Final Air Quality Technical Report

Elliot Road: Eastern Maricopa Floodway to Ellsworth Road Maricopa County, Arizona

October 2024

ADOT No.: 0000 MA MES T0359 03D Federal Aid No.: MES-0(239(D City of Mesa Project No.: CP0982



The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Arizona Department of Transportation pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated June 25, 2024, and executed by the Federal Highway Administration and the Arizona Department of Transportation.

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for

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October 2024

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- 3. MOVES3.1 and CAL3QHC Input Files

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1. PROJECT DESCRIPTION

1.1 Introduction

This Air Quality Technical Report has been prepared in support of the roadway widening project on Elliot Road between the East Maricopa Floodway (EMF) and Ellsworth Road in Mesa, Maricopa County, Arizona.

Potential air quality impacts were modeled and evaluated based on traffic data included in the *Draft Traffic Statement Elliot Road: Eastern Maricopa Floodway to Ellsworth Road* (Dibble June 2024) and communications with Dibble technical staff. The report is consistent with the most recent regional air quality conformity analysis prepared by the Maricopa Association of Governments (MAG) (MAG 2021a). Additional information sources included guidance from the Environmental Protection Agency (EPA) (EPA 1992, 1995, 2021) and the Federal Highway Administration (FHWA) (FHWA 2023).

1.2 Purpose and Need

Elliot Road primarily consists of one lane in each direction with unpaved shoulders and no medians, turn lanes, street lighting, or sidewalks between the EMF and Hawes Road. East of Hawes Road, Elliot Road transitions to three lanes in each direction with street lighting and intermittent medians and sidewalks. Traffic signals are located at intersections with Sossaman Road, SR 202L, and Ellsworth Road and will be updated as part of the project.

The purpose of the proposed project is to increase capacity on Elliot Road, improve multi-modal traffic flow and mobility options, and support development within the areas adjacent to the project corridor.

1.3 Project Description

Project elements include:

- Widening of Elliot Road to match the City's six-lane major arterial section:
 - The existing two-lane roadway along Elliot Road will be widened to three eastbound and three westbound through-traffic lanes and an eastbound and a westbound striped bike lane.
 - The widened roadway will include sidewalks and curb and gutter, as needed.
 - Gaps addressing the transitions from the project improvements to the existing lane configurations will be constructed.
 - Intersection improvements will be constructed at Sossaman Road, 80th Street, and Hawes Road.
- Constructing raised medians along Elliot Road between Sossaman Road and SR 202L.
- Constructing new sidewalks along Elliot Road between Sossaman Road and SR 202L and between SR 202L and Ellsworth Road, with Americans with Disabilities Act (ADA)-compliant sidewalk ramps at driveways and intersections.
- Developing a management access plan for existing driveways along Elliot Road and constructing driveway improvements as needed.

- Constructing a new eastbound-to-southbound right turn lane at the Elliot Road/Ellsworth Road intersection.
- Constructing drainage improvements along Elliot Road that will discharge into the EMF.
- Installing street lightings to accommodate multi-modal traffic along Elliot Road.
- Modifying or replacing existing traffic signals at intersections along Elliot Road at Sossaman Road, Hawes Road, and Ellsworth Road.
- Installing a new traffic signal at the intersection of Elliot Road and 80th Street.
- Extending the City's intelligent transportation system (ITS) fiber optic backbone to connect the traffic signals along Elliot Road within the project limits.
- Installing new and replacing existing permanent signage and pavement markings, as needed.
- Relocating utilities, as needed.
- Landscaping the project corridor.
- Conducting geotechnical investigations, including pavement borings.

According to the Fiscal Year (FY) 2022–2025 Transportation Improvement Program (TIP), the project is expected to open for traffic in 2027 (MAG 2024).

The project location is shown on Figure 1 and the project study area is shown on Figure 2.



Figure 1. Project Location Map

ADOT No. 0000 MA MES T0359 03D Federal Aid No. MES-0(239)D



Figure 2. Project Study Area

2. REGULATORY FRAMEWORK

2.1 Pollutant Overview

2.1.1 Criteria Air Pollutants

EPA has established National Ambient Air Quality Standards (NAAQS) to protect the public from the effects of air pollution. These standards include both primary and secondary standards. Primary standards protect public health, while secondary standards protect public welfare (such as protecting property and vegetation from the effects of a particular pollutant). The NAAQS are listed in Table 1 and have been adopted by the state of Arizona as the ambient air quality standards for the state.

| Pollutant | Average Time | Primary/Secondary Standard | Form |
|--|-------------------------|--|---|
| Carbon monoxide (CO) | 1-hour | 35 ppm (primary) | Not to be exceeded more than |
| | 8-hour | 9 ppm (primary) | once per year |
| Nitrogen dioxide (NO ₂) | 1-hour | 100 ppb (primary) | 98th percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | Annual | 53 ppb (primary and secondary) | Annual mean |
| Ozone (O ₃) | 8-hour | 0.070 ppm (primary and secondary) | Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years |
| Particulate matter (PM ₁₀) | 24-hour | 150 μg/m ³ (primary and secondary) | Not to be exceeded more than once per year on average over 3 years |
| Fine particulate matter (PM _{2.5}) | 24-hour | 35 μg/m ³ (primary and secondary) | 98th percentile, averaged over 3 years |
| | Annual | 12.0 µg/m ³ (primary) 15.0 µg/m ³ (secondary) | Annual mean, averaged over 3 years |
| Sulfur dioxide (SO ₂) | 1-hour | 75 ppb (primary) | 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | 3-hour | 0.5 ppm (secondary) | Not to be exceeded more than once per year |
| Lead | Rolling 3-month average | 0.15 µg/m ³ (primary and secondary) | Not to be exceeded |

Table 1. National Ambient Air Quality Standards

µg/m³ – micrograms per cubic meter; ppm – parts per million; ppb – parts per billion Source: Adapted from U.S EPA, NAAQS Table (https://www.epa.gov/criteria-air-pollutants/naaqs-table), accessed July 10, 2024

The criteria air pollutants of concern for transportation projects are carbon monoxide (CO), particulate matter (PM), and ozone (O_3) .

