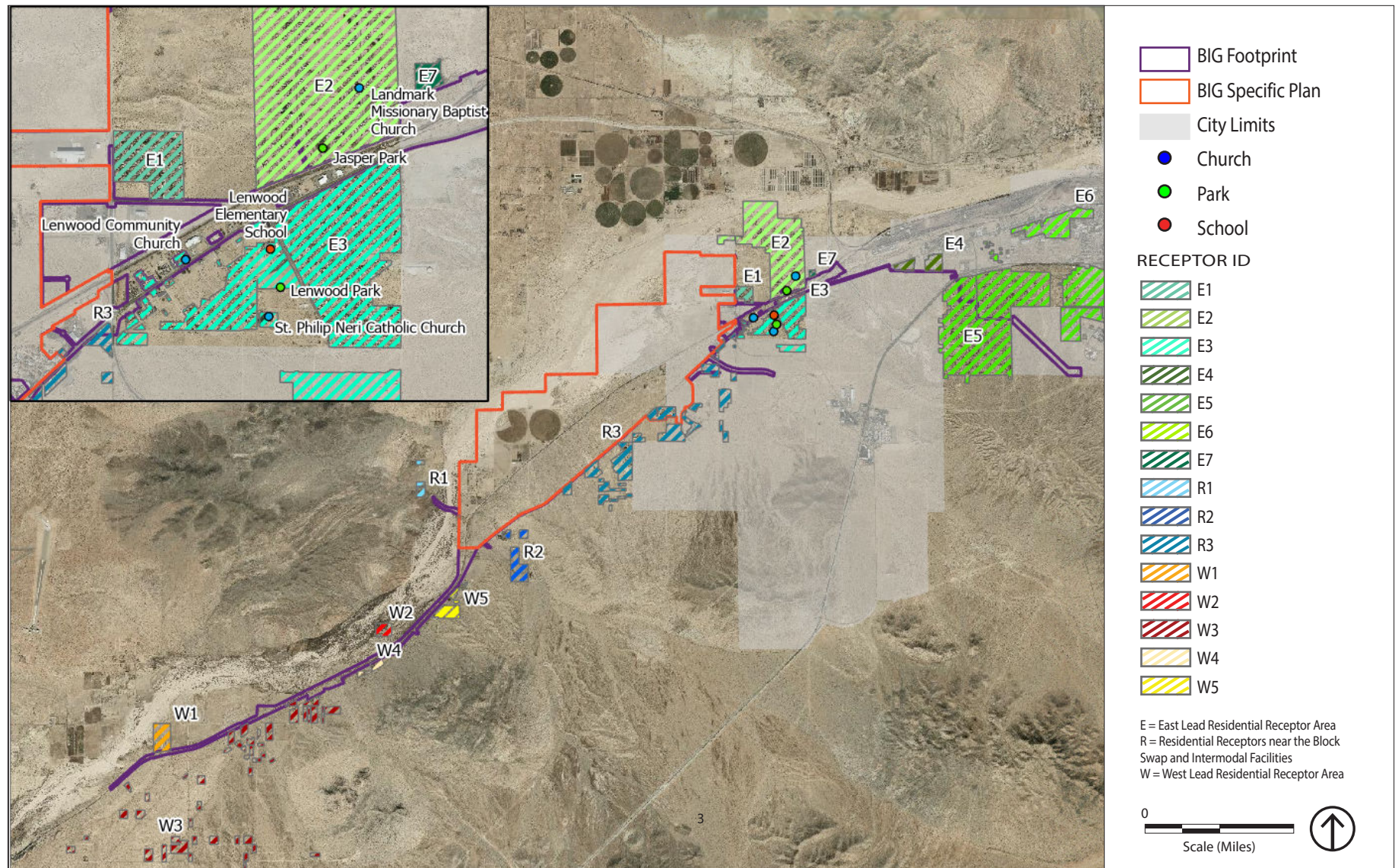
Cal.4th 439, 453; *POET, LLC v. State Air Resources Bd.*) (2017) 12 Cal.App.5th 52, 80; *San Franciscans for Livable Neighborhoods v. City & County of San Francisco* (2018) 26 Cal.App.5th 596, 616-617, 620 [upholding future baseline as supported by substantial evidence: “A determination that an existing conditions analysis would be misleading or without informational value is primarily factual and must be upheld if supported by substantial evidence.”].)

Table 5.3-14: Sensitive Receptors – BIG

Receptor ID	Receptor Description	Location	Distance and Direction from BIG¹
Residential Receptors – West Lead Receptor Area			
W1	Single-Family Residences	Along Indian Trail, approximately 2,500 feet north of National Trails Highway	1,000 feet south
W2	Single-family Residences	Along Indian Trail, northeast of the Indian Trail and Lords Road Intersection	700 feet north
W3	Single-family Residences	Along Main Street, approximately 500 feet west of Hodge Road	240 feet south
W4	Single-family Residences	Along Main Street, approximately 400 feet east of Hodge Road	600 feet south
W5	Single-family Residences	Along Hodge Road, east of the Main Street and Hodge Road intersection	950 feet south
W6	Single-family Residences	Along Main Street, approximately 1,500 feet northeast of Hodge Road	350 feet south
W7	Single-family Residences	Along Main Street, approximately 5,680 feet southwest of Buckboard Road	360 feet southeast
W8	Single-family Residences	Along Main Street, approximately 4,400 feet southwest of Buckboard Road	340 feet southeast
Residential Receptors – Block Swap/Intermodal Receptor Area			
R1	Single-family Residences	Along Main Street, approximately 1,500 feet north of Buckboard Road	720 feet southeast
R2	Single-family Residences	Along Main Street, approximately 3,000 feet northeast of Buckboard Road	530 feet southeast
R3	Single-family Residences	Along Main Street, approximately 2,400 feet west of Prairie Avenue	500 feet southeast
R4	Single-family Residences	Along Main Street, approximately 2,175 feet west of Prairie Avenue	330 feet southeast
R5	Single-Family Residences	At the intersection of Prairie Avenue and Spinet Street	2,850 feet southeast
R6	Single-family Residences	Along Gazana Street, Approximately 245 feet west of Sylvan Avenue	570 feet southeast
R7	Single-family Residences	Along Amarylis Avenue, approximately 480 feet south of Main Street	570 feet southeast
Residential Receptors – East Lead Receptor Area			
E1	Single-family Residences	Along Sweeten Lane, approximately 800 feet east of National Trails Highway	1,600 feet southeast
E2	Single-family Residences	Along Main St, approximately west of Sun Valley Drive	760 feet southeast
E3	Single-family Residences	Along Main Street, approximately 1,700 Sun Valley Drive	610 feet southeast

Table 5.3-14: Sensitive Receptors – BIG

Receptor ID	Receptor Description	Location	Distance and Direction from BIG¹
E4	Single-family Residences	Along Main St, approximately 910 feet west of Sun Valley Drive	580 feet southeast
E5	Single-family Residences	At the intersection of Main Street and Holland Street	640 feet southeast
E6	Single-family Residences	Intersection of Main Street and Holland Street	380 feet south
E7	Single-family Residences	Intersection of Jade Road and Walnut Street	4,200 feet north
E8	Single-family Residences	Along Jasper Road, approximately 380 feet west of Birch Road	300 feet north
E9	Single-family Residences	Along Main Street, approximately 200 feet north of Anderson Avenue	440 feet south
E10	Single-family Residences	Southeast of Main Street and Avenue H	9,000 feet southeast
Along 33 kV Line			
T1	Single-family Residences	Surrey Court, North of Surrey Road and Surrey Court	100 feet south
T2	Single-family Residences	Along Rimrock Road, approximately 90 feet east of L Street	120 feet east
T3	Single-family Residences	Along J Street, approximately 80 feet south of Bonanza Road	100 feet south
Schools			
1	Lenwood Elementary School	Along Ash Road, approximately 500 feet south of Main Street	520 feet southeast
Places of Worship			
2	Landmark Missionary Baptist Church	Along Cedar Road, approximately 530 feet north of Jasper Road	1,080 northeast
3	St. Philip Neri Catholic Church	Along 3 rd Street, approximately 400 feet east of Paris Avenue	1,670 feet southeast
4	Lenwood Community Church	Along Main Street, approximately 95 feet west of Woods Avenue	230 feet south
5	Veterans of Foreign Wars	Intersection of Main Street and Frank Street	140 feet south
6	Dollar General	Along Main St, west of Ash Road	125 feet south
Parks			
7	Jasper Park	Along Jasper Road, approximately 290 feet east of Birch Road	Adjacent to the northeast
8	Lenwood Park	Along Ash Road, approximately 960 feet south of Main Street	960 feet to the southeast
Note: Distances are measured from the closest sensitive receptor to the closest point of BIG. Inclusion in this table does not necessarily denote that significant impacts would occur at these locations.			
W = West Lead Residential Receptor Area; R = Residential Receptors near the Block Swap and Intermodal Facilities; E = East Lead Residential Receptor Area; T = Along 33 kV Transmission Line			
Source: Google Inc. 2024. Google Earth Pro.			



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Figure 5.3-4
Sensitive Receptor Locations - BIG

5.3.5 IMPACT THRESHOLDS AND SIGNIFICANCE CRITERIA

State CEQA Guidelines **Appendix G: Environmental Checklist Form** includes questions concerning air quality. The issues presented in the Environmental Checklist Form have been used to formulate thresholds of significance in this section. Accordingly, the Project would have a significant effect concerning air quality if it would:

- **Impact 5.3-1:** Conflict with or obstruct implementation of the applicable air quality plan.
- **Impact 5.3-2:** Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable State or federal ambient air quality standard.
- **Impact 5.3-3:** Expose sensitive receptors to substantial pollutant concentrations.
- **Impact 5.3-4:** Result in other emissions (such as odors) adversely affecting a substantial number of people pursuant to MDAQMD Rule 402.

Mojave Desert Air Quality Management District Thresholds

The U.S. EPA and CARB have designated portions of the MDAQMD non-attainment for a variety of pollutants. Please refer to **Table 5.3-2** for these classifications. Under the FCAA, the MDAQMD has adopted federal attainment plans for O₃ and PM₁₀, as described above.

Under CEQA, the MDAQMD is an expert comment agency on air quality and related matters within its jurisdiction or impacting on its jurisdiction. MDAQMD serves as a responsible agency for projects that require air permits. According to the *MDAQMD CEQA and Federal Conformity Guidelines*, a project is significant if it triggers or exceed the following evaluation criteria:

- Generates total emissions (direct and indirect) in excess of the thresholds (see **Table 5.3-15**, below).
- Generates a violation of any AAQS when added to the local background.
- Does not conform with the applicable attainment or maintenance plan(s).
- Exposes sensitive receptors to substantial pollution concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a non-cancerous HI greater than or equal to 1.

Consistency with AQMPs. MDAQMD requires a consistency evaluation with adopted federal and State AQMPs. Per the MDAQMD CEQA Guidelines, there are two general criteria to determine project consistency with the MDAQMD AQMPs (MDAQMD, 2020). Under the first criteria (Criterion 1), a project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. For the second criteria (Criterion 2), a project is conforming if it complies with all applicable MDAQMD rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). Conformity with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast.

If a project is deemed consistent with the existing land use plan, it is considered consistent with the AQMPs. Zoning changes, specific plans, general plan amendments, and similar land use plan changes that do not increase dwelling unit density, do not increase vehicle trips, and do not increase vehicle miles traveled are also deemed to not exceed this threshold (MDAQMD, 2020).

Regional Significance Thresholds. MDAQMD significance criteria are shown in **Table 5.3-15: MDAQMD Emissions Thresholds**. The thresholds in this table are applied to both construction and operational phases of the project regardless of whether they are stationary or mobile sources, resulting in a conservative estimate of air quality impacts of the project. Projects with phases shorter than one-year (e.g., construction activities) should be compared to the daily value.

Table 5.3-15: MDAQMD Emissions Thresholds		
Criteria Air Pollutants and Precursors	Annual (tons)	Daily (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NO _x)	25	137
Volatile Organic Compounds (VOC)	25	137
Oxides of Sulfur (SO _x)	25	137
Particulate Matter (PM ₁₀)	15	82
Particulate Matter (PM _{2.5})	12	65
Hydrogen Sulfide (H ₂ S)	10	54
Lead (Pb)	0.6	3
Source: Mojave Desert Air Quality Management District. 2020. <i>California Environmental Quality Act and Federal Conformity Guidelines</i> , February 2020.		

Cancer and Non-Cancer Health Risks. As noted above, the MDAQMD considers a project that results in an incremental increase in individual lifetime cancer risk impact of 10 in a million or greater to be significant. With respect to non-cancer health impacts, the MDAQMD considers a project that results in an HI greater than or equal to 1 to result in a significant impact.

Cancer Burden. Whereas cancer risk represents the probability that an individual will develop cancer, cancer burden multiplies the cancer risk by the exposed population to estimate the number of individuals that would be expected to contract cancer from the project. A cancer burden greater than 0.5 excess cancer cases (in areas exposed to one in one million or greater risk, on a 70-year basis) is considered significant.

Odors. The MDAQMD does not have numerical thresholds for odors. Odors are qualitatively evaluated based on typical odor generating land uses, as well as potential for a project to create an odor nuisance pursuant to MDAQMD Rule 402.

Asbestos. There are no quantitative thresholds for asbestos. CARB regulates demolition of asbestos containing structures. As described above, significance of NOA impacts are determined based on a review of geologic formation mapping and the Project's potential to disturb potential asbestos containing rock formations.

Valley Fever. There are no quantitative thresholds for Valley Fever. Compliance with MDAQMD dust control rules and best management practices during construction would reduce the risk of contracting Valley Fever.

5.3.6 PROJECT IMPACTS AND MITIGATION MEASURES

Applicable Proposed General Plan Policies

The proposed General Plan goals and policies relevant to air quality are listed below.

Land Use Element

- **Policy LU-1.1 Land use compatibility.** Require that new development be located, buffered, and designed to avoid or reduce (to an acceptable level), negative impacts on existing conforming uses and adjacent neighborhoods. Require that new residential development be located, buffered, and designed so as to not hinder the economic viability and continuity of areas planned for nonresidential uses.
- **Policy LU-1.4 Nonresidential west of 15/58.** Plan and prioritize undeveloped areas west of Highway 58 and Interstate 15 for non-residential uses to promote land use compatibility, protect and enhance residential neighborhoods, and maintain the viability of commercial and industrial businesses for the community's present and future economic viability.
- **Policy LU-1.5 Industrial amendments.** Prohibit amendments to the Land Use Map for General Industrial within Central Barstow, which is where the vast majority of Barstow residents live, shop, recreate, worship, and go to school. Permit amendments to the Land Use Map for General Industrial within 500 feet of the Lenwood community only when associated with a specific plan that includes appropriate buffering.
- **Policy LU-2.1 Balanced mix of land uses.** Plan for and maintain a balanced mix of high quality land uses to ensure a range of residential options, fiscal sustainability, and convenient access to shops, restaurants, services, and well-paid jobs.
- **Policy LU-3.2 Downtown design and land use.** Promote building and site designs that facilitate a walkable, experience-oriented atmosphere in the downtown. Encourage a mix of land uses that provide the opportunity to live, work, shop, and eat during the day and/or night.

Circulation Element

- **Policy CM-2.1 Pedestrian Network.** Establish and maintain pedestrian walkways that promote safe and convenient travel to transit stops and between residential and commercial areas, schools, parks, recreation facilities and other key destination points.
- **Policy CM-2.2 Bicycle Network.** Establish and maintain a citywide bicycle network that consists primarily of Class I multipurpose trails, Class II bike lanes, or Class IV separated bikeways. Additionally: Class III bike routes are acceptable facilities in constrained circumstances to attain connectivity.

When truck routes and bicycle facilities share a right-of-way and when widening or building new Primary Arterials, provide safe separation between bicycles and traffic through a combination of

Class I and Class IV facilities, with Class I multipurpose trails at mid-block portions and Class IV bikeways separated by raised curbs at intersections.

- **Policy CM-2.3 Electric bikes.** Support and encourage the use of electric bicycles to reduce resident and employee reliance on cars, resulting in greater mobility while lowering vehicle miles traveled and associated emissions.
- **Policy CM-2.4 Transit service.** Coordinate with Victor Valley Transit Authority (VVTA) to provide residents and workers with accessible and convenient service between residential neighborhoods, commercial centers, educational facilities, employment nodes, and medical facilities. Coordinate with VVTA to install, improve, and maintain safe, clean, comfortable, well-lit, and rider-friendly transit stops that are well marked and visible to motorists.
- **Policy CM-2.5 Downtown Barstow.** Enhance the public realm to create a pedestrian- and transit-friendly environment along and connecting to Main Street between Otis and 7th Avenues.
- **Policy CM-2.6 Design of new facilities.** Design new streets and streetscape improvements to accommodate vehicles, transit, bicycles, and pedestrians based on a combination of the land use and roadway context to promote safety and efficiency for all users.
- **Policy CM-2.7 Public space and networks.** Leverage public rights-of-way, easements, and other public spaces to maintain and expand bicycle and pedestrian networks.
- **Policy CM-2.8 Access management.** Minimize access points and curb cuts along primary and secondary arterials and in the proximity of an intersection to improve traffic flow and safety for vehicles, pedestrians, and bicycles. Eliminate and/or consolidate driveways when new development occurs or when traffic operation or safety warrants.
- **Policy CM-2.9 Site design.** Require new development to incorporate amenities and pathways so that pedestrians and bicyclists can access the site and onsite businesses safely and conveniently from the public right-of-way and parking areas.
- **Policy CM-2.10 VMT reduction.** Promote new development and transportation demand management (TDM) strategies that will reduce household and employment vehicle miles traveled (VMT). Prioritize the implementation of TDM strategies over the expansion of roadway capacity.
- **Policy CM-3.1 Truck routes.** Maintain a network of City truck routes that provides for the safe and efficient transport of goods while minimizing negative impacts on local circulation and noise-sensitive land uses.
- **Policy CM-3.2 Truck parking.** Require new truck-intensive land uses to design and incorporate space and facilities in order to reduce truck parking and idling in the public rights-of-way (ROWs); exceptions may be allowed for portions of ROWs entirely surrounded by land designated as General Industrial. Prohibit truck parking except on property designated for General Industrial or General Commercial along Interstate 15 south of State Route 58.

Open Space and Conservation Element

- **Policy OSC-1.5 Open space linkages.** Establish and maintain pedestrian and bicycle networks that link open space and recreation facilities.

- **Policy OSC-3.1. Sensitive land uses.** Approve development in a manner that ensures sensitive receptors are reasonably separated from mobile and stationary sources of pollution, taking into consideration guidance from the California Air Resources Board. Include measures as necessary and feasible to reduce or avoid exposure of existing and planned future sensitive receptors to air pollution levels that exceed state and federal standards.
- **Policy OSC-3.2 Pollutant reduction and monitoring.** Coordinate with the Mojave Desert Air Quality Management District (MDAQMD) and San Bernardino County to reduce greenhouse gas emissions consistent with state law and other pollutants to maintain and progress toward state and federal attainment status. Collaborate with MDAQMD and other entities to monitor and reduce major pollutants affecting the City at the emission source.
- **Policy OSC-3.3 Construction and operations.** Invest as resources are available in City facilities and fleet vehicles to improve energy efficiency and reduce emissions. Encourage City contractors and other builders and developers to use low-emission construction vehicles and equipment to improve air quality and reduce emissions.
- **Policy OSC-3.4 Fugitive dust emissions.** Coordinate with the Mojave Desert Air Quality Management District and apply requirements for dust control plans, revegetation, and soil compaction to prevent fugitive dust emissions.
- **Policy OSC-3.5 Indoor air quality.** Pursue funding to improve indoor air quality for households with poor indoor air quality, with priority given to assisting lower income households
- **Policy OSC-3.6. Improved outdoor air quality.** Work with the Mojave Desert Air Quality Management District, San Bernardino Association of Governments, San Bernardino County, neighboring jurisdictions, and community partners to implement federal ozone and PM 10 and PM2.5 non-attainment plans and meet federal and state air quality standards, by reducing overall air pollutant emissions from mobile and stationary sources.
- **Policy OSC-8.1 Energy conservation.** Pursue strategies that would conserve energy as the preferred mechanisms to reduce energy needs and to meet applicable energy-saving standards.
- **Policy OSC-8.2 Renewable sources.** Promote the use of renewable energy sources for the construction and operation of public and private sector development.
- **Policy CM-8.3 Zero-emission infrastructure.** Coordinate with regional, state, and federal agencies as well as Victor Valley Transit Authority to plan for, fund, and install facilities that support the clean fueling of automobiles, public transit, electric bikes, and medium- and heavy-duty vehicles.
- **Policy OSC-8.4 Building design and upgrades.** Encourage the upgrading of existing buildings to incorporate design elements, building materials, orientation, and fixtures that improve environmental sustainability and reduce emissions.

Safety Element

- **Policy S-2.8 Healthy, resilient, and efficient buildings.** Encourage and pursue funding for improvements to existing residential and nonresidential buildings consistent with the latest state building code requirements for indoor air quality; energy efficiency; energy storage; disaster and severe weather resilience; and solar power. As funding is obtained, prioritize improvements for

buildings that are both within 500 feet of a freeway or railroad and intended for use by residents or employees for at least eight hours a day.

Impact 5.3-1 ***Would the Project conflict with or obstruct implementation of the applicable air quality plan?***

Proposed General Plan

CEQA requires that projects be evaluated for consistency with the applicable adopted AQMPs. A consistency determination plays an important role in local agency project review by linking local planning and individual projects to the AQMPs. It fulfills the CEQA goal of informing decision makers of the environmental effects of a project under consideration at a stage early enough to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to the clean air goals of the AQMPs. Per the MDAQMD CEQA Guidelines, project consistency to the MDAQMD AQMPs are based on the following two-criterion standard (MDAQMD, 2020):

- **Criterion 1:** Whether a project conflicts with or delays implementation of any applicable attainment or maintenance plan.
- **Criterion 2:** Whether a project complies with applicable air district rules and regulations, complies with proposed control measures, and is consistent with the growth forecasts in the applicable plan.

Criterion 1

The MDAB is designated nonattainment for O₃, PM₁₀, and PM_{2.5}. As discussed under **Impact 5.3-2** below, implementation of the proposed General Plan would exceed the operational regional thresholds for VOC, NO_x, and CO. Emissions of VOC and NO_x are precursors to the formation of O₃. In addition, NO_x is a precursor to the formation of PM₁₀ and PM_{2.5}. Therefore, emissions of VOC and NO_x that exceed the MDAQMD regional significance thresholds would contribute to the O₃ and PM (PM₁₀ and PM_{2.5}) nonattainment designation of the MDAB. Consequently, emissions generated by development projects in addition to existing sources in the proposed General Plan area are considered to cumulatively contribute to the nonattainment designations for these pollutants of the MDAB. Development allowed under the proposed land use plan could contribute to an increase in the frequency or severity of air quality emissions and delay attainment of the AAQS or interim emission reductions in the AQMP. Therefore, the proposed General Plan would be inconsistent with Criterion 1.

Criterion 2

The emissions forecast by MDAQMD are based in part on the demographic projections provided by SCAG. Regional population, housing, and employment projections developed by SCAG are based in part on the local jurisdictions' general plan land use designations. These projections form the foundation for the emissions inventory of the AQMPs. These demographic trends are incorporated into Connect SoCal 2024 compiled by SCAG to determine priority transportation projects in the SCAG region. Projects that are

consistent with the local general plan are considered consistent with the air quality–related regional plan. MDAQMD considers a project consistent with the AQMPs if it is consistent with the existing land use plan (MDAQMD, 2020). Typically, only new or amended general plan elements, specific plans, and major projects that have the potential to affect the regional population and employment forecasts need to undergo a consistency review.

MDAQMD is tasked with implementing programs and regulations required by the FCAA and CCAA. MDAQMD has prepared several plans such as O₃ attainment plans with the latest adopted in 2023 addressing the Federal 70 parts per billion standard and PM attainment plans with the latest adopted in 2005 addressing the MDAQMD schedule for district measures to reduce PM pursuant to H&S Code 39614(d), to attain the NAAQS and CAAQS. A wide variety of control measures are included in the AQMPs, such as reducing or offsetting emissions from construction and operations associated with land use developments. Future development projects accommodated under the proposed General Plan would be required to adhere to the MDAQMD control measures, as outlined in the air quality plans and implemented through MDAQMD rules and regulations.

However, as discussed in **Impact 5.13-1 of Section 5.13: Population and Housing**, both the projected population and employment growth exceed SCAG projections.¹³ **Table 5.3-16: Comparison of the Proposed General Plan Project to the 2015 General Plan Population, Employment, and Daily VMT**, compares the population, employment, and daily VMT generation of the proposed General Plan to the population, employment, and daily VMT generation of the current land use plan.

Table 5.3-16: Comparison of the Proposed General Plan Project to the 2015 General Plan Population, Employment, and Daily VMT				
Scenario	2015 General Plan	Proposed General Plan	Change from 2015 General Plan	Percent Change from 2015 General Plan
Population ¹	45,603	52,833	7,230	16%
Employment ¹	19,810	25,235	5,425	27%
Service Population (SP)	65,413	78,068	12,655	19%
Daily VMT ²	2,209,312	2,177,250	(32,063)	-1%
VMT/SP	33.77	27.89	(5.89)	-17%
Notes: VMT: Vehicle Miles Traveled; RTAC: Regional Targets Advisory Committee.				
¹ See Table 5.13-3: Buildout Under 2015 vs Proposed General Plan area Projections .				
² Daily VMT provided by Fehr & Peers.				

As shown in the table, daily VMT and VMT per service population would decrease under the proposed General Plan compared to the 2015 General Plan. As discussed in **Impact 5.15-2**, the proposed General Plan is designed to support long-term reductions in VMT by encouraging a mix of land uses and improved connectivity to regional transportation corridors. The decrease in total daily VMT and VMT per service population are indicators that implementation of the proposed General Plan would result in less emissions per service population. See **Section 5.15** for more information about how the proposed General Plan is

¹³ While the proposed General Plan analysis is programmatic, it is combined with the BIG project. Therefore, the proposed General Plan population and employment projections discussed in Impact 5.13-1 includes the projected population and employment associated with BIG.

designed to reduce VMT. However, the proposed General Plan would result in more growth than the 2015 General Plan because it would increase population and employment by 16 percent and 27 percent, respectively. Although the proposed General Plan could result in lower emissions per service population, because buildout of the proposed General Plan would exceed the forecasts in the 2015 General Plan, it could generate total emissions that are not in the current regional emissions inventory for the MDAB. As discussed under **Impact 5.3-2**, implementation of the proposed General Plan would generate an increase in criteria air pollutants emissions that would exceed the MDAQMD's current significance thresholds. Therefore, although individual development projects would be consistent with the control measures/regulations identified in MDAQMD's AQMP (e.g., existing MDAQMD rules and regulations such as Regulation XIII and Rule 1113 and statewide regulations such as CARB's Advanced Clean Cars I) and the proposed General Plan would result a decrease in VMT and VMT per service population, because the proposed General Plan would result in more growth, it is conservatively considered to be inconsistent with Criterion 2.

Summary. As discussed above, the proposed General Plan is considered to be inconsistent with both Criterion 1 and Criterion 2. Therefore, the proposed General Plan is considered to conflict with the AQMPs despite the additional policies in the proposed General Plan and would result in a potentially significant impact prior to any mitigation. **MM GP AQ-1 and MM GP AQ-2** would reduce emissions to the extent feasible. Additionally, the various goals and policies of the proposed General Plan, in addition to applicable MDAQMD rules and regulations, would contribute to reducing regional criteria air pollutant during construction and operational phases of development projects. However, due to the magnitude and intensity of development accommodated by the proposed General Plan, Impact 5.3-1 would remain significant and unavoidable.

Impact 5.3-1: General Plan: Level of Significance Before Mitigation: Potentially Significant Impact.

Impact 5.3-1: General Plan: Mitigation Measures: Refer to **MM GP AQ-1** and **MM GP AQ-2**.

Impact 5.3-1: General Plan: Level of Significance After Mitigation: Significant and Unavoidable Impact.

Barstow International Gateway

Per the MDAQMD CEQA and Federal Conformity Guidelines (2020), a project is nonconforming with an air quality plan if it conflicts with or delays implementation of any applicable attainment or maintenance plan (Criterion 1). A project is conforming if it complies with applicable air district rules and regulations, complies with proposed control measures, and is consistent with the growth forecasts in the applicable plan (Criterion 2).

Criterion 1

As discussed later in **Impact 5.3-2**, BIG would exceed MDAQMD's construction and operational emissions thresholds. Therefore, a delay in the timely attainment of air quality standards could occur, and BIG's impact is inconsistent with the first criterion.

Criterion 2

MDAQMD Western Mojave Desert AQMP

The BIG footprint is within the MDAB, which is under the jurisdiction of the MDAQMD. The MDAQMD Western MD AQMP (2023) is the applicable air quality plan for the BIG footprint. The MDAQMD Western MD AQMP contains air pollutant reduction strategies based on growth forecasts, which were defined in consultation with local governments and are based on local general plans; see **Section 5.3.2.3: Regional, MDAQMD**. The BIG footprint's existing land use designations in the CWP consist of Rural Living, Resource/Land Management, Public Facility, and Right-of-Way. The BIG footprint's existing land use designations in the 2015 General Plan consist of General Commercial, General Industrial, Diverse Use, Public/Quasi-Public, and Right-of-Way. BIG includes implementation of a Specific Plan coordinated with the proposed General Plan, which would change the BIG footprint's existing land use designations to Specific Plan. Following the proposed General Plan, BIG would not conflict with any land use plan, policy, or regulation.

As previously mentioned in **Section 5.3.2.3: MDAQMD Rules**, the MDAQMD has adopted rules to limit air emissions. BIG would comply with the following MDAQMD Rules, as applicable, for regulation of fugitive dust and emissions from fossil fuel combustion:

- Visible Emissions Rule (Rule 401)
- Nuisance Rule (Rule 402)
- Fugitive Dust Rule (Rule 403)
- PM Concentration Rule (Rule 404)
- Solid PM Weight Rule (Rule 405)
- Combustion Contaminants Rule (Rule 409)
- Sulfur Content of Liquid Fuels Rule (Rule 431)
- Architectural Coating Rule (Rule 1113)

BIG implementation would not conflict with the MDAQMD Western MD AQMP and would therefore not be inconsistent with the second criterion as a result.

South Coast AQMD 2022 AQMP

BIG implementation would improve goods movement and supply chain efficiency by transporting more containers by train, thereby reducing truck trips in the SCAB, which is under the jurisdiction of the South Coast AQMD. The South Coast AQMD identifies goods movement activities as a challenge for cleaning air for the 17 million residents in the SCAB. The South Coast AQMD's 2022 AQMP includes Transportation Control Measures and Reasonably Available Control Measures that BIG would help implement. Measure 7.19 involves programs (overseen by CARB) to encourage goods movement by rail. Additionally, Measure 7.20 aims to divert trucks from nonattainment areas (i.e., requiring pass-through trucks to choose routes away from the SCAG region). The AQMP notes that there is no authority to implement this measure and that it is not feasible because the whole South Coast region is nonattainment under one or more of the

NAAQS. However, within the South Coast AQMD region, BIG would transport more containers with trains instead of heavy-duty trucks to reduce approximately 124,710 heavy-duty truck miles per year (compared to without BIG conditions) in 2028, approximately 158,437 heavy-duty truck miles per year (compared to without BIG conditions) in 2033, and approximately 192,255 heavy-duty truck miles per year (compared to without BIG conditions) in 2048 from regional roadways and associated emissions reductions within the South Coast AQMD. Additional reductions in truck miles and air pollutant emissions would occur throughout California and in other States with BIG implementation. The reduction in regional heavy-duty truck miles within the SCAB compared to without BIG conditions would achieve this measure (**Appendix 5.15 BIG-1: Barstow International Gateway CEQA Assessment – Transportation Analysis**).

SCAG Connect SoCal

The overarching vision of Connect SoCal includes encouraging implementation of innovative technologies and Intelligent Transportation Systems aimed at expanding accessibility, relieving congestion, and reducing emissions. According to the *Goods Movement Technical Report* of Connect SoCal 2024, the efficient movement of goods is a critical component of a strong economy and improves quality of life in the SCAG region. By 2050, SCAG anticipates that the goods movement system will include new charging and fueling infrastructure, expanded rail yards, upgrades to the main line railroad tracks, improved port terminals, and heavy-duty truck and freight corridor bottleneck relief projects, including dedicated heavy-duty truck lanes. Per Connect SoCal 2024, as the region continues to grow, the goods movement system will also show significant progress in reducing emissions, including operational efficiencies and the introduction of near-zero and ZE vehicles.

Connect SoCal 2024 is supported by a combination of transportation and land use strategies that outline how the region can achieve California’s GHG reduction goals and FCAA requirements. Connect SoCal 2024 also strives to achieve broader regional objectives, such as improved equity and resilience, preservation of natural lands, improvement of public health, increased transportation safety, support for the region’s vital goods movement industries, and more efficient use of resources.

Connect SoCal 2024 subgoals relevant to BIG include supporting investments that result in improved safety and air quality and minimized GHG emissions (Mobility); integrating the region’s development pattern and transportation network to improve air quality, reduce GHG emissions, and enable more sustainable use of energy and water (Environment); conserving the region’s resources (Environment); improve access to jobs (Economy); and advancing a resilient and efficient goods movement system that supports the economic vitality of the region, attainment of clean air, and quality of life for our communities (Economy).

Connect SoCal 2024 explains that transportation, especially the goods movement sectors, contributes to the overwhelming majority of air pollutant emissions causing O₃ pollution. As part of the vision for the 2050 horizon year, Connect SoCal states that it is critical to integrate land use decisions and technological advancements to minimize environmental and health impacts while fostering continued growth in trade and commerce. Infrastructure improvements support greater system efficiency and may reduce emissions. Reducing air quality emissions is addressed through cleaner and more efficient operation of vehicles, largely by modifying or replacing the existing regional fleet of goods movement equipment (e.g.,

locomotives, cargo handling equipment, ocean going vessels and commercial harbor craft) with cleaner technologies or efficiency operation of vehicles.

BIG improves goods movement and supply chain efficiency by transporting more containers with trains within California to reduce heavy-duty truck miles by approximately (compared to without BIG conditions):

- **2028:** 58,130,956 heavy-duty truck miles reduced per year in California and 217,824,523 heavy-duty truck miles reduced per year nationally
- **2033:** 76,365,405 heavy-duty truck miles reduced per year in California and 286,312,231 heavy-duty truck miles reduced per year nationally
- **2048:** 89,381,289 heavy-duty truck miles reduced per year in California and 333,123,035 heavy-duty truck miles reduced per year in nationally

The reduction in heavy-duty truck miles would result in a GHG emission annual net reduction of approximately:

- **2028:** 87,418 metric tons of CO₂ equivalent reduced in California and 325,665 metric tons of CO₂ equivalent reduced nationally
- **2033:** 101,088 metric tons of CO₂ equivalent reduced in California and 376,762 metric tons of CO₂ equivalent reduced nationally
- **2048:** 100,539 metric tons of CO₂ equivalent reduced in California and 372,416 metric tons of CO₂ equivalent reduced nationally

See **Appendix 5.8 BIG-1: Barstow International Gateway Greenhouse Gas Emissions Assessment** for additional detail on GHG emissions and truck miles traveled reductions. Connect SoCal notes that attaining the federal O₃ standards in the SCAB will require reductions in emissions of NO_x well beyond reductions resulting from current rules, programs and commercially available technologies. Previous regulations and incentive programs have improved vehicle emissions performance, but as the region grows, existing measures are not enough to realize attainment of the O₃ standards in the 2023 time frame and 2031 time frame. With the projected changes in both heavy-duty truck and rail emissions, greater advancements in technology are needed to meet regional attainment objectives. BIG's reduction in truck trips and improvement in goods movement with ZE cargo handling equipment (compared to without BIG conditions) helps address the regional attainment objectives identified by SCAG.

As discussed in **Section 5.13: Population and Housing**, BIG is estimated to generate approximately 16,000 direct, indirect, and induced jobs by the year 2048, accounting for the 92 jobs associated with the existing commercial and industrial uses to be displaced. In 2021, the County's civilian labor force had 937,085 employed persons. By the year 2050, SCAG estimates total employment for the County at 1,148,000, for an increase of 210,915 jobs by 2050. The estimated 16,000 new jobs attributable by BIG would be approximately seven percent of the projected increase in jobs within the County by 2050. Therefore, BIG would induce growth. However, job growth associated with BIG would be within the projections used to develop the AQMPs.