- **CO** is a colorless, odorless, and poisonous gas that interferes with the transfer of oxygen to the brain and can cause headaches, drowsiness, and loss of equilibrium, among other effects. Nearly all CO emissions result from mobile sources (on-road motor vehicle exhaust) from the incomplete combustion of carbon-based fuels. The highest CO emissions are generally associated with vehicles operating at slow speeds, in congested, stop-and-go traffic, and at colder temperatures.
- **Particulate matter** falls into one of two categories: particulate matter with a diameter of 10 microns or less (PM₁₀) or particulate matter with a diameter of 2.5 microns or less (PM_{2.5}). The primary sources of particulate matter are vehicle emissions but can also include dust, soot, and smoke. The principal health effects of airborne particulate matter are to the respiratory system.
- **O**₃ is a secondary pollutant formed when precursor emissions, nitrogen oxides (NO_x) and volatile organic compounds (VOCs), react in the presence of sunlight. O₃ is a major component of photochemical smog. O₃ irritates the eyes and respiratory tract and increases the risk of respiratory and heart diseases.

2.1.2 Mobile Source Air Toxics

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates mobile source air toxics (MSATs). Most MSAT emissions originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), and stationary sources (e.g., factories or refineries). A subset of the 21 MSATs have been labeled by FHWA as the priority MSATs and include:

- benzene
- 1,3-butadiene
- diesel particulate matter
- formaldehyde
- naphthalene
- acrolein
- acetaldehyde
- ethylbenzene
- polycyclic organic matter

Benzene is found in emissions from burning coal and oil, evaporative emissions from gasoline service stations, motor vehicle exhaust, and tobacco smoke. Short-term inhalation exposure to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders, including reduced red blood cell counts and anemia when exposure occurs in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels of benzene, and adverse effects on the developing fetus have been observed in animal tests. An increased incidence of leukemia (cancer of the tissues that form white blood cells) has been observed in humans occupationally exposed to benzene. EPA has classified benzene as a known human carcinogen for all routes of exposure).

Motor vehicle exhaust is the primary source of **1,3-butadiene**. Although 1,3-butadiene breaks down quickly in the atmosphere, it is usually found in ambient air at low levels in urban and suburban areas. Short-term exposure to 1,3-butadiene by inhalation in humans results in irritation of the eyes, nasal passages, throat, and lungs. Epidemiological studies have reported a

possible association between 1,3-butadiene exposure and cardiovascular diseases. Epidemiological studies of workers in rubber plants have shown an association between 1,3butadiene exposure and increased incidence of leukemia. Animal studies have reported tumors at various sites from 1,3-butadiene exposure. EPA has classified 1,3-butadiene as carcinogenic to humans by inhalation.

Diesel particulate matter is a collection of various-sized particles emitted from diesel-powered vehicles, including elemental carbon, organic carbon, and sulfate particles, with trace amounts of nitrate, metals, and other particles. Diesel particulate matter of concern for MSAT analyses are those particles sized 10 microns or smaller. Although particulate matter may come from several sources, diesel particulate matter is derived exclusively from diesel vehicle exhaust. Exposure to diesel particulate matter results in irritation to the eyes, nose, throat, and lungs, and may exacerbate asthma. Diesel particulate matter is considered a probable human carcinogen.

Formaldehyde is used primarily to produce resins used in particleboard products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Short-term and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen.

Naphthalene is used in the production of phthalic anhydride; it is also used in mothballs and for large-scale production of plasticizers for plastics. Short-term exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with anemia, damage to the liver, and neurological damage. Cataracts have also been reported in workers acutely exposed to naphthalene by inhalation and ingestion. Chronic (long-term) exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Hemolytic anemia has been reported in infants born to mothers who sniffed or ingested naphthalene (as mothballs) during pregnancy. Available data are inadequate to establish a causal relationship between exposure to naphthalene and cancer in humans. EPA has classified naphthalene as a possible human carcinogen.

Acrolein is primarily used as an intermediate in the synthesis of acrylic acid and as a biocide. It may be formed from the breakdown of certain pollutants in outdoor air or from the burning of organic matter including tobacco, or fuels such as gasoline or oil. It is toxic to humans following inhalation, oral or dermal exposures. Short-term inhalation exposure may result in upper respiratory tract irritation and congestion. No information is available on its reproductive, developmental, or carcinogenic effects in humans, and the existing animal cancer data are considered inadequate to determine its carcinogenicity.

Acetaldehyde is mainly used as an intermediate in the synthesis of other chemicals. It is ubiquitous in the environment and may be formed in the body from the breakdown of ethanol. Short-term exposure to acetaldehyde results in several effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen based

on limited human cancer studies and animal studies that have shown nasal tumors in laboratory animals.