To accommodate the proposed improvements, BIG would remove approximately 108 dwelling units. Therefore, BIG would not generate population growth or cause the population growth projections used in air quality management planning to be exceeded.

Regulatory Setting

The State has developed various regulations, and additional regulations are underway to achieve sustainable freight goals, accelerate the introduction of cleaner technology, and reduce localized emissions. Several of these regulations include:

- The Heavy Truck and Bus rule, passed in 2008, requires that by 2023 nearly all heavy-duty vehicles have engines that are model year 2010 or newer. Drayage trucks must also meet the requirement of having 2010 or newer model year engines under the Drayage Truck Regulation.
 - Trucks registered in California and accessing BIG are required to comply with CARB's Heavy Truck and Bus Rule.
- CARB created an optional low NO_x standard in 2013 to allow certification of lower NO_x engines for use in an incentive program. Additionally, various incentive programs have since funded the deployment of electric, hybrid-electric and near-ZE trucks, and an updated funding plan is under development.
 - The Low NO_x incentive program would also benefit trucks accessing BIG.
- The Clean Transportation Incentive Program invests up to \$100 million annually in transportation and fuel transportation projects throughout the State.
 - Trucks accessing BIG would benefit from this incentive program to reduce emissions.
- The Low Carbon Transportation Investments and the Air Quality Improvement Program provide mobile source incentives to reduce GHG, criteria pollutant, and TAC emissions through the deployment of advanced technology and clean transportation in the light-duty and heavy-duty sectors. Low Carbon Transportation Investments are supported by Cap-and-Trade auction proceeds.
 - Low Carbon Transportation Investments would help to reduce truck emissions, including trucks accessing BIG.

Regulations are also being developed for forklifts and cargo handling equipment to transition to ZE (CARB, NDc). BIG operations would benefit from the implementation of current and potential future regulations (e.g., improvements in vehicle emissions, low NO_x standard, Clean Transportation Incentive Program, Low Carbon Transportation Investments, the Air Quality Improvement Program, etc.) enacted to improve goods movement and reduce emissions.

For the reasons above, BIG would be inconsistent with Criterion 1 but consistent with Criterion 2.

Impact 5.3-1: BIG: Level of Significance Before Mitigation: Potentially Significant Impact.

Impact 5.3-1: BIG Mitigation Measures: Refer to **MM BIG AQ-1** through **MM BIG AQ-14**. No additional mitigation is feasible.

Impact 5.3-1: BIG Level of Significance After Mitigation: Significant and Unavoidable Impact.

Impact 5.3-2 *Would the Project 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?*

Proposed General Plan

Construction

Construction activities attributed to future development that could occur under the proposed General Plan could temporarily increase PM₁₀, PM_{2.5}, VOC, NO_x, SO_x, and CO regional emissions in the MDAB. The primary source of NO_x, CO, and sulfur oxide emissions is the operation of construction equipment. The primary sources of PM₁₀ and PM_{2.5} emissions are activities that disturb the soil, such as grading and excavation, road construction, and building demolition and construction. The primary sources of VOC emissions are the application of architectural coating and off-gas emissions associated with asphalt paving. A discussion of health impacts associated with air pollutant emissions generated by construction activities is included under **Section 5.3.4: Air Pollutants of Concern**.

Although future construction activities would occur over the buildout horizon of the proposed General Plan causing short-term emissions of criteria air pollutants; information regarding specific development projects, soil types, and the locations of receptors would be needed in order to quantify the level of impact associated with construction activity. Due to the anticipated scale of development activity associated with buildout of the proposed General Plan, emissions likely would exceed the MDAQMD regional significance thresholds. In accordance with the MDAQMD methodology, emissions that exceed the regional significance thresholds would cumulatively contribute to the nonattainment designations of the MDAB.

An estimate of construction emissions is included in the operational phase regional criteria air pollutant emissions inventory under Area Source: Off-road Equipment in **Table 5.3-17: Horizon Year 2048 Proposed General Plan Area Regional Criteria Air Pollutant Emissions Inventory Above Existing Conditions Within MDAB** and **Table 5.3-18: Horizon Year 2048 Proposed General Plan Area Annual Regional Criteria Air Pollutant Emissions Inventory Above Existing Conditions Within MDAB**. However, air quality emissions related to construction must be addressed on a project-by-project basis. Potential construction-related impacts associated with and specific to BIG are evaluated separately. However, for the overall proposed General Plan, which is a broad-based policy plan, it is not possible to determine whether the scale and phasing of individual projects would exceed the MDAQMD's short-term regional or localized construction emissions thresholds. Proposed Policies OSC-3.3 and OSC-3.4 would contribute to reducing emissions from construction equipment and vehicles and to reducing construction-related fugitive dust emissions to the extent feasible. In addition to regulatory measures—e.g., MDAQMD Rule 403 for fugitive dust control and CARB's Airborne Toxic Control Measures—mitigation imposed at the project level may include extension of construction schedules and/or use of special equipment.

Table 5.3-17: Horizon Year 2048 Proposed General Plan Area Regional Criteria Air Pollutant Emissions Inventory Above Existing Conditions Within MDAB

Source	Criteria Air Pollutant Emissions (pounds per day)					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Existing Land Uses – Year 2048						
On-Road Transportation ¹	17	422	1,306	10	93	35
Energy ²	10	173	104	1	14	14
Area Source – Offroad Equipment ³	141	158	3,030	<1	8	7
Area Source – Consumer Products ⁴	706	n/a	n/a	n/a	n/a	n/a
Maximum Daily Emissions	874	752	4,440	11	115	56
Proposed General Plan – Horizon Year 2048						
General Plan Community Emissions						
On-Road Transportation (including BIG) ¹	29	946	2,006	18	185	73
Energy ^{2,5}	15	257	154	2	20	20
Area Source – Offroad Equipment ^{3,6}	176	87	3,910	<1	3	2
Area Source – Consumer Products ⁴	1,365	n/a	n/a	n/a	n/a	n/a
Subtotal Proposed General Plan Emissions	1,584	1,289	6,070	20	208	95
BIG Emissions - MDAB						
BIG (Excludes Mobile Sources)	394	2,746	3,337	6	76	2
Maximum Daily Community + BIG	1,978	4,035	9,408	26	132	97
Net Change						
Existing Land USEs 2048	874	752	4,440	11	115	56
Project Community + BIG	1,978	4,035	9,408	26	132	97
Net Change	1,105	3,284	4,968	15	17	41
MDAQMD Regional Significance Thresholds	137	137	548	137	82	65
Exceeds Threshold?	Yes	Yes	Yes	No	No	No
Notes: ¹ Based on calendar year 2048 emissions data from EMFAC2021, Version 1.0.2, and daily VMT and TMT provided by Fehr & Peers. Transportation sector includes the full trip lengths for internal-internal, internal-external, and external-internal trips. ² Based on average natural gas use of the five-year (2019 to 2023) usage data provided by Southwest Gas and the CalEEMod, version 2022.1, default natural gas emissions factors. The five-year average is used to account for fluctuations in energy use. ³ Based on calendar year 2023 offroad equipment emissions data for the County from OFFROAD2021, Version 1.0.2., adjusted to the farmland, household, employment, and population associated with the existing conditions of the proposed General Plan area compared to the County. ⁴ Based on the CalEEMod, version 2022.1, default emission rates, which are applied to residential and non-residential land uses. ⁵ Adjusted for increases in population for natural gas use and non-residential square footage for non-residential natural gas use in the proposed General Plan area. ⁶ Adjusted to the farmland, household, employment, and population associated with the proposed General Plan compared to the County.						
Sources: Appendix 5.3 GP-1: Air Quality and Greenhouse Gas Emissions Modeling and Appendix 5.3 BIG-1: Air Quality Technical Report .						

Table 5.3-18: Horizon Year 2048 Proposed General Plan Area Annual Regional Criteria Air Pollutant Emissions Inventory Above Existing Conditions Within MDAB

Source	Criteria Air Pollutant Emissions (tons per year)					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Existing Land Uses – Year 2048						
On-Road Transportation ¹	3	73	227	2	16	1
Energy ²	2	32	19	<1	2	2
Area Source – Offroad Equipment ³	26	29	553	<1	1	1
Area Source – Consumer Products ⁴	129	n/a	n/a	n/a	n/a	n/a
Total Annual	168	409	799	2	20	5
Proposed General Plan – Horizon Year 2048						
General Plan Community Emissions						
On-Road Transportation (including BIG) ¹	5	164	348	3	32	3
Energy ^{2,5}	3	47	28	1	4	4
Area Source – Offroad Equipment ^{3,6}	32	16	714	<1	1	<1
Area Source – Consumer Products ⁴	249	n/a	n/a	n/a	n/a	n/a
Subtotal	289	227	1,090	3	36	7
BIG Emissions - MDAB						
BIG (Excludes Mobile Sources)	56	378	575	1	)17)	(3)
Total Annual Community + BIG	345	605	1,665	4	19	4
Net Change						
Existing Land Uses 2048	159	133	801	2	20	5
Project Community + BIG	345	605	1,665	4	19	4
Net Change From Existing 2048	186	471	864	2	(1)	(1)
MDAQMD Regional Significance Thresholds	25	25	100	25	15	12
Exceeds Threshold?	Yes	Yes	Yes	No	No	No
Notes: ¹ Based on calendar year 2048 emissions data from EMFAC2021, Version 1.0.2, and daily VMT and TMT provided by Fehr & Peers. Transportation sector includes the full trip lengths for internal-internal, internal-external, and external-internal trips. ² Based on average natural gas use of the five-year (2019 to 2023) usage data provided by Southwest Gas and the CalEEMod, version 2022.1, default natural gas emissions factors. The five-year average is used to account for fluctuations in energy use. ³ Based on calendar year 2023 offroad equipment emissions data for the County from OFFROAD2021, Version 1.0.2., adjusted to the farmland, household, employment, and population associated with the existing conditions of the proposed General Plan area compared to the County. ⁴ Based on the CalEEMod, version 2022.1, default emission rates, which are applied to residential and non-residential land uses. ⁵ Adjusted for increases in population for natural gas use and non-residential square footage for non-residential natural gas use in the proposed General Plan area. ⁶ Adjusted to the farmland, household, employment, and population associated with the proposed General Plan compared to the County.						
Sources: Appendix 5.3 GP-1: Air Quality and Greenhouse Gas Emissions Modeling and Appendix 5.3 BIG-1: Air Quality Technical Report .						

Though some individual projects under the proposed General Plan may not exceed the MDAQMD regional significance thresholds, the likely scale and extent of construction activities associated with future development projects under the proposed General Plan would likely exceed the relevant MDAQMD thresholds. Additionally, some future development projects could potentially exceed the MDAQMD regional significance thresholds on an individual basis. Application of State and MDAQMD rules and regulations, and implementation of the proposed General Plan goals, policies, and actions would

contribute to reducing operation-related criteria air pollutants generated from energy, area, and mobile sources to the extent feasible. Incorporation of **MM GP AQ-1** would reduce criteria air pollutants during construction to the extent feasible. Implementation of the aforementioned rules and mitigation could reduce construction-phase regional air quality impacts of future individual projects to a less than significant level. However, due to the magnitude of the overall land use development associated with the proposed General Plan in addition to the uncertainty of the timing in their development and construction, construction impacts would remain significant and unavoidable.

Operations

The emissions inventory for the proposed General Plan area under horizon year 2048 is shown in **Table 5.3-17: Horizon Year 2048 Proposed General Plan Area Regional Criteria Air Pollutant Emissions Inventory Above Existing Conditions Within MDAB** and **Table 5.3-18: Horizon Year 2048 Proposed General Plan Area Annual Regional Criteria Air Pollutant Emissions Inventory Above Existing Conditions Within MDAB**. Also shown in **Table 5.3-17** and **Table 5.3-18** are the emissions associated with the existing land uses as they exist now, but operating under calendar year 2048 conditions with respect to mobile-source emissions. This approach assumes VMT and TMT would remain the same as under year 2023 baseline conditions, however vehicles associated with the existing land uses would be replaced over time and newer cleaner vehicles would replace older more polluting vehicles. As shown in the table, implementation of the proposed General Plan would result in an increase in criteria air pollutant emissions from the existing land uses. This increase is based on the difference between existing land uses and land uses associated with buildout of the proposed General Plan as well as an estimate of population and employment in the General Plan area in year 2048. Buildout of the proposed General Plan would generate long-term emissions that exceed the daily MDAQMD thresholds for VOC, NO_x, and CO. Emissions of VOC and NO_x are precursors to the formation of O₃. In addition, NO_x is a precursor to the formation of PM₁₀ and PM_{2.5}. Therefore, emissions of VOC and NO_x that exceed the MDAQMD regional significance thresholds would contribute to the O₃ and PM (PM₁₀ and PM_{2.5}) nonattainment designation of the MDAB.

Implementation of the proposed General Plan policies could contribute to reducing criteria air pollutant emissions. Policies OSC-8.1, OSC-8.2, OSC-8.4, and S-2.8 would support pursuing strategies to increase energy conservation and energy efficiency in addition to promoting use of renewable energy. These policies would contribute to reducing criteria air pollutant emissions from the energy sector. In addition to these energy-related policies, Circulation Element policies such as Policies CM-2.1, CM-2.2, CM-2.5, CM-2.6, CM-2.7, CM-2.8, and CM-2.9 as well as Land Use Element Policies LU-2.1 and LU-3.2 and Policy OSC-1.5 of the Open Space Conservation Element would support improving the pedestrian and bicycle network infrastructures. Policy CM-2.3 would support increasing use of electric bikes, and Policy CM-2.4 would support increasing transit service. Also, Policy CM-2.10 would promote transportation demand management strategies to reduce household and employment passenger car VMT. Overall, these Circulation Element and Land Use Element policies would contribute to reducing single-occupant VMT to the extent feasible. However, future development projects that would be accommodated by the proposed General Plan could exceed the MDAQMD regional emissions thresholds.

Application of State and MDAQMD rules and regulations and implementation of the proposed General Plan goals, policies, and actions would contribute to reducing operation-related criteria air pollutants

generated from energy, area, and mobile sources to the extent feasible. Incorporation of **MM GP AQ-2**, which requires future development projects to assess air quality impacts associated with project operations, would also contribute to reducing criteria air pollutants. Implementation of these rules, goals and policies, and mitigation could contribute to reducing operation-phase regional air quality impacts of future individual projects to a less than significant level. However, due to the magnitude of the overall land use development associated with the proposed General Plan, long-term operational impacts would remain significant and unavoidable.

Impact 5.3-2: General Plan: Level of Significance Before Mitigation: Potentially Significant Impact.

Mitigation Measures

- MM GP AQ-1 Reduce Emissions from Construction Activities.** Prior to issuance of any construction permits for development projects subject to CEQA review (i.e., non-exempt projects), development project applicants shall prepare and submit to the City of Barstow (City) Planning Division a technical assessment evaluating potential project construction-related air quality impacts. The evaluation shall be prepared in conformance with the Mojave Desert Air Quality Management District (MDAQMD) methodology and guidelines for projects in the Mojave Desert Air Basin. If construction-related criteria air pollutants are determined to have the potential to exceed the adopted thresholds of significance of the applicable air district, the City Planning Division shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during construction activities to below these thresholds, to the extent feasible. These identified measures shall be incorporated into appropriate construction documents (e.g., construction management plans) submitted to the City and shall be verified by the City Public Works Division. Mitigation measures to reduce construction-related emissions could include, but are not limited to:
- a. Use of construction equipment rated by the United States Environmental Protection Agency as having Tier 3 (model year 2006 or newer) or Tier 4 (model year 2008 or newer) emission limits, applicable for engines between 50 and 750 horsepower. A list of construction equipment by type and model year shall be maintained by the construction contractor on-site and available for City review upon request.
 - b. Ensure construction equipment is properly serviced and maintained to the manufacturer's standards.
 - c. Use of alternative-fueled or catalyst-equipped diesel construction equipment, if available and feasible.
 - d. Clearly posted signs that require operators of trucks and construction equipment to minimize idling time (e.g., five minute maximum).

- e. Preparation and implementation of a fugitive dust control plan that may include the following measures:
- f. Disturbed areas (including storage piles) that are not being actively utilized for construction purposes shall be effectively stabilized using water or chemical stabilizer/suppressant, or covered with a tarp or other suitable cover (e.g., revegetated).
- g. On-site unpaved roads and off-site unpaved access roads shall be effectively stabilized using water or chemical stabilizer/suppressant.
- h. Land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled utilizing application of water or by presoaking.
- i. Material shall be covered or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained when materials are transported off the site.
- j. Operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)
- k. Following the addition of materials to or the removal of materials from the surface of outdoor storage piles, said piles shall be effectively stabilized to prevent fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
- l. Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- m. Any site with 150 or more vehicle trips per day shall prevent carryout and track out.
- n. Limit traffic speeds on unpaved roads to 15 mph.
- o. Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- p. Install wheel washers for all exiting trucks or wash off all trucks and equipment leaving the project area.

MM GP AQ-2

Reduce Emissions from Operation. Prior to discretionary approval by the City of Barstow (City) Planning Division for development projects subject to CEQA review (i.e., nonexempt projects), project applicants shall prepare a technical assessment evaluating potential air quality impacts related to the project operation phase and submit it to the City Planning Division for review and approval. The evaluation shall

be prepared in conformance with the Mojave Desert Air Quality Management District (MDAQMD) methodology and guidelines for projects in the Mojave Desert Air Basin. If operation-related air pollutants are determined to have the potential to exceed the MDAQMD-adopted thresholds of significance, the City Planning Division shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions to the extent feasible during operational activities. The identified measures shall be included as part of the conditions of approval. Possible Mitigation measures to reduce long-term emissions can include, but are not limited to:

- a. For site-specific development that requires refrigerated vehicles, the construction documents shall demonstrate an adequate number of electrical service connections at loading docks for plug-in of the anticipated number of refrigerated trailers to reduce idling time and emissions.
- b. Applicants for manufacturing and light industrial uses shall utilize energy storage and combined heat and power in appropriate applications to optimize renewable energy generation systems and avoid peak energy use.
- c. Applicants for non-residential developments with over 50 employees shall provide changing/shower facilities as specified, at minimum, or greater than in the California Green Building Standards (CALGreen) Code (Non-residential Voluntary Measures).
- d. Applicants for multifamily, hotel, and motel developments shall provide bicycle parking facilities equivalent to or greater than as specified in the Residential Voluntary Measures of the CALGreen Code.
- e. Applicants for non-residential developments with 50 or more parking spaces shall provide preferential parking spaces for low-emitting, fuel-efficient, and carpool/van vehicles equivalent to or greater than the CALGreen Code (Non-residential Voluntary Measures).
- f. Applicants for non-residential developments and multi-family residential developments shall provide facilities to support electric charging stations identified in the Non-residential Voluntary Measures and Residential Voluntary Measures of the CALGreen Code, respectively.
- g. Applicant-provided appliances shall be Energy Star-certified appliances or appliances of equivalent energy efficiency (e.g., dishwashers, refrigerators, clothes washers, and dryers). Installation of Energy Star-certified or equivalent appliances shall be verified by Building & Safety during plan check.
- h. Applicants for future development projects along existing and planned transit routes shall coordinate with the City of Barstow and the applicable transit agency

to ensure that bus pad and shelter improvements are incorporated, as appropriate.

Impact 5.3-2: General Plan: Level of Significance After Mitigation: Significant and Unavoidable Impact. The application of State and MDAQMD rules and regulations and implementation of the proposed General Plan goals, policies, and actions would contribute to reducing construction- and operation-related criteria air pollutants generated from energy, area, and mobile sources to the extent feasible. Incorporation of **MM GP AQ-1** and **MM GP AQ-2** would also contribute to reducing criteria air pollutants. Implementation of these rules, goals and policies, and mitigation could contribute to reducing construction- and operation-phase regional air quality impacts of future individual projects to a less than significant level. However, the proposed General Plan would result in significant and unavoidable construction- and operation-related regional air quality impacts.

Regional Health Impacts Associated With Emissions from Proposed General Plan and BIG

Contributing to the MDAB's nonattainment status would also contribute to elevating health effects associated with these criteria air pollutants. Known health effects related to ozone (O₃) include worsening of bronchitis, asthma, and emphysema and a decrease in lung function. Health effects associated with particulate matter (PM) include premature death of people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, decreased lung function, and increased respiratory symptoms. Reducing emissions would further contribute to reducing possible health effects related to criteria air pollutants.

It is speculative for this broad-based policy plan to determine how exceeding the regional thresholds would affect the number of days the region is in nonattainment since mass emissions are not correlated with concentrations of emissions, or how many additional individuals in the MDAB would experience health effects.

This EIR quantifies the increase in criteria air pollutants emissions in the proposed General Plan area to the extent feasible. However, at a program-level analysis, it is not feasible to quantify the increase in criteria air pollutants from stationary sources associated with the proposed project or meaningfully correlate how regional criteria air pollutant emissions above the MDAQMD significance thresholds correlate with MDAB-wide health impacts.

To determine cancer and noncancer health risk, the location, velocity of emissions, meteorology and topography of the area, and locations of receptors are equally important model parameters as the quantity of TAC emissions. The white paper in **Appendix 5.3-1 BIG-1**, *"We Can Model Regional Emissions, But Are the Results Meaningful for CEQA?"* describes several of the challenges of quantifying local effects—particularly health risks—for large-scale, regional projects, and these are applicable to both criteria air pollutants and toxic air contaminants (TACs). Similarly, the two amicus briefs filed by the air districts on the *Friant Ranch* case (see **Appendix 5.3-1 BIG-1**) describe two positions regarding CEQA requirements, modeling feasibility, variables, and reliability of results for determining specific health risks associated with criteria air pollutants. The discussions also include the distinction between criteria air pollutant emissions and TACs with respect to health risks. The following paragraphs summarize major points about the infeasibility of assessing health risks of criteria air pollutant emissions and TACs associated with implementation of a general plan. MDAQMD currently does not have methodologies that

would provide the City with a consistent, reliable, and meaningful analysis to correlate specific health impacts that may result from a proposed project's mass emissions (MDAQMD, 2020). For criteria air pollutants, exceedance of the regional significance thresholds cannot be used to correlate a project to quantifiable health impacts unless emissions are sufficiently high to use a regional model.

To achieve and maintain air quality standards, the MDAQMD has established numerical emission indicators of significance for regional for both construction and operational phases of a local plan or project. The thresholds represent the maximum emissions from a plan or project that are expected not to cause or contribute to an exceedance of the most stringent applicable NAAQS or CAAQS. By analyzing the plan's emissions against the thresholds, an EIR assesses whether these emissions directly contribute to any regional or local exceedances of the applicable AAQS and exposure levels.

O₃ concentrations depend on a variety of complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Secondary formation of particulate matter (PM) and O₃ can occur far from sources as a result of regional transport due to wind and topography (e.g., low-level jet stream). Photochemical modeling depends on all emission sources in the entire domain (i.e., modeling grid). Low resolution and spatial averaging produce "noise" and modeling errors that usually exceed individual source contributions. Because of the complexities of predicting ground-level O₃ concentrations in relation to the NAAQS and CAAQS, it is not possible to link health risks to the magnitude of emissions exceeding the significance thresholds.

Current models used in CEQA air quality analyses are designed to estimate potential project construction and operational emissions for defined projects. The estimated emissions are compared to significance thresholds, which are keyed to reducing emissions to levels that will not interfere with the region's ability to attain the health-based standards. This serves to protect public health in the overall region, but there is currently no CEQA methodology to determine the impact of emissions (e.g., lbs/day) on future concentration levels (e.g., ppm or µg/m³) in specific geographic areas. CEQA thresholds, therefore, are not specifically tied to potential health outcomes in the region.

The EIR must provide an analysis that is understandable for decision making and public disclosure. Regional-scale modeling may provide a technical method for this type of analysis, but it does not necessarily provide a meaningful way to connect the magnitude of a project's criteria pollutant emissions to health effects without speculation. Additionally, this type of analysis is not feasible at a general plan level because the locations of emissions sources and quantity of emissions are not known. However, because cumulative development within the proposed General Plan area would exceed the regional significance thresholds, the proposed General Plan could contribute to an increase in health effects in the MDAB until the attainment standards are met in the MDAB.

Barstow International Gateway

Construction

BIG construction would generate short-term emissions of criteria air pollutants. The criteria pollutants of primary concern within BIG include O₃-precursor pollutants (i.e., ROG and NO_x) and PM₁₀ and PM_{2.5}. Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the amount of pollutants generated exceeds the MDAQMD's thresholds of significance.

Construction results in the temporary generation of emissions resulting from demolition, site grading, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment, especially on unpaved surfaces. Maximum daily construction-generated emissions for BIG are summarized in **Table 5.3-19: Unmitigated Construction Emissions** and **Table 5.3-20: Unmitigated Construction Emissions (tons per year)**; also see **Appendix 5.3 BIG-1**.

Table 5.3-19: Unmitigated Construction Emissions (pounds per day)						
Construction Year	Pollutant (Maximum Pounds per Day) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Unmitigated Emissions						
2025 Off-Road Equipment Exhaust	364	3,036	2,900	8	128	118
2025 Fugitive Dust	-	-	-	-	2,556	803
2025 On-Road Mobile Sources	21	149	329	2	13	5
Total Peak Day 2025	385	3,186	3,228	10	2,696	926
2026 Off-Road Equipment Exhaust	726	6,163	5,792	15	266	244
2026 Fugitive Dust	-	-	-	-	4,624	2,045
2026 On-Road Mobile Sources	30	338	446	4	27	12
2026 Train Material Deliveries	22	584	142	1	13	13
2026 Paving and Architectural Coatings	163	-	-	-	-	-
2026 Asphalt Batching	43	86	1,223	14	320	25
Total Peak Day 2026	984	7,170	7,603	34	5,251	2,339
2027 Off-Road Equipment Exhaust	125	919	1,012	3	38	35
2027 Fugitive Dust	-	-	-	-	2,694	550
2027 On-Road Mobile Sources	18	207	267	2	17	7
2027 Paving and Architectural Coatings	808	-	-	-	-	-
Total Peak Day 2027	951	1,126	1,279	5	2,749	592
2028 Off-Road Equipment Exhaust	54	115	134	0.29	25	23
2028 Fugitive Dust	-	-	-	-	448	92
2028 On-Road Mobile Sources	17	207	225	2	17	7
Total Peak Day 2028	71	322	358	2	490	123
Maximum Total Peak Day	984	7,170	7,603	34	5,251	2,339
MDAQMD Threshold	137	137	548	137	82	65
Threshold Exceeded Without Mitigation?	Yes	Yes	Yes	No	Yes	Yes

Table 5.3-19: Unmitigated Construction Emissions (pounds per day)

Construction Year	Pollutant (Maximum Pounds per Day) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
VOC = Volatile Organic Compounds; NO _x = Nitrogen Oxides; CO = Carbon Monoxide; SO ₂ = Sulfur Dioxide; PM ₁₀ = Particulate Matter 10 microns in diameter or less; PM _{2.5} = Particulate Matter 2.5 microns in diameter or less.						
Notes: ¹ MDAQMD Rule 403 Fugitive Dust applied. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the South Coast Air Quality Management District CEQA Handbook (Tables XI-A through XI-E) were applied.						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report.						

Table 5.3-20: Unmitigated Construction Emissions (tons per year)

Construction Year	Pollutant (tons per year) ¹					
	VOC ¹	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Unmitigated Emissions						
2025 Off-Road Equipment Exhaust	15	125	120	0.32	5	5
2025 Fugitive Dust	-	-	-	-	146	72
2025 On-Road Mobile Sources	1	5	13	0.07	1	0.23
Total 2025	16	130	133	0.38	151	77
2026 Off-Road Equipment Exhaust	49	391	385	1	17	16
2026 Fugitive Dust	-	-	-	-	675	258
2026 On-Road Mobile Sources	4	38	52	0.44	3	1
2026 Train Material Deliveries	2	64	16	0.06	1	1
2026 Paving and Architectural Coatings	0.08	-	-	-	-	-
2026 Asphalt Batching	5	10	143	2	37	3
Total 2026	60	504	596	3	734	280
2027 Off-Road Equipment Exhaust	13	80	87	0.23	5	4
2027 Fugitive Dust	-	-	-	-	229	62
2027 On-Road Mobile Sources	2	22	22	0.24	2	1
2027 Paving and Architectural Coatings	105	-	-	-	-	-
Total 2027	120	102	109	0.47	235	67
2028 Off-Road Equipment Exhaust	4	8	9	0.02	2	2
2028 Fugitive Dust	-	-	-	-	30	6
2028 On-Road Mobile Sources	0.24	2	3	0.02	0.17	0.07
Total 2028	4	10	12	0.04	32	8
Maximum Total Annual	120	504	596	3	734	280
MDAQMD Threshold	25	25	100	25	15	12
Threshold Exceeded Without Mitigation?	Yes	Yes	Yes	No	Yes	Yes
VOC = Volatile Organic Compounds; NO _x = Nitrogen Oxides; CO = Carbon Monoxide; SO ₂ = Sulfur Dioxide; PM ₁₀ = Particulate Matter 10 microns in diameter or less; PM _{2.5} = Particulate Matter 2.5 microns in diameter or less.						
Notes: ¹ MDAQMD Rule 403 Fugitive Dust applied. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the South Coast Air Quality Management District CEQA Handbook (Tables XI-A through XI-E) were applied.						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report.						

Table 5.3-19 and **Table 5.3-20** show that unmitigated construction emissions would exceed the MDAQMD thresholds for VOC, NO_x, CO, PM₁₀, and PM_{2.5} construction thresholds despite compliance with applicable laws, ordinances, and regulations (LORs). The majority of emissions occur from off-road equipment exhaust. Additionally, VOC emissions occur from architectural coating and paving activities. BIG would also be required to comply with the following mitigation measures to lower construction emissions. **MM BIG AQ-1** requires controls for fugitive dust emissions and **MM BIG AQ-2** requires all architectural coatings to be super-compliant low VOC paints, consisting of no more than 10 grams per liter of VOC. **MM BIG AQ-3** requires construction equipment to meet CARB Tier 4 Final emissions standards and **MM BIG AQ-4** requires the use of renewable diesel fuel during construction. Furthermore, **MM BIG AQ-5** requires on-road construction trucks to have an average fleet mix of model year 2010 or newer (no less than the average fleet mix for the current calendar year as set forth in the EMFAC2021 database) and **MM BIG AQ-6** requires emissions controls for concrete batch plants such as reduction of fugitive dust.

Mitigated construction emissions are shown in **Table 5.3-21: Mitigated Construction Emissions (pounds per day)** and **Table 5.3-22: Mitigated Construction Emissions (tons per year)**. Despite the implementation of mitigation measures, due to the size of BIG, emissions would remain above MDAQMD's thresholds; refer to **Table 5.3-15**. Construction impacts would be significant and unavoidable despite the implementation of **MM BIG AQ-1** through **MM BIG AQ-6**.

Table 5.3-21: Mitigated Construction Emissions (pounds per day)						
Construction Year	Pollutant (Maximum Pounds per Day)^{1, 2}					
	VOC	NO_x	CO	SO₂	PM₁₀	PM_{2.5}
Mitigated Emissions						
2025 Off-Road Equipment Exhaust	336	2,258	2,900	8	67	58
2025 Fugitive Dust	-	-	-	-	839	286
2025 On-Road Mobile Sources	21	149	329	2	13	5
Total Peak Day 2025	357	2,408	3,228	10	919	349
2026 Off-Road Equipment Exhaust	655	4,179	5,791	15	129	110
2026 Fugitive Dust	-	-	-	-	1,394	743
2026 On-Road Mobile Sources	30	338	446	4	27	12
2026 Train Material Deliveries	22	584	142	1	13	13
2026 Paving and Architectural Coatings	163	-	-	-	-	-
2026 Asphalt Batching	43	86	1,223	14	320	25
Total Peak Day 2026	913	5,187	7,601	34	1,883	902
2027 Off-Road Equipment Exhaust	115	548	1,010	3	17	13
2027 Fugitive Dust	-	-	-	-	755	181
2027 On-Road Mobile Sources	18	207	267	2	17	7
2027 Paving and Architectural Coatings	161	-	-	-	-	-
Total Peak Day 2027	294	755	1,277	5	788	201
2028 Off-Road Equipment Exhaust	54	65	134	0.29	16	15
2028 Fugitive Dust	-	-	-	-	123	28
2028 On-Road Mobile Sources	17	207	225	2	17	7
Total Peak Day 2028	71	272	358	2	156	50
Maximum Total Peak Day	913	5,187	7,601	34	1,883	902
MDAQMD Threshold	137	137	548	137	82	65
Threshold Exceeded With Mitigation?	Yes	Yes	Yes	No	Yes	Yes

Table 5.3-21: Mitigated Construction Emissions (pounds per day)

Construction Year	Pollutant (Maximum Pounds per Day) ^{1, 2}					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
VOC = Volatile Organic Compounds; NO _x = Nitrogen Oxides; CO = Carbon Monoxide; SO ₂ = Sulfur Dioxide; PM ₁₀ = Particulate Matter 10 microns in diameter or less; PM _{2.5} = Particulate Matter 2.5 microns in diameter or less.						
Notes:						
¹ MDAQMD Rule 403 Fugitive Dust applied prior to mitigation. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the South Coast Air Quality Management District CEQA Handbook (Tables XI-A through XI-E) were applied.						
² Mitigation includes the incorporation of MM BIG AQ-1 (dust control), MM BIG AQ-2 (architectural coatings), MM BIG AQ-3 (Tier 4 equipment), MM BIG AQ-4 (renewable diesel fuel), MM BIG AQ-5 (on-road construction vehicles), and MM BIG AQ-6 (concrete batch plants).						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

Table 5.3-22: Mitigated Construction Emissions (tons per year)

Construction Year	Pollutant (tons per year) ^{1, 2}					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Mitigated Emissions						
2025 Off-Road Equipment Exhaust	14	86	120	0.32	3	2
2025 Fugitive Dust	-	-	-	-	46	26
2025 On-Road Mobile Sources	1	5	13	0.07	1	0
Total 2025	15	92	133	0.39	49	29
2026 Off-Road Equipment Exhaust	44	261	384	1	8	7
2026 Fugitive Dust	-	-	-	-	172	55
2026 On-Road Mobile Sources	4	38	52	0.44	3	1
2026 Train Material Deliveries	2	64	16	0.06	1	1
2026 Paving and Architectural Coatings	0.08	-	-	-	-	-
2026 Asphalt Batching	5	10	143	2	37	3
Total 2026	56	374	596	3	222	68
2027 Off-Road Equipment Exhaust	12	41	87	0.23	2	2
2027 Fugitive Dust	-	-	-	-	85	21
2027 On-Road Mobile Sources	2	22	22	0.24	2	1
2027 Paving and Architectural Coatings	21	-	-	-	-	-
Total 2027	35	63	109	0.47	89	24
2028 Off-Road Equipment Exhaust	4	4	9	0.02	1	1
2028 Fugitive Dust	-	-	-	-	8	2
2028 On-Road Mobile Sources	0.24	2	3	0.02	0.17	0.07
Total 2028	4	6	12	0.04	10	3
Maximum Total Annual	56	374	596	3	222	68
MDAQMD Threshold	25	25	100	25	15	12
Threshold Exceeded With Mitigation?	Yes	Yes	Yes	No	Yes	Yes
VOC = Volatile Organic Compounds; NO _x = Nitrogen Oxides; CO = Carbon Monoxide; SO ₂ = Sulfur Dioxide; PM ₁₀ = Particulate Matter 10 microns in diameter or less; PM _{2.5} = Particulate Matter 2.5 microns in diameter or less.						

Table 5.3-22: Mitigated Construction Emissions (tons per year)

Construction Year	Pollutant (tons per year) ^{1, 2}					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Notes:						
¹ MDAQMD Rule 403 Fugitive Dust applied prior to mitigation. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the South Coast Air Quality Management District CEQA Handbook (Tables XI-A through XI-E) were applied.						
² Mitigation includes the incorporation of MM BIG AQ-1 (dust control), MM BIG AQ-2 (architectural coatings), MM BIG AQ-3 (Tier 4 equipment), MM BIG AQ-4 (renewable diesel fuel), MM BIG AQ-5 (on-road construction vehicles), and MM BIG AQ-6 (concrete batch plants).						
Sources: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

Operations

BIG's operational emissions would be associated with area sources (e.g., landscape maintenance equipment, architectural coatings, off-road equipment, etc.), energy sources, mobile sources (i.e., motor vehicle use), and off-road equipment. The major contributors of operational emissions are heavy-duty trucks, line-haul locomotives, switcher locomotives, and non-electric cargo-handling equipment (e.g., chassis stackers, and maintenance equipment). BIG includes various features which reduce operational emissions, including dedicated Tier 4 trains to transport containers between the Ports and BIG's intermodal facility, Tier 4 switcher locomotives, the retirement of all existing switcher locomotives at the existing Barstow classification yard and the addition of six Tier 4 switcher locomotives,¹⁴ increase the renewable diesel composition within the Port's existing fueling site, the use of electric cargo handling equipment (i.e., electric rubber-tired gantry (RTG) cranes, chassis stacking forklifts, forklifts, top pick/side loaders, and electric hostlers) and the use of all-electric appliances and end uses instead of natural gas.