Ethylbenzene is mainly used in the manufacture of styrene, which is used to make latex, synthetic rubber, plastic packaging, disposable cups and containers, and insulation, among others. Short-term exposure to ethylbenzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects such as dizziness. Chronic (long-term) exposure to ethylbenzene by inhalation in humans has shown conflicting results regarding its effects on the blood. Animal studies have reported effects on the blood, liver, and kidneys from chronic inhalation exposure to ethylbenzene. Limited information is available on the carcinogenic effects of ethylbenzene by inhalation resulted in an increased incidence of kidney and testicular tumors in rats, and lung and liver tumors in mice. The carcinogenicity of ethylbenzene in humans has not been firmly established.

The term **polycyclic organic matter** (POM) includes a broad class of compounds that includes polycyclic aromatic hydrocarbons (PAHs), of which benzo[a]pyrene is a member. POM compounds are formed primarily from combustion and are present in the atmosphere in particulate form. Sources of POM air emissions are diverse and include tobacco smoke, vehicle exhaust, home heating systems, laying tar, and grilling meat. Cancer is the major concern from exposure to POM. Epidemiologic studies have reported an increase in lung cancer in humans exposed to coke oven emissions, roofing tar emissions, and cigarette smoke; all of which contain POM compounds. Animal studies have reported respiratory tract tumors from inhalation exposure to benzo[a]pyrene and stomach tumors, leukemia, and lung tumors from oral exposure to benzo[a]pyrene. EPA has classified seven PAHs (benzo[a]pyrene, benz[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3- cd]pyrene) as probable human carcinogens .

Unlike the NAAQS for criteria pollutants, there are no standard for MSATs.

2.2 Regulations

2.2.1 Federal

The Clean Air Act (CAA) and its amendments direct EPA to implement policies, procedures, and regulations that will ensure acceptable levels of criteria pollutants in the ambient environment. Under the CAA, a project cannot:

- Cause or contribute to any new violation of any NAAQS (see Table 1) in any area
- Increase the frequency or severity of any existing violation of any NAAQS in any area
- Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area

2.2.1.1 Arizona Nonattainment and Maintenance Areas

Geographic areas in which the ambient concentrations of a pollutant exceed or contribute to ambient air quality in a nearby area not meeting the NAAQS are classified as nonattainment areas. Federal regulations require states to prepare State Implementation Plans (SIPs) that establish methods to bring air quality in nonattainment areas into compliance with the NAAQS and to maintain compliance. Nonattainment areas that return to compliance are classified as maintenance areas and may be redesignated as attainment areas after 20 years of demonstrating continuing compliance with no further NAAQS exceedances.

As shown below in Table 2 and on Figure 3, portions of Maricopa County are currently designated as nonattainment for O_3 and PM_{10} and maintenance for CO (EPA 2024).

Current Standard (year Applicable State established) Implementation Plan Pollutant Designation Nonattainment (moderate) Ozone (O_3) 0.070 (2015) MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area (2016) 24-hour: **35 µg**/m³ Fine Particulate Matter Attainment Not Applicable (PM_{2.5}) Annual: 12 µg/m³ (2015) Coarse Particulate Matter 150 µg/m³ (2015) MAG 2012 Five Percent Nonattainment (serious) Plan for PM-10 for the (PM₁₀) Maricopa County Nonattainment Area (2012) Carbon Monoxide (CO) Attainment/Maintenance MAG 2013 Carbon 1-hour: 35 ppm Monoxide Maintenance 8-hour: 9 ppm (1971) Plan for the Maricopa County Area (2013)

Table 2. Maricopa County Air Quality Attainment Status

Source: EPA "Green Book" https://www.epa.gov/green-book, accessed July 21, 2024.



Figure 3. Arizona Nonattainment and Maintenance Areas

2.2.1.2 Regional Transportation Conformity

Transportation projects in nonattainment and/or maintenance areas must be included in a regional transportation plan (RTP) or TIP that conforms with the state air quality plans as outlined in the applicable SIP.

The TIP includes a list of highway and transit projects selected as priorities for funding by cities, state transportation departments, county road commissions, and transit agencies. Federally funded projects to be completed in the near-term must be included in the regional conformity analysis completed by the metropolitan planning organization (MPO); such projects are also usually included in the region's TIP, and therefore conform with the SIP.

The proposed project improvements for the Elliot Road: Eastern Maricopa Floodway to Ellsworth Road are included in the Maricopa Association of Governments *Regional*

Transportation Plan: Momentum 2050 (MAG 2021b) and the Fiscal Year 2022-2025 TIP (MES-0(239)D – Elliot Road: Eastern Maricopa Floodway to Ellsworth Road).

The conformity rule also establishes the process by which FHWA, the Federal Transit Administration, and local MPOs determine conformance of transportation plans and TIPs and federally-funded highway and transit projects. As part of that process, local MPOs are required to undertake conformity determinations on transportation plans and TIPs before they are adopted, approved, or accepted.

For PM, the MAG Conformity Analysis for the FY 2022–2025 MAG TIP and the MOMENTUM 2050 RTP (MAG 2021b) and its amendments concluded that vehicle-related emissions associated with the FY 2022–2025 TIP and the 2050 RTP for the analysis years of 2025, 2030, 2040, and 2050 are projected to be less than the approved 2012 emissions budget and the approved 2006 emissions budget. Therefore, regional air quality conformity for PM has been demonstrated.