In addition, future year operational emissions are influenced by various regulations and agreements that would reduce operational emissions from heavy-duty trucks, including continued implementation of CARB regulations such as the In-Use Off-Road Diesel Vehicle Rule, Emission Standard for On-road Trucks, and the CARB Statewide Truck and Bus Regulation. These regulations are factored into CARB's EMFAC 2021 projections used for the on-road mobile source analysis. Unmitigated BIG operational emissions within the MDAB are summarized in **Table 5.3-23: Unmitigated Operational Emissions Within MDAB (pounds per day)** and **Table 5.3-24: Unmitigated Operational Emissions within MDAB (tons per year)**. As shown in **Table 5.3-23: Unmitigated Operational Emissions Within MDAB (pounds per day)**, emissions within MDAB would exceed applicable thresholds; therefore, mitigation is required; see *Mitigated Operations* Section below.

BIG operational emissions within the SCAB are summarized in **Table 5.3-25: Unmitigated Operational Emissions Within SCAB (pounds per day)**. As shown in **Table 5.3-25**, emissions within SCAB would be below applicable thresholds. Therefore, no mitigation is required.

¹⁴ Only six Tier 4 switcher locomotives are needed to fully replace the 15 existing Tier 0/0+/1+ switcher locomotives due to improved reliability, advanced traction control, and better power/improved torque with Tier 4 switchers.

Table 5.3-23: Unmitigated Operational Emissions Within MDAB (pounds per day)

Source	Pollutant (Maximum Pounds per Day) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
2028 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	52	1,518	383	1	32	31
Mainline (With BIG)	30	887	249	1	18	18
Net Mainline (Through BIG)	-22	-631	-134	-0.46	-14	-13
BIG Lead Tracks	9	261	74	0.26	5	5
BIG Block Swap Yard	15	338	66	0.23	9	9
BIG Intermodal Facility	0.70	20	5	0.02	0.42	0.41
BIG Maintenance	4	27	4	0.01	0.98	0.95
Locomotives Within BIG Footprint Subtotal	6	15	15	0.06	2	2
Mobile Sources						
Passenger Cars	41	38	721	2	90	23
Trucks	1	120	33	1	59	17
On-site Dust – Passenger Cars ²	-	-	-	-	4	0.91
On-site Dust – Trucks/Equipment ²	-	-	-	-	7	2
Equipment Exhaust	143	551	2,280	3	20	20
Area Sources	256	1	72	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	448	724	3,121	7	182	65
Reduced TMT Emissions (MDAB Only) ³	-1	-120	-29	-1	-74	-21
Rail Corridor Emissions – No BIG (within MDAB)	1,915	48,806	12,310	43	1,020	990
Rail Corridor Emissions - With BIG (within MDAB)	2,001	51,217	12,984	46	1,061	1,029
Net Rail Corridor Emissions Change (within MDAB) ⁴	86	2,412	675	3	40	39
2028 Total BIG Operational Emissions	533	3,016	3,767	8	148	83
Existing Barstow Yard Switcher Replacement	-131	-821	-53	-0.26	-39	-38
Net 2028 Emissions	403	2,195	3,715	8	109	45
MDAQMD Threshold	137	137	548	137	82	65
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	No
2033 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	54	1,601	423	1	33	32
Mainline (With BIG)	30	899	271	0.96	18	17
Net Mainline (Through BIG)	-23	-702	-152	-0.53	-15	-14
BIG Lead Tracks	9	275	84	0.30	5	5
BIG Block Swap Yard	16	366	73	0.26	10	10
BIG Intermodal Facility	0.86	26	7	0.02	0.52	0.50
BIG Maintenance	4	27	4	0.01	0.98	0.96
Locomotives Within BIG Footprint Subtotal	6	-7	15	0	2	2

Table 5.3-23: Unmitigated Operational Emissions Within MDAB (pounds per day)						
Source	Pollutant (Maximum Pounds per Day) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Mobile Sources						
Passenger Cars	43	34	758	3	17	6
Trucks	2	128	33	1	14	6
On-site Dust – Passenger Cars ²	-	-	-	-	5	1
On-site Dust – Trucks/Equipment ²	-	-	-	-	9	2
Equipment Exhaust	150	557	2,282	3	2	20
Area Sources	256	1	72	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	456	713	3,160	7	48	37
Reduced TMT Emissions (MDAB Only) ³	-1	-125	-27	-1	-77	-22
Rail Corridor Emissions – No BIG (within MDAB)	1,924	49,997	13,214	47	1,015	985
Rail Corridor Emissions - With BIG (within MDAB)	2,036	53,122	14,131	50	1,068	1,036
Net Rail Corridor Emissions Change (within MDAB)	112	3,125	917	4	53	51
2033 Total BIG Operational Emissions	567	3,713	4,051	9	24	67
Existing Barstow Yard Switcher Replacement ⁵	-131	-821	-53	0	-39	-38
Net 2033 Emissions	436	2,896	3,994	9	-81	13
MDAQMD Threshold	137	137	548	137	82	65
Threshold Exceeded?	Yes	Yes	Yes	No	No	No
2048 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	53	1,704	529	2	31	30
Mainline (With BIG)	31	1,002	348	1	18	17
Net Mainline (Through BIG)	-21	-702	-181	-0.63	-13	-13
BIG Lead Tracks	9	295	104	0.37	5	5
BIG Block Swap Yard	25	561	110	0.39	16	15
BIG Intermodal Facility	0.69	22	7	0.02	0.40	0.39
BIG Maintenance	5	34	5	0.02	1	1
Locomotives Within BIG Footprint Subtotal	18	211	45	0.17	9	9
Mobile Sources						
Passenger Cars	33	24	701	3	132	34
Trucks	2	132	26	1	92	28
On-site Dust – Passenger Cars ²	-	-	-	-	13	4
On-site Dust – Trucks/Equipment ²	-	-	-	-	15	4
Equipment Exhaust	156	558	2,286	3	19	19
Area Sources	256	0.62	72	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	465	926	3,130	7	281	96
Reduced TMT Emissions (MDAB Only) ³	-1	-122	-16	-1	-108	-30

Table 5.3-23: Unmitigated Operational Emissions Within MDAB (pounds per day)

Source	Pollutant (Maximum Pounds per Day) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Rail Corridor Emissions – No BIG (within MDAB)	1,919	53,861	16,699	59	969	940
Rail Corridor Emissions - With BIG (within MDAB)	2,016	56,795	17,706	63	1,012	981
Net Rail Corridor Emissions Change (within MDAB) ⁴	96	2,934	1,007	4	43	42
2048 Total BIG Operational Emissions	560	3,738	4,120	10	215	107
Existing Barstow Yard Switcher Replacement	-131	-821	-53	-0.26	-39	-38
Net 2048 Emissions	430	2,917	4,067	10	176	70
MDAQMD Threshold	137	137	548	137	82	65
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	Yes
Notes: ¹ Totals may not add up due to rounding. ² Includes fugitive dust, break wear, and tire wear from fleet vehicles, on-site passenger cars, heavy-duty trucks, and cargo-handling equipment. ³ BIG would improve goods movement and supply chain efficiency by transporting more containers with trains to reduce approximately 40,328 TMT per day in 2028, approximately 49,500 TMT per day in 2033, and approximately 59,305 TMT per day in 2048; See Appendix 5.15 BIG-1: Barstow International Gateway CEQA Assessment – Transportation Analysis ⁴ MDAB only Corridor emissions per EnSafe, <i>BNSF Barstow International Gateway Corridor Emissions Analysis</i> , October 2025 (see Appendix 5.3 BIG-1, Appendix B). Note that operational train emissions modeling was completed for future years without BIG (2028, 2033, and 2048) to establish future baseline train emissions and analyze incremental emissions increases directly attributable to BIG.						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

Table 5.3-24: Unmitigated Operational Emissions within MDAB (tons per year)

Source	Pollutant (Tons per Year) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
2028 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	8	245	62	0.22	5	5
Mainline (With BIG)	5	143	40	0.14	3	3
Net Mainline (Through BIG)	-3	-102	-22	-0.07	-2	-2
BIG Lead Tracks	1	42	12	0.04	0.87	0.84
BIG Block Swap Yard	2	55	11	0.04	1	1
BIG Intermodal Facility	0.11	3	1	<0.01	0.07	0.07
BIG Maintenance	1	4	1	<0.01	0.16	0.15
Locomotives Within BIG Footprint Subtotal	1	2	3	0.01	0.38	0.36
Mobile Sources						
Passenger Cars	6	5	96	0.32	16	4
Trucks	0.23	18	5	0.16	11	3
On-site Dust – Passenger Cars ²	-	-	-	-	0.67	0.17
On-site Dust – Trucks/Equipment ²	-	-	-	-	1	0.32
Equipment Exhaust	12	42	379	0.54	2	1
Area Sources	47	0.06	6	<0.01	<0.01	<0.01

Table 5.3-24: Unmitigated Operational Emissions within MDAB (tons per year)

Source	Pollutant (Tons per Year) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	66	68	489	1	30	9
Reduced TMT Emissions (MDAB Only) ³	-0.20	-22	-5	-0.21	-14	-4
Rail Corridor Emissions – No BIG (within MDAB)	309	7,882	1,988	7	165	160
Rail Corridor Emissions - With BIG (within MDAB)	323	8,272	2,097	7	171	166
Net Rail Corridor Emissions Change (within MDAB) ⁴	14	389	109	0.44	6	6
2028 Total BIG Operational Emissions	80	435	593	1	23	12
Existing Barstow Yard Switcher Replacement	-24	-150	-10	-0.05	-7	-7
Net 2028 Emissions	56	286	583	1	16	5
MDAQMD Threshold	25	25	100	25	15	12
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	No
2033 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	9	259	68	0.24	5	5
Mainline (With BIG)	5	145	44	0.16	3	3
Net Mainline (Through BIG)	-4	-113	-25	-0.09	-2	-2
BIG Lead Tracks	1	44	14	0.05	0.89	0.86
BIG Block Swap Yard	3	59	12	0.04	2	2
BIG Intermodal Facility	0.14	4	1	<0.01	0.08	0.08
BIG Maintenance	0.59	4	0.67	<0.01	0.16	0.15
Locomotives Within BIG Footprint Subtotal	1	-1	2	0.01	0.35	0.34
Mobile Sources						
Passenger Cars	5	3	92	0.40	24	6
Trucks	0.28	20	4	0.20	16	5
On-site Dust – Passenger Cars ²	-	-	-	-	2	0.62
On-site Dust – Trucks/Equipment ²	-	-	-	-	3	0.69
Equipment Exhaust	13	43	380	0.54	2	2
Area Sources	47	0.06	6	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	66	65	485	1	47	14
Reduced TMT Emissions (MDAB Only) ³	-0.21	-23	-5	-0.23	-14	-4
Rail Corridor Emissions – No BIG (within MDAB)	311	8,075	2,134	8	164	159
Rail Corridor Emissions - With BIG (within MDAB)	329	8,579	2,282	8	172	167
Net Rail Corridor Emissions Change (within MDAB) ⁴	18	505	148	0.59	9	8
2033 Total BIG Operational Improvements	84	547	628	1	41	18
Existing Barstow Yard Switcher Replacement	-24	-150	-10	-0.05	-7	-7
Net 2033 Emissions	60	397	618	1	34	11

Table 5.3-24: Unmitigated Operational Emissions within MDAB (tons per year)

Source	Pollutant (Tons per Year) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
MDAQMD Threshold	25	25	100	25	15	12
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	No
2048 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	9	275	85	0.30	5	5
Mainline (With BIG)	5	162	56	0.20	3	3
Net Mainline (Through BIG)	-3	-113	-29	-0.10	-2	-2
BIG Lead Tracks	1	48	17	0.06	0.84	0.82
BIG Block Swap Yard	4	91	18	0.06	3	2
BIG Intermodal Facility	0.13	4	1	<0.01	0.07	0.07
BIG Maintenance	0.75	6	0.89	<0.01	0.20	0.19
Locomotives Within BIG Footprint Subtotal	3	35	7	0.03	2	1
Mobile Sources						
Passenger Cars	5	3	92	0.40	24	6
Trucks	0.28	20	4	0.20	16	5
On-site Dust – Passenger Cars ²	-	-	-	-	2	0.62
On-site Dust – Trucks/Equipment ²	-	-	-	-	3	0.69
Equipment Exhaust	15	44	376	0.54	1	1
Area Sources	47	0.06	6	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	70	102	486	1	48	15
Reduced TMT Emissions (MDAB Only) ³	-0.21	-22	-3	-0.24	-20	-5
Rail Corridor Emissions – No BIG (within MDAB)	310	8,699	2,697	10	156	152
Rail Corridor Emissions - With BIG (within MDAB)	326	9,173	2,860	10	163	159
Net Rail Corridor Emissions Change (within MDAB) ⁴	16	474	163	0.65	7	7
2048 Total BIG Operational Emissions	86	553	646	2	35	16
Existing Barstow Yard Switcher Replacement	-24	-150	-10	-0.05	-7	-7
Net 2048 Emissions	62	403	636	2	28	9
MDAQMD Threshold	25	25	100	25	15	12
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	No
Notes:						
¹ Totals may not add up due to rounding.						
² Includes fugitive dust, break wear, and tire wear from fleet vehicles, on-site passenger cars, heavy-duty trucks, and cargo-handling equipment.						
³ BIG would improve goods movement and supply chain efficiency by transporting more containers with trains to reduce approximately 14,719,796 annual TMT in 2028, approximately 18,067,338 annual TMT in 2033, and approximately 21,646,477 annual TMT in 2048; See Appendix 5.15 BIG-1: Barstow International Gateway CEQA Assessment – Transportation Analysis .						
⁴ MDAB only Corridor emissions per EnSafe, BNSF Barstow International Gateway Corridor Emissions Analysis, October 2025 (Appendix 5.3 BIG-1, Appendix B).						
Note that operational train emissions modeling was completed for future years without BIG (2028, 2033, and 2048) to establish future baseline train emissions and analyze incremental emissions increases directly attributable to BIG.						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

Table 5.3-25: Unmitigated Operational Emissions Within SCAB (pounds per day)						
Source	Pollutant (Pounds per Day) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
2028 OPERATIONS						
2028 Rail Corridor Emissions - Without BIG	432	11,008	2,776	10	230	223
2028 Rail Corridor Emissions - With BIG	436	11,118	3,080	11	228	221
Net Rail Corridor Emissions Change (within SCAB) ²	4	110	303	1	-2	-2
Reduced TMT Emissions (SCAB Only) ³	-5	-394	-109	-4	-230	-64
Net 2028 Emissions	-0.83	-284	195	-2	-232	-66
South Coast AQMD Threshold	55	55	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No
2033 OPERATIONS						
2033 Rail Corridor Emissions - Without BIG	435	11,302	2,987	11	229	222
2033 Rail Corridor Emissions - With BIG	442	11,460	3,390	12	228	221
Net Rail Corridor Emissions Change (within SCAB) ²	7	158	404	2	-2	-2
Reduced TMT Emissions (SCAB Only) ³	-5	-441	-116	-4	-241	-69
Net 2033 Emissions	1	-283	288	-3	-243	-70
South Coast AQMD Threshold	55	55	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No
2048 OPERATIONS						
2048 Rail Corridor Emissions – No BIG	435	12,216	3,787	13	220	213
2048 Rail Corridor Emissions - With BIG	446	12,451	4,259	15	220	213
Net Rail Corridor Emissions Change (within SCAB) ²	11	236	472	2	-0.01	-0.01
Reduced TMT Emissions (SCAB Only) ³	-6	-425	-82	-4	-352	-97
Net 2048 Emissions	5	-189	390	-2	-352	-97
South Coast AQMD Threshold	55	55	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No
¹ Totals may not add up due to rounding.						
² SCAB only Corridor emissions per EnSafe, <i>BNSF Barstow International Gateway Corridor Emissions Analysis</i> , September 2025.						
³ BIG would improve goods movement and supply chain efficiency by transporting more containers with trains to reduce approximately 124,710 TMT per day in 2028, approximately 163,607 TMT per day in 2033, and approximately 192,255 TMT per day in 2048; See Appendix 5.15 BIG-1: Barstow International Gateway CEQA Assessment – Transportation Analysis .						
Sources: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

Regional Emissions Improvements and Pollutant Transport

As discussed above, BIG improves goods movement and supply chain efficiency by transporting more containers by train to eliminate approximately 1,715 daily truck trips in 2028, 2,270 daily truck trips in 2033, and 2,635 daily truck trips in 2048; see **Table 19: BIG VMT Detail of Appendix 5.15 BIG-1: Barstow International Gateway CEQA Assessment – Transportation Analysis**. BIG is anticipated to reduce truck miles traveled by increasing the use of trains for cargo transportation and by providing an intermodal facility closer to unit origin than currently exists. Under existing conditions, cargo arrives at the Ports on container ships in 40-foot international containers, which are then placed onto heavy-duty trucks and transported to local warehouses. The cargo is then transferred from the 40-foot international containers to 53-foot domestic containers, which are trucked back to rail yards, transloaded onto trains, and

transported generally easterly to their final destination. The transloading results in a significant number of truck trips and associated criteria pollutant and GHG emissions primarily within the MDAQMD region.

Prevailing winds transport O₃ and O₃ precursors from the SCAB and the San Joaquin Valley Air Basin into and through the MDAB. As noted in the MDAQMD 2023 O₃ Attainment Plan, due to meteorological and terrain effects, the air flow and transport of emissions from the SCAB is the major source of O₃ pollution in Western MD.

Furthermore, the MDAQMD 2023 O₃ Attainment Plan also notes that the current and new NO_x emission reduction commitments from CARB, South Coast AQMD, and the San Joaquin APCD will drive O₃ concentrations down even further for the future years within the MDAB. In 2020 NO_x emissions decreased by up to 20 percent due to the additional NO_x emission reductions caused by the pandemic, resulting in a 0-2 parts per billion decrease in O₃. This suggests that NO_x emission control strategies in upwind areas such as SCAB and the San Joaquin Valley are expected to be effective in reducing O₃ levels in future years. As such, emissions improvements from TMT reductions and train operations improvements compared to without BIG conditions in the SCAB would also improve emissions within the western portion of the MDAB by reducing the amount of pollutants transported into the MDAB.

Mitigated Operations

Unmitigated operational emissions would exceed the MDAQMD VOC, NO_x, CO, PM₁₀, and PM_{2.5} thresholds; see **Table 5.3-23** and **Table 5.3-24**. The majority of emissions occur from locomotives, heavy-duty trucks, equipment exhaust, and fugitive dust. **MM BIG AQ-7** requires sweeping of paved areas to reduce fugitive dust. According to the Western Regional Air Partnership's Fugitive Dust Handbook, an 86 percent sweeping efficiency and a 14-day frequency can result in a PM₁₀ control efficiency of seven percent.

To reduce exhaust emissions, **MM BIG AQ-8** requires RTG cranes to use renewable diesel. **MM BIG AQ-9** through **MM BIG AQ-14** require various measures to reduce BIG transload warehouse-related operational emissions. For example, **MM BIG AQ-9** includes truck idling limits, **MM BIG AQ-10** requires Tier 4 emergency backup generators, and **MM BIG AQ-11** and **MM BIG AQ-12** require truck efficiency measures such as compliance with CARB's Carl Moyer Efficiency Program and U.S. EPA's Smart Way Program. **MM AQ-13** would further reduce emissions by requiring electric landscaping equipment. To support future technologies, and **MM BIG AQ-14** requires EV charging infrastructure.

BIG's mitigated operational emissions are shown in **Table 5.3-26: Mitigated Operational Emissions within MDAB (pounds per day)** and **Table 5.3-27: Mitigated Operational Emissions Within MDAB (tons per year)**. The MMs are described below.

Table 5.3-26: Mitigated Operational Emissions within MDAB (pounds per day)

Source	Pollutant (Maximum Pounds per Day) ^{1, 2}					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
2028 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	52	1,518	383	1	32	31
Mainline (With BIG)	30	887	249	1	18	18
Net Mainline (Through BIG)	-22	-631	-134	-0.46	-14	-13
BIG Lead Tracks	9	261	74	0.26	5	5
BIG Block Swap Yard	15	338	66	0.23	9	9
BIG Intermodal Facility	0.69	20	5	0.02	0.42	0.41
BIG Maintenance	4	27	4	0.01	0.98	0.95
Locomotives Within BIG Footprint Subtotal	6	15	15	0.06	2	2
Mobile Sources						
Passenger Cars	41	38	721	2	90	23
Trucks	1	120	33	1	59	17
On-site Dust – Passenger Cars ³	-	-	-	-	4	0.91
On-site Dust – Trucks/Equipment ³	-	-	-	-	7	1.91
Equipment Exhaust	37	75	244	0.48	2	2
Area Sources	207	<0.01	<0.01	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	294	247	1,013	4	165	48
Reduced TMT Emissions (MDAB Only) ⁴	-1.10	-120	-29	-1	-74	-21
Rail Corridor Emissions - No BIG (within MDAB)	1,915	48,806	12,310	43	1,020	990
Rail Corridor Emissions - With BIG (within MDAB)	2,001	51,217	12,984	46	1,061	1,029
Net Rail Corridor Emissions Change (MDAB Only) ⁵	86	2,412	675	3	40	39
2028 Total BIG Operational Improvements	379	2,539	1,659	5	131	66
Existing Barstow Yard Switcher Replacement	-131	-821	-53	-0.26	-39	-38
Net 2028 Emissions	248	1,719	1,606	5	92	28
MDAQMD Threshold	137	137	548	137	82	65
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	No
2033 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	54	1,601	423	1	33	32
Mainline (With BIG)	30	899	271	1	18	17
Net Mainline (Through BIG)	-23	-703	-152	-0.53	-15	-14
BIG Lead Tracks	9	275	84	0.30	5	5
BIG Block Swap Yard	16	366	73	0.26	10	10
BIG Intermodal Facility	0.86	26	7	0.02	0.52	0.50
BIG Maintenance	4	27	4	0.01	0.98	0.96

Table 5.3-26: Mitigated Operational Emissions within MDAB (pounds per day)						
Source	Pollutant (Maximum Pounds per Day) ^{1, 2}					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Locomotives Within BIG Footprint Subtotal	6	-7	15	0.07	2	2
Mobile Sources						
Passenger Cars	43	34	758	3	17	6
Trucks	2	128	33	1	14	6
On-site Dust – Passenger Cars ³	-	-	-	-	5	1
On-site Dust – Trucks/Equipment ³	-	-	-	-	9	2
Equipment Exhaust	37	75	244	0.48	2	2
Area Sources	207	<0.01	<0.01	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	295	230	1,051	4	49	20
Reduced TMT Emissions (MDAB Only) ⁴	-1	-125	-27	-1	-77	-22
Rail Corridor Emissions - No BIG (within MDAB)	1,915	48,806	12,310	43	1,020	990
Rail Corridor Emissions - With BIG (within MDAB)	2,001	51,217	12,984	46	1,061	1,029
Net Rail Corridor Emissions Change (MDAB Only) ⁵	86	2,412	675	3	40	39
2033 Total BIG Operational Emissions	380	2,517	1,698	6	12	37
Existing Barstow Yard Switcher Replacement	-131	-821	-53	-0.26	-39	-38
Net 2033 Emissions	249	1,696	1,645	5	-27	-1
MDAQMD Threshold	137	137	548	137	82	65
Threshold Exceeded?	Yes	Yes	Yes	No	No	No
2048 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	53	1,704	529	2	31	30
Mainline (With BIG)	31	1,002	348	1	18	17
Net Mainline (Through BIG)	-21	-702	-181	-0.63	-13	-13
BIG Lead Tracks	9	295	104	0.37	5	5
BIG Block Swap Yard	25	561	110	0.39	16	15
BIG Intermodal Facility	0.69	22	7	0.02	0	0
BIG Maintenance	5	34	5	0.02	1	1
Locomotives Within BIG Footprint Subtotal	18	211	45	0.17	9	9
Mobile Sources						
Passenger Cars	33	24	701	3	132	34
Trucks	2	132	26	1	92	26
On-site Dust – Passenger Cars ³	-	-	-	-	13	4
On-site Dust – Trucks/Equipment ³	-	-	-	-	15	4
Equipment Exhaust	50	82	249	0.49	2	2
Area Sources	207	<0.01	<0.01	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-

Table 5.3-26: Mitigated Operational Emissions within MDAB (pounds per day)

Source	Pollutant (Maximum Pounds per Day) ^{1, 2}					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
BIG Footprint Emissions	311	449	1,021	5	264	78
Reduced TMT Emissions (MDAB Only) ⁴	-1	-122	-16	-1	-108	-30
Rail Corridor Emissions - No BIG (within MDAB)	1,919	53,861	16,699	59	969	940
Rail Corridor Emissions - With BIG (within MDAB)	2,016	56,795	17,706	63	1,012	981
Net Rail Corridor Emissions Change (MDAB Only) ⁵	96	2,934	1,007	4	43	42
2048 Total BIG Operational Emissions	406	3,261	2,012	7	198	90
Existing Barstow Yard Switcher Replacement	-131	-821	-53	-0.26	-39	-38
Net 2048 Emissions	275	2,441	1,959	7	159	52
MDAQMD Threshold	137	137	548	137	82	65
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	No
¹ Totals may not add up due to rounding. ² Mitigation measures include MM BIG AQ-7 (sweeping paved areas), MM BIG AQ-8 (Tier 4 Switchers), MM BIG AQ-9 (Replace Tier 1+ locomotives), and MM BIG AQ-10 (renewable diesel RTG cranes). ³ Includes fugitive dust, break wear, and tire wear from fleet vehicles, on-site passenger cars, heavy-duty trucks, and cargo-handling equipment. ⁴ BIG would improve goods movement and supply chain efficiency by transporting more containers with trains to reduce approximately 40,328 TMT per day in 2028, approximately 49,500 TMT per day in 2033, and approximately 59,305 TMT per day in 2048 from regional roadways; See Appendix 5.15 BIG-1: Barstow International Gateway CEQA Assessment – Transportation Analysis . ⁵ MDAB only Corridor emissions per EnSafe, BNSF Barstow International Gateway Corridor Emissions Analysis, October 2025 (Appendix 5.3 BIG-1, Appendix B).						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

Table 5.3-27: Mitigated Operational Emissions Within MDAB (tons per year)

Source	Pollutant (Tons per Year) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
2028 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	8	245	62	0.22	5	5
Mainline (With BIG)	5	143	40	0.14	3	3
Net Mainline (Through BIG)	-3	-102	-22	-0.07	-2	-2
BIG Lead Tracks	1	42	12	0.04	0.87	0.84
BIG Block Swap Yard	2	55	11	0.04	1.47	1.42
BIG Intermodal Facility	0.11	3	0.83	<0.01	0.07	0.07
BIG Maintenance	0.59	4	0.66	<0.01	0.16	0.15
Locomotives Within BIG Footprint Subtotal	1	2	3	0.01	0.38	0.36
Mobile Sources						
Passenger Cars	6	5	96	0.32	16	4
Trucks	0.23	18	5	0.16	11	3
On-site Dust – Passenger Cars ³	-	-	-	-	0.67	0.17
On-site Dust – Trucks/Equipment ³	-	-	-	-	1	0.32
Equipment Exhaust	4.82	7	8	0.02	0.17	0.16
Area Sources	38	<0.01	<0.01	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	50	33	112	0.52	29	8
Reduced TMT Emissions (MDAB Only) ⁴	-0.20	-22	-5	-0.21	-14	-4
Rail Corridor Emissions – No BIG (within MDAB)	309	7,882	1,988	7	165	160
Rail Corridor Emissions - With BIG (within MDAB)	323	8,272	2,097	7	171	166
Net Rail Corridor Emissions Change (MDAB Only) ⁵	14	389	109	0	6	6
2028 Total BIG Operational Emissions	64	400	215	0.75	22	11
Existing Barstow Yard Switcher Replacement	-24	-150	-10	-0.05	-7	-7
Net 2028 Emissions	40	250	206	0.70	15	4
MDAQMD Threshold	25	25	100	25	15	12
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	No
2033 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	9	259	68	0.24	5	5
Mainline (With BIG)	5	145	44	0.16	3	3
Net Mainline (Through BIG)	-4	-113	-25	-0.09	-2	-2
BIG Lead Tracks	1	44	14	0.05	0.89	0.86
BIG Block Swap Yard	3	59	12	0.04	2	2
BIG Intermodal Facility	0.14	4	1	<0.01	0.08	0.08
BIG Maintenance	0.59	4	0.67	<0.01	0.16	0.15
Locomotives Within BIG Footprint Subtotal	1	-1	2	0.01	0.35	0.34

Table 5.3-27: Mitigated Operational Emissions Within MDAB (tons per year)

Source	Pollutant (Tons per Year) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Mobile Sources						
Passenger Cars	5	3	92	0.40	24	6
Trucks	0.28	20	4	0.20	16	5
On-site Dust – Passenger Cars ³	-	-	-	-	2	0.62
On-site Dust – Trucks/Equipment ³	-	-	-	-	3	0.69
Equipment Exhaust	4.82	7	8	0.02	0.17	0.16
Area Sources	38	<0.01	<0.01	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	49	29	107	0.62	45	12
Reduced TMT Emissions (MDAB Only) ⁴	-0.21	-23	-5	-0.23	-14	-4
Rail Corridor Emissions - No BIG (within MDAB)	309	7,882	1,988	7	165	160
Rail Corridor Emissions - With BIG (within MDAB)	323	8,272	2,097	7	171	166
Net Rail Corridor Emissions Change (MDAB Only) ⁵	14	389	109	0.44	6	6
2033 Total BIG Operational Emissions	63	396	211	1	38	15
Existing Barstow Yard Switcher Replacement	-24	-150	-10	-0.05	-7	-7
Net 2033 Emissions	39	246	201	0.79	31	8
MDAQMD Threshold	25	25	100	25	15	12
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	No
2048 Operations						
Locomotives (BIG Footprint)						
Mainline (Without BIG)	9	275	85	0.30	5	5
Mainline (With BIG)	5	162	56	0.20	3	3
Net Mainline (Through BIG)	-3	-113	-29	-0.10	-2.09	-2
BIG Lead Tracks	1	48	17	0.06	0.84	0.82
BIG Block Swap Yard	4	91	18	0.06	3	2
BIG Intermodal Facility	0.13	4	1	<0.01	0.07	0.07
BIG Maintenance	0.75	6	1	<0.01	0.20	0.19
Locomotives Within BIG Footprint Subtotal	3	35	7	0.03	2	1
Mobile Sources						
Passenger Cars	5	3	92	0.40	24	6
Trucks	0.28	20	4	0.20	16	5
On-site Dust – Passenger Cars ³	-	-	-	-	2	0.62
On-site Dust – Trucks/Equipment ³	-	-	-	-	3	0.69
Equipment Exhaust	7.12	8	9	0.02	0.11	0.11
Area Sources	35.74	<0.01	<0.01	<0.01	<0.01	<0.01
Energy (Natural Gas)	-	-	-	-	-	-
BIG Footprint Emissions	51	66	113	0.64	46	13
Reduced TMT Emissions (MDAB Only) ⁴	-0.21	-22	-3	-0.24	-20	-5
Rail Corridor Emissions - No BIG (within MDAB)	310	8,699	2,697	10	156	152

Table 5.3-27: Mitigated Operational Emissions Within MDAB (tons per year)						
Source	Pollutant (Tons per Year) ¹					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Rail Corridor Emissions - With BIG (within MDAB)	326	9,173	2,860	10	163	159
Net Rail Corridor Emissions Change (MDAB Only) ⁵	16	474	163	1	7	7
2048 Total BIG Operational Emissions	67	518	273	1	34	15
Existing Barstow Yard Switcher Replacement	-24	-150	-10	-0.05	-7	-7
Net 2048 Emissions	43	368	263	1	26	8
MDAQMD Threshold	25	25	100	25	15	12
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	No
¹ Totals may not add up due to rounding.						
² Mitigation measures include MM BIG AQ-7 (sweeping paved areas), MM BIG AQ-8 (Tier 4 Switchers), MM BIG AQ-9 (Replace Tier 1+ locomotives), and MM BIG AQ-10 (renewable diesel RTG cranes).						
³ Includes fugitive dust, break wear, and tier wear from fleet vehicles, on-site passenger cars, heavy-duty trucks, and cargo-handling equipment.						
⁴ BIG would improve goods movement and supply chain efficiency by transporting more containers with trains to reduce approximately 40,328 TMT per day in 2028, approximately 49,500 TMT per day in 2033, and approximately 59,305 TMT per day in 2048; See Appendix 5.15 BIG-1: Barstow International Gateway CEQA Assessment – Transportation Analysis .						
⁵ MDAB only Corridor emissions per EnSafe, BNSF Barstow International Gateway Corridor Emissions Analysis, October 2025 (Appendix 5.3 BIG-1, Appendix B).						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

Table 5.3-26 and **Table 5.3-27** show that despite the implementation of **MM BIG AQ-7** through **MM BIG AQ-14**, operational emissions would remain above MDAQMD thresholds. Therefore, operational emissions would be significant and unavoidable. As shown above, unmitigated emissions within SCAB (i.e., South Coast AQMD’s jurisdiction) would be below applicable thresholds and no mitigation is required.

Laws, Ordinances, and Regulations

Laws, Ordinances, and Regulations (LORs) are existing requirements that are based on local, State, or federal regulations or laws that are frequently required independently of CEQA review. Typical LORs include compliance with the provisions of the Building Code, MDAQMD Rules, etc. The City may impose additional conditions during the approval process, as appropriate. Because LORs are neither BIG specific nor a result of development of BIG, they are not considered to be mitigation measures. These measures are considered part of the unmitigated project. Note that a number of measures may ultimately fall under the responsibility of the party that constructs or operates transload warehouses, thus, the following list of LORs and mitigation measures at times use the term “implementing entity” to refer to the responsible party (either BNSF, its contractor, or a transload warehouse developer or their contractor).

LOR AQ-1

Prior to the issuance of grading permits, the City Engineer shall confirm that the Grading Plan, Building Plans and Specifications require all construction contractors to comply with Mojave Air Quality Management District (MDAQMD) Rule 403 to minimize construction emissions of dust and particulates. The measures in the plans/specifications include, but are not limited to, the following:

- Minimize fugitive dust emissions from wrecking, excavation, grading, clearing of land and solid waste disposal operations.

- A person shall not cause or allow particulate matter (PM) to exceed $100 \mu\text{g}/\text{m}^3$ when determined as the difference between upwind and downwind samples collected on high volume samplers at the property line for a minimum of five hours.
- Prevent visible PM from being deposited upon public roadways as a direct result of their operations. Reasonable precautions shall include, but are not limited to:
 - Remove PM from off-road equipment prior to movement on paved streets or the prompt removal of any material from paved streets onto which such material has been deposited.
 - Use periodic watering for short-term stabilization of Disturbed Surface Area to minimize visible fugitive dust emissions. Use of a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes shall be considered sufficient to maintain compliance.
 - Take actions sufficient to prevent project-related track-outs onto paved surfaces.
 - Cover loaded haul vehicles while operating on publicly maintained paved surfaces.
 - Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than thirty days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate Visible Fugitive Dust emissions.
 - Clean-up project-related Track-outs or spills on Publicly Maintained paved surfaces within twenty-four hours.
 - Reduce non-essential Earth-Moving Activity under High Wind conditions. For purposes of this Rule, a reduction in Earth-Moving Activity when visible dusting occurs from moist and dry surfaces due to wind erosion shall be considered sufficient to maintain compliance.
 - Prepare and submit to the MDAQMD, prior to commencing Earth-Moving Activity, a dust control plan that describes all applicable dust control measures that will be implemented at the project.
 - Provide Stabilized access route(s) to the project site as soon as is feasible.
 - Maintain natural topography to the extent possible.
 - Construct parking lots and paved roads first, where feasible; and
 - Construct upwind portions of project first, where feasible.

- The Owner or Operator of a site undergoing weed abatement activity shall not disrupt the soil crust to the extent that Visible Fugitive Dust is created due to wind erosion.

LOR AQ-2 Pursuant to MDAQMD Rule 1113, the Applicant shall require by contract specifications that the interior and exterior architectural coatings products used have a volatile organic compound rating of 50 grams per liter or less.

LOR AQ-3 The Applicant shall ensure contractors post signs and train personnel on compliance with California Code of Regulations, Title 13, § 2449 requiring applicable diesel powered construction equipment idling to be limited to five minutes, except in circumstances when the limit does not apply (e.g., when queuing).

LOR AQ-4 BIG shall be designed in accordance with the applicable California Code of Regulations (CCR), Title 24 (California Building Standards Code) Energy Efficiency Standards for Non-residential Buildings (CCR, Title 24, Part 6). These standards are updated, nominally every three years, to incorporate improved energy efficiency technologies and methods. The City of Barstow Building Official, or designee shall ensure compliance prior to the issuance of each building permit. The Title 24 Energy Efficiency Standards (§ 110.10) require buildings to be designed to have 15 percent of the roof area “solar ready” that will structurally accommodate later installation of rooftop solar panels. If future building operators pursue providing rooftop solar panels, they will submit plans for solar panels prior to occupancy.

LOR AQ-5 BIG shall be designed in accordance with the applicable California Green Building Standards (CALGreen) Code (24 California Code of Regulations, Part 11). The Building Official, or designee shall ensure compliance prior to the issuance of each building permit. These requirements include, but are not limited to:

- Design buildings to be water efficient. Install water-efficient fixtures in accordance with the CALGreen Code, Part 11, § 5.303.
- Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with the CALGreen Code, Part 11, § 5.408.1.
- Provide storage areas for recyclables and green waste and adequate recycling containers located in readily accessible areas in accordance with the CALGreen Code, Part 11, § 5.410.
- To facilitate future installation of electric vehicle supply equipment, construction shall comply with CALGreen Code, Part 11, § 5.106.5.3 (non-residential electric vehicle charging).

Impact 5.3-2: BIG: Level of Significance Before Mitigation: Potentially Significant Impact.

Mitigation Measures

MM BIG AQ-1 Fugitive Dust Emissions. During construction, the contractor shall employ the following measures to minimize and control fugitive dust emissions. The contractor shall prepare a fugitive dust control plan that complies with Mojave Desert Air Quality Management (MDAQMD) Rule 403, which, at a minimum, shall describe how each measure would be employed, identify the individual responsible for ensuring implementation, and address the following components unless alternative measures are approved by the MDAQMD.

- Water unpaved road surface shall be maintained with adequate moisture.
- Limit vehicle travel speed on unpaved roads to 25 miles per hour for loaded haul trucks which may be exceeded if visible fugitive dust is not generated.
- Reduce non-essential dust-generating activities when average wind speed exceeds 25 mph.
- Stabilize disturbed surface areas, including storage piles, that are not being used for over two weeks, by using water, a chemical stabilizer/suppressant, hydro mulch, or by covering with a tarp or other suitable cover or vegetative ground cover, to control fugitive dust emissions effectively. In areas adjacent to organic farms, the Contractor would use non-chemical means of dust suppression. Use of a water truck during visible dusting episodes is considered sufficient for compliance with this measure. For disturbed surface areas, project-related dust generating activities should be based on the difference between upwind and downwind dust (i.e., the metric should be no more dust than currently exiting the site).
- For buildings up to 6 stories in height, wet all exterior surfaces of buildings during demolition.

MM BIG AQ-2 Low VOC Paint (Construction and Operations). During construction and operations, BIG shall utilize “Super-Compliant” low VOC paints. Super-Compliant low VOC paints shall be no more than 10 grams per liter of VOC. Prior to issuance of building permits, the City of Barstow Building and Safety Department shall confirm that plans include the following specifications:

- All architectural coatings will be super-compliant low VOC paints.
- Recycle leftover paint. Take any leftover paint to a hazardous waste center; do not mix leftover water-based and oil-based paints.
- Keep lids closed on all paint containers when not in use to prevent VOC emissions and excessive odors.
- For water-based paints, clean up with water only. Whenever possible, do not rinse the cleanup water down the drain or pour it directly into the ground or the

storm drain. Set aside the can of cleanup water and take it to the hazardous waste center (www.cleanup.org).

- Use compliant low-VOC cleaning solvents to clean paint application equipment.
- Keep all paint- and solvent-laden rags in sealed containers to prevent VOC emissions.
- Contractors shall construct/build with materials that do not require painting and use pre-painted construction materials to the extent practicable.
- Use high-pressure/low volume paint applicators with a minimum transfer efficiency of at least 50 percent or other application techniques with equivalent or higher transfer efficiency.

MM BIG AQ-3

Reduce Exhaust Emissions from Off-Road Construction Equipment. Prior to issuance of construction contracts, BNSF or its designee shall incorporate the following off-road construction equipment exhaust emissions requirements into the contract specifications:

- All heavy-duty diesel off-road construction equipment used during the construction phase shall meet Tier 4 Final engine requirements, except for specialized equipment, such as Caterpillar 657 Scrapers, Caterpillar 777 Articulated Off-Highway Trucks, track laying machines, ballast regulators, and other specialized rail equipment that are not available as Tier 4. In the event that non-specialized construction equipment cannot meet Tier 4 Final engine certification, the implementing entity must demonstrate through future documentation with written findings that no Tier 4 equipment of that type are reasonably available.
- A copy of each unit's certified tier specification and shall be made available to the City in quarterly reports.

MM BIG AQ-4

Renewable Diesel (Construction). During construction, the implementing entity shall use renewable diesel fuel to minimize and control exhaust emissions from heavy-duty diesel-fueled construction equipment and off-road heavy diesel trucks, except that traditional diesel can be used where renewable diesel is not available from suppliers within 200 miles of the BIG footprint. Renewable diesel shall meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum fuels sold in California. The implementing entity shall provide the City with quarterly reports of renewable diesel purchase records and equipment and vehicle fuel consumption. The construction contract shall identify the quantity of traditional diesel purchased and fully document the availability and price of renewable diesel to meet BIG demand.

- MM BIG AQ-5 Reduce Exhaust Emissions from On-Road Construction Equipment.** Prior to issuance of construction contracts, the implementing entity shall incorporate the following material-hauling heavy truck fleet mix requirements into the contract specifications:
- All on-road trucks used to haul construction materials shall consist of an average fleet mix of equipment model year 2010 or newer, but no less than the average fleet mix for the current calendar year as set forth in the CARB’s EMFAC2021 database.
 - The implementing entity shall provide documentation to BNSF of efforts to secure such a fleet mix.
 - The implementing entity shall keep a written record of the fleet mix for on-road construction equipment during BIG construction and provide the City and annual reports documenting compliance.
- MM BIG AQ-6 Reduce the Potential Impact of Concrete and Asphalt Batch Plants.** Prior to the construction or arrival of a batch plant on site, the implementing entity shall provide the City with documentation demonstrating that batch plants are sited at least 1,000 feet from sensitive receptors, including places such as daycare centers, hospitals, senior care facilities, residences, parks, and other areas where people may congregate. Batch plants shall implement control measures required by MDAQMD as part of the Permit to Construct in order to reduce fugitive dust such as water sprays, enclosures, hoods, curtains, shrouds, movable and telescoping chutes, central dust collection systems, and other suitable technology, to reduce emissions to be equivalent to the U.S. EPA AP-42 controlled emission factors for batch plants. The implementing entity shall provide a copy of the MDAQMD permit application to the City that each batch plant meets this standard during operation.
- MM BIG AQ-7 Sweep Paved Areas.** During operations, paved areas such as parking lots, internal roadways, the container yard, chassis storage area, and cargo handling areas shall be swept at least once every 7 calendar days.
- MM BIG AQ-8 Renewable Diesel RTG Cranes.** Rubber Tired Gantry (RTG) cranes shall be powered with renewable diesel. BNSF shall provide the City of Barstow with evidence demonstrating use of renewable diesel for RTG cranes prior to the issuance of certificate of occupancy.
- MM BIG AQ-9 Truck Idling Limits and Truck Route Signage.** Prior to the issuance of a tenant occupancy permit, the Planning Division shall confirm that all truck access gates and loading docks within the BIG site shall have posted signage posted that states:
- Truck drivers shall turn off engines when not in use.
 - Truck drivers shall shut down the engine after two minutes of continuous idling operation. Once the vehicle is stopped, the transmission is set to “neutral” or “park,” and the parking brake is engaged.

- Telephone numbers of the building facilities manager, the Mojave Desert AQMD, and CARB to report violations.
- Signs shall also inform truck drivers about the health effects of diesel particulates, the California Air Resources Board diesel idling regulations, and the importance of being a good neighbor by not parking in residential areas.
- Clearly mark truck routes with trailblazer signs, so that trucks will not travel next to or near sensitive land uses (e.g., residences, schools, day care centers, etc.).
- Restrict overnight truck parking in sensitive land uses by providing overnight truck parking inside the proposed Project site.
- The implementing entity shall designate an officer to monitor trucks on-site for compliance. Signs and drive aisle pavement markings shall clearly identify the on-site circulation pattern to minimize unnecessary on-site vehicular travel.
- Additionally, signs shall be provided at every truck exit driveway showing directional information to the off-site truck route. To the extent feasible, BIG shall direct trucks away from sensitive receptors. All signage installed as part of BIG shall be legible, durable, and weather-proof.

This mitigation measure applies only to tenant improvements and not the building shell approvals.

MM BIG AQ-10 Tier 4 Emergency Back-Up Generators. Prior to the issuance of a tenant occupancy permit, the Planning Division shall confirm that the BIG plans and specifications require all standard emergency generators (i.e., non-cold storage generators) to meet California Air Resources Board Tier 4 Final emissions standards. A copy of each unit's Best Available Control Technology (BACT) documentation (certified tier specification) and CARB or Mojave Desert AQMD operating permit (if applicable) shall be provided to the City. This mitigation measure applies only to tenant improvements and not the building shell approvals.

MM BIG AQ-11 Carl Moyer Truck Efficiency Improvements. Prior to the issuance of a tenant occupancy permit, the Planning Division shall confirm that tenant lease agreements include specifications that require vendor trucks for the industrial buildings include energy efficiency improvement features through the Carl Moyer Program—including truck modernization, retrofits, and/or aerodynamic kits and low rolling resistance tires— to reduce fuel consumption. This mitigation measure applies only to tenant improvements and not the building shell approvals.

MM BIG AQ-12 U.S. EPA Smart Way Program. Prior to the issuance of a tenant occupancy permit, the Planning Division shall confirm that tenant lease agreements include specifications that require tenants to enroll in the U.S. Environmental Protection Agency's SmartWay program, and tenants shall be required to use carriers that are

SmartWay carriers. This mitigation measure applies only to tenant improvements and not the building shell approvals.

MM BIG AQ-13 Electric Landscape Equipment. Prior to the issuance of occupancy permits, the implementing entity shall confirm that agreements for landscaping services include contractual language that all handheld landscaping equipment used on-site shall be 100 percent electrically powered. This mitigation measure applies only to tenant permits and not the building shell approvals.

MM BIG AQ-14 Future EV Charging Infrastructure. Prior to the issuance of a building permit for transload warehouse facility tenant improvements, the implementing entity shall confirm that the BIG transload facility is designed to include the following:

- Prior to issuance of a Building Permit for the Shell Design, the buildings' electrical room shall be sufficiently sized to hold additional panels that may be needed to supply power for the future installation of EV truck charging stations on the site. Conduit should be installed from the electrical room to tractor trailer parking spaces in a logical location(s) on the site determined by the implementing entity during construction document plan check, for the purpose of accommodating the future installation of EV truck charging stations at such time this technology becomes commercially available and the buildings are being served by trucks with electric-powered engines.
- The buildings' electrical room shall be sufficiently sized to hold additional panels that may be needed in the future to supply power to trailers with TRUs during the loading/unloading of refrigerated goods, if required by future tenants who utilize cold storage. Conduit should be installed from the electrical room to the loading docks in a location determined by the tenant as the logical location(s) to receive trailers with TRUs.

Mitigation Measures Considered but Determined Infeasible

No additional feasible mitigation measures were identified that could reduce emissions below those shown above. Mitigation measure feasibility for each major source category is discussed below.

Construction. Additional mitigation measures for BIG were considered for addressing impacts related to construction. These measures were evaluated in terms of whether they were capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. The measures below were evaluated and determined to be infeasible for consideration as enforceable mitigations:

1. *Extend the construction schedule and limit construction equipment and usage*

Extending the construction schedule or limiting construction equipment and/or usage could reduce on-site emissions, however, it was determined that this would not be a feasible measure, as increasing the length of the construction schedule would delay the opening year of BIG and thus delay BIG's benefits. Additionally, extending construction activities would extend the duration of impacts that affect other

operations, access, and improvements of the beneficial effects of BIG (nationally reducing truck miles travelled, reducing greenhouse gas emissions, improving existing flooding conditions, etc.). Finally, other environmental impacts could increase as a result of extending the construction schedule, including visual impacts from construction lighting, biological impacts due to longer potential to affect sensitive species, noise impacts due to extended duration of noise-generating activities, and transportation due to longer road closures.

2. *Require electric construction equipment and vehicles*

Electric equipment would eliminate on-site emissions associated with diesel equipment exhaust (other emissions, such as particulate matter from fugitive dust, would still occur). However, commercialization of this technology for construction equipment is in its earliest stages. Alternative fuel and electric construction equipment (including excavators, wheel loaders, and soil compactors) that are commercially available are compact, light- to medium-duty, and have limited capacity and capabilities when viewed in the context of a major construction project like BIG. The vast majority of earthmoving activities at BIG would require heavy-duty capabilities beyond those of the zero-emissions equipment recommended by the MDAQMD and the South Coast AQMD. Based on an understanding of the current marketplace, there are currently no zero emissions or near zero emissions equipment available for the earthwork operations necessary to construct BIG based on the general capabilities of the available zero emissions and near zero emissions equipment. Other considerations such as operational demands and the need for charging infrastructure also would limit the feasibility of electrified equipment. The types of heavy-duty on-road trucks for the activities required for the BIG construction (e.g., soil import/export, transport of steel and pre-cast concrete structure elements and materials) are typically larger trucks (Class 8 trucks with a displacement greater than 10 liters) than those currently available with zero emission or near-zero emission technology. However, renewable diesel fuel shall be used to minimize and control exhaust emissions from heavy -duty diesel-fueled construction equipment and heavy diesel trucks, except where renewable diesel is not available from suppliers (within 200 miles of BIG).

Because small equipment types account for only a minor fraction of total BIG construction emissions, a requirement for their use would provide little emissions reduction benefit. Technological innovations likely will be slowly adapted for larger equipment and vehicles based on market demand and economic considerations. Development of larger electrified equipment and vehicles is unlikely to occur during the construction duration of BIG, as concepts of heavy-duty equipment and vehicles have only recently been announced by manufacturers, and widespread commercial availability is unlikely before the 2030s (construction to be completed by 2028), long after BIG construction is complete. Therefore, a requirement that all equipment and vehicles be electric as a potential mitigation measure would not be feasible for the BIG construction period.

Operations. Additional mitigation measures for BIG were considered for addressing impacts related to operations. These measures were evaluated in terms of whether they were capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. The measures below were evaluated and determined to be infeasible based on these factors:

3. Battery Electric Locomotives (BELs) – Linehaul from Ports to IMF

The majority of freight locomotives in the United States are diesel-fueled. Alternatives to diesel fueled locomotives are in production or being tested. Zero-emissions (ZE) linehaul locomotives can be accomplished using one of three potential processes (catenary lines, hydrogen fuel cells, or battery electric) with the battery electric locomotive (BEL) technology currently being the most technologically advanced way of implementing a ZE locomotive. Catenary lines are impractical since this would involve laying thousands of miles of electrified lines the distance of the rail and hydrogen fuel cells, although promising, is not feasible based on technological progress (decades from being a feasible fuel source). BELs use batteries instead of diesel to provide power to the locomotive's traction motors. Linehaul locomotives have a fuel capacity of 5,000 U.S. gallons and converting the fuel to energy represents approximately 200 megawatt-hours (MWh) of available energy capacity on board the locomotive. Diesel engines are about 40% efficient in converting the fuel to energy, which means diesel locomotives have an effective or "useable" energy capacity of 75-80 MWh. By contrast, batteries are approximately 90 percent efficient at converting energy to work, however, they have a much smaller energy capacity, as discussed below.

In order to meet the demands of BIG, based on the analysis and route modeling, a BEL with a battery of a minimum of 15 MWh capacity would be required to replace each diesel fueled locomotive in order to complete the portion of an eastbound trip from the Long Beach Port through the Cajon Pass to BIG.

Currently, the largest BEL built for a North American rail operator is 2.4 MWh. There is nothing higher than the 2.4 MWh that has been deployed in North America. The largest locomotive built for international operations that could operate on the North American rail network contains approximately 7 MWh of energy. To provide more energy to a locomotive would require multiple battery tenders (additional railcars included solely to carry batteries to extend the overall power of the locomotives) to reach the desired range. Therefore, the largest BEL currently available would have less than one-tenth of the energy capacity of the diesel locomotive linehaul units. Furthermore, battery tenders are extremely heavy, presenting ongoing maintenance concerns to mainline track segments, and inclusion of three to four battery tenders means three to four fewer railcars with goods being transported, which reduces the economic viability of every train trip that the train would make.

There is no supply chain for either a BEL of this size or for battery tenders to increase their power, and there is no established maintenance process or safety protocol that has yet been adopted by the North American rail industry. Introduction of new locomotive propulsion systems is governed by the Federal Railroad Administration. The safety case for battery-electric locomotives is still pending and will need to be approved by the agency for operation by a North American operator. That process is expected to take several years.

Furthermore, the power needed for recharging and the time necessary to recharge creates additional challenges for BIG. Assuming manufacturers can develop a BEL of sufficient energy capacity and it was market ready, the power draw needed to support these units would struggle to meet the demand. BELs traveling from the Ports would arrive at BIG with empty or nearly-empty batteries. Charging the 15 MWh batteries could take over 12 hours, using expected-to-be-available 1 MW charging solutions currently

under development. A train equipped with four locomotives would require a power capacity of 4 MW per train. If higher-power chargers become available (e.g., 6 MW systems utilized in European ferry systems), the charging time would be shortened to approximately two hours, but the power need would be a staggering 24 MW, or more than one-third of the entire facility power allotment – simply to charge one train of four locomotives. This would require transmission-level electrical delivery service to accomplish BIG required charging demands. Additionally, this calculation is only for the power demand to charge a single train's worth of BELs. For the dedicated fleet from the Ports to BIG's intermodal facility, BIG is anticipated to receive approximately three trains per day in 2028, increasing to approximately five trains per day in 2048. Each train would require between four to five BELs, and there would be overlap between multiple trains charging their BELs at a given time. In 2048, this would mean approximately 18 BELs charging per day and a corresponding approximately 18 MW in additional energy demand.

BIG is allotted a "power budget" of 66 MW peak energy demand for the facility by SCE, which has been allocated to support the current proposed electrical demand for the site, including electric wide span cranes, electric hostlers, and other electric cargo handling equipment. Through incorporation of electric hostlers, electric RMG cranes, electric forklifts, charging for employee electric vehicles, hybrid electric RTGs, and lighting, heating, air conditioning, and other typical electrical demands, BIG has already maximized the allocated power budget. SCE has indicated that BIG would be required to move to transmission-level service in order to supply additional power to the site. This process would take approximately 7-10 years from the time that the linehaul BEL and charging technology is approved and available. Given the power budget is for peak energy demand, additional solar generation would not enable BNSF to go beyond this power budget, as solar does not generate energy during nighttime, and cloud cover or other weather conditions could also reduce the energy generation during daytime. Because BIG would operate 24 hours per day, BIG must consider only power from the grid as the power budget, and would supplement this power with energy from solar during daytime.

In order to support operations and prevent delays, a significant support fleet of BEL locomotives would be required beyond just the replacements to each diesel fueled locomotives. This support fleet would be needed to prevent train delays and be powered and ready to add to a train for departure. Factors that contribute to a large support fleet are charging times, undefined train schedules that can lead to departure bunching, and labor agreements that have scheduled on-duty times effecting the ability to transfer power from recharge pads to trains efficiently.

In order to support operations and prevent delays a significant support fleet of BEL locomotives would be required beyond just the replacements to each diesel fueled locomotives. This support fleet would be needed to prevent train delays and be powered and ready to add to a train for departure. Factors that contribute to a large support fleet are charging times, undefined train schedules that can lead to departure bunching, and labor agreements that have scheduled on-duty times effecting the ability to transfer power from recharge pads to trains efficiently.

Finally, this mitigation is not legally feasible due to federal preemption. See *Friends of Eel River v. North Coast Railroad Authority* (2017) 3 Cal.5th 677, *Association of Irrigated Residents v Kern County Bd. of*

Supervisors (2017) 17 Cal.App.5th 708; *American Railroads v. South Coast Air Quality Management District* (2010) 622 F.3d 1094.

No Class I Railroads are currently using BEL linehaul locomotives as part of their active fleet. In fact, BNSF is the only Class I Railroad that has tested a BEL linehaul locomotive. Therefore, with the lack of availability, the demand on the electrical system/long lead time for power delivery and the inefficiency of the current system, this measure is infeasible.

4. Battery Electric Locomotives (BELs) – Switchers at the Block Swap Yard

While not yet commercially viable or operationally proven for the type of switching operation at BIG, battery-electric locomotives (BELs) would require a capacity of at least 2 MWh to provide the power necessary to perform locomotive switching tasks for at least a full shift. Switchers at BIG would need to operate around the clock in order to support the needs of the facility. In order to provide adequate time to charge the locomotives, high-speed chargers would be required to be utilized to charge the locomotive batteries between operating shifts. To recharge a 2 MWh battery, it would require 2 MW of constant power per locomotive (anticipated as a 1 hour charge time). Assuming the expected-to-be available 1 MW charging solutions currently under development, the chargers will have a constant draw of 1MW and can temporarily reach 4.5 MW. This means that charging just three locomotives at one time could equate to 20% of the entire facility's power budget (13.5/66 MW) and would be roughly equivalent to the entire power capacity of one of the three circuits providing power to BIG. It is anticipated that BIG would utilize approximately eight switchers to support the facility in 2028, potentially peaking at 36 MW of power if all locomotives are charged at the same time. In 2048, the number of switchers to support the facility increases to twelve. Therefore, adding BEL switchers would significantly impact the power demand for the BIG facility.

If BIG adopted lower-power chargers (e.g., commercially-available 400 kw chargers) it would take approximately six hours to charge a single locomotive. To maintain operational fluidity and flexibility, BIG would require three times as many battery-electric switchers to operate the facility. One third of the fleet would operate each shift while a third would be actively charging with a reserve third in support for power outages, periods of high volume, locomotive maintenance, and crew availability during shift changes. In 2048, this would require commissioning 24 electric switcher locomotives. Positioning twelve fully-charged locomotives across the yard while moving twelve depleted locomotives to the charger and supporting a reserve fleet of 12 locomotives could cause significant congestion and hamper fluidity within the rail yard. Furthermore, simultaneously charging twelve locomotives at 400 kw each would increase BIG power demand by almost 5 MW. As electrical costs vary widely in California, based on time of use and rates, electricity cost could result in cost that would exceed the costs of diesel. Further, given the limited use of switcher locomotives, reduced fuel costs would be offset by the additional cost of the electric locomotives.

Furthermore, to date, only one switcher of this size (2.4 MWh) has been built for U.S. operations as a prototype. No 2.4 MWh or higher switcher has been built. There is no supply chain for this equipment and there is no established maintenance process or safety protocol that has been adopted by the North American rail industry. Introduction of new locomotive propulsion systems is governed by the Federal Railroad Administration. The safety case for battery-electric locomotives is still pending and will need to

be approved by the agency for operation by a North American operator. That process would take several years.

BNSF has been working with SCE on BIG power supply since 2022 to analyze the capacity of Barstow's electrical infrastructure. Because charging an electric vehicle fleet and cargo handling equipment that operates 24/7 creates significant demands on the electrical grid, SCE conducted an extensive internal review to confirm that the system could reliably serve the load, even when portions of the distribution system were being maintained. After several iterations, SCE confirmed that BIG could be supplied using new feeders from the existing Tortilla Substation. These new feeders will be able to cross-connect to existing feeders within Barstow to meet SCE's reliability requirements. This avoided the need for a new substation in Barstow.

BIG is allotted a "power budget" of 66MW for the facility by SCE, which has been allocated to support the current proposed electrical demand for the site, including electric wide span cranes, electric hostlers, and other electric cargo handling equipment. SCE has indicated that BIG would be required to move to transmission-level service in order to supply additional power to the site. This process would take approximately 7-10 years from the time that the switcher BEL and charging technology is approved and available. Therefore, with the lack of availability, the demand on the electrical system/long lead time for power delivery and the inefficiency of the current system, this measure is infeasible.

5. *Zero/Near Zero Emission Trucks*

BIG would use electric hostlers for the movements between the intermodal facility and the transload warehouses, however a small percentage of diesel trucks are assumed to transport containers directly to the intermodal facility as the use of zero /near-zero emission trucks have been determined to be infeasible.

As an initial matter, given the actions of the U.S. Congress and the Trump administration, California has no legal ability to mandate zero/near zero emission truck technology under the former Advanced Clean Truck Rule or any other regulation. Given this revocation, as deliveries are made to BIG's intermodal facility from a variety of customers or independent trucking contractors throughout southern California, the Central Valley, Arizona and Nevada. It is entirely speculative that zero emission/near zero emission trucks will be widely in use with customers or independent trucking contractors within a reasonable period of time. Further, given the multitude of origins of these trucks, the necessary charging infrastructure does not exist along the many anticipated trucking routes in California or elsewhere in the region. Moreover, because of the revocation of the Advanced Clean Truck Rule, there is no basis to find that such critical infrastructure will exist in a reasonable period of time. As noted above, there are also concerns about power availability; BIG is allotted a "power budget" of 66 MW for the facility by SCE, which has been allocated to support the current proposed electrical demand for the site, including electric wide span cranes, electric hostlers, and other electric cargo handling equipment. Should BIG require all trucks accessing the site to be electric, this could only be accommodated by either removing or converting an electric component in order to reduce electric demand, or supplying additional power to the site. SCE has indicated that BIG would be required to move to transmission-level service in order to supply additional

power to the site. This process would take approximately 7 to 10 years from the time that the eRTG and charging technology is approved and available.

Additionally, the rail yard lacks space for the necessary infrastructure for truck charging due to spatial constraints from the grade-separated crossing, slope, and rail tracks. All available space is dedicated to stacking containers, employee parking, or buildings. In addition to the power constraints identified above, BIG would need to locate the truck charging within the container yard north of the mainline tracks in order to accommodate electric truck charging. This would require electric trucks to enter the rail yard, drop off their container, and then go north to the container yard to charge. The grade-separated crossing is designed to be dedicated to electric hostlers draying containers between the rail yard and transload warehouse center, and adding electric trucks cause congestion and operational inefficiencies.

Finally, BNSF has no ability to mandate the make-up of the trucking fleets used by its existing customers or independent trucking companies used by its customers and a mandate that access to BIG be limited to only zero/near zero emission trucks would significantly impede BNSF's ability to attract future customers and thus render the entirety of BIG impractical.

Therefore, for all the above reasons, the potential zero/near zero truck mitigation measure would not be feasible for the BIG.

6. *Hybrid Electric Rubber Tire Gantry Cranes (RTGs) vs. Electric RTG Cranes (eRTGs)*

BIG would use hybrid electric Rubber Tire Gantry Cranes (RTGs) as well as Electric Rail Mounted Cranes (RMGs). RTGs provide the operational flexibility needed on-site in conjunction with the electric RMGs. The RTGs are not fixed to a track or to any charging infrastructure, for instance conductor bars (fixed infrastructure where the crane collects power) or cable reeling drums/power cables (cable connection to the power source) that would limit movement. RTGs can move the entire length of a track, be repositioned to other tracks, or move around the site as necessary providing significant operational benefits. Additionally, RTGs can be relocated for service and don't affect the efficiency of operations if equipment or the track is out of service. The RTGs would be used in conjunction with fully electric RMGs, which are fixed to the track and have limited mobility. Any breakdown of an RMG or maintenance of rail/track, would stop all operation on that track and take all equipment out of service until the crane or the electrical supply was repaired. RTGs have the flexibility to be moved around the site, even where track is out of service.

BIG would utilize a hybrid electric RTG vs the battery or electric RTGs (eRTGs) as the battery capacity of eRTGs do not have the capacity for the operational needs of the BIG. Currently, the only eRTG is new (introduced in April 2025) that has not been tested or is currently in use. This RTG has two battery types available: liquid cooled with 4 hour = 222 kWh capacity or liquid-cooled with 8-hour = 296 kWh capacity. The stated battery charging time is 1 hour at the full rated charging power with a charging rate of 1C. If the batteries and charging operate at full capacity as specified, each crane would require a minimum of three to six hours of downtime per day for charging under optimal charging conditions. BIG is not considered to be within the optimal conditions for battery electric equipment as battery charging efficiency would be susceptible to degradation in hot conditions.

Additionally, BIG would use approximately 11 RTGs. The facility would operate 24 hours a day and 7 days a week with minimal down time for charging RTGs. It is expected that BIG would utilize 1MW chargers for each crane, resulting in a minimum of 11 MW draw if all cranes are charged simultaneously. RTGs would all be moved to a centralized charging location at the beginning/end of each shift. Relocating the RTGs would reduce operational time for each crane and could take a considerable amount of time if a crane has to move several miles to a charger, given the intermodal tracks are approximately three miles long. The alternative would include utilizing trackside charging stations which would eliminate the need to relocate the cranes for charging, but would create fixed infrastructure choke points, rendering parts of the track unusable while the cranes are charging, reducing the effective capacity of the facility.

Moreover, BIG is allotted a “power budget” of 66MW for the facility by SCE, which has been allocated to support the current proposed electrical demand for the site, including electric wide span cranes, electric hostlers, and other electric cargo handling equipment. SCE has indicated that BIG would be required to move to transmission-level service in order to supply additional power to the site. This process would take approximately 7-10 years from the time that the eRTG and charging technology is approved and available.

For all of these reasons, the potential mitigation measure was determined infeasible.

Impact 5.3-2: BIG Level of Significance After Mitigation: Significant and Unavoidable Impact.

5.3.6.2 Potential Criteria Pollutant Health Impacts

This section includes a discussion of the potential health effects of criteria air pollutant impacts due to the exceedance of mass emissions thresholds in accordance with the findings of the legal case *Sierra Club v. County of Fresno* (2018), commonly called “Friant Ranch”. Health effects information was acquired through a review of available literature published by the MDAQMD, CARB, and U.S. EPA. This discussion provides supplemental information related to the air quality concentration impacts. This discussion is not itself an impact-significance determination under any CEQA threshold identified in this document.

This section discusses the relationship between BIG’s regional criteria pollutant emissions and the potential for adverse health effects to occur for persons exposed to the emitted pollutants. BIG construction and operation would produce regional mass emissions of VOC, NOX, CO, PM₁₀, and PM_{2.5} above MDAQMD thresholds. NO₂, a criteria pollutant, is the primary component of NOX. In addition, VOCs and NOX are precursors of O₃, a criterial pollutant that is photochemically formed from the precursors in the atmosphere in the presence of sunlight. Therefore, the criteria pollutants evaluated for regional health effects are NO₂, O₃, CO, and PM.

There is currently no methodology available that can accurately quantify regional health effects from NO₂, O₃, CO, or PM exposure associated with an individual project’s emissions. The South Coast AQMD reached a similar conclusion in its *Amicus Curiae* brief filed with the California Supreme Court in the case of *Sierra Club v. County of Fresno*, when, concerning O₃, the South Coast AQMD stated that it does not know of a way to accurately quantify health impacts caused by emissions produced on a scale as small as individual projects. One existing tool, U.S. EPA’s BenMAP, calculates the number and economic value of air pollution-related deaths and illnesses resulting from changes in O₃ and PM_{2.5} concentrations. However, the expected changes in regional O₃ concentrations associated with BIG would be so low that BenMAP would

likely produce estimates of health effects that are near zero. Therefore, the extent to which regional adverse health effects can be identified in this section is limited to (a) discussing BIG's potential impact on regional pollutant levels; and (b) generally describing the types of adverse health effects associated with exposure to the pollutants of concern.

Carbon Monoxide (CO)

The MDAB is currently designated attainment of the CAAQS and NAAQS for CO. The CAAQSs were established to protect public health, including the most sensitive groups. The NAAQS were established to protect public health with an adequate margin of safety. The most stringent CO CAAQS or NAAQS are 20 ppm for a 1-hour average and 9.0 ppm for an 8-hour average.

The highest CO concentrations recorded anywhere in the MDAB over the last three available years (2019 to 2021) are 5.461 ppm for a 1-hour average. This pollutant level is 27 percent of the 1-hour CAAQS and 16 percent of the 1-hour NAAQS.

According to the most recent U.S. EPA-approved MDAB emissions inventory, the MDAB's total CO emissions in 2020 were 337.3 tons per day. By comparison, BIG construction would result in a maximum of 3,846 pounds per day (1.92 tons per day) and BIG operations total CO emissions would be 2,697 pounds per day (1.35 tons per day), which would be 0.6 percent and 0.4 percent as large as the total MDAB emissions, respectively. Therefore, BIG's contribution to regional CO levels would be relatively small.

Potential Health Effects. In developing CO standards, the U.S. EPA has prepared a comprehensive report on the possible health effects associated with CO exposure. The South Coast AQMD summarizes the U.S. EPA's findings in its *Final 2016 AQMP*. The main conclusions are:

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of worsening oxygen supply delivery to the heart. Inhaled CO has no known direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport, by competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin. Hence, people with conditions requiring an increased oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses, and patients with chronic hypoxemia (oxygen deficiency), such as is seen at high altitudes. Reductions in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO resulting in carboxyhemoglobin levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels, including preterm births and heart abnormalities.

Nitrogen Dioxide (NO₂)

The MDAB is currently designated attainment of the NO₂ CAAQS and NAAQS. The most stringent NO₂ standards are 0.18 ppm for a 1-hour average (State 1-hour standard), 0.100 ppm for a three-year average of the 98th percentile of the annual distributions of daily maximum 1-hour average concentrations (federal 1-hour standard), and 0.030 ppm for an annual average (CAAQS).

The highest NO₂ concentrations recorded anywhere in the MDAB over the last 3 available years (2021 – 2023) are 0.062 ppm. The pollutant level is 34 percent and 62 percent of the CAAQS and NAAQS 1-hour standards, respectively.

According to the most recent CARB emissions inventory, the total NO_x emissions within the MDAB in 2020 were 204.2 tons/day. By comparison, the highest NO_x emissions increment associated with BIG construction is 4,419 lb/day (2.21 tons/day), which would be 0.7 percent of the total MDAB emissions. Operational emissions would exceed the MDAQMD threshold with 2,265 lbs/day (1.1 tons/day), which would be 0.3 percent as large as the total MDAB emissions. Therefore, BIG's contribution to regional NO₂ levels would be relatively small.

Potential Health Effects. In developing the NO₂ standards, the U.S. EPA and CARB have prepared comprehensive reports on the possible health effects associated with NO₂ exposure. The main conclusions of these agencies are:

The U.S. EPA concluded that a causal relationship exists between short-term NO₂ exposure and respiratory effects such as asthma attacks. There is likely to be a causal relationship between long-term NO₂ exposure and respiratory effects based on the evidence for development of asthma. For short-term and long-term NO₂ exposure, evidence is suggestive of, but not sufficient to imply, a causal relationship with cardiovascular effects, diabetes, mortality, birth outcomes, and cancer. People with asthma, children, and older adults are at increased risk for NO₂-related health effects.

CARB concluded that, in controlled human exposure studies, asthmatics appear to be especially sensitive to NO₂. Asthmatic volunteers have experienced short-term effects at concentrations as low as 0.26 ppm. There is evidence that a subset of asthmatics may experience increased airway reactivity at concentrations of 0.2 to 0.3 ppm for 30 minutes to 2 hours. Generally, no clinical effects are reported in non-asthmatic volunteers in conditions below 1 ppm. Epidemiological studies have shown an association between NO₂ and both hospital admissions and emergency room visits for asthma at 24-hour average concentrations ranging from 0.018 to 0.036 ppm. Less robust evidence suggests associations with mortality, hospitalization for cardiovascular disease, and low birth weight.

Ozone (O₃)

The MDAB is currently designated nonattainment of the O₃ concentration standards. The most stringent State and federal O₃ standards are 0.09 ppm for 1-hour average, 0.07 ppm for the three-year average of the fourth-highest 8-hour concentration each year (known as the federal 8-hour standard), and 0.07 ppm for an 8-hour average (known as the State 8-hour standard).