For CO, the MAG Conformity Analysis for the FY 2022–2025 MAG TIP and the MOMENTUM 2050 RTP (MAG 2021b) and its amendments concluded that vehicle-related emissions associated with the FY 2022–2025 TIP and the 2050 MOMENTUM RTP for the analysis years of 2025, 2030, 2040, and 2050 are projected to be less than the approved 2025 CO emissions budget. As a result, the applicable conformity test for CO has been demonstrated.

For 8-hour O_3 , the total vehicle-related VOC and NO_x emissions associated with implementation of the FY 2022-2025 TIP and 2050 RTP for the analysis year of 2023 are projected to be less than the approved 2017 emissions budgets and the VOC and NO_x emissions for the analysis years of 2025, 2030, 2040, and 2050 are projected to be less than the approved 2017 emissions budgets. The applicable conformity test for 8-hour O_3 has been demonstrated.

3. AFFECTED ENVIRONMENT

3.1 Project Setting

The project is located in Mesa, Arizona, east of Phoenix. The topography in the project area is relatively flat. Land uses in the project area are mostly commercial with some light-industrial development. There is undeveloped land on the north and south side of Elliot Road throughout the project corridor.

The project is in the Salt River Valley at an elevation of about 1,300 feet. Temperatures range from very hot during summer months to mild during winter months. In the winter many days are over 70 degrees Fahrenheit (°F). The normal high temperature is over 90°F from early May through late September, and over 100°F from early June through early September. Annual precipitation averages about 10 inches per year (National Weather Service 2024). A summary of average monthly temperatures and precipitation is shown in Table 3.

| | | Precipitation | | |
|----------------|---------------|--------------------------|--------------------------|---------------------|
| Month | Average Daily | Average Daily Maximum | Average Daily Minimum | (inches) Average |
| January | 54.5 | 67.5 | 41.0 | 1.25 |
| February | 56.3 | 70.1 | 42.7 | 1.29 |
| March | 62.9 | 77.2 | 47.6 | 0.96 |
| April | 70.2 | 85.2 | 53.3 | 0.26 |
| Мау | 78.5 | 94.4 | 61.6 | 0.18 |
| June | 88.5 | 104.1 | 70.7 | 0.07 |
| July | 93.4 | 105.9 | 78.9 | 1.06 |
| August | 91.6 | 104.6 | 78.4 | 1.54 |
| September | 86.0 | 100.2 | 71.4 | 1.19 |
| October | 74.4 | 89.5 | 59.1 | 0.46 |
| November | 63.0 | 76.8 | 47.6 | 0.64 |
| December | 53.5 | 61.1 | 40.1 | 1.31 |
| Annual Average | 72.8 | 86.8 | 57.7 | 10.01 |

Table 3. Climate Data for East Mesa, Arizona (2003-2023)

Source: National Weather Service, 2024

3.2 NAAQS Pollutant Monitoring Data

The Arizona Department of Environmental Quality (ADEQ) and the Maricopa County Air Quality Division (MCAQD) maintain a network of air monitoring stations throughout the county. These monitoring stations provide ambient air quality information in the vicinity in which they are located.

The nearest monitoring station to the project area is the Mesa station (located at 310 South Brooks), about 12 miles west of the project area as shown on Figure 4. This site collects data on

ambient concentrations of CO, O_3 , $PM_{2.5}$, and PM_{10} . Table 4 shows the last three years (2021 to 2023) of available monitor data for O_3 , $PM_{2.5}$, PM_{10} , and CO at the Mesa monitoring station.

Because the Mesa monitor is the closest monitor to the project area, it was determined to be the site most representative of ambient CO concentrations used for CO hot-spot modeling (discussed in Section 3.3). There were no exceedances of the CO standard during this period. The monitor recorded exceedances of the O_3 standard in 2021 through 2023, and PM_{10} in 2021.



Figure 4. Mesa Monitor Location

| Pollutant | | Monitor Value | 2021 | 2022 | 2023 |
|-------------------------------|-------------------|----------------------------------|-------|-------|-------|
| Carbon Monoxide | 1-hour | Maximum | 1.7 | 2.1 | 2.3 |
| (CO) [ppm] | | 2nd Maximum | 1.7 | 2.0 | 1.8 |
| | | Number of Exceedances | 0 | 0 | 0 |
| | 8-hour | Maximum | 1.1 | 1.3 | 1.2 |
| | | 2nd Maximum | 1.1 | 1.3 | 1.2 |
| | | Number of Exceedances 0 0 | | 0 | 0 |
| Particulate Matter | PM ₁₀ | Maximum 24-hour | 199 | 74 | 112 |
| [µ g /m³] | | Second Maximum | 170 | 65 | 85 |
| | | Number of Exceedances | 2 | 0 | 0 |
| | PM _{2.5} | 24-hour 98th Percentile | 18 | 17 | 15 |
| | | Annual Mean | 6.8 | 6.3 | 6.5 |
| Ozone (O ₃) [ppm] | 8-hour | First Highest | 0.085 | 0.084 | 0.085 |
| | | Second Highest | 0.083 | 0.081 | 0.084 |
| | | Third Highest | 0.083 | 0.078 | 0.082 |
| | | Fourth Highest | 0.084 | 0.078 | 0.080 |
| | | Number of Days Standard Exceeded | 32 | 22 | 22 |

 Table 4. Air Quality Data – Mesa Station (2021 – 2023)

Sources: EPA AirData, https://www.epa.gov/outdoor-air-quality-data, accessed July 21, 2024

3.3 Intersection Level of Service

As shown below in Table 5, under the 2050 No-Build and Build Alternatives, several intersections in the Elliot Road corridor operate at LOS D or worse in either the AM or PM peak hour.

The LOS and intersection volumes at the Elliot Road/SR 202 northbound and southbound traffic interchange (TI) and the Elliot Road/Ellsworth Road intersection exceed the allowable thresholds for use of FHWA's Categorical Hot-Spot Finding tool; therefore, a quantitative hot-spot analysis is required for the TI and intersection using MOVES3.1 to develop vehicle emission rates and the CAL3QHC dispersion model to estimate CO concentrations at receptors in the vicinity of the TI and the intersection.

| Table 5. Intersection | Level of | Service and | Peak Hour | Volumes |
|-----------------------|----------|-------------|-----------|---------|
| | | ••••••• | | |

| | | 2023 Existin | g Conditions | | 2050 No Build | | | | | | | | |
|--|----------------------|------------------|-------------------------------------|---------------------------------|-----------------------|------------------|-------------------------------------|------------------------------------|-------------------------|------------------|-------------------------------------|------------------------------------|---|
| Intersection | LOS (delay, sec.) | Volumes (vph) | Medium Truck Volumes (vph) | Heavy Truck Volumes (vph) | LOS (delay, sec.) | Volumes (vph) | Medium Truck Volumes (vph) | Heavy Truck Volumes (vph) | LOS (delay, sec.) | Volumes (vph) | Medium Truck Volumes (vph) | Heavy Truck Volumes (vph) | Total Truck Volume Difference (Build – No Build, vph) ¹ |
| Sossaman Rd. & | AM: B (10.2) | AM: 959 | AM: 143 | AM: 38 | AM: F (80.2) | AM: 2,751 | AM: 413 | AM: 110 PM: 150 | AM: A (9.2) | AM: 2,910 | AM: 436 | AM: 116 | AM: 29 PM: 21 |
| Emot Ka. | PM: B (10.1) | PM: 962 | PM: 144 | PM: 38 | ГМ: Г (209.7 <i>)</i> | FIM: 5,962 | FIM: 597 | FIM: 139 | PM: C (27.9) | F MI: 4,141 | F IVI: 021 | F IVI: 100 | FM: 51 |
| 80 th St. & Elliot | AM: | AM: 727 | AM: 109 | AM: 36 | AM: | AM: 2,018 | AM: 303 | AM: 101 | AM: A (6.7) | AM: 2,255 | AM: 338 | AM: 113 | AM: 47 |
| Rd. ² | PM: | PM: 694 | PM: 104 | PM: 34 | PM: | PM: 3,128 | PM: 469 | PM: 156 | PM: A (9.8) | PM: 3,420 | PM: 513 | PM: 171 | PM: 58 |
| Hawes Rd. & | AM: | AM: 825 | AM: 156 | AM: 49 | AM: | AM: 3,114 | AM: 592 | AM: 187 | AM: B (12.4) | AM: 3,250 | AM: 617 | AM: 195 | AM: 33 |
| Elliot Rd. ² | PM: | PM: 993 | PM: 188 | PM: 59 | PM: | PM: 5,219 | PM: 992 | PM: 313 | PM: D (52.9) | PM: 5,384 | PM: 1,023 | PM: 323 | PM: 41 |
| SR 202 SB & | AM: B (18.0) | AM: 1,341 | AM: 214 | AM: 93 | AM: C (31.2) | AM: 3,866 | AM: 619 | AM: 271 | AM: C (25.8) | AM: 4,085 | AM: 654 | AM: 286 | AM: 50 |
| Elliot Rd. | PM: D (36.1) | PM: 2,135 | PM: 341 | PM: 149 | PM: F (153.9) | PM: 6,409 | PM: 1,025 | PM: 449 | PM: E (79.2) | PM: 6,758 | PM: 1,081 | PM: 473 | PM: 80 |
| SR 202 NB & | AM: B (18.5) | AM: 2,562 | AM: 409 | AM: 179 | AM: E (55.2) | AM: 4,994 | AM: 799 | AM: 350 | AM: E (69.0) | AM: 5,414 | AM: 866 | AM: 379 | AM: 96 |
| Elliot Rd. | PM: E (74.5) | PM: 2,528 | PM: 404 | PM: 176 | PM: F (111.5) | PM: 6,815 | PM: 1,090 | PM: 477 | PM: F (108.4) | PM: 7,229 | PM: 1,157 | PM: 506 | PM: 96 |
| Ellsworth Rd. | AM: E (75.4) | AM: 3,367 | AM: 336 | AM: 168 | AM: F (143.1) | AM: 4,499 | AM: 450 | AM: 225 | AM: D (38.4) | AM: 5,052 | AM: 505 | AM: 253 | AM: 83 |
| & Elliot Rd. | PM: D (36.2) | PM: 3,309 | PM: 330 | PM: 165 | PM: F (216.5) | PM: 5,356 | PM: 536 | PM: 268 | PM: E (68.2) | PM: 5,899 | PM: 590 | PM: 295 | PM: 81 |
| ¹ Truck Volume Difference includes both MT and HT ² Intersection is unsignalized under 2023 Existing Conditions Source: Dibble, June 2024. Draft Traffic Statement – Elliot Road: Eastern Maricopa Floodway to Ellsworth Road. Values in Red – greater than acceptable LOS C MT – Medium Trucks (vehicles with 2 axles & 6 wheels; gross vehicle weight – 10,000 to 26,400 pounds) HT – Heavy Trucks (vehicles with 3 or more axles; | | | | | | | | | | | | | |

gross vehicle weight greater than 26,400 pounds).