The highest 1-hour O₃ concentration recorded in the MDAB over the last three available years (2021 to 2023) is 0.131 ppm, which is 1.45 times the standard. The highest 8-hour O₃ concentration recorded in the MDAB over the last three available years is 0.107 ppm, which is 1.5 times the standard.

According to the most recent CARB emissions inventory, the MDAB's total VOC (ROG) emissions in 2020 were 93.5 tons/day. By comparison, BIG's highest VOC (ROG) emissions increment was 924 lb/day (0.46 tons/day) during construction and 596 lbs/day (0.3 tons/day) during operations, which would be 0.1 percent and 0.1 percent of the total MDAB emissions, respectively. As discussed above for NO₂, BIG's NO_x

emissions increment would be 0.7 percent and 0.3 percent as large as the total MDAB emissions during construction and operations, respectively. Therefore, BIG's contribution to regional O₃ levels would be relatively small.

Potential Health Effects. In developing the O₃ standards, U.S. EPA and OEHHA have prepared comprehensive reports on the possible health effects associated with O₃ exposure. The agencies' main conclusions are noted below.

The U.S. EPA concluded that a causal relationship exists between short-term O₃ exposure and respiratory effects. A causal relationship is likely to exist between short-term O₃ exposure and cardiovascular effects and mortality. Evidence suggests a causal relationship between short-term O₃ exposure and central nervous system effects. A causal relationship is likely to exist between long-term O₃ exposure and respiratory effects. Evidence suggests a causal relationship between long-term O₃ exposure and 33 cardiovascular effects, reproductive and developmental effects, central nervous system effects, and mortality. There is little evidence for a relationship between long-term O₃ exposure and increased risk of lung cancer. The populations and life stages that have adequate evidence for increased O₃-related health effects are individuals with certain genotypes, individuals with asthma, younger and older age groups, individuals with reduced intake of Vitamins E and C, and outdoor workers.

OEHHA concluded that O₃ exposure can result in reduced lung function, increased respiratory symptoms, increased airway hyperreactivity and increased airway inflammation, increased mortality, hospitalization for cardiopulmonary causes, emergency room visits for asthma, and restrictions in activity. In controlled human exposure studies, exercising individuals exposed for one hour to an O₃ concentration as low as 0.12 ppm or for 6.6-hours to a concentration as low as 0.08 ppm experienced lung function decrements and symptoms of respiratory irritation such as cough or pain upon deep inhalation. The lowest O₃ concentrations at which airway hyperreactivity (an increase in the tendency of the airways to constrict in reaction to exposure to irritants) has been reported are 0.18 ppm O₃ following 2-hour exposure in exercising subjects, 0.40 ppm following 2-hour exposure in resting subjects, and 0.08 ppm O₃ in subjects exercising for 6.6 hours. Airway inflammation has been reported following 2-hour exposures to 0.20 ppm O₃ and following 6.6-hour exposure to 0.08 ppm O₃. Children may be affected by O₃ more than the general population because of its effects on the developing lung and since children have relatively higher exposure than adults. Also, asthmatics may represent a sensitive sub-population for O₃.

Particulate Matter (PM)

The MDAB is currently designated nonattainment of the PM₁₀ State 24-hour and annual CAAQS and NAAQS. The most stringent PM₁₀ CAAQS or NAAQS are 50 µg/m³ and 150 µg/m³, respectively. The highest PM₁₀ concentrations recorded in the BIG footprint over the last 3 available years (2021 through 2023) are 372.7 µg/m³). This pollutant level is seven times and two times the CAAQS and NAAQS, respectively. According to the most recent CARB emissions inventory, the total PM₁₀ emissions within the MDAB in 2020 were 219.2 tons/day. By comparison, the PM₁₀ emissions increment associated with BIG would average 61,120 lb/day (31 tons/day) during construction and 914 lbs/day (0.5 tons/day) during operations, which would be 9.1 percent and 0.1 percent as large as the total MDAB emissions, respectively. Therefore, BIG's contribution to regional PM₁₀ levels would be relatively small.

The MDAB is currently designated unclassified/attainment of the PM_{2.5} federal 24-hour and NAAQS of 35 µg/m³. The highest PM_{2.5} concentrations recorded in BIG's footprint over the last 3 available years (2021 through 2023) are 87.1 µg/m³. This pollutant level is 2.5 times the NAAQS. According to the most recent CARB emissions inventory, the total PM_{2.5} emissions within the MDAB in 2020 were 59.0 tons/day. By comparison, the highest PM_{2.5} emissions increment associated with BIG are 56,291 lb/day (28 tons/day) during construction and 268 lbs/day (0.13 tons/day) during operations, which would be 8.3 percent and 0.04 percent as large as the total MDAB emissions, respectively. Therefore, BIG's contribution to regional PM_{2.5} levels would be relatively small.

Potential Health Effects. In developing the PM₁₀ standards, the U.S. EPA and CARB have prepared comprehensive reports on the possible health effects associated with PM₁₀ exposure. The South Coast AQMD also reviewed PM₁₀-related health effects in Appendix I of its *Final 2016 Air Quality Management Plan*. Most of the health effects findings made by these agencies focus on PM_{2.5}, which is the smaller, more easily inhalable subset of PM₁₀. The main conclusions of the agencies are:

U.S. EPA concluded that a causal relationship exists between PM_{2.5} exposure (both short- and long-term) and cardiovascular effects and mortality. A causal relationship is likely to exist between PM_{2.5} exposure (both short- and long-term) and respiratory effects. Evidence is suggestive of a causal relationship between long-term PM_{2.5} exposure and reproductive and developmental effects, cancer, mutagenicity, and genotoxicity. For the portion of PM₁₀ greater than 2.5 microns (PM_{10-2.5}), U.S. EPA concluded that evidence is suggestive of a causal relationship between short-term PM_{10-2.5} exposure and cardiovascular effects, respiratory effects, and mortality. Older adults have heightened responses for cardiovascular morbidity with PM exposure. Children are at an increased risk of PM-related respiratory effects. Individuals with underlying cardiovascular disease or asthma may be at an increased risk for adverse effects.

CARB concluded that the potential health effects associated with PM exposure include mortality, increased hospital admissions for cardiopulmonary causes, acute and chronic bronchitis, asthma attacks and emergency room visits, respiratory symptoms, and days with some restriction in activity. These adverse health effects have been reported primarily in infants, children, the elderly, and those with preexisting cardiopulmonary disease. CARB also classifies the portion of PM₁₀ produced by DPM as a TAC exhibiting carcinogenic effects. A quantitative HRA of BIG's emission of DPM is included herein.

South Coast AQMD concluded that there is a causal relationship between PM_{2.5} exposure and cardiovascular effects and mortality. Specific cardiovascular effects include cardiovascular deaths, hospital admissions for ischemic heart disease and congestive heart failure, changes in heart rate variability and markers of oxidative stress, and markers of atherosclerosis. A causal relationship is likely to exist between PM_{2.5} exposure and respiratory effects, such as hospital admissions for Chronic Obstructive Pulmonary Disease or respiratory infections, asthma development, asthma or allergy exacerbation, lung cancer, impacts on lung function, lung inflammation, oxidative stress, and airway hyperresponsiveness. Both short-term and long-term PM exposures are linked to health effects in humans. Young children, older adults, and people with pre-existing respiratory or cardiovascular health conditions are among those who may be more susceptible to the adverse effects of PM. The South Coast

AQMD also found that the DPM portion of PM₁₀ is a significant contributor to the cancer risk associated with TACs in the SCAB. For example, the average lifetime risk for excess cancer cases in the SCAB from all sources is estimated to be 424 per million for the inhalation pathway. South Coast AQMD's *Multiple Air Toxics Exposure Study V* determined that DPM is responsible for approximately 50 percent of the risk.

Summary. In summary, BIG would produce substantial CO, VOC (ROG), NO_x, and PM regional emissions. However, these would make relatively small contributions to regional levels. There is currently no agency-accepted methodology available that can accurately quantify regional health effects from CO, VOC, NO₂, O₃, or PM exposure associated with an individual project's emissions. Therefore, the above discussion is limited to identifying BIG's potential contribution to regional pollutant levels, and generally describing the types of adverse health effects associated with exposure to those pollutants.

Impact 5.3-3 ***Would the Project, expose sensitive receptors to substantial pollutant concentrations?***

Proposed General Plan

The following describes potential localized operational air quality impacts from implementation of the proposed General Plan, other than BIG.

CO Hot Spots

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the State 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm. However, emissions from motor vehicles, the largest source of CO emissions, have been declining since 1985 despite increases in VMT due to the introduction of new automotive emission controls and fleet turnover. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection to more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—to generate a significant CO impact (BAAQMD, 2023). Based on the projected average daily roadway segment volumes for the proposed General Plan, it is not anticipated that the proposed General Plan would generate the number of peak hour intersection volumes needed to generate a potential CO hot spot (see **Appendix 5.15 BIG-1: Barstow International Gateway CEQA Assessment – Transportation Analysis**). Therefore, implementation of the proposed General Plan would not have the potential to substantially increase CO hot spots at intersections in the vicinity of sensitive receptors in the proposed General Plan area, and impacts would be less than significant

TACs

Various industrial and commercial processes (e.g., manufacturing, dry cleaning) allowed under the proposed General Plan would be expected to release TACs. TAC emissions generated by stationary and point sources of emissions within the MDAB are regulated and controlled by MDAQMD, respectively. However, emissions of TACs from mobile sources when operating at a property (e.g., truck idling) are

regulated by statewide rules and regulations, not by MDAQMD, and have the potential to generate substantial concentrations of air pollutants.

Permitted Stationary Sources. Land uses that would require a permit from MDAQMD for emissions of TACs include chemical processing facilities, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. The proposed land use-designated areas that would permit uses that would require a permit from MDAQMD for equipment beyond a boiler or emergency generator include Diverse Use, Commercial, Industrial, and Business Park. Emissions of TACs from stationary sources would be controlled by MDAQMD through permitting and would be subject to further study and HRA prior to the issuance of any necessary air quality permits. Adherence to MDAQMD's New Source Review program would ensure that stationary source emissions (permitted sources) would be reduced or mitigated below MDAQMD significance thresholds of ten in one million cancer risk and one for acute risk at the maximally exposed individual. Though these sources would incrementally contribute to the proposed General Plan's inventory individually, they would be mitigated to the standards identified in **Table 5.3-9: Dispersion Modeling Assumptions – BIG**. In addition to the permitting process, the City would collaborate with MDAQMD to monitor and reduce major pollutants affecting the City at the emission source under proposed Policy OSC-3.2.

Nonpermitted Sources. Mobile sources of TACs are not regulated by MDAQMD. The primary driver of health risk in the MDAB is DPM. Mobile sources of DPM in the unincorporated areas are truck travel, truck idling, and use of off-road equipment. New warehousing operations could generate substantial DPM emissions from off-road equipment use and truck idling. In addition, some warehousing and industrial facilities may include use of TRUs for cold storage. New land uses that would be permitted under the proposed General Plan that use trucks, including trucks with TRUs, could generate an increase in DPM that would contribute to cancer and noncancer health risk in the MDAB. Additionally, these types of facilities could also generate PM (PM₁₀ and PM_{2.5}) that may cause an exceedance or contribute to the continuing exceedance of the NAAQS and CAAQS. Warehousing would be permitted in the proposed Industrial-designated areas under the proposed General Plan. As shown in **Figure 3-13: Proposed General Plan Land Use Plan**, the proposed Industrial land use-designated areas are found in the northern portion of the City north of Main Street, in addition to the area at the Interstate 15 (I-15) and Old Highway 58 interchange, the area east of Montana Road and south of I-40, and the area in the southern portion of the City west of I-15. These new land uses that could generate a high number of heavy-duty trucks, such as warehousing, could be near existing sensitive receptors within and outside the unincorporated areas such as the single-family homes along Old Highway 58 east of Soapmine Road and the residences along Soapmine Road near Marks Road. In addition, trucks would travel on regional transportation routes through the MDAB, contributing to near-roadway DPM concentrations. MDAQMD, per its CEQA Guidelines, requires proposed distribution center projects that generate 40 or more trucks per day and that are within 1,000 feet of existing or planned sensitive land uses (e.g., schools, daycare centers, residences, playgrounds, and medical facilities) to be evaluated to its health risk significance thresholds of 10 in a million for cancer risk and/or a HI of 1.0.

The proposed General Plan includes various policies that would minimize exposure of sensitive receptors to TAC emissions:

- **Policy LU-1.1 Land use compatibility.** Require that new development be located, buffered, and designed to avoid or reduce (to an acceptable level), negative impacts on existing conforming uses and adjacent neighborhoods. Require that new residential development be located, buffered, and designed so as to not hinder the economic viability and continuity of areas planned for nonresidential uses.
- **Policy LU-1.4 Nonresidential west of 15/58.** Plan and prioritize undeveloped areas west of Highway 58 and Interstate 15 for non-residential uses to promote land use compatibility, protect and enhance residential neighborhoods, and maintain the viability of commercial and industrial businesses for the community's present and future economic viability.
- **Policy LU-1.5 Industrial amendments.** Prohibit amendments to the Land Use Map for General Industrial within Central Barstow, which is where the vast majority of Barstow residents live, shop, recreate, worship, and go to school. Permit amendments to the Land Use Map for General Industrial within 500 feet of the Lenwood community only when associated with a specific plan that includes appropriate buffering.
- **Policy CM-3.1 Truck routes.** Maintain a network of City truck routes that provides for the safe and efficient transport of goods while minimizing negative impacts on local circulation and noise-sensitive land uses.
- **Policy CM-3.2 Truck parking.** Require new truck-intensive land uses to design and incorporate space and facilities in order to reduce truck parking and idling in the public rights-of-way (ROWs); exceptions may be allowed for portions of ROWs entirely surrounded by land designated as General Industrial. Prohibit truck parking except on property designated for General Industrial or General Commercial along Interstate 15 south of State Route 58.
- **Policy OSC-3.1. Sensitive land uses.** Approve development in a manner that ensures sensitive receptors are reasonably separated from mobile and stationary sources of pollution, taking into consideration guidance from the California Air Resources Board. Include measures as necessary and feasible to reduce or avoid exposure of existing and planned future sensitive receptors to air pollution levels that exceed state and federal standards.
- **Policy OSC-3.2 Pollutant reduction and monitoring.** Coordinate with the Mojave Desert Air Quality Management District (MDAQMD) and San Bernardino County to reduce greenhouse gas emissions consistent with state law and other pollutants to maintain and progress toward state and federal attainment status. Collaborate with MDAQMD and other entities to monitor and reduce major pollutants affecting the City at the emission source.

Beside these proposed General Plan policies, MDAQMD requires evaluation of certain project types, such as a distribution center, to evaluate health risk impacts if they exceed the MDAQMD health risk screening criteria. For this programmatic general plan-level assessment, it is not feasible to conduct dispersion modeling to determine the contribution of health risks associated with individual land use types because site-specific information on emissions and emissions quantities is not known. This is because a general plan does not directly result in development without additional approvals. Before any development can occur in the proposed General Plan area, it must be analyzed for consistency with the proposed General Plan, zoning requirements, and other applicable local and State requirements; comply with CEQA requirements; and obtain necessary clearances and permits.

Buildout of the proposed General Plan could expose sensitive receptors to substantial concentrations of TACs. The proposed General Plan could result in new sources of TACs near existing or planned sensitive receptors. Review of development projects by MDAQMD for permitted sources of air toxics (e.g., industrial facilities, dry cleaners, and gasoline dispensing facilities) would ensure that health risks are minimized. Individual development projects would be required to achieve the incremental risk thresholds established by MDAQMD to the extent feasible pursuant to **MM GP AQ-3**, and TACs would be less than significant. However, implementation of the proposed General Plan would generate TACs that could contribute to elevated levels in the MDAB. Though individual projects would achieve the project-level risk threshold of 10 per million, cumulatively they would contribute to the higher levels of cancer risk in the MDAB and, therefore, result in a cumulatively considerable impact. Therefore, the proposed Project's cumulative contribution to health risk is significant and unavoidable.

Impact 5.3-3: General Plan: Level of Significance Before Mitigation: Potentially Significant Impact.

Mitigation Measures

MM GP AQ-3 **Operational Health Risk Assessment.** Applicants for new discretionary industrial or warehousing projects or commercial land uses that would generate substantial diesel truck travel—i.e., 40 diesel trucks per day per the Mojave Desert Air Quality Management District (MDAQMD) CEQA Guidelines, or 40 or more trucks with diesel-powered transport refrigeration units per day based on the California Air Resources Board recommendations for siting new sensitive land uses—and that are within 1,000 feet of existing or planned sensitive land uses shall prepare a health risk assessment (HRA). Sensitive land uses consist of residences, senior living/assisted living communities, schools, daycare centers, playgrounds, and medical facilities. All HRAs shall be submitted to the City of Barstow Planning Division and the MDAQMD for evaluation.

The HRA shall be prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment and MDAQMD for projects in the Mojave Desert Air Basin (MDAB). If the HRA shows that the project incremental cancer risk exceeds ten in one million (10E-06) or the risk thresholds in effect at the time a project is considered, or that the appropriate noncancer hazard index exceeds 1.0 or the thresholds as determined by MDAQMD at the time a project is considered, the applicant shall identify and demonstrate that measures are capable of reducing potential cancer and noncancer risks to an acceptable level to the extent feasible, including appropriate enforcement mechanisms. Measures to reduce risk impacts may include but are not limited to:

- a. Restricting idling on-site beyond Air Toxic Control Measures idling restrictions, as feasible.
- b. Electrifying warehousing docks.
- c. Requiring use of newer equipment and/or vehicles.

- d. Restricting off-site truck travel through the creation of truck routes.

Measures identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site development plan as a component of the proposed project.

Impact 5.3-3: General Plan: Level of Significance After Mitigation: Significant and Unavoidable Impact.

Barstow International Gateway

BIG implementation could result in localized emissions that would result in the exposure of sensitive receptors to localized criteria pollutant concentrations including potential CO hot spots, asbestos, Valley Fever, and TACs. Impacts to sensitive receptors are discussed below.

Criteria Pollutant Concentrations

Localized Concentrations of Construction Emissions of Criteria Pollutants (BIG Footprint Only)

Dispersion modeling of on-site and off-site BIG construction emissions was performed to assess the impact of construction on ambient air concentrations in the vicinity of the BIG footprint. BIG construction would comply with MDAQMD rules which include fugitive dust control (Rule 403) and use of low-VOC paints and coatings (Rule 1113).

The U.S. EPA dispersion model AERMOD was used to predict maximum ambient pollutant concentrations within the BIG study area. Detailed dispersion modeling inputs and outputs are included in **Appendix 5.3 BIG-1. Table 5.3-28: Maximum Off-Site Construction Pollutant Concentrations (Unmitigated)** – BIG presents the maximum off-site ground level concentrations of criteria pollutants estimated for BIG construction.

Table 5.3-28: Maximum Off-Site Construction Pollutant Concentrations (Unmitigated) – BIG

Pollutant	Averaging Time	Maximum Modeled Concentration (µg/m³)	Background Concentration (µg/m³) ¹	Total Ground Level Concentration (µg/m³)	Threshold (µg/m³) ²	Threshold Exceeded? ³
NO ₂ ⁴	1-hour	179.65	117.42	297.08	339 (State)	No
	1-hour ^{4, 5}	80.83	102.24	183.07	188 (federal)	No
	Annual	2.60	26.35	28.95	57 (State)	No
					100 (federal)	No
CO	1-hour	262	6,256	6,518	23,000 (State)	No
					40,000 (federal)	No
	8-hour	42	5,631	5,673	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	20.94	--	20.94	5 (federal)	Yes
	Annual	3.17	--	3.17	1 (federal)	Yes
PM _{2.5} ⁶	24-hour	4.74	--	4.74	1.2 (federal)	Yes
	Annual	1.25	--	1.25	0.3 (federal)	Yes
Note: ¹ Background concentrations are from the Barstow Monitoring Station (2022 – 2024). Note that CO is no longer monitored and the above data is the latest available (2019 – 2021).						

² Ambient air quality thresholds are the NAAQS and CAAQS provided in Table 5.3-1 . All thresholds are shown in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for comparison to modeled concentrations.
³ Exceedances of the NAAQS and CAAQS are indicated in bold .
⁴ NO_2 concentrations were calculated per Tier 2 ARM2 ratios in U.S. EPA's 40 CFR Part 51 Appendix W, § 4.2.3.4. Conversion of NO_x to NO_2 use U.S. EPA minimum and maximum default values NO_2/NO_x of 0.5 and 0.9, respectively.
⁵ This comparison is to the federal NAAQS, which is a 98 th percentile threshold. The background concentration is the 3-year average of the 8 th highest daily maximum 1-hour concentration, over the years 2022, 2023, and 2024.
⁶ The thresholds for PM_{10} and $\text{PM}_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .

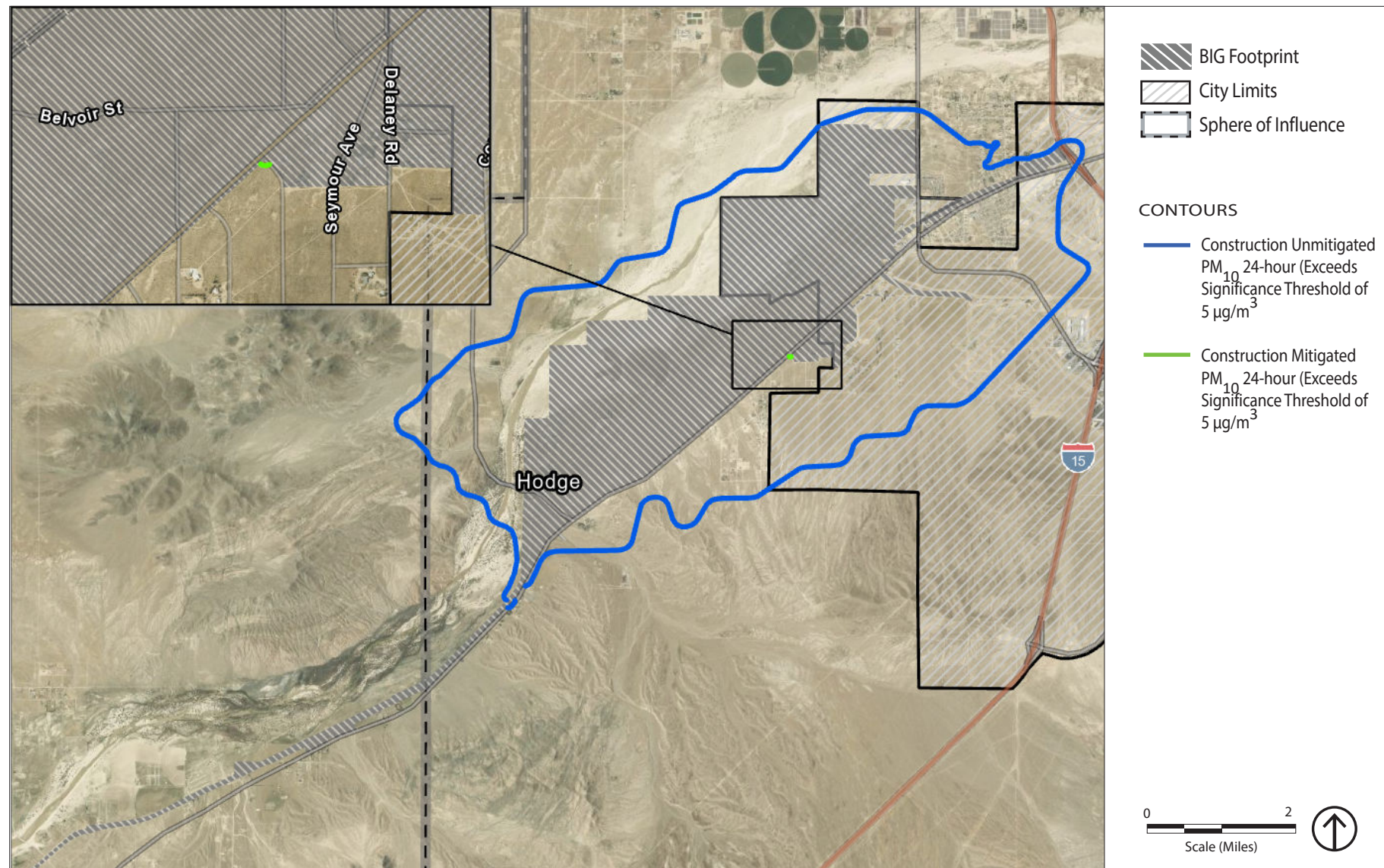
Table 5.3-28 shows that emissions of PM_{10} , and $\text{PM}_{2.5}$ from BIG construction would result in ambient concentrations that exceed applicable PM_{10} and $\text{PM}_{2.5}$ NAAQSs. As discussed above, BIG would be required to implement **MM BIG AQ-1**, and **MM BIG AQ-3** through **MM BIG AQ-6**, which would reduce construction PM_{10} and $\text{PM}_{2.5}$ emissions. These mitigation measures require fugitive dust controls, Tier 4 equipment, use of renewable diesel, clean on-road construction vehicles, and concrete batch plant emissions controls. Mitigated construction pollutant concentrations are shown in **Table 5.3-29: Maximum Off-Site Construction Pollutant Concentrations (Mitigated)**. As shown in **Table 5.3-29**, construction emissions would be reduced, but would still exceed the PM_{10} NAAQS (24-hour) despite the implementation of mitigation. See **Figure 5.3-5: Construction Mitigated 24-Hour PM_{10} Pollutant Concentration**. Therefore, localized construction impacts would be significant and unavoidable.

Table 5.3-29: Maximum Off-Site Construction Pollutant Concentrations (Mitigated)

Pollutant	Averaging Time	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background Concentration ($\mu\text{g}/\text{m}^3$) ¹	Total Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Threshold ($\mu\text{g}/\text{m}^3$) ²	Threshold Exceeded? ³
NO ₂ ⁴	1-hour	131.14	117.42	248.56	339 (State)	No
	1-hour ^{4, 5}	60.03	102.24	162.27	188 (federal)	No
	Annual	2.23	26.35	28.58	57 (State)	No
					100 (federal)	No
CO	1-hour	261	6,256	6,518	23,000 (State)	No
					40,000 (federal)	No
	8-hour	42	5,631	5,673	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	5.48	--	5.48	5 (federal)	Yes
	Annual	0.83	--	0.83	1 (federal)	No
PM _{2.5} ⁶	24-hour	1.10	--	1.10	1.2 (federal)	No
	Annual	0.29	--	0.29	0.3 (federal)	No

Note:

¹ Background concentrations are from the Barstow Monitoring Station (2022 – 2024). Note that CO is no longer monitored and the above data is the latest available (2019 – 2021).² Ambient air quality thresholds are the NAAQS and CAAQS provided in **Table 5.3-1**. All thresholds are shown in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for comparison to modeled concentrations³ Exceedances of the NAAQS and CAAQS are indicated in bold.⁴ NO₂ concentrations were calculated per Tier 2 ARM2 ratios in U.S. EPA's 40 CFR Part 51 Appendix W, § 4.2.3.4. Conversion of NO_x to NO₂ use U.S. EPA minimum and maximum default values NO₂/NO_x of 0.5 and 0.9, respectively.⁵ This comparison is to the federal NAAQS, which is a 98th percentile threshold. The background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2022, 2023, and 2024.⁶ The thresholds for PM₁₀ and PM_{2.5} are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.Source: Refer to **Appendix 5.3 BIG-1: Air Quality Technical Report**.



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Figure 5.3-5
Construction Mitigated PM_{10} 24-Hour Concentration Isopleth

Localized Concentrations of Operations Emissions of Criteria Pollutants

BIG Footprint

Dispersion modeling of on-site and off-site BIG operational emissions was performed to assess impacts to air concentrations in the vicinity of BIG. These concentrations were modeled for BIG Opening Year 2028, Interim Year 2033, and Horizon Year 2048. The U.S. EPA dispersion model, AERMOD, was used to predict maximum ambient pollutant concentrations based on mass emissions modeled for each analysis year in the vicinity of BIG. **Table 5.3-30: Maximum Off-Site Concentration from Operations (Unmitigated)** presents the maximum off-site ground level concentrations of criteria pollutants estimated for BIG. As shown in the table, unmitigated BIG operations would exceed the NAAQS and CAAQS for NO₂ (1-hour) in 2048.

Table 5.3-30: Maximum Off-Site Concentration from Operations (Unmitigated)						
Pollutant	Averaging Time	Maximum Modeled Concentration (µg/m ³) ⁷	Background Concentration (µg/m ³) ¹	Total Ground Level Concentration (µg/m ³)	Threshold (µg/m ³) ²	Threshold Exceeded? ³
2028 Operations						
NO ₂ ⁴	1-hour	97.82	117.42	215.24	339 (State)	No
	1-hour ^{4,5}	60.74	102.24	162.98	188 (federal)	No
	Annual	2.91	26.35	29.25	57 (State)	No
					100 (federal)	No
CO	1-hour	509	6,256	6,765	23,000 (State)	No
					40,000 (federal)	No
	8-hour	204	5,631	5,835	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	1.03	--	1.03	5 (federal)	No
	Annual	0.32	--	0.32	1 (federal)	No
PM _{2.5} ⁶	24-hour	0.49	--	0.49	1.2 (federal)	No
	Annual	0.18	--	0.18	0.3 (federal)	No
2033 Operations						
NO ₂ ⁴	1-hour	102.09	117.42	219.52	339 (State)	No
	1-hour ^{4,5}	72.03	102.87	174.27	188 (federal)	No
	Annual	3.26	26.35	29.60	57 (State)	No
					100 (federal)	No
CO	1-hour	510	6,256	6,766	23,000 (State)	No
					40,000 (federal)	No
	8-hour	205	5,631	5,835	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	1.21	--	1.21	5 (federal)	No
	Annual	0.38	--	0.38	1 (federal)	No
PM _{2.5} ⁶	24-hour	0.53	--	0.53	1.2 (federal)	No
	Annual	0.19	--	0.19	0.3 (federal)	No
2048 Operations						
NO ₂ ⁴	1-hour	123.57	117.42	241.00	339 (State)	No
	1-hour ^{4,5}	88.70	102.24	190.95	188 (federal)	Yes

Table 5.3-30: Maximum Off-Site Concentration from Operations (Unmitigated)

Pollutant	Averaging Time	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$) ⁷	Background Concentration ($\mu\text{g}/\text{m}^3$) ¹	Total Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Threshold ($\mu\text{g}/\text{m}^3$) ²	Threshold Exceeded? ³
	Annual	4.16	26.35	30.51	57 (State)	No
					100 (federal)	No
CO	1-hour	509	6,256	6,765	23,000 (State)	No
					40,000 (federal)	No
	8-hour	203	5,631	5,834	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	1.89	--	1.89	5 (federal)	No
	Annual	0.61	--	0.61	1 (federal)	No
PM _{2.5} ⁶	24-hour	0.80	--	0.80	1.2 (federal)	No
	Annual	0.29	--	0.29	0.3 (federal)	No

Notes:

¹ Background concentrations are from the Barstow Monitoring Station (2022 – 2024). Note that CO is no longer monitored and the above data is the latest available (2019 – 2021).

² Ambient air quality thresholds are the NAAQS and CAAQS provided in **Table 5.3-1**. All thresholds are shown in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for comparison to modeled concentrations.

³ Exceedances of the NAAQS and CAAQS are indicated in **bold**.

⁴ NO₂ concentrations were calculated per Tier 2 ARM2 ratios in U.S. EPA's 40 CFR Part 51 Appendix W, § 4.2.3.4. Conversion of NO_x to NO₂ use U.S. EPA minimum and maximum default values NO₂/NO_x of 0.5 and 0.9, respectively.

⁵ This comparison is to the federal NAAQS, which is a 98th percentile threshold. The background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2022, 2023, and 2024.

⁶ The thresholds for PM₁₀ and PM_{2.5} are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

⁷ The Barstow Yard switcher replacement was conservatively not considered in the NAAQS and CAAQS modeling for the unmitigated project. Unlike the HRA, the NAAQS and CAAQS modeling is the max concentration at the fenceline and the switcher replacement would not substantially change the BIG concentrations.

Source: Refer to **Appendix 5.3 BIG-1: Air Quality Technical Report**.

BIG operations would include Tier 4 locomotives, renewable diesel fuels, and electric cargo handling equipment. Additionally, BIG operations would be required to implement **MM BIG AQ-7** through **MM BIG AQ-14**, which require on-site sweeping of paved areas, renewable diesel for RTG cranes, truck idling limits and truck route signage, Tier 4 emergency backup generators, and truck efficiency measures such as compliance with CARB's Carl Moyer Efficiency Program and U.S. EPA's Smart Way Program, electric landscaping equipment, electric truck charging stations, and future EV charging infrastructure. Implementation of mitigation would minimize operational emissions. Mitigated operational pollutant concentrations are shown in **Table 5.3-31: Maximum Off-Site Concentration from Operations (Mitigated)**. As shown in **Table 5.3-31**, operational concentrations would not exceed the NAAQS or CAAQS in any of the analysis years with implementation of **MM BIG AQ-7** through **MM BIG AQ-14**.

Table 5.3-31: Maximum Off-Site Concentration from Operations (Mitigated)

Pollutant	Averaging Time	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$) ⁷	Background Concentration ($\mu\text{g}/\text{m}^3$) ¹	Total Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Threshold ($\mu\text{g}/\text{m}^3$) ²	Threshold Exceeded? ³
2028 Operations						
NO ₂ ⁴	1-hour	78.12	117.42	195.54	339 (State)	No
	1-hour ^{4,5}	48.72	102.24	150.96	188 (federal)	No
	Annual	2.18	26.35	28.53	57 (State)	No
					100 (federal)	No
CO	1-hour	67	6,256	6,324	23,000 (State)	No
					40,000 (federal)	No
	8-hour	13	5,631	5,644	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	0.58	--	0.58	5 (federal)	No
	Annual	0.29	--	0.29	1 (federal)	No
PM _{2.5} ⁶	24-hour	0.45	--	0.45	1.2 (federal)	No
	Annual	0.16	--	0.16	0.3 (federal)	No
2033 Operations						
NO ₂ ⁴	1-hour	81.94	117.42	199.39	339 (State)	No
	1-hour ^{4,5}	59.73	102.24	161.97	188 (federal)	No
	Annual	2.40	26.35	28.74	57 (State)	No
					100 (federal)	No
CO	1-hour	73	6,256	6,329	23,000 (State)	No
					40,000 (federal)	No
	8-hour	22	5,631	5,653	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	1.10	--	1.10	5 (federal)	No
	Annual	0.35	--	0.35	1 (federal)	No
PM _{2.5} ⁶	24-hour	0.49	--	0.49	1.2 (federal)	No
	Annual	0.18	--	0.18	0.3 (federal)	No
2048 Operations						
NO ₂ ⁴	1-hour	102.79	117.42	220.22	339 (State)	No
	1-hour ^{4,5}	75.96	102.24	178.20	188 (federal)	No
	Annual	4.16	26.35	30.50	57 (State)	No
					100 (federal)	No
CO	1-hour	94	6,256	6,350	23,000 (State)	No
					40,000 (federal)	No
	8-hour	28	5,631	5,659	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	1.82	--	1.82	5 (federal)	No
	Annual	0.59	--	0.59	1 (federal)	No
PM _{2.5} ⁶	24-hour	0.77	--	0.77	1.2 (federal)	No
	Annual	0.28	--	0.28	0.3 (federal)	No
Note: ¹ Background concentrations are from the Barstow Monitoring Station (2022 – 2024). Note that CO is no longer monitored and the above data is the latest available (2019 – 2021).						

Table 5.3-31: Maximum Off-Site Concentration from Operations (Mitigated)

Pollutant	Averaging Time	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$) ⁷	Background Concentration ($\mu\text{g}/\text{m}^3$) ¹	Total Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Threshold ($\mu\text{g}/\text{m}^3$) ²	Threshold Exceeded? ³
² Ambient air quality thresholds are the NAAQS and CAAQS provided in Table 5.3-1 . All thresholds are shown in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for comparison to modeled concentrations. ³ Exceedances of the NAAQS and CAAQS are indicated in bold. ⁴ NO ₂ concentrations were calculated per Tier 2 ARM2 ratios in U.S. EPA's 40 CFR Part 51 Appendix W, § 4.2.3.4. Conversion of NO _x to NO ₂ use U.S. EPA minimum and maximum default values NO ₂ /NO _x of 0.5 and 0.9, respectively. ⁵ This comparison is to the federal NAAQS, which is a 98 th percentile threshold. The background concentration is the 3-year average of the 8 th highest daily maximum 1-hour concentration, over the years 2022, 2023, and 2024. ⁶ The thresholds for PM ₁₀ and PM _{2.5} are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold. ⁷ The Barstow Yard switcher replacement was conservatively not considered in the NAAQS and CAAQS modeling for the unmitigated project. Unlike the HRA, the NAAQS and CAAQS modeling is the max concentration at the fenceline and the switcher replacement would not substantially change the BIG concentrations.						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

Rail Corridor Concentrations

Localized effects of BIG-related Corridor emissions and the associated increases in criteria pollutants were modeled for a worst-case segment in the SCAB and two segments in the MDAB near BIG. The analyzed segments include one location in the SCAB (based on the SRA with the highest background concentration) and two locations in the MDAB (one west of BIG and one east of BIG). The SCAB worst-case segment is based on existing background ambient air quality concentrations as measured by the South Coast AQMD and CARB. There are fewer monitoring stations in the MDAB and the Barstow Monitoring Station measured by MDAQMD has the highest background concentrations and was conservatively used to evaluate impacts in the MDAB.