3.4 Sensitive Receptors

The project was modeled for CO hot spots at the SR 202/Elliot Road TI and the Elliot Road/Ellsworth Road intersection. Sensitive receptors (i.e., locations where people would reasonably have access for extended periods of time) within about 0.25 mile of the TI and intersection were included in the model and are shown on Figures 5, 6, and 7.

For CO hot-spot modeling, receptors are generally located near the right-of-way line at public locations where people would have access for extended periods of time. Receptor locations include crosswalks nearest the intersection and on sidewalk locations adjacent to the roadway. There are no improvements proposed for the SR 202/Elliot Road interchange; therefore, existing sidewalks on Elliot Road will be retained as part of the project. Receptors were placed on the sidewalks at the intersection crosswalk, extending to more than 400 feet from each leg of the interchange and intersection.

Receptors were spaced at about 25-meter (82 feet) intervals on sidewalks and modeled at a height of 6 feet above the ground to approximate an average breathing height. Fifty-seven receptors were modeled around the SR 202/Elliot Road Southbound ramps and 53 receptors were modeled around the SR 202/Elliot Road Northbound ramps. Fifty-two receptors were modeled around the Elliot Road/Ellsworth Road intersection.



Figure 5. Elliot Road/SR 202 TI (Southbound: No-Build and Build Intersection Configuration)



Figure 6. Elliot Road/SR 202 TI (Northbound: No-Build and Build Intersection Configuration)



Figure 7. Elliot Road/Ellsworth Road (No-Build and Build Intersection Configuration)

4. TRANSPORTATION CONFORMITY

4.1 CO Project-Level Conformity

4.1.1 Geographic Applicability

Transportation conformity is applicable because the project is in a CO maintenance area, and the Elliot Road/SR 202 TI and the Elliot Road/Ellsworth Road intersection operate at LOS D or worse under the 2050 No-Build and 2050 Build Alternative in the AM and/or PM peak-hours because of increased traffic volumes related to the project (40 Code of Federal Regulations [CFR] 93.123(a)(ii)). Therefore, a quantitative hot-spot evaluation for potential CO impacts is required.

4.1.2 Methodology

Air quality modeling was conducted using EPA guidance as discussed below (EPA 1992, 1995, 2021). To determine potential CO impacts, a detailed hot-spot analysis was conducted at the Elliot Road/SR 202 TI and the Elliot Road/Ellsworth Road intersection. The SR 202 TI and Ellsworth Road intersection were selected for quantitative hot-spot modeling because they would operate at LOS D or worse under the 2050 No-Build and 2050 Build Alternatives and because they had the highest traffic volumes in the corridor.

EPA's MOVES3.1 model was used to develop vehicle emission rates and the CAL3QHC dispersion model was used to estimate CO concentrations at receptors in the vicinity of the TI and intersection.

Quantitative hot-spot modeling was performed for the following alternatives and analysis years:

- 2050 No Build Alternative (AM and PM peak-hour)
- 2050 Build Alternative (AM and PM peak-hour)

4.1.2.1 MOVES3.1 Emissions Model and CAL3QHC Inputs

The most recent version of EPA's MOVES model (MOVES3.1) was used to estimate CO emission rates from vehicles traveling on roadways at free flow speeds and while idling during the red phase at signalized intersections. Signal timing data for were provided by project engineers.

Each dedicated travel lane (e.g., through lanes and dedicated left- or right-turn lanes) was modeled as an individual link with traffic volumes derived from the traffic report (Dibble 2024) and communications with Dibble technical staff. Queue links (i.e., locations where vehicles are stopped and idling during the red phase of a traffic signal) were included with the queue link beginning at the intersection stop bar (see discussion in Section 4.1.2.2). Other input files required for MOVES3.1 (for example, age distribution, inspection/maintenance programs, and average speed distributions, among others) were derived from the most recent MAG conformity evaluations (the Spring 2023 conformity evaluations) and reflect the local conditions used in regional transportation conformity evaluations.

Traffic volumes on individual links (approach, departure, and queue) were obtained from data included in the traffic report (Dibble 2024). Link coordinates (northings and eastings) were derived from a project design file provided by the project engineers. The intersection

configurations showing approach, departure, and queue links, as well as CAL3QHC receptor locations, are shown above on Figures 5, 6, and 7.

Link-specific traffic data were used to develop project-specific input files for each modeled link with that link's average speed, road grade, and vehicle mix for each scenario analyzed (that is, the 2050 No-Build Alternative, and the 2050 Build Alternative).

4.1.2.2 CAL3QHC Dispersion Model

EPA's CAL3QHC dispersion model was used to estimate peak 1-hour CO concentrations at receptors around the Elliot Road/SR 202 TI and the Elliot Road/Ellsworth Road intersection. Eight-hour CO concentrations were estimated by multiplying the highest peak 1-hour CO concentrations by a calculated worst-case persistence factor of 0.86 developed for a separate project in a more urban location. The worst-case persistence factor of 0.86 was used for this project because it is greater than the default value of 0.7 suggested in EPA guidance. The persistence factor accounts for fluctuating traffic volumes, vehicle speeds, and meteorological conditions over 8 hours (as distinct from a single hour).

Different emission rates occur when vehicles are stopped (i.e., idling) at signalized intersections during the red phase of the signal, accelerating away from the intersection, decelerating when approaching a signalized intersection, and moving at different average speeds.

Inputs to the CAL3QHC dispersion analysis included:

- Free-flow links extending about 750 feet from the center of the signalized intersection
- Queue links beginning at the intersection stop bar
- Receptors were placed at crosswalk locations nearest the intersections and spaced at approximately 25-meter intervals outside of the mixing zone on sidewalk locations and other locations where people could be reasonably expected to congregate as determined from aerial imagery

Other variables included in the CAL3QHC model were based on recommended values from EPA guidance (EPA 1992) and included:

- Wind Speed 1 meter per second
- Wind Direction Increment Every 10 degrees of wind direction from 0 degrees to 350 degrees (36 directions)
- Stability Class D (4) for urban areas
- Mixing Height 1,000 meters
- Source Height 0 meters
- Surface Roughness City land use commercial (175 cm)

Background Concentrations

Background CO concentrations were derived from the Mesa Station (310 South Brooks) corridor for the years 2020 to 2022. Table 6 shows the maximum 1-hour and 8-hour CO concentration recorded at the Mesa Station during that period.

As shown in Table 6, the highest CO concentrations at the Mesa Station over the 3-year period were 3.2 parts per million (ppm) and 1.6 ppm for the 1-hour and 8-hour concentrations, respectively in 2020.

Because this monitor is the closest monitor to the project corridor it was used as the background concentration in CAL3QHC modeling to produce the maximum (i.e., worst-case) CO emission estimates at receptor locations around the intersection.

- 1-hour CO background concentration: 3.2 ppm
- 8-hour CO background concentration: 1.6 ppm

Table 6. Mesa Station Carbon Monoxide Monitor

| Monitor | Approximate Distance to Elliot Road/SR 202 TI (miles) | 2020 Maximum Concentration (1-hour/8-hour) | 2021 Maximum Concentration (1-hour/8-hour) | 2022 Maximum Concentration (1-hour/8-hour) |
|---|--|--|--|--|
| Mesa Station (310 South Brooks Circle) | 12.0 miles northwest | 3.2/1.6 | 1.7/1.1 | 2.1/1.3 |

Source: US EPA AirData (https://www.epa.gov/outdoor-air-quality-data/monitor-values-report, accessed July 21, 2024)

Values in Red – highest 1-hour and 8-hour CO concentrations over the 2020 to 2022 timeframe Concentrations shown in parts per million (ppm)

Comparison to NAAQS

CAL3QHC model results for the 2050 No-Build Alternative and the 2050 Build Alternative were compared to the CO NAAQS to determine whether there would be an exceedance of the standard resulting from the proposed project.

The CO NAAQS are 35 ppm and 9 ppm for the 1-hour and 8-hour periods, respectively.

CAL3QHC Impact Assessment

Maximum CO concentrations under the 2050 No-Build Alternative and the 2050 Build Alternative at the SR 202/Elliot Road TI and the Elliot Road/Ellsworth Road intersection were estimated with the CAL3QHC model. At each receptor, the maximum 1-hour CO concentrations were determined. The 8-hour CO concentrations were estimated by applying a persistence factor of 0.86 to the 1-hour concentrations, as discussed in Section 4.1.2.2.

As shown in Table 7, the total maximum 1-hour CO concentrations (including a 3.2 ppm background concentration) under the 2050 No-Build Alternative ranged from 3.5 ppm to 3.8 ppm and from 3.5 ppm to 3.9 ppm under the 2050 Build Alternative.

The total maximum 8-hour CO concentrations (including a 1.6 ppm background concentration) under the 2050 No-Build Alternative ranged from 1.8 ppm to 2.1 ppm and from 1.9 ppm to 2.3 ppm under the 2050 Build Alternative.

Modeled concentrations were below the NAAQS for both the 1-hour and 8-hour CO standard.

Table 7. Total Predicted 1-Hour (8-Hour) CO Concentrations

| | 2050 No-Build | 2050 Build |
|--------------|-----------------|-----------------|
| Intersection | 1-hour (8-hour) | 1-hour (8-hour) |

| | 2050 No-Build | 2050 Build | | | |
|---|---------------------|-----------------|--|--|--|
| Intersection | 1-hour (8-hour) | 1-hour (8-hour) | | | |
| SR 202/Elliot Road - Northbound – AM Peak | 3.7 (2.0) | 3.8 (2.1) | | | |
| SR 202/Elliot Road - Northbound - PM Peak | 3.8 (2.1) 3.9 (2.3) | | | | |
| | | | | | |
| SR 202/Elliot Road - Southbound - AM Peak | 3.5 (1.9) | 3.8 (2.1) | | | |
| SR 202/Elliot Road - Southbound - PM Peak | 3.7 (2.0) | 3.7 (2.0) | | | |
| | | | | | |
| Elliot Road/Ellsworth Road – AM Peak | 3.5 (1.9) | 3.5 (1.9) | | | |
| Elliot Road/Ellsworth Road – PM Peak | 3.5 (1.8) | 3.6 (1.9) | | | |
| | | | | | |
| | | | | | |

Concentrations shown in parts per million (ppm)

1-hour results include maximum background CO concentration of 3.2 ppm from the Mesa monitor 8-hour concentration calculated with 0.86 ppm persistence factor and 8-hour background concentration of 1.6 ppm from the Mesa monitor.