As noted above, the SCAB segment with the highest background concentrations was selected to provide a conservative analysis. The two locations in the MDAB include a segment west of BIG and a segment east of BIG. Segments east and west of BIG were selected because train volumes and associated emissions at these locations are different. Therefore, both of these segments were analyzed to disclose impacts from different emissions increases east and west of BIG.

South Coast AQMD Segment

Dispersion modeling of off-site BIG operational emissions was performed to assess impacts to air concentrations along the rail corridor within the SCAB. The segment modeled is located within SRA 12, which has been identified as the worst-case railroad segment because it has the highest background concentrations. These concentrations were modeled for BIG Opening Year (2028), Interim Year (2033), and Horizon Year (2048). Table 5.3-32: Corridor – South Coast AQMD Segment Operations presents the maximum off-site ground level concentrations of criteria pollutants estimated along the worst-case rail segment within SRA 12 of the SCAB. As shown in **Table 5.3-32**, unmitigated BIG operations would not exceed the NAAQS and CAAQS for NO₂ (1-hour), PM₁₀ (24-hour and annual), and PM_{2.5} (24-hour and annual) in 2028, 2033, and 2048.

Table 5.3-32: Corridor – South Coast AQMD Segment Operations

Pollutant	Averaging Time	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background Concentration ($\mu\text{g}/\text{m}^3$) ¹	Total Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Threshold ($\mu\text{g}/\text{m}^3$) ²	Threshold Exceeded? ³
2028 Operations						
NO ₂ ⁴	1-hour	1.08	128.34	129.42	339 (State)	No
	1-hour ^{4,5}	1.07	99.92	100.99	188 (federal)	No
	Annual	0.35	27.10	27.44	57 (State) 100 (federal)	No No
CO	1-hour	2.07	4,926	4,928	23,000 (State) 40,000 (federal)	No No
	8-hour	1.84	4,239	4,241	10,000 (State/fed)	No
	24-hour	0.003	--	0.003	5 (federal)	No
PM ₁₀ ⁶	Annual	0.001	--	0.001	1 (federal)	No
	24-hour	0.002	--	0.002	1.2 (federal)	No
PM _{2.5} ⁶	Annual	0.001	--	0.001	0.3 (federal)	No
2033 Operations						
NO ₂ ⁴	1-hour	1.27	128.34	129.61	339 (State)	No
	1-hour ^{4,5}	1.25	99.92	101.18	188 (federal)	No
	Annual	0.40	27.10	27.50	57 (State) 100 (federal)	No No
CO	1-hour	2.68	4,926	4,929	23,000 (State) 40,000 (federal)	No No
	8-hour	2.39	4,239	4,241	10,000 (State/fed)	No
	24-hour	0.003	--	0.003	5 (federal)	No
PM ₁₀ ⁶	Annual	0.002	--	0.002	1 (federal)	No
	24-hour	0.003	--	0.003	1.2 (federal)	No
PM _{2.5} ⁶	Annual	0.002	--	0.002	0.3 (federal)	No
2048 Operations						
NO ₂ ⁴	1-hour	1.88	128.34	130.22	339 (State)	No
	1-hour ^{4,5}	1.86	99.92	101.78	188 (federal)	No
	Annual	0.60	27.10	27.70	57 (State) 100 (federal)	No No
CO	1-hour	3.20	4,926	4,929	23,000 (State) 40,000 (federal)	No No
	8-hour	2.85	4,239	4,242	10,000 (State/fed)	No
	24-hour	0.011	--	0.011	5 (federal)	No
PM ₁₀ ⁶	Annual	0.006	--	0.006	1 (federal)	No
	24-hour	0.010	--	0.010	1.2 (federal)	No
PM _{2.5} ⁶	Annual	0.006	--	0.006	0.3 (federal)	No
Note: ¹ Background concentrations are from the South Central LA Monitoring Station (700 North Bullis Rd, Compton, CA 90221, ARB# 7012, AQS#: 60371302) ² Ambient air quality thresholds are the NAAQS and CAAQS provided in Table 5.3-1. All thresholds are shown in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for comparison to modeled concentrations. ³ Exceedances of the NAAQS and CAAQS are indicated in bold. ⁴ NO₂ concentrations were calculated per Tier 2 ARM2 ratios in U.S. EPA's 40 CFR Part 51 Appendix W, § 4.2.3.4. Conversion of NO_x to NO₂ use U.S. EPA minimum and maximum default values NO₂/NO_x of 0.5 and 0.9, respectively.						

Table 5.3-32: Corridor – South Coast AQMD Segment Operations

Pollutant	Averaging Time	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background Concentration ($\mu\text{g}/\text{m}^3$) ¹	Total Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Threshold ($\mu\text{g}/\text{m}^3$) ²	Threshold Exceeded? ³
⁵ This comparison is to the federal NAAQS, which is a 98 th percentile threshold. The background concentration is the 3-year average of the 8 th highest daily maximum 1-hour concentration, over the years 2022, 2023, and 2024.						
⁶ The thresholds for PM ₁₀ and PM _{2.5} are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

MDAQMD West of BIG

Dispersion modeling of off-site BIG operational emissions was performed to assess impacts to air concentrations along the rail corridor west of the BIG Footprint to the Silver Lakes Community. This segment is located closest to sensitive receptors that are not adjacent to the BIG footprint. The concentrations were modeled for BIG Opening Year 2028, Interim Year 2033, and Horizon Year 2048.

Table 5.3-33: Corridor – MDAQMD West of BIG Segment Operations presents the maximum off-site ground level concentrations of criteria pollutants estimated along the rail segment west of BIG to the Silver Lakes Community. As shown in **Table 5.3-33**, unmitigated BIG operations would not exceed the NAAQS or CAAQS in any of the analysis years.

Table 5.3-33: Corridor – MDAQMD West of BIG Segment Operations

Pollutant	Averaging Time	Maximum Modeled Concentration ⁷	Background Concentration ($\mu\text{g}/\text{m}^3$) ¹	Total Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Threshold ($\mu\text{g}/\text{m}^3$) ²	Threshold Exceeded? ³
2028 Operations						
NO ₂ ⁴	1-hour	0.39	117.42	117.81	339 (State)	No
	1-hour ^{4,5}	0.36	102.24	102.60	188 (federal)	No
	Annual	0.04	26.35	26.38	57 (State) 100 (federal)	No No
CO	1-hour	4.30	6,256	6,260	23,000 (State) 40,000 (federal)	No No
	8-hour	1.91	5,631	5,632	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	-1.0E-04	--	-1.0E-04	5 (federal)	No
	Annual	-6.0E-06	--	-6.0E-06	1 (federal)	No
PM _{2.5} ⁶	24-hour	-8.4E-05	--	-8.4E-05	1.2 (federal)	No
	Annual	-5.9E-06	--	-5.9E-06	0.3 (federal)	No
2033 Operations						
NO ₂ ⁴	1-hour	0.98	117.42	118.42	339 (State)	No
	1-hour ^{4,5}	0.90	102.24	103.16	188 (federal)	No
	Annual	0.04	26.35	26.38	57 (State) 100 (federal)	No No
CO	1-hour	5.87	6,256	6,262	23,000 (State) 40,000 (federal)	No No
	8-hour	2.60	5,631	5,633	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	-4.9E-05	--	-4.9E-05	5 (federal)	No
	Annual	-2.8E-06	--	-2.8E-06	1 (federal)	No

Table 5.3-33: Corridor – MDAQMD West of BIG Segment Operations

Pollutant	Averaging Time	Maximum Modeled Concentration ⁷	Background Concentration (µg/m ³) ¹	Total Ground Level Concentration (µg/m ³)	Threshold (µg/m ³) ²	Threshold Exceeded? ³
PM _{2.5} ⁶	24-hour	-3.9E-05	--	-3.9E-05	1.2 (federal)	No
	Annual	-2.7E-06	--	-2.7E-06	0.3 (federal)	No
2048 Operations						
NO ₂ ⁴	1-hour	0.35	117.42	117.83	339 (State)	No
	1-hour ^{4, 5}	0.32	102.24	102.62	188 (federal)	No
	Annual	0.03	26.35	26.38	57 (State)	No
					100 (federal)	No
CO	1-hour	6.16	6,256	6,262	23,000 (State)	No
					40,000 (federal)	No
	8-hour	2.72	5,631	5,633	10,000 (State/fed)	No
PM ₁₀ ⁶	24-hour	-9.6E-05	--	-9.6E-05	5 (federal)	No
	Annual	-5.6E-06	--	-5.6E-06	1 (federal)	No
PM _{2.5} ⁶	24-hour	-7.8E-05	--	-7.8E-05	1.2 (federal)	No
	Annual	-5.4E-06	--	-5.4E-06	0.3 (federal)	No
Note: ¹ Background concentrations are from the Barstow Monitoring Station (2022 – 2024). Note that CO is no longer monitored and the above data is the latest available (2019 – 2021). ² Ambient air quality thresholds are the NAAQS and CAAQS provided in Table 5.3-1. All thresholds are shown in micrograms per cubic meter (µg/m³) for comparison to modeled concentrations. ³ Exceedances of the NAAQS and CAAQS are indicated in bold. ⁴ NO₂ concentrations were calculated per Tier 2 ARM2 ratios in U.S. EPA's 40 CFR Part 51 Appendix W, § 4.2.3.4. Conversion of NO_x to NO₂ use U.S. EPA minimum and maximum default values NO₂/NO_x of 0.5 and 0.9, respectively. ⁵ This comparison is to the federal NAAQS, which is a 98th percentile threshold. The background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2022, 2023, and 2024. ⁶ The thresholds for PM₁₀ and PM_{2.5} are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold. ⁷ The Barstow Yard switcher replacement was conservatively not considered in the NAAQS and CAAQS modeling for the unmitigated project. Unlike the HRA, the NAAQS and CAAQS modeling is the max concentration at the fenceline and the switcher replacement would not substantially change the BIG concentrations.						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

MDAQMD East of BIG

Dispersion modeling of off-site BIG operational emissions was performed to assess impacts to air concentrations along the rail corridor east of the BIG Footprint. This segment is located closest to sensitive receptors that are not adjacent to the BIG footprint. The concentrations were modeled for BIG Opening Year 2028, Interim Year 2033, and Horizon Year 2048. **Table 5.3-34: Corridor – MDAQMD East of Big Segment Operations.** **Table 5.3-34: Corridor – MDAQMD East of Big Segment Operations** presents the maximum off-site ground level concentrations of criteria pollutants estimated along the rail segment east of BIG. As shown in **Table 5.3-34**, unmitigated BIG operations would not exceed the NAAQS or CAAQS in any of the analysis years.

Table 5.3-34: Corridor – MDAQMD East of Big Segment Operations

Pollutant	Averaging Time	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$) ⁷	Background Concentration ($\mu\text{g}/\text{m}^3$) ¹	Total Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Threshold ($\mu\text{g}/\text{m}^3$) ²	Threshold Exceeded? ³
2028 Operations						
NO ₂ ⁴	1-hour	16.81	117.42	134.24	339 (State)	No
	1-hour ^{4,5}	13.14	102.24	115.39	188 (federal)	No
	Annual	0.56	26.35	26.90	57 (State) 100 (federal)	No No
CO	1-hour	5	6,256	6,261	23,000 (State) 40,000 (federal)	No No
	8-hour	2	5,631	5,632	10,000 (State/fed)	No
	24-hour	0.04	--	0.04	5 (federal)	No
PM ₁₀ ⁶	Annual	0.01	--	0.01	1 (federal)	No
	24-hour	0.04	--	0.04	1.2 (federal)	No
PM _{2.5} ⁶	Annual	0.01	--	0.01	0.3 (federal)	No
	24-hour	0.04	--	0.04	1.2 (federal)	No
2033 Operations						
NO ₂ ⁴	1-hour	21.66	117.42	139.08	339 (State)	No
	1-hour ^{4,5}	16.39	102.24	119.17	188 (federal)	No
	Annual	0.72	26.35	27.07	57 (State) 100 (federal)	No No
CO	1-hour	6	6,256	6,263	23,000 (State) 40,000 (federal)	No No
	8-hour	2	5,631	5,633	10,000 (State/fed)	No
	24-hour	0.05	--	0.05	5 (federal)	No
PM ₁₀ ⁶	Annual	0.01	--	0.01	1 (federal)	No
	24-hour	0.05	--	0.05	1.2 (federal)	No
PM _{2.5} ⁶	Annual	0.01	--	0.01	0.3 (federal)	No
	24-hour	0.05	--	0.05	1.2 (federal)	No
2048 Operations						
NO ₂ ⁴	1-hour	20.49	117.42	137.92	339 (State)	No
	1-hour ^{4,5}	16.02	102.24	118.26	188 (federal)	No
	Annual	0.68	26.35	27.03	57 (State) 100 (federal)	No No
CO	1-hour	7	6,256	6,263	23,000 (State) 40,000 (federal)	No No
	8-hour	3	5,631	5,633	10,000 (State/fed)	No
	24-hour	0.04	--	0.04	5 (federal)	No
PM ₁₀ ⁶	Annual	0.01	--	0.01	1 (federal)	No
	24-hour	0.04	--	0.04	1.2 (federal)	No
PM _{2.5} ⁶	Annual	0.01	--	0.01	0.3 (federal)	No
	24-hour	0.04	--	0.04	1.2 (federal)	No
Note: ¹ Background concentrations are from the Barstow Monitoring Station (2022 – 2024). Note that CO is no longer monitored and the above data is the latest available (2019 – 2021). ² Ambient air quality thresholds are the NAAQS and CAAQS provided in Table 5.3-1 . All thresholds are shown in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for comparison to modeled concentrations. ³ Exceedances of the NAAQS and CAAQS are indicated in bold .						

Table 5.3-34: Corridor – MDAQMD East of Big Segment Operations

Pollutant	Averaging Time	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$) ⁷	Background Concentration ($\mu\text{g}/\text{m}^3$) ¹	Total Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Threshold ($\mu\text{g}/\text{m}^3$) ²	Threshold Exceeded? ³
⁴ NO ₂ concentrations were calculated per Tier 2 ARM2 ratios in U.S. EPA's 40 CFR Part 51 Appendix W, § 4.2.3.4. Conversion of NO _x to NO ₂ use U.S. EPA minimum and maximum default values NO ₂ /NO _x of 0.5 and 0.9, respectively. ⁵ This comparison is to the federal NAAQS, which is a 98 th percentile threshold. The background concentration is the 3-year average of the 8 th highest daily maximum 1-hour concentration, over the years 2022, 2023, and 2024. ⁶ The thresholds for PM ₁₀ and PM _{2.5} are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold. ⁷ The Barstow Yard switcher replacement was conservatively not considered in the NAAQS and CAAQS modeling for the unmitigated project. Unlike the HRA, the NAAQS and CAAQS modeling is the max concentration at the fenceline and the switcher replacement would not substantially change the BIG concentrations.						
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .						

CO Hot spots

An analysis of CO “hot spots” (CO exceedances are caused by vehicular emissions, primarily when vehicles are idling at intersections) is needed to determine whether the change in an intersection’s level-of-service resulting from BIG would have the potential to exceed CAAQS or NAAQS.

BIG is in a rural area and as shown in the operational analysis, above, BIG CO concentrations would not exceed the 1-hour or 8-hour NAAQS or CAAQS when compared with background concentrations. Therefore, BIG would not have the potential to cause an intersection to reach the volume of traffic required to generate a CO hot spot. Note that the Barstow Yard switcher replacements would not affect CO hotspots because Tier 4 emission standards primarily reduce NO_x and particulate matter, but CO emission rates are unchanged.

Asbestos

BIG would acquire various properties, many of which may contain structures which need to be removed. Many of the structures within BIG footprint may have been built with structural and building materials that contain asbestos.

The demolition of structures with asbestos-containing materials is subject to *National Emission Standards for HAPs* limitations and would require an asbestos inspection. BIG would comply with the MDAQMD asbestos requirements, including submission of an asbestos survey and notification of demolition form. Strict compliance with existing asbestos regulations would prevent a substantial effect from asbestos. Additionally, the County is not designated by the California Geological Survey as areas likely to contain NOA. Therefore, NOA would not likely be disturbed during BIG construction.

Valley Fever

As discussed in **Section 0: Valley Fever**, Valley Fever is not highly endemic to the County with an incident rate of 1.8 cases per 100,000 people. In contrast, in 2016 the statewide annual incident rate was 13.7 per 100,000 people. The California counties considered highly endemic for Valley Fever include Kern (251.7 per 100,000), Kings (157.3 per 100,000), San Luis Obispo (82.8 per 100,000), Fresno (60.8 per 100,000), Tulare (45.3 per 100,000), Madera (31.5 per 100,000), and San Joaquin (25.3 per 100,000), and accounted for 70 percent of the reported cases in 2016.

Even if present at the site, construction activities may not result in increased incidence of Valley Fever. Propagation of Valley Fever is dependent on climatic conditions, with the potential for growth and surface exposure highest following early seasonal rains and long dry spells. Valley Fever spores can be released when filaments are disturbed by earthmoving activities, although receptors must be exposed to and inhale the spores to be at increased risk of developing Valley Fever. Moreover, exposure to Valley Fever does not guarantee that an individual will become ill—approximately 60 percent of people exposed to the fungal spores are asymptomatic and show no signs of an infection.

To reduce fugitive dust from BIG and minimize adverse air quality impacts, BIG would employ dust control measures in accordance with the MDAQMD Rules 401 and 403.2, which limit the amount of fugitive dust generated during construction and would also be required to comply with **MM BIG AQ-1**, which requires controls for fugitive dust emissions. These requirements are consistent with California Department of Public Health recommendations for the implementation of dust control measures, including regular application of water during soil-disturbance activities, to minimize impacts related to Valley Fever. Further, regulations designed to minimize exposure to Valley Fever hazards are included in Title 8 of the CCR and would be complied with during BIG's construction phase.

BIG would not result in a significant impact attributable to Valley Fever exposure based on its geographic location and compliance with applicable regulatory standards and dust control measures, which will serve to minimize the release of and exposure to fungal spores. Therefore, impacts associated with Valley Fever exposure for sensitive receptors would be less than significant.

Potential Impacts of Toxic Air Contaminants

BIG Footprint

The health effects discussion is guided by the emissions analysis and HRA contained in **Appendix 5.3 BIG-1**. The emissions analysis involves construction and operational activity data, and emission factors, which are used to estimate emissions for all BIG sources.

The HRA analyzes BIG TAC emissions and human exposure to the emissions during 9-, 25-, 30-, and 70-year periods, each starting the year after the baseline and reflecting OEHHA-recommended exposure durations for different receptor types. The impacts evaluated address three types of health effects (individual lifetime cancer risk, chronic non-cancer HI, and acute non-cancer HI). A threshold exceedance indicates a substantial contribution to adverse health effects related to TAC exposure.

This analysis examines project impacts resulting from BIG construction and operations from the commencement of construction in 2025 for a 30-year exposure duration for sensitive/residential receptors, 25-year exposure duration for worker receptors, and 9-year exposure duration for school-site student receptors. Because cancerous health risks result from long exposure periods, construction health risk and operational health risk are analyzed both separately and combined, based on the sources listed in **Table 20: Toxic Air Contaminant Sources of Appendix 5.3 BIG-1**.

Risk Uncertainty. HRAs such as the one presented in this analysis are not intended to quantify estimates of the absolute health risk or expected disease incidence for a population. Rather, HRAs such as this one are conducted to allow for comparisons of the potential health risks of different alternatives to each other

and the significance criteria. Consistent with agency guidelines and standard approaches to regulatory risk assessment, this risk assessment used health-protective (high-end/conservative) assumptions to provide a margin of safety with respect to human health.

What is a Carcinogenic Risk Assessment? Individual cancer risk is the additional probability a person exposed to a toxic pollutant may have of developing cancer after long-term exposure to a project-related TAC. The individual cancer risk does not mean that a person *will* develop cancer from estimated exposures to toxic air pollutants, nor should it be interpreted as the number of people that will develop cancer at a specific location. The individual cancer risk is based on continual long-term exposure and estimated annual concentrations that may, or may not, vary in real time for the location or person under evaluation. Cancer risk is typically expressed as the chance of an individual developing cancer if a million people were exposed continuously for a specified duration (e.g., 30 years) to the same concentration of toxic emissions being evaluated.

Modeled pollutant concentrations will vary based on many factors. Some of the factors include how the pollutant is released (type of source [i.e., truck, locomotive, etc.]; height, speed, and temperature of release; terrain in the surrounding area; presence of buildings), wind direction and speed, and proximity of receptors.

As described above, this analysis uses a 10 in one million cancer (carcinogenic) risk threshold. Expressed as a probability, 10 in one million is 0.00001 or 0.001 percent. To provide context, the following is a list of risks associated with other known activities (risk of occurrence in an individual's lifetime) (Source: San Joaquin Valley Air Pollution Control District, *Guidance for Assessing and Mitigating Air Quality Impacts*, page 100, 2015).

Occurrence	Lifetime Risk
• Contracting cancer (from all sources)	• 250,000 in a million
• Dying of cancer	• 140,000 in a million
• Dying in a car accident	• 12,000 in a million
• Dying from a fall	• 4,600 in a million
• Dying from excessive heat	• 73 in a million
• Being struck by lighting	• 7.4 in a million

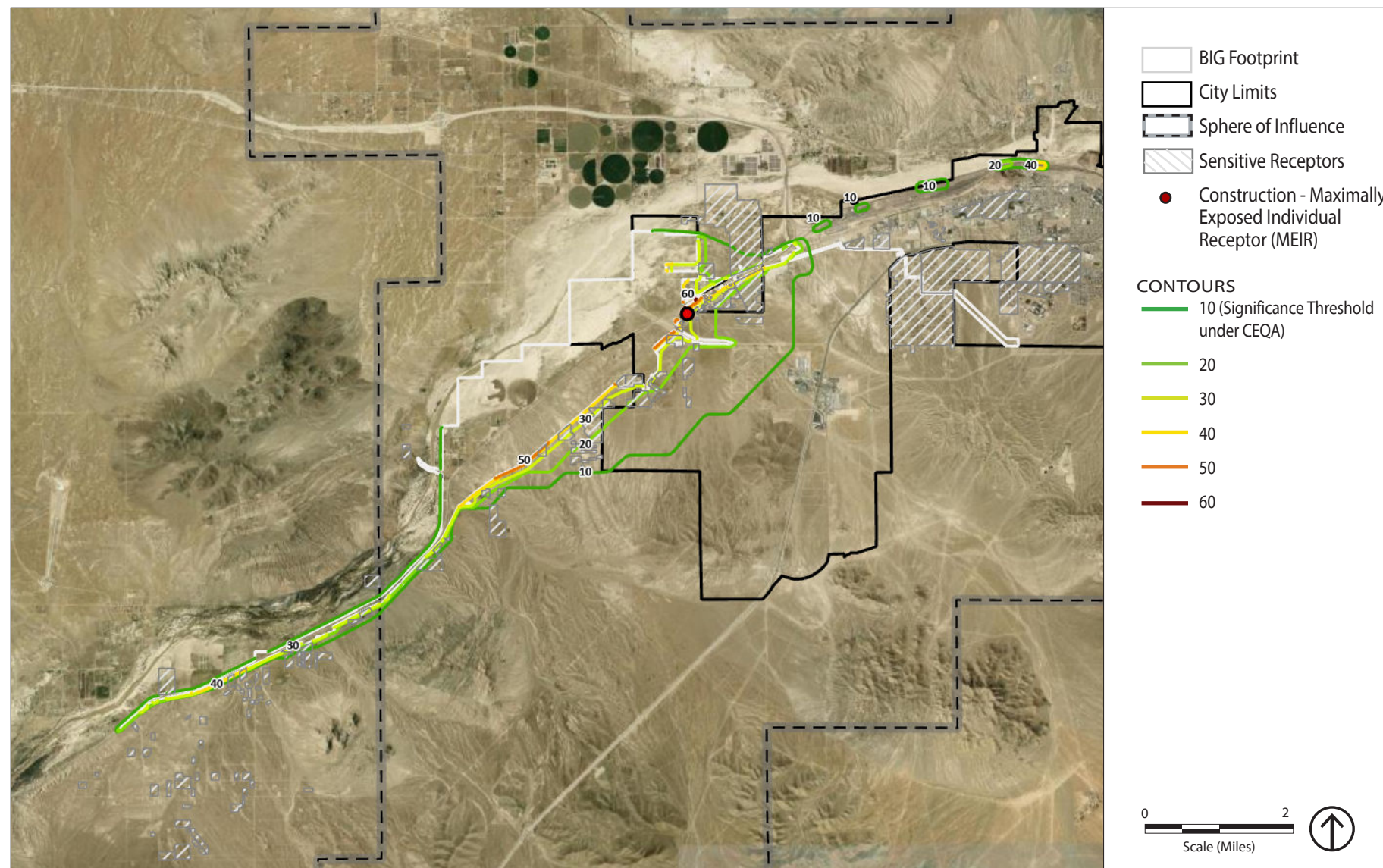
As shown above, the 10 in one million threshold is conservative in protecting public health. For instance, the chance of contracting cancer from a project with a risk of 10 in a million is, on the face of it, less than significant when compared to the 250,000 in a million overall chance of contracting cancer from all sources.¹⁵

¹⁵ The 250,000 in a million overall chance of contracting cancer from all sources may also be a conservative. The South Coast AQMD's Multiple Air Toxics Exposure Study V (August 2021) notes that in the U.S. population, the chances of developing cancer over a lifetime is 38.4 percent. This translates into a risk of about 384,000 in a million over a lifetime.

It is important to note the following conservative modeling assumptions: exposure duration is based on continual heavy-duty truck operation along nearby roadways while the majority of heavy-duty truck activity along roadways would occur during daytime hours, exposure of residential receptors begin during the third trimester in utero while that may only represent a fraction of the population present in the surrounding area, and receptors would be located outdoors in the same location and continuously exposed to toxic contaminants for a specific duration without consideration of time spent indoors. Exposure would be reduced when factoring in that a majority of the heavy-duty truck trips along nearby roadways would occur during daytime hours, residential receptors may relocate to the project area later in life and begin exposure as an adult, and a majority of a receptor's time is spent indoors with windows closed.

While the level of significance for the purposes of this analysis is 10 in one million (0.001 percent), the MDAQMD considers a risk of 100 in one million (0.01 percent) to be a "significant risk". The MDAQMD's Air Toxics Program Public Notification Procedures identifies 10 in one million for lifetime Maximum Individual Cancer Risk (MICR) as the level for informing the public per the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (Air Toxics Act; Health and Safety Code (H&S Code) §§ 44300-44384. The Air Toxics Act does not require emissions or health risk reductions. The MDAQMD's Air Toxics "Hot Spots" Program Risk Reduction Audit And Plan Procedures identifies 100 in one million as the level of risk considered a "significant risk" and would require a risk reduction audit and plan.

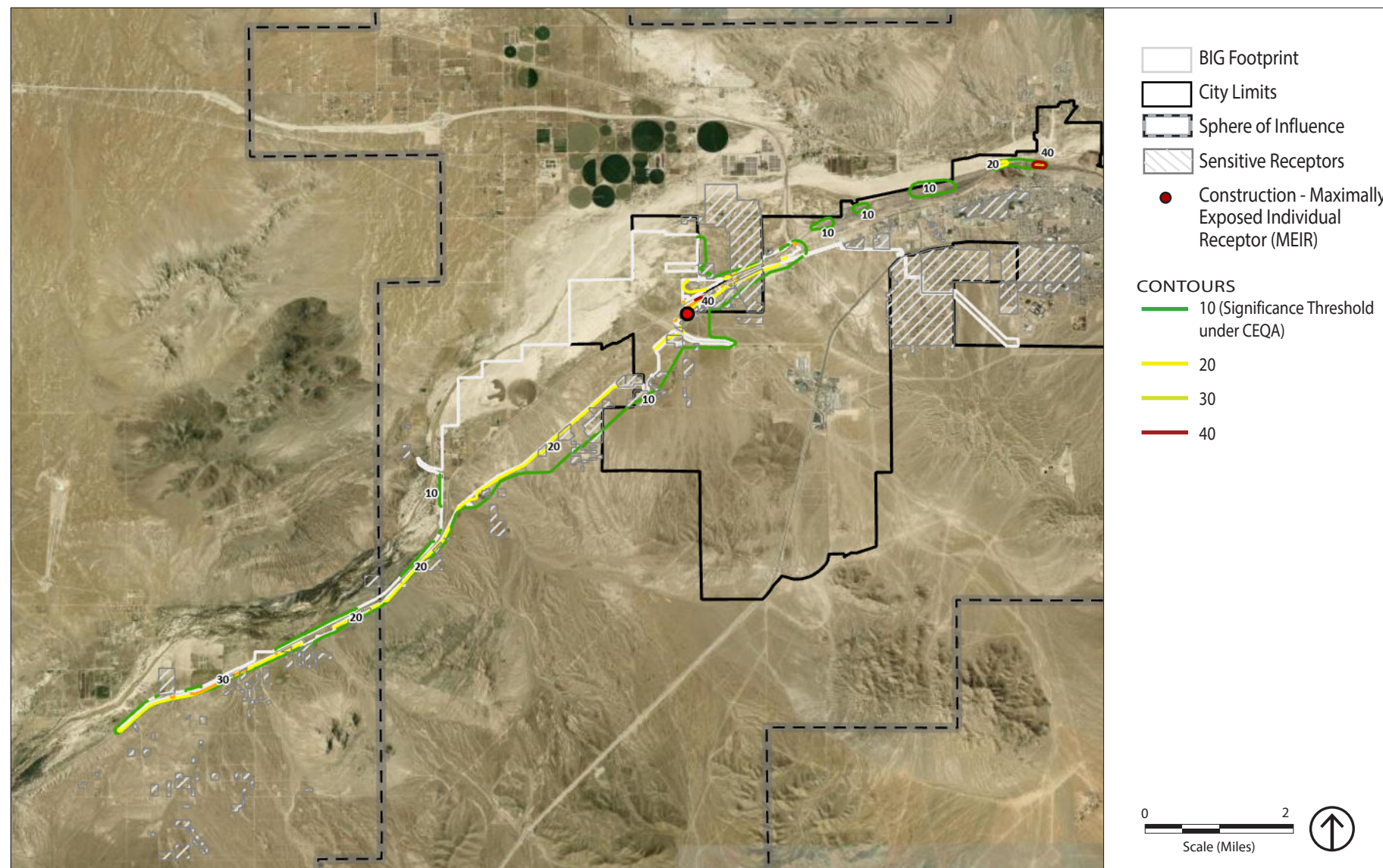
Table 5.3-35: Carcinogenic Risk Assessment (Construction Only) shows the unmitigated health risk for BIG construction. The exposure duration for construction is approximately 2.8-years. The unmitigated construction risk assessment includes existing regulations summarized in **Table 5.3-35**. The table also shows mitigated construction risk. Unmitigated and mitigated construction risk would exceed the 10 in one million incremental threshold at residential and worker receptors. See **Figure 5.3-6: Construction Health Risk Assessment (Unmitigated)** and **Figure 5.3-7: Construction Health Risk Assessment (Mitigated)**. As noted above, unmitigated risk would be minimized with **MM BIG AQ-3** through **MM BIG AQ-6**, which would reduce construction exhaust emissions (i.e., DPM) by requiring Tier 4 offroad equipment, renewable diesel, newer model year on-road construction trucks, and the minimization of batch plant emissions. Construction carcinogenic risk would remain above the 10 in one million threshold despite the implementation of mitigation measures.



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). These contours do not represent student or worker risk, which are calculated separately.

Figure 5.3-6
Construction Health Risk Assessment (Unmitigated)



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). These contours do not represent student or worker risk, which are calculated separately.

Figure 5.3-7
Construction Health Risk Assessment (Mitigated)

Table 5.3-35: Carcinogenic Risk Assessment (Construction Only)				
Receptor Location ^{1, 2}	Risk per Million			Threshold Exceeded?
	Unmitigated Cancer Risk	Mitigated Cancer Risk	Significance Threshold	
Maximally Exposed Individual Resident (MEIR)	45.84	24.52	10	Yes
Maximally Exposed Individual Worker (MEIW)	21.98	13.11	10	Yes
Maximally Exposed Student Receptor	10.47	5.96	10	No
Maximally Exposed Park Receptor	2.57	1.64	10	No
Notes:				
¹ Receptors described here reflect the receptor shown in Table 5.3-14 with the highest carcinogenic risk.				
² Sensitive receptor locations can be seen in Figure 5.3-4.				
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report.				

Table 5.3-36: Carcinogenic Risk Assessment (Operations Only) shows the unmitigated and mitigated health risk for BIG operations. Based on OEHHA *Risk Assessment Guidelines*, the exposure duration for a resident is 30 years, beginning with the third trimester; the exposure duration for workers is 25years, and the exposure duration for students is 9 years.

Table 5.3-36: Carcinogenic Risk Assessment (Operations Only)					
Receptor Location ^{1,2, 3}	Risk per Million				Threshold Exceeded?
	Unmitigated Cancer Risk		Mitigated Cancer Risk	Significance Threshold	
	Without Barstow Switcher Replacement	With Barstow Switcher Replacement			
Maximally Exposed Individual Resident (MEIR)	42.63	40.17	39.97	10	Yes
Maximally Exposed Individual Worker (MEIW)	5.33	5.09	4.04	10	No
Maximally Exposed Student Receptor	6.38	6.26	3.90	10	No
Maximally Exposed Park Receptor	5.88	5.69	3.68	10	No
Notes:					
¹ Receptors described here reflect the receptor shown in Table 5.3-14 with the highest carcinogenic risk.					
² Sensitive receptor locations can be seen in Figure 5.3-4 .					
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .					

As shown in **Table 5.3-36**, unmitigated operations would exceed the MDAQMD threshold of 10 in one million. See Figure 5.3-8: Operations Health Risk Assessment – West Leads (Unmitigated), Figure 5.3-9: Operations Health Risk Assessment – BIG and East Leads (Unmitigated), Figure 5.3-10: Operations Health Risk Assessment – East of BIG (Unmitigated), **Figure 5.3-11: Operations Health Risk Assessment - East of BIG (Unmitigated with Switcher Replacement)**, Figure 5.3-12: Operations Health Risk Assessment – West Leads (Mitigated), Figure 5.3-13: Operations Health Risk Assessment – BIG and East Leads (Mitigated), and Figure 5.3-14: Operations Health Risk Assessment – East of BIG (Mitigated). These impacts would be

reduced with implementation of **LOR AQ-3**, which minimizes construction idling. **MM BIG AQ-3** through **MM BIG AQ-6** would reduce cancer causing emissions from BIG construction and **MM BIG AQ-8** through **MM BIG AQ-14** would reduce cancer causing emissions from BIG operations. Impacts would remain above MDAQMD's thresholds after mitigation is applied. Unmitigated and mitigated risk would exceed the 10 in one million incremental threshold at residential receptors during operations. However, the risk for student, worker, and park receptors would be less than significant.

Table 5.3-37: Carcinogenic Risk Assessment (Construction and Operations) shows the unmitigated and mitigated health risk associated with a continued exposure starting from the beginning of BIG construction for 2.8 years and the operational exposure continuing for the remaining time (e.g., 27.2 years for residential exposure).

Unmitigated and mitigated risk would exceed the 10 in one million incremental threshold at residential receptors during operations. See **Figure 5.3-15: Combined Construction and Operational Health Risk Assessment – West Leads (Unmitigated)**, **Figure 5.3-16: Combined Construction and Operational Health Risk Assessment – BIG and East Leads (Unmitigated)**, **Figure 5.3-17: Combined Construction and Operational Health Risk Assessment – East of BIG (Unmitigated)**, **Figure 5.3-18: Combined Construction and Operational Health Risk Assessment – East of BIG (Unmitigated with Switcher Replacement)**, **Figure 5.3-19: Combined Construction and Operational Health Risk Assessment – West Leads (Mitigated)**, **Figure 5.3-20: Combined Construction and Operational Health Risk Assessment – BIG and East Leads**, and **Figure 5.3-21: Combined Construction and Operational Health Risk Assessment – East of BIG (Mitigated)**. As noted above, unmitigated risk would be minimized with **LOR AQ-3**. The risk for student, worker, and park receptors would be less than significant.

Individual residential cancer risk is calculated assuming that an individual would be exposed to the same concentration of a pollutant for a duration of 30 years without consideration of time spent indoors. Exposure would be reduced when factoring in time spent indoors with windows closed. With high summer temperatures in the City, the use of air conditioning is likely to reduce indoor temperatures. With consideration of time spent indoors and the likelihood that windows would be closed and air conditioning would be used during the summer months, risk would be lower than what is shown in **Table 5.3-37**.

Table 5.3-37: Carcinogenic Risk Assessment (Construction and Operations)

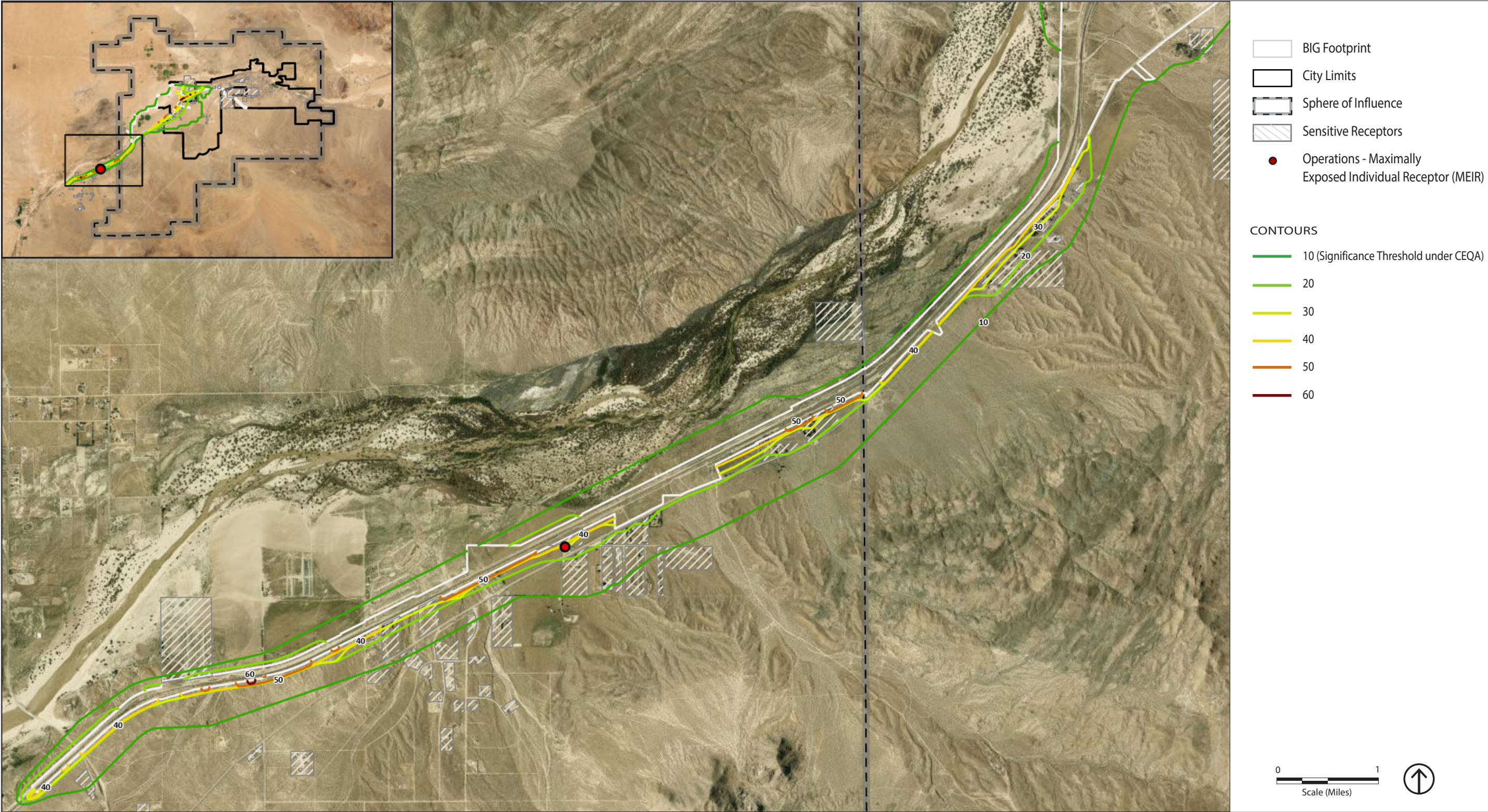
Receptor Location	Risk per Million ¹				Threshold Exceeded?
	Unmitigated Cancer Risk		Mitigated Cancer Risk	Significance Threshold	
	Without Barstow Switcher Replacement	With Barstow Switcher Replacement			
Maximally Exposed Individual Resident (MEIR)	64.58	64.04	40.03	10	Yes
Maximally Exposed Individual Worker (MEIW)	26.47	26.28	16.36	10	Yes
Maximally Exposed Student Receptor	15.20	15.09	8.50	10	No
Maximally Exposed Park Receptor	646	6.27	3.96	10	No

Notes:

¹ The combined construction and operational risk is not the sum of the individual risk for each because the combined scenario assumes continuous exposure with different start ages, exposure durations, breathing rates, and age sensitivity factors. For example, the operations only scenario assumes 30 years of operational exposure whereas the combined risk is 2.8 years of construction + 27.2 years of operations.

Source: Refer to **Appendix 5.3 BIG-1: Air Quality Technical Report**.

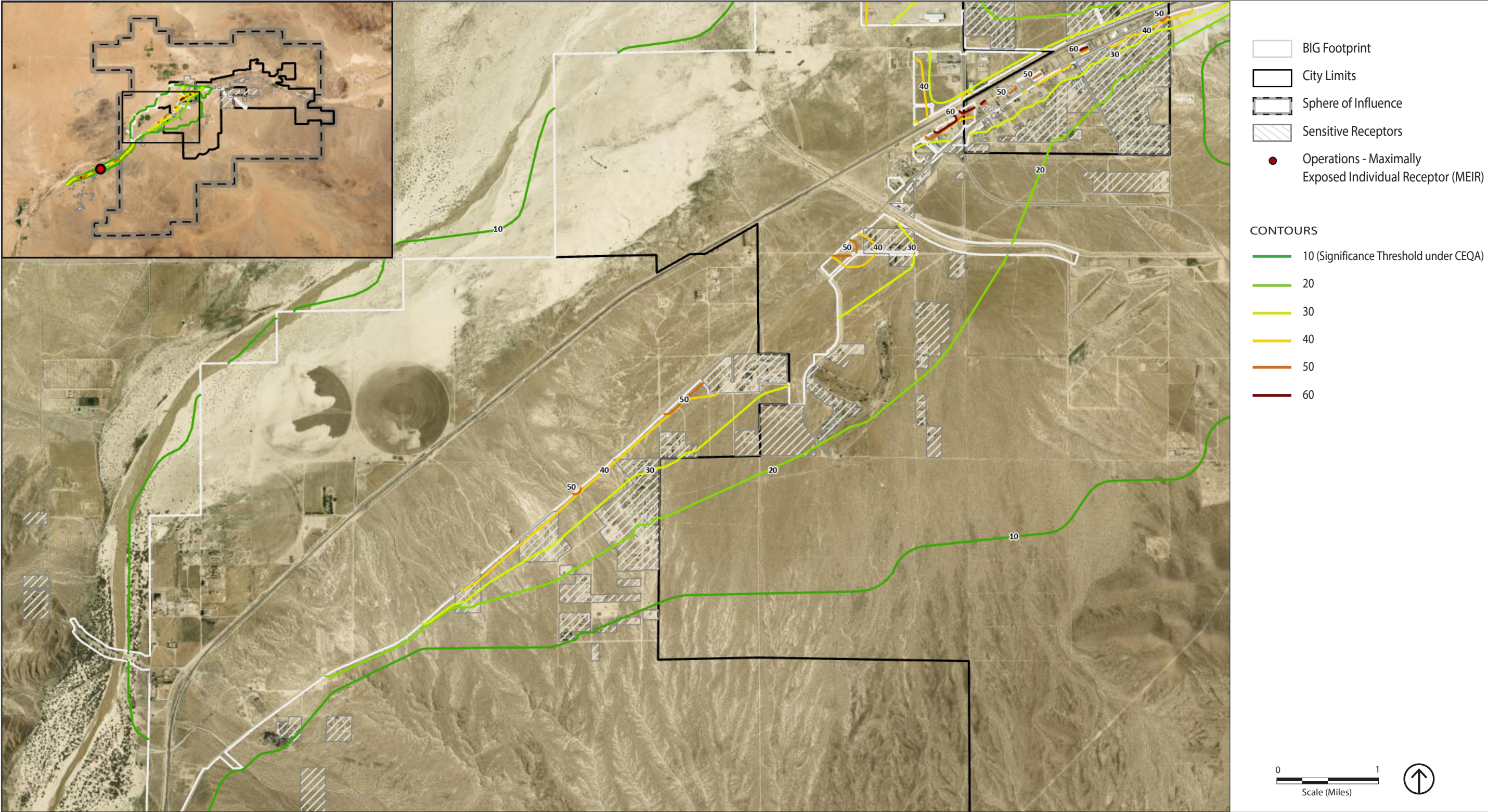
The cancer risk isopleths are shown below. In addition, the estimated point of maximum impact and maximum individual lifetime cancer risk may not be replicated by air monitoring.



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict 30-year residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). These contours do not represent student or worker risk, which are calculated separately.

Figure 5.3-8
Operations Health Risk Assessment - West Leads (Unmitigated)



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict 30-year residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). These contours do not represent student or worker risk, which are calculated separately.

Figure 5.3-9
Operations Health Risk Assessment - BIG and East Leads (Unmitigated)

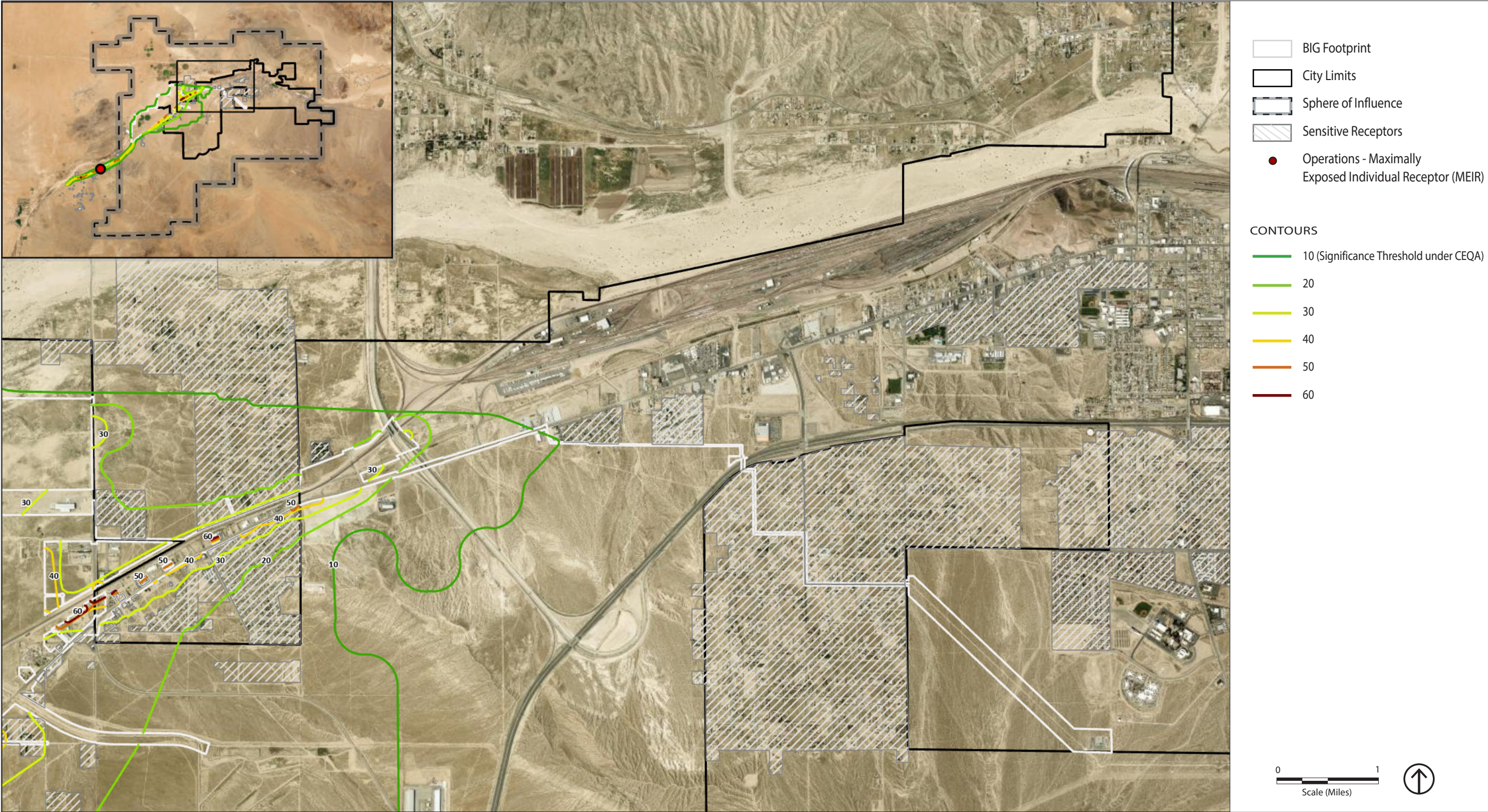


Figure 5.3-10
Operations Health Risk Assessment – East of BIG (Unmitigated)

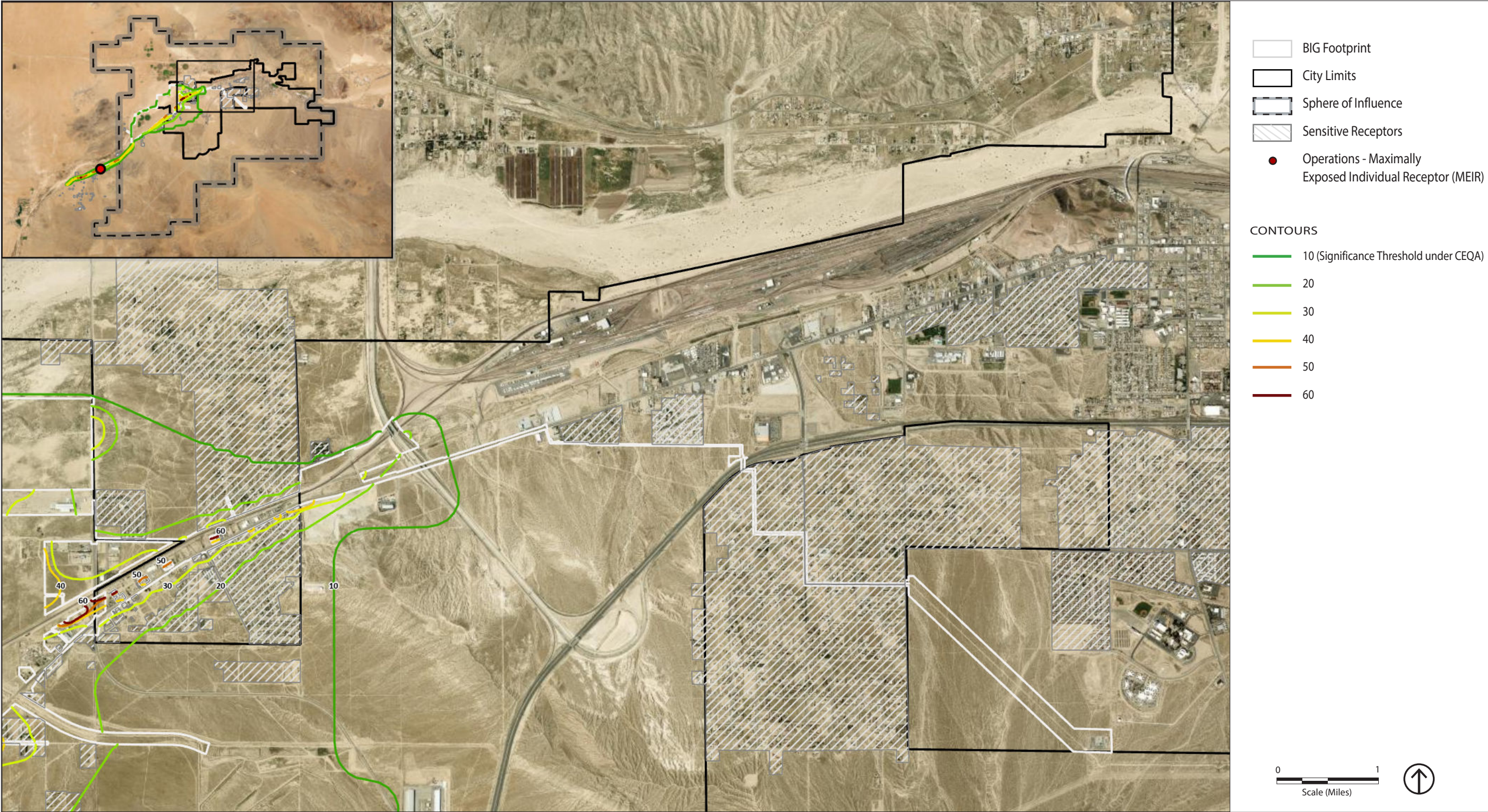
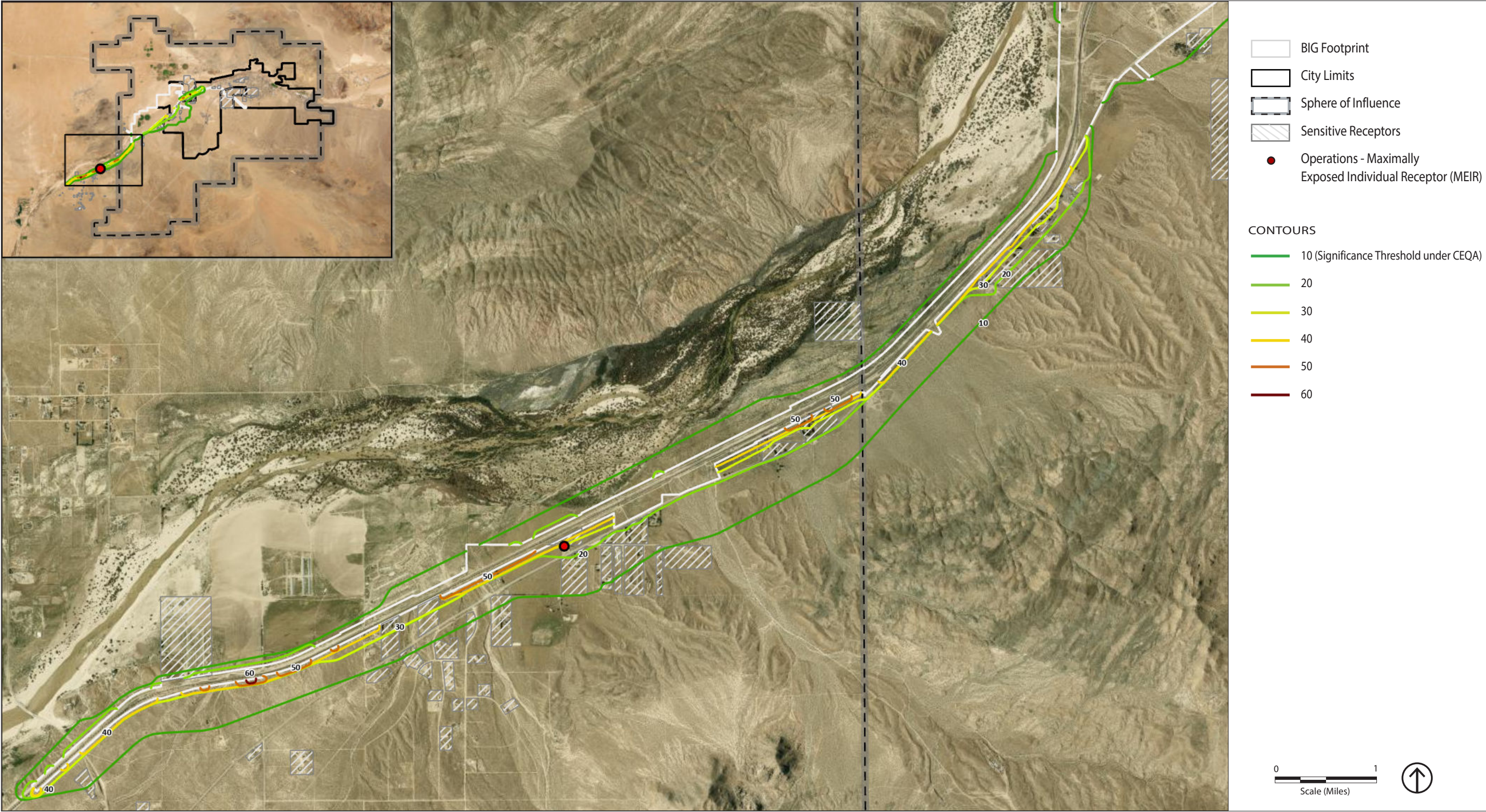


Figure 5.3-11
Operations Health Risk Assessment - East of BIG (Unmitigated with Switcher Replacement)



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict 30-year residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). These contours do not represent student or worker risk, which are calculated separately.

Figure 5.3-12
Operations Health Risk Assessment - West Leads (Mitigated)

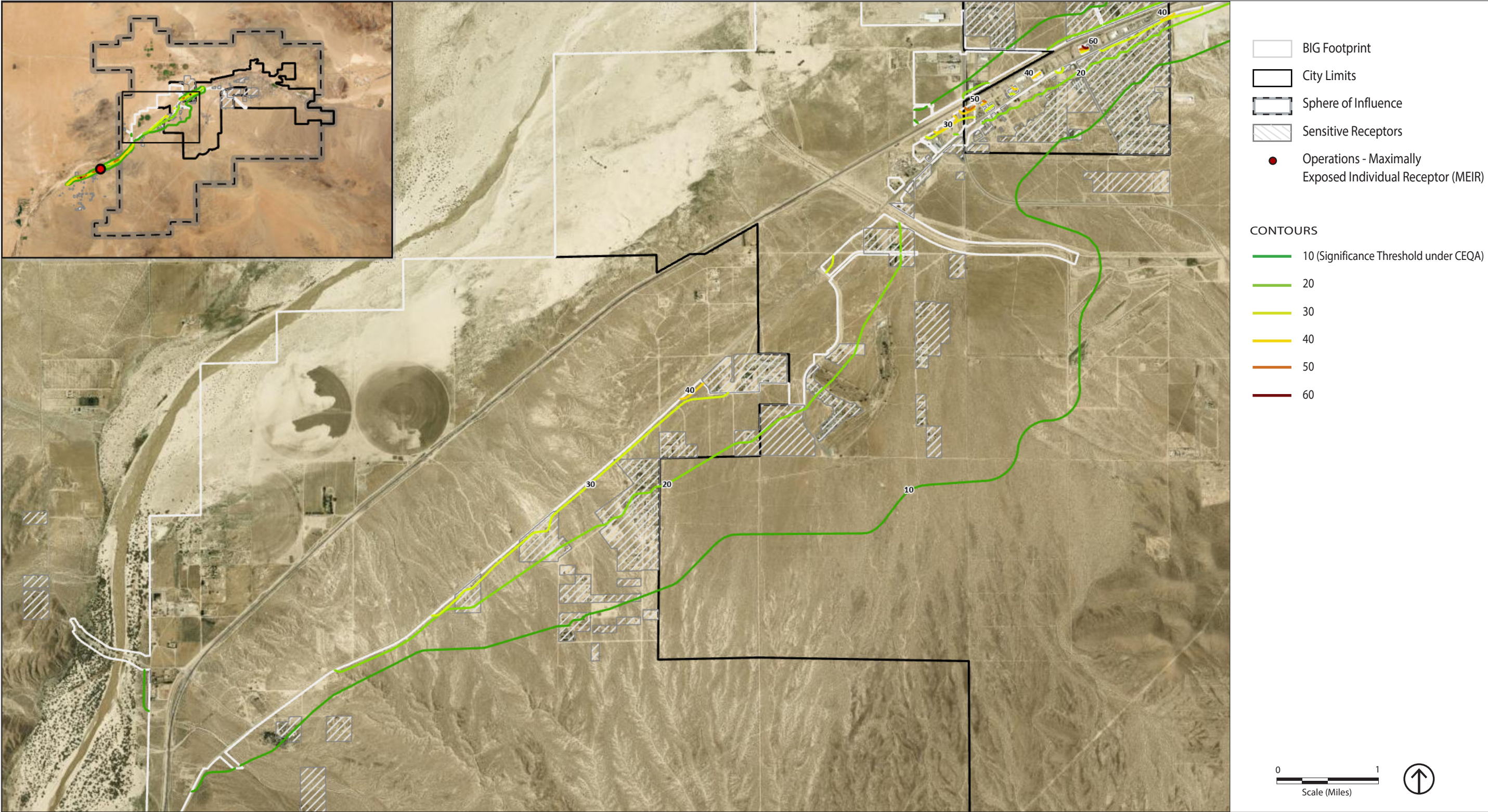


Figure 5.3-13
Operations Health Risk Assessment - BIG and East Leads (Mitigated)

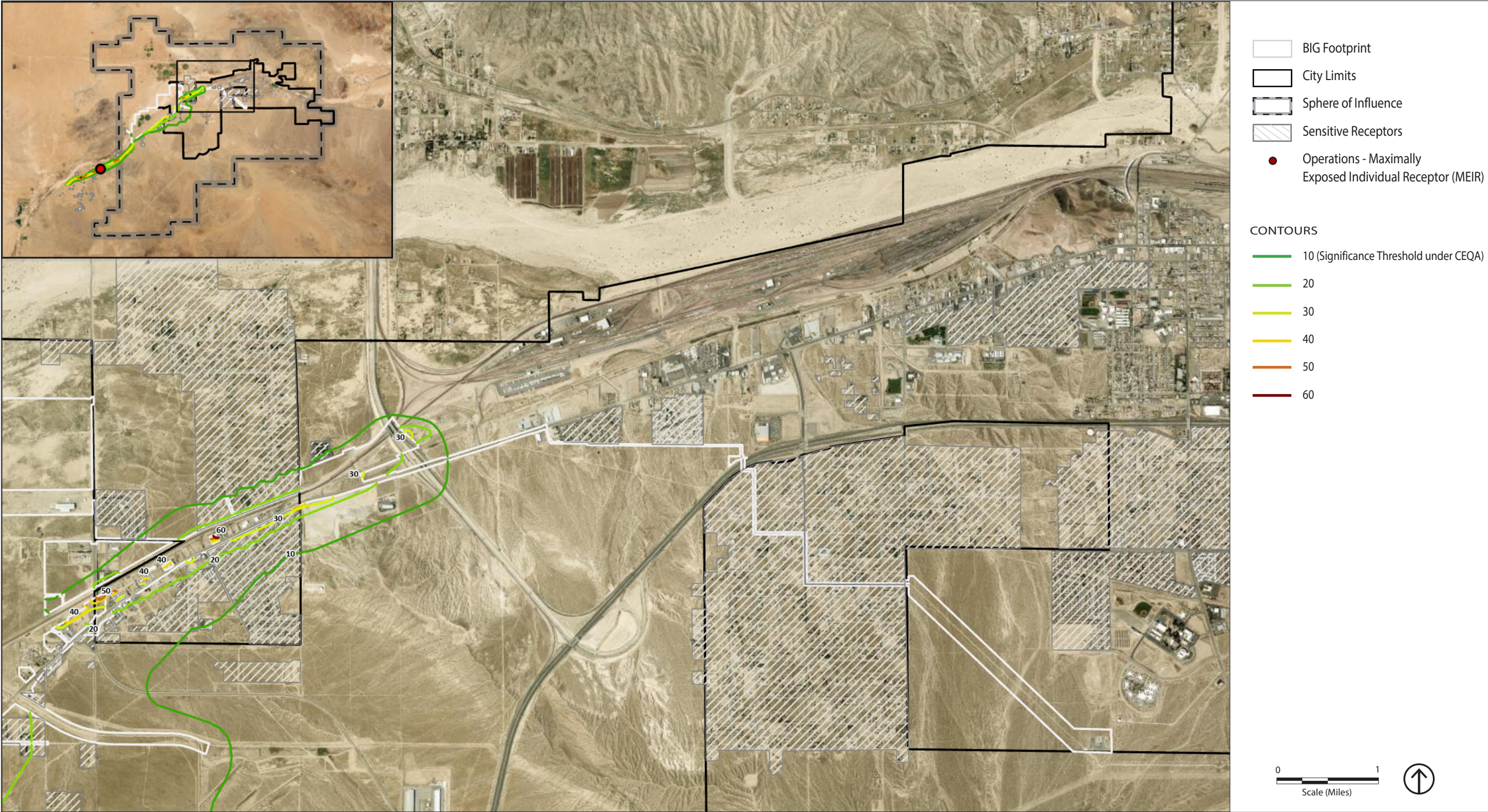
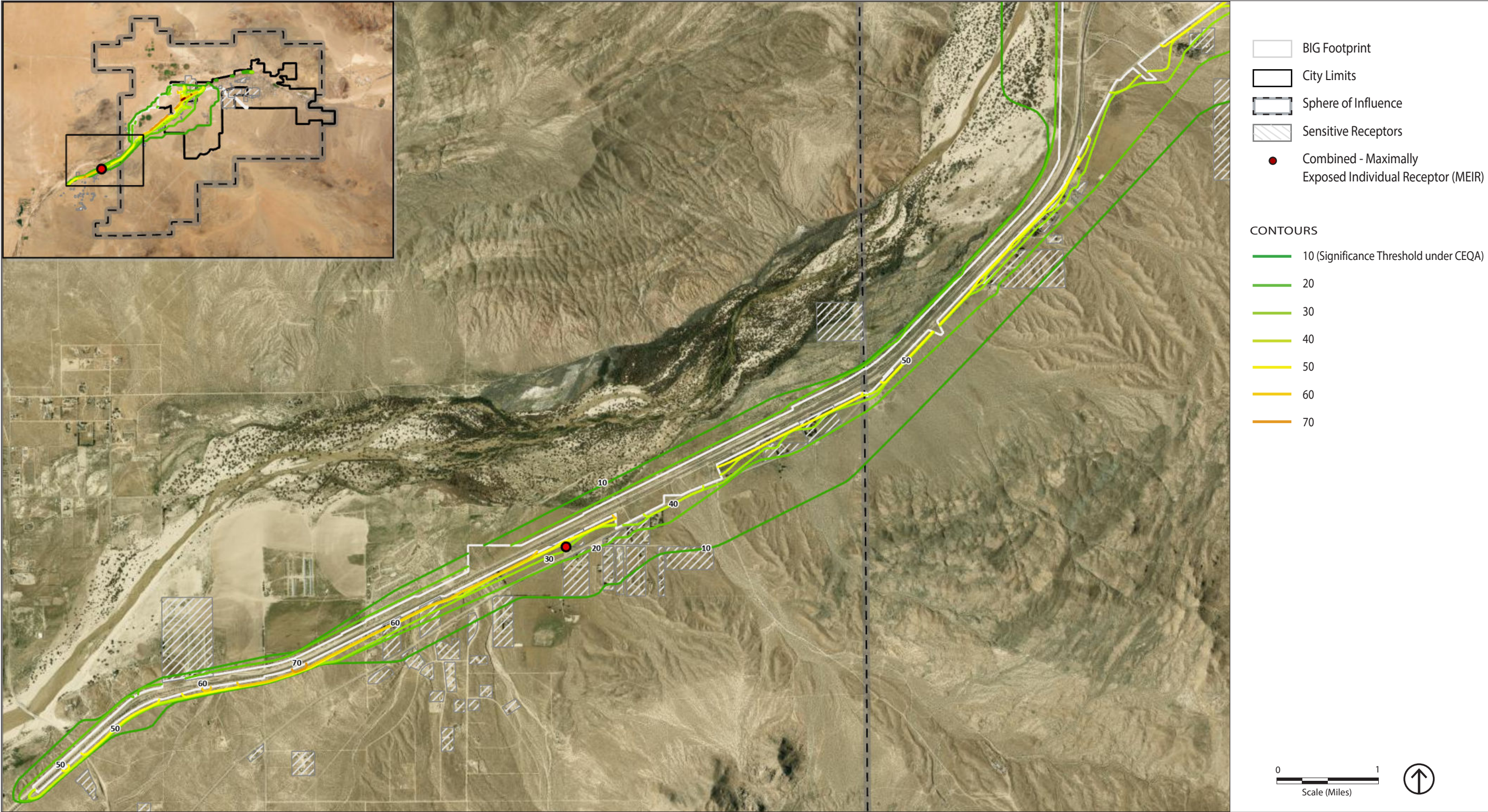


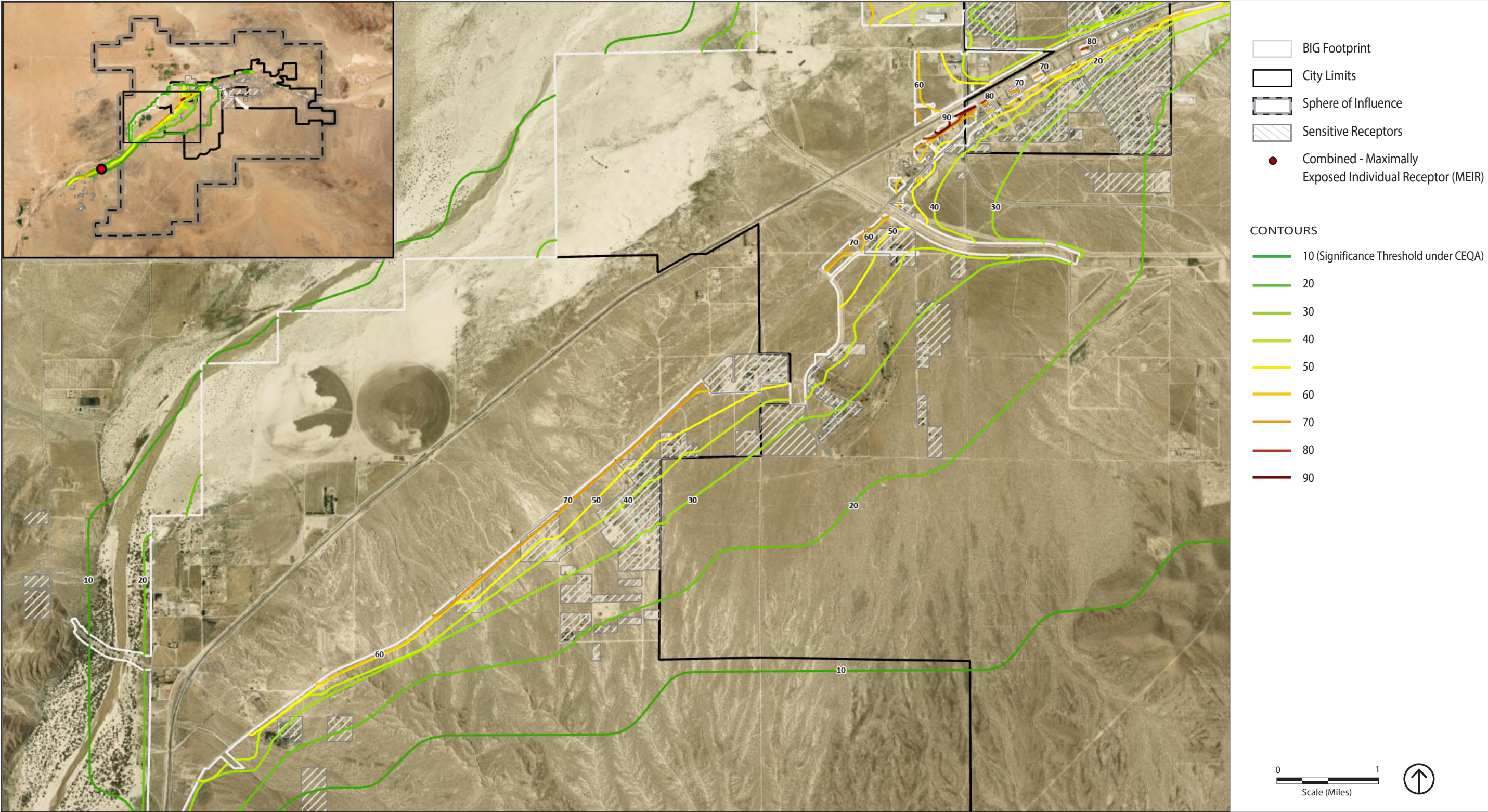
Figure 5.3-14
Operations Health Risk Assessment - East of BIG (Mitigated)



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict 30-year residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHA). These contours do not represent student or worker risk, which are calculated separately.

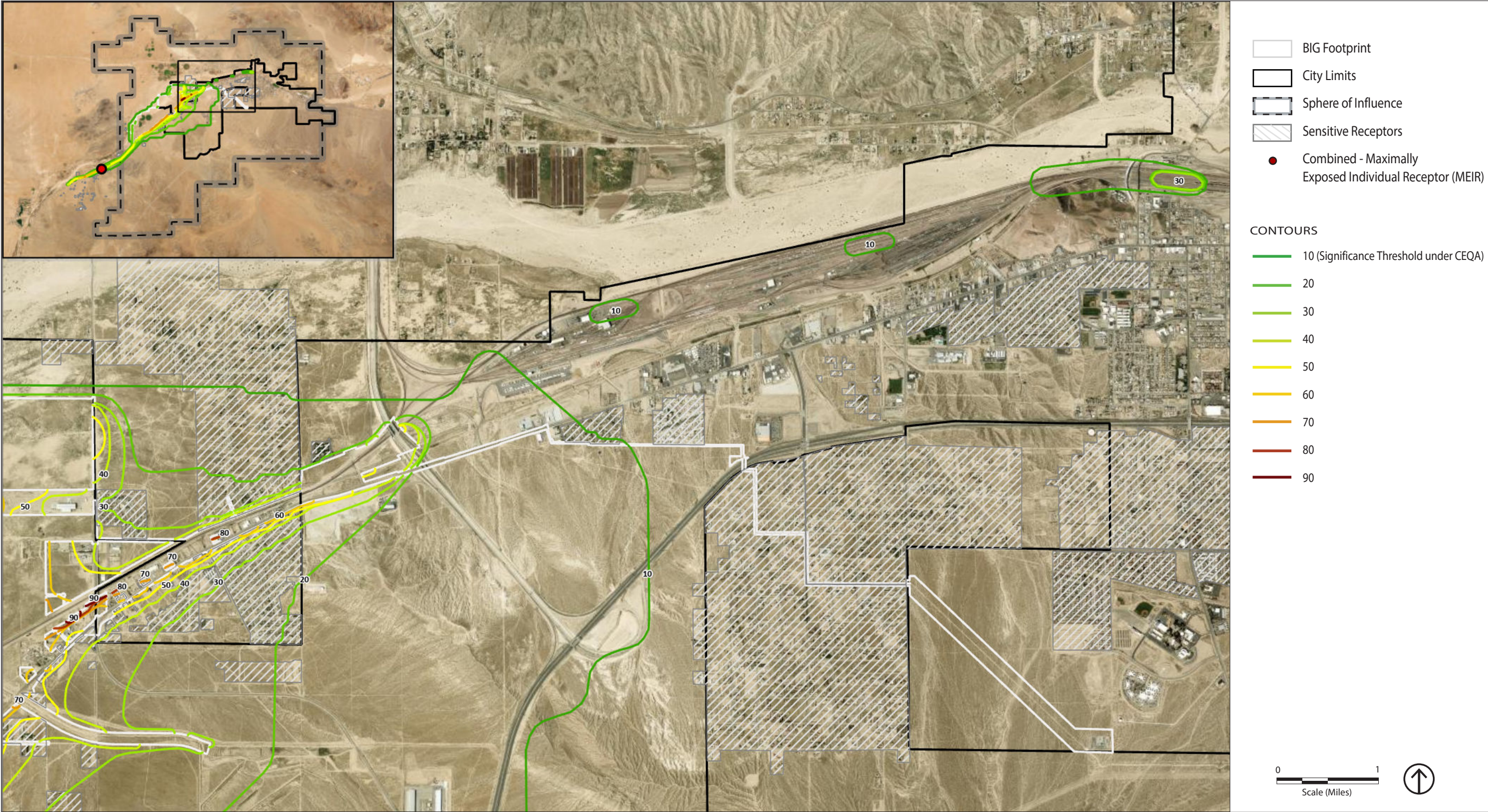
Figure 5.3-15
Combined Construction and Operational Health Risk Assessment - West Leads (Unmitigated)



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict 30-year residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHA). These contours do not represent student or worker risk, which are calculated separately.

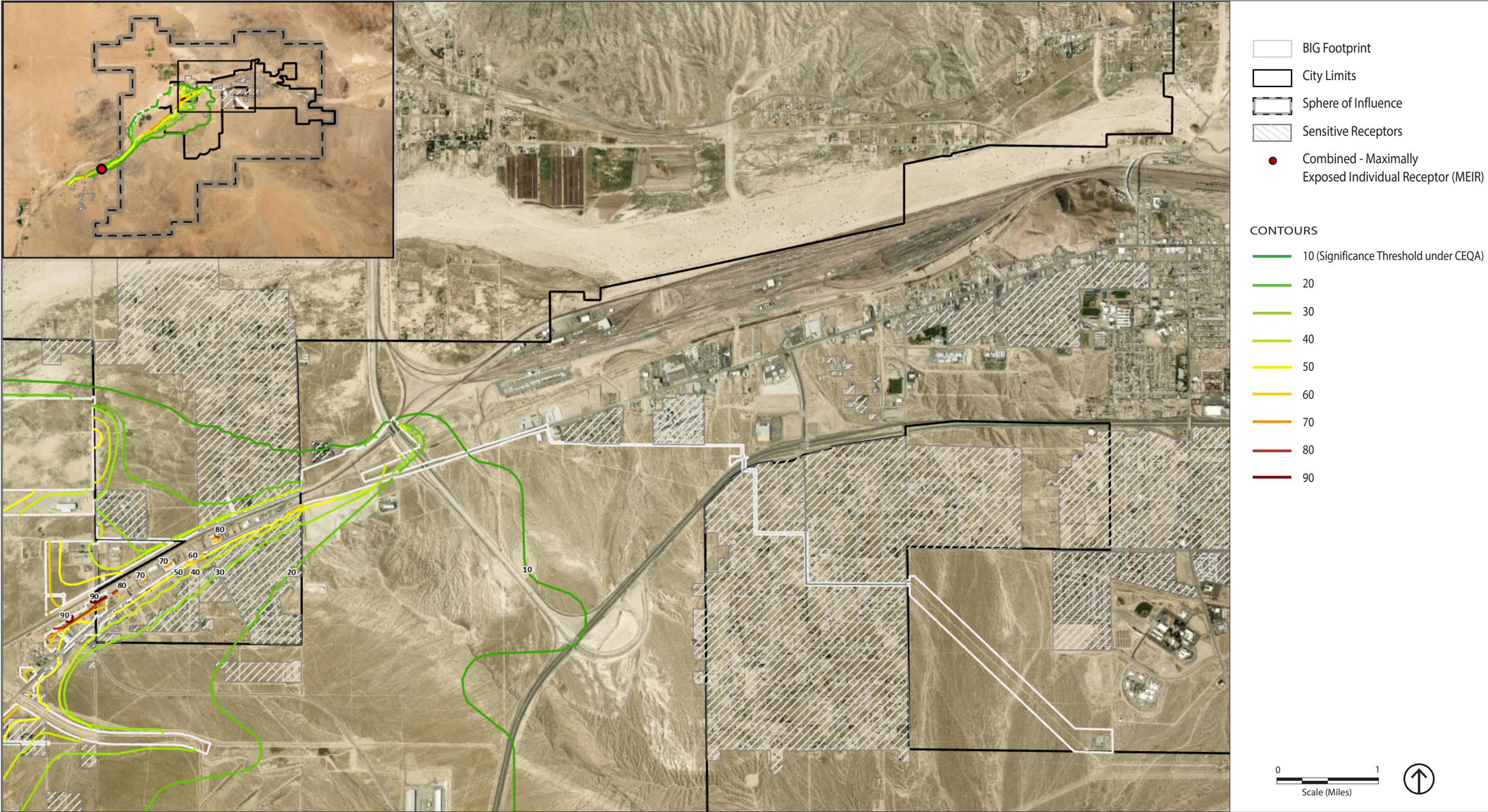
Figure 5.3-16
Combined Construction and Operational Health Risk Assessment - BIG and East Leads (Unmitigated)



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict 30-year residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). These contours do not represent student or worker risk, which are calculated separately.

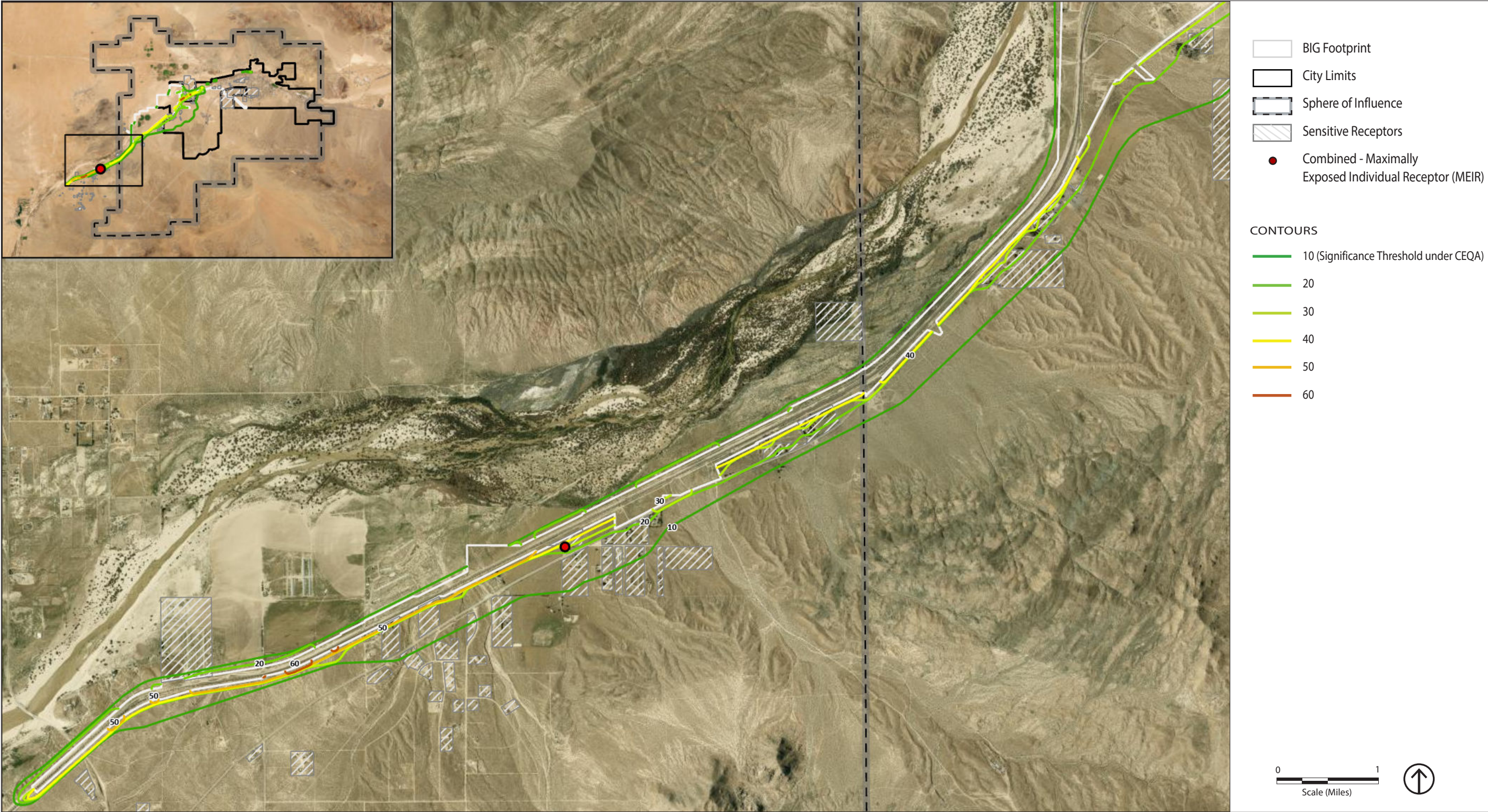
Figure 5.3-17
Combined Construction and Operational Health Risk Assessment - East of BIG (Unmitigated)



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict 30-year residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). These contours do not represent student or worker risk, which are calculated separately.

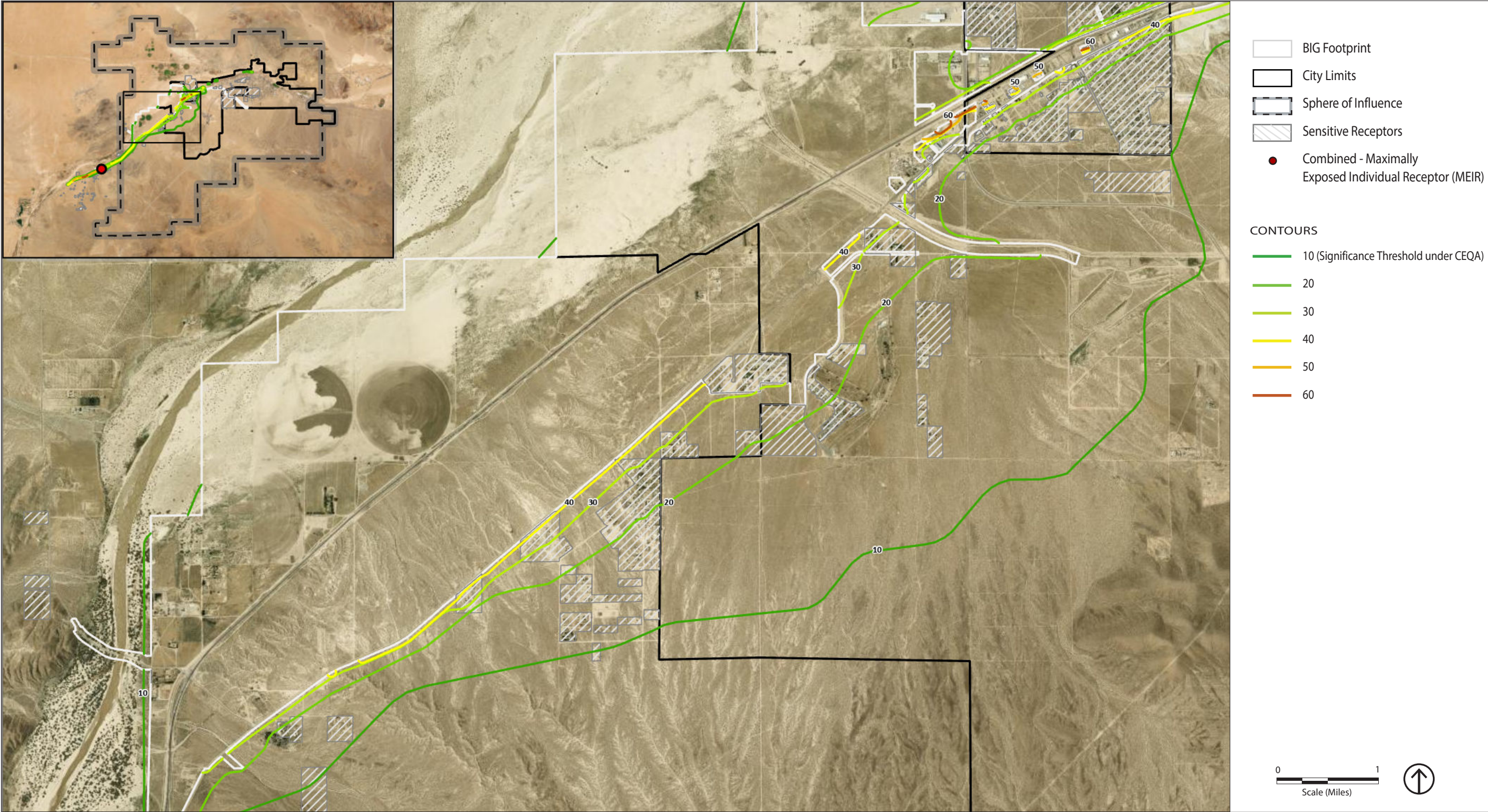
Figure 5.3-18
Combined Construction and Operational Health Risk Assessment - East of BIG
(Unmitigated with Switcher Replacement)



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict 30-year residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). These contours do not represent student or worker risk, which are calculated separately.

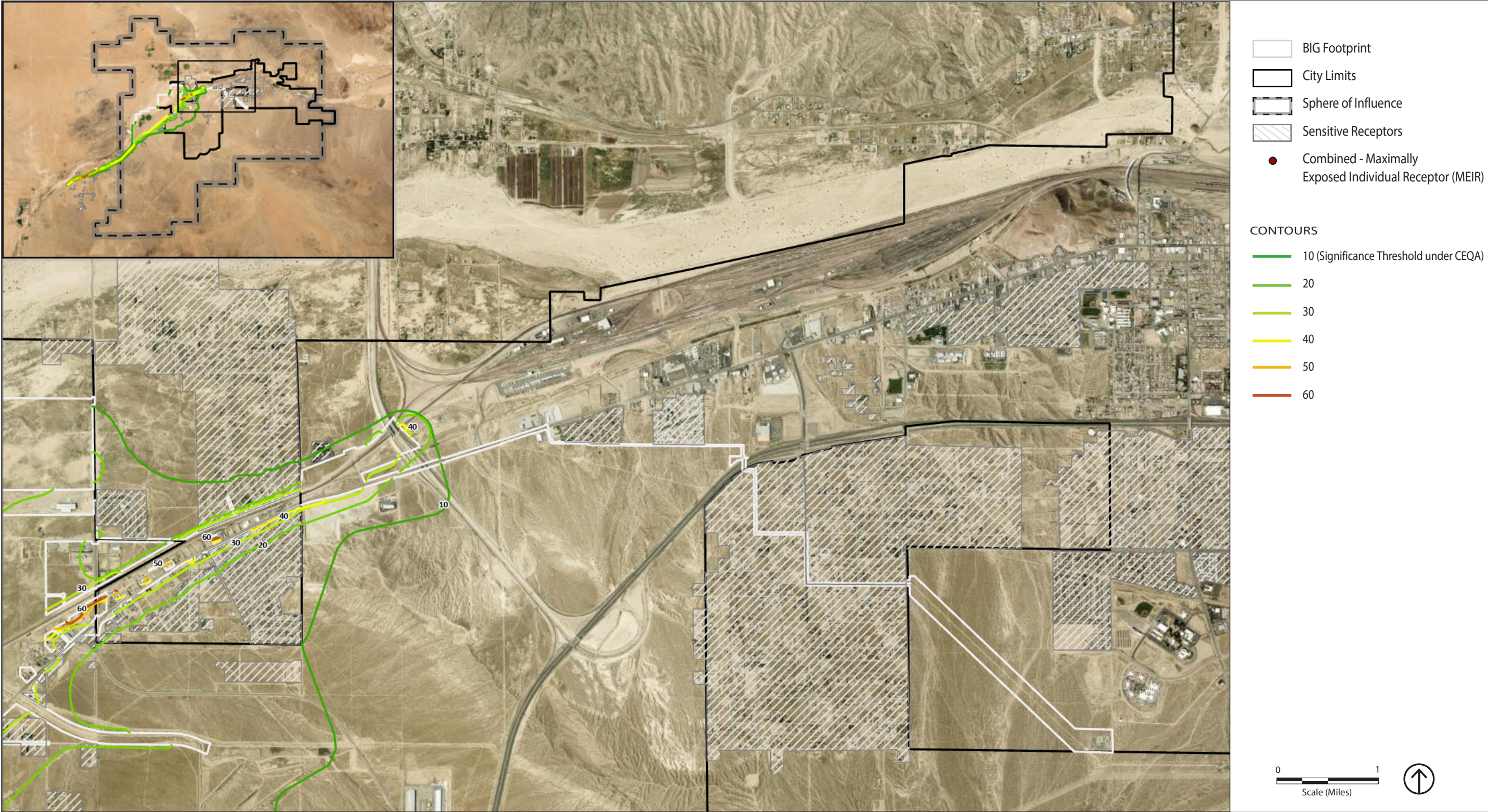
Figure 5.3-19
Combined Construction and Operational Health Risk Assessment - West Leads (Mitigated)



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict 30-year residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). These contours do not represent student or worker risk, which are calculated separately.

Figure 5.3-20
Combined Construction and Operational Health Risk Assessment - BIG and East Leads (Mitigated)



Source: AERMOD View, 2025; ESRI, *World Imagery (Basemap)*, 2024; County of San Bernardino, *Y2023 PUA Cache (Aerial imagery)*, 2023; and City of Barstow, *LAFCO Map*, 2022.

Note: These contours depict 30-year residential exposure with a 3rd trimester start age, age sensitivity factors, and age-specific breathing rates recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). These contours do not represent student or worker risk, which are calculated separately.

Figure 5.3-21
Combined Construction and Operational Health Risk Assessment – East of BIG (Mitigated)

Population Cancer Burden

What is Population Cancer Burden? Population cancer burden represents the number of excess cancer cases that could occur in the population assuming a worst-case 70-year exposure duration, beginning from the third trimester in utero. Population cancer burden quantifies the estimated increase in the number of cancer cases by multiplying the individual cancer risk (calculated using the conservative assumptions discussed above) by the exposed population. This assumes that the population would be exposed to BIG contaminants continuously for 70 years beginning in the third trimester in utero. This is a conservative assumption because the calculation does not consider members of the population beginning their exposure as adults, resulting in members of the population being exposed to less than 70 years of BIG construction and operations (i.e., households moving out of the area).

Table 5.3-38: Population Cancer Burden at 70-Year Exposure summarizes population cancer unmitigated and mitigated (refer to the MMs below) burden by census tract. The cancer burden calculation provides an estimate of the increased number of cancer cases as a result of exposures to TAC emissions. The total cancer burden is the product of the number of persons in a population area (such as a census tract) and the estimated individual risk from TACs in that population area and then summed over all of the population areas. The unmitigated cancer burden includes the LORs noted above.

Table 5.3-38: Population Cancer Burden at 70-Year Exposure					
Census Tract ID	2048 Population	Unmitigated Risk at the Centroid	Unmitigated Burden	Mitigated Risk at the Centroid	Mitigated Burden
11801	4,787	1.16E-05	0.06	7.54E-06	0.04
11802	3,875	2.27E-05	0.09	1.54E-05	0.06
11602	1,862	4.22E-07	0.00	2.48E-07	0.00
11900	3,078	1.39E-06	0.00	8.03E-07	0.00
9400	4,657	6.66E-06	0.03	3.64E-06	0.02
11700	1,693	3.66E-07	0.00	1.97E-07	0.00
9300	1,411	4.01E-06	0.01	2.18E-06	0.00
Total Cancer Burden		-	0.19	-	0.12
Significance Threshold		-	0.5	-	0.5
Threshold Exceeded?		-	No	-	No
Sources: Census data from the 2020 Decennial Census official population. Refer to Appendix 5.3 BIG-1: Air Quality Technical Report..					

Chronic Hazard Index

What is Chronic Hazard Index? Chronic HI measures the likelihood that chronic noncancer health effects including cardiovascular disease, diabetes, and respiratory health illnesses would occur. A chronic HI below 1.0 indicates that exposure to a TAC is not expected to cause adverse noncancer health effects. Chronic HI is calculated by dividing the pollutant concentration by the chronic REL. RELs are published by OEHHA for various TACs. For respiratory risk, the chronic REL is the airborne concentration of a substance that is not expected to cause adverse health effects in the general population, even with continuous exposure over a lifetime.

The significance thresholds for TAC exposure also require an evaluation of non-cancer risk stated in terms of a HI. Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance. The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated. RELs are designed to protect sensitive individuals within the population.

Unmitigated and mitigated chronic non-carcinogenic impacts are shown in **Table 5.3-39: Chronic Hazard Assessment Results at Peak Receptor** for the worst-case peak receptor. A chronic HI of 1.0 is considered individually significant. The HI is calculated by dividing the chronic exposure by the REL. The chronic HI was calculated based on the highest annual average concentration at the maximally exposed individual receptor. The highest worst-case chronic HI associated with unmitigated DPM emissions from BIG in year 2028 would be 0.08. Therefore, even without mitigation, non-carcinogenic hazards are calculated to be less than the MDAQMD significance threshold of 1.0 at all receptors a less than significant impact would occur. With mitigation the chronic HI would be reduced to 0.06. Impacts would be less than significant.

Table 5.3-39: Chronic Hazard Assessment Results at Peak Receptor		
Emissions Sources	Concentration ($\mu\text{g}/\text{m}^3$) ¹	Chronic Hazard
2028 Unmitigated	0.38	0.08
2028 Mitigated ²	0.29	0.06
2033 Unmitigated	0.20	0.04
2033 Mitigated ²	0.19	0.04
2048 Unmitigated	0.63	0.13
2048 Mitigated ²	0.63	0.13
Threshold	N/A	1
Threshold Exceeded?	N/A	No
Notes: ¹ The reported pollutant concentration (annual period) is at the closest receptor (maximally exposed individual receptor). ² Impacts would not exceed applicable thresholds and mitigation is not required. However, mitigation is required to reduce criteria pollutant emissions impacts and mitigated results are included for disclosure purposes. The mitigated exposure scenario shows the risk with MM BIG AQ-1 through MM BIG AQ-10 .		
Source: Refer to Appendix 5.3 BIG-1: Air Quality Technical Report .		

Risk Uncertainty. As discussed above, HRAs such as the one presented in this analysis are not intended to provide estimates of the absolute health risk or expected incidence of disease in a population. Rather, HRAs are conducted to allow comparisons of the potential health impacts of different alternatives to each other and to significance criteria. Consistent with agency guidelines and standard approaches to regulatory risk assessment, this risk assessment used health-protective (conservative) assumptions to provide a margin of safety with respect to human health.

Improvements in the Corridor. As previously discussed, **Table 5.3-31: Maximum Off-Site Concentration from Operations (Mitigated)** shows that BIG would not increase particulate matter pollutant emissions in the Corridor within the SCAB (i.e., the South Coast AQMD's jurisdiction). DPM is the primary TAC of concern because it is the most potent TAC emitted from diesel exhaust and includes hundreds of chemicals. DPM is a subset of PM₁₀; however, locomotive emission factors are only available for PM₁₀ and not DPM. Therefore, although DPM is a subset of PM₁₀ exhaust, this analysis conservatively assumes all

PM₁₀ exhaust emissions are DPM.¹⁶ **Table 5.3-40: Unmitigated Net Operational DPM Emissions Along Corridor (Tons per Year)** shows that BIG would reduce PM₁₀ (DPM) emissions in the Corridor. BIG's DPM emission reduction occur from using dedicated Tier 4 locomotives to transport containers between the Ports and BIG's intermodal facility, using Tier 4 switcher locomotives, and modifying the fuel blend used within the Ports' existing fueling site to use up to ten percent renewable diesel. Therefore, BIG would improve DPM emissions in the Corridor and would result in a beneficial impact. Thus, there is no potential cancer risk, hazard index, or cancer burden impacts in the Corridor west of BIG.

Table 5.3-40: Unmitigated Net Operational DPM Emissions Along Corridor (Tons per Year)			
Source	DPM (as Tons per Year of PM ₁₀ Exhaust)		
	2028	2033	2048
West of BIG (Within Mojave Desert Air Basin) ¹			
Operations – Corridor Emissions Without BIG	17.85	17.71	16.86
Operations – Corridor Emissions With BIG	17.74	17.66	16.76
Change	-0.11	-0.05	-0.10
Within South Coast Air Basin			
Operations –Corridor Emissions Without BIG	37.16	37.04	35.47
Operations – Corridor Emissions With BIG	36.77	36.74	35.47
Change	-0.39	-0.29	0.00
1. As shown in Figure 14 of the of BIG emissions HRA (see Appendix 5.3 BIG-1) impacts above 10 in a million cease along the rail Corridor approximately two miles east of BIG. As there are no other emissions associated with BIG other than the Corridor, and because there are few sensitive receptors along the Corridor east of BIG, there are no potential additional significant impacts east of BIG.			
Sources: SCAB only Corridor emissions per EnSafe, <i>BNSF Barstow International Gateway Corridor Emissions Analysis</i> , October 2025; refer to Appendix 5.3 BIG-1: Air Quality Technical Report, Appendix B .			

Impact 5.3-3: BIG: Level of Significance Before Mitigation: Potentially Significant Impact for construction concentrations at the BIG Footprint and construction and operational cancer risk at the BIG footprint. Less than significant for all localized corridor impacts.

Impact 5.3-3: BIG Mitigation Measures: Refer to **MM BIG AQ-1** through **MM BIG AQ-14**. No additional mitigation is feasible as discussed above.

Impact 5.3-3: BIG Level of Significance After Mitigation: Significant and Unavoidable Impact.

¹⁶ More than 90 percent of DPM is less than 1 um in diameter and is a subset of PM_{2.5} and PM_{2.5} comprises a portion of PM₁₀. Therefore, assuming PM₁₀ as the surrogate for DPM constitutes a conservative analysis. Source: CARB. ND. *Inhalable Particulate Matter and Health (PM_{2.5} and PM₁₀)*. <https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health#:~:text=Fine%20particulate%20matter%20is%20defined,comprises%20a%20portion%20of%20PM10>. CAPCOA and CARB. 2024 (July). *Non-Vehicular Diesel Engine Risk Assessment Guidance*. <https://ww2.arb.ca.gov/sites/default/files/classic/ab2588/2024%20DICE%20Screening%20Risk%20Guidelines.pdf>.

Impact 5.3-4 ***Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?***

Proposed General Plan

Construction

During construction activities, construction equipment exhaust and application of asphalt and architectural coatings would temporarily generate odors. Any construction-related odor emissions would be temporary and intermittent in nature. Additionally, noxious odors would be confined to the immediate vicinity of the construction equipment. By the time such emissions reach any sensitive receptor sites, they would be diluted to well below any level of air quality concern. Furthermore, short-term construction-related odors are expected to cease upon the drying or hardening of the odor-producing materials. Therefore, impacts associated with construction-generated odors are considered less than significant.

Operations

Development allowed under the proposed General Plan could generate new sources of odors. Odors from the types of land uses that could generate objectionable odors are regulated under MDAQMD Rule 402, which states:

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

Industrial land uses, including indoor agricultural uses, are the primary types of land uses that have the potential to generate objectionable odors. Future environmental review could be required for industrial projects to ensure that sensitive land uses are not exposed to nuisance odors. MDAQMD Rule 402 requires abatement of any nuisance generating an odor complaint. Typical abatement includes passing air through a drying agent followed by two successive beds of activated carbon to generate odor-free air. Facilities would need to consider measures to reduce odors as part of their CEQA review.

Consequently, review of projects proximate to sensitive land uses is necessary to ensure that odor impacts are minimized. Odor impacts could be significant for new projects that have the potential to generate odors within the odor screening distances.

Impact 5.3-4: General Plan: Level of Significance Before Mitigation: Less than Significant Impact.

Impact 5.3-4: General Plan: Mitigation Measures: No mitigation required.

Impact 5.3-4: General Plan: Level of Significance After Mitigation: No significant impact would occur.

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Construction

The sensitive receptors nearest BIG are approximately 120 feet southeast of BIG footprint; see **Table 5.3-14**. Odors would only be a potential concern within the BIG footprint. During construction-related activities, some odors (not substantial pollutant concentrations) that may be detected are those typical of construction vehicles (e.g., diesel exhaust from grading and construction equipment). These odors are a temporary short-term impact that is typical of construction projects and would disperse rapidly. Therefore, BIG would not result in emissions leading to odors that would adversely affect a substantial number of people.

Operations

CARB's *Air Quality and Land Use Handbook* identifies the sources of the most common odor complaints received by local air districts. Typical sources include sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. BIG does not contain any of the land uses identified as typically associated with emissions of objectionable odors.

BIG operations would generate air pollutants because of the exhaust from diesel fuel combustion. The maintenance activities and locomotive idling would generate the most diesel emissions. The chemical species found in diesel exhaust include some that are known to produce odors and that can result in the characteristic diesel exhaust odor with which most people are familiar.

As shown in **Table 5.3-14**, the sensitive receptors nearest BIG are approximately 120 feet southeast of the BIG footprint. Receptors next to the east lead tracks are currently adjacent to the existing BNSF tracks. Therefore, these receptors would experience the incremental increase from being closer to the proposed tracks. The grading proposed for BIG involves lowering the existing grade by up to approximately 37 feet from Main Street. Therefore, receptors near the intermodal facility would be substantially buffered from idling train exhaust odors by terrain differences, the proposed slope, and the proposed storage areas.

The mobile nature of most BIG emission sources would help to disperse odors. All line-haul locomotives entering the BIG footprint would be equipped with Automatic Engine Start Stop technology, which would limit idling time for any single location to 15 minutes, after which the Automatic Engine Start Stop will cause all but one locomotive to shut down. Therefore, with Automatic Engine Start Stop technology, idling and odors from diesel emissions would be minimized.

Although offensive odors rarely cause physical harm, they can be unpleasant and generate citizen complaints. MDAQMD Rule 402 (Nuisance) places general limitations on nuisances including odors. Specifically, Rule 402 prohibits the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. These limitations are based on complaints and enforced by the local air pollution control officer. Moreover, the distance between BIG emission sources and the nearest sensitive receptor is

expected to be enough to allow for adequate dispersion of these emissions to below objectionable odor levels.

Given the rural nature of the BIG footprint and that BIG would not generate substantial odors, BIG would be likely to result in minor changes in the overall odor environment in the vicinity above baseline conditions. As such, the potential is low for BIG to produce objectionable odors that would substantially affect a sensitive receptor and impacts would be less than significant.

Impact 5.3-4: BIG: Level of Significance Before Mitigation: Less than Significant Impact.

Impact 5.3-4: BIG Mitigation Measures: No mitigation required.

Impact 5.3-4: BIG Level of Significance After Mitigation: No significant impact would occur.

5.3.7 SIGNIFICANT UNAVOIDABLE IMPACTS

Proposed General Plan

The proposed General Plan would result in significant unavoidable impacts concerning **Impact 5.3-1: GP** through Impact 5.3-3, but no significant unavoidable impact concerning **Impact 5.3-4: GP**.

Emissions generated by development projects in addition to existing sources within the proposed General Plan area are considered to cumulatively contribute to the nonattainment designations of the MDAB. Development allowed under the proposed land use plan could contribute to an increase in frequency or severity of air quality violations and delay attainment of the AAQS or interim emission reductions in the AQMP. Therefore, the proposed General Plan would conflict with the AQMPs. Due to the magnitude and intensity of development accommodated by the proposed General Plan, **Impact 5.3-1: GP** would remain **significant and unavoidable**.

Application of State and MDAQMD rules and regulations, and implementation of the proposed General Plan goals, policies, and actions would contribute to reducing operation-related criteria air pollutants generated from energy, area, and mobile sources to the extent feasible. Incorporation of **MM AQ-1** and **MM AQ-2** would also contribute to reducing criteria air pollutants. Implementation of these rules, goals and policies, and mitigation could contribute to reducing construction and operation-phase regional air quality impacts of future individual projects to a less than significant level. However, due to the magnitude and the uncertainty of the timing of construction of the overall land uses accommodated under the proposed General Plan, Impact 5.3-2 would remain **significant and unavoidable**.

Buildout of the proposed General Plan could expose sensitive receptors to substantial concentrations of TACs. Buildout could result in new sources of TACs near existing or planned sensitive receptors. Review of development projects by MDAQMD for permitted sources of air toxics (e.g., industrial facilities, dry cleaners, and gasoline dispensing facilities) would ensure that health risks are minimized. Individual permitted development projects would be required to achieve the incremental risk thresholds established by MDAQMD, and TACs would be less than significant. However, implementation of the proposed General Plan would generate TACs that could contribute to elevated levels in the MDAB. While individual projects would achieve the project-level risk threshold of 10 per million, they would nonetheless contribute to the

higher levels of cancer risk in the MDAB and therefore result in a cumulatively considerable impact. Therefore, Impact 5.3-3 (cumulative health risk impacts) would be significant and unavoidable.

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BIG would conflict with or obstruct implementation of the applicable air quality plan, result in a cumulatively considerable net increase of criteria pollutants for which the region is in nonattainment under an applicable NAAQS or CAAQS, and expose sensitive receptors to substantial pollutant concentrations.

BIG would result in significant and unavoidable impacts with regard to air quality planning, criteria pollutant emissions, and exposure of sensitive populations.

5.3.8 REFERENCES

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