Interagency Consultation for Carbon Monoxide

On July 14, 2024, ADOT provided the "Project-Level Carbon Monoxide (CO) and Particulate Matter (PM₁₀) Consultation Document" to the following interagency consulting parties for a 30-day review: EPA, FHWA, MAG, ADEQ, and MCAQD.

On August 8, 2024, FHWA provided comments concerning the appropriateness of using the FHWA CO Categorical Hot-Spot tool for the proposed project and the average grade (%) used in the MOVES3.1 input file. In addition, FHWA requested detailed hot-spot modeling at the Ellsworth Road/Elliot Road intersection in addition to the Elliot Road/SR 202 TI. Finally, FHWA concurred that the proposed project was not a project of air quality concern for PM₁₀.

On August 15, 2024, EPA provided comments asking for 2023 existing conditions LOS and intersection volumes to be included in Table 1 of the consultation document and additional details concerning the estimate of future truck volumes on Elliot Road. In addition, EPA also had a comment concerning the appropriateness of the FHWA CO Categorical Hot-Spot tool. On September 3, 2024, EPA concurred by email that the proposed project was not a project of air quality concern for PM_{10} .

On August 26, 2024, ADOT provided a "Revised Project-Level Carbon Monoxide (CO) and Particulate Matter (PM₁₀) Consultation Document" to the interagency consulting parties responding to comments provided by FHWA and EPA.

On September 12, 2024, an interagency consultation meeting was held to discuss the revised consultation document and ADOT's response to comments. There were no additional revisions requested to the consultation document or objections raised to ADOT's response to comments. Revisions to the model and consultation document were made based on the comments provided and are incorporated in this report. The "Revised Project-Level Carbon Monoxide (CO) and Particulate Matter (PM_{10}) Consultation Document" is included as Attachment 1.

Interagency comments received during this review period and the response to agency comments are included in Attachment 2. Additionally, there were no additional comments on this air quality report during the comment period provided through October 30, 2024.

Conclusion and Conformity Determination

The project has been included in the MAG RTP: Momentum 2050 (MAG 2021b) and its amendments, and the FY 2022-2025 TIP, as approved by FHWA on September 25, 2023.

The MAG Conformity Analysis for the FY 2022–2025 MAG TIP and the MOMENTUM 2050 RTP (MAG 2021b) and its amendments concluded that for CO, vehicle-related emissions associated with the FY 2022–2025 TIP and the 2050 MOMENTUM RTP for the analysis years of 2025, 2030, 2040, and 2050 are projected to be less than the approved 2025 emissions budgets.

CO hot-spot modeling was conducted at the SR 202/Elliot Road TI and the Elliot Road/Ellsworth Road intersection to evaluate the potential for CO hot spots due to poor LOS under the 2050 No-Build Alternative and the 2050 Build Alternative in both the AM and PM peak-hours of operation. As shown above in Table 7, CAL3QHC modeling results were below the NAAQS for both the 1-hour and 8-hour NAAQS.

The analysis concluded that the proposed project would not:

- Cause or contribute to any new violation of any NAAQS in the CO maintenance area
- Increase the frequency or severity of any existing violation of any NAAQS in the CO maintenance area
- Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in the CO maintenance area

4.2 **PM**₁₀ Conformity Determination

4.2.1 Geographic Applicability

Transportation conformity is applicable to the project because the project is in a PM_{10} nonattainment area.

Projects in PM₁₀ nonattainment areas requiring a quantitative hot spot of local particulate emissions include:

- New highway projects that have a significant number of diesel-fueled vehicles, and expanded highway projects that have a significant increase in the number of diesel-fueled vehicles
- Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel-fueled vehicles, or those that would change to LOS D, E, or F because of an increase in traffic volumes from a significant number of diesel-fueled vehicles related to the project
- New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location

- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location
- Projects in or affecting locations, areas, or categories of sites that are identified in the PM₁₀ applicable implementation plan as sites of possible violation

4.2.2 Consistency with PM₁₀ Regional Analysis

The project is included in the MAG RTP: Momentum 2050 (MAG 2021b) and the FY 2022-2025 TIP (MES-0(239)D – Elliot Road: Eastern Maricopa Floodway (EMF) to Ellsworth Road) as approved by FHWA on September 25, 2023.

For PM₁₀, the MAG Conformity Analysis for the FY 2022–2025 MAG TIP and the MOMENTUM 2050 RTP (MAG 2021b) and its amendments concluded that vehicle-related emissions associated with the FY 2022–2025 TIP and the 2050 RTP for the analysis years of 2025, 2030, 2040, and 2050 are projected to be less than the approved 2012 emissions budget and the approved 2006 emissions budget.

Regional air quality conformity for PM_{10} has been satisfied.

4.2.3 Basis for Qualitative Particulate Matter Determination

As discussed in the "Revised Project-Level Carbon Monoxide (CO) and Particulate Matter (PM₁₀) Consultation Document" (Attachment 1), particulate matter hot-spot analyses are required only for Projects of Air Quality Concern (POAQC). The project does not meet any of the screening criteria used to define a POAQC as described below:

- The 2050 Build Alternative is not a new highway project, nor does it expand an existing highway.
- The SR 202/Elliot Road TI and the Elliot Road/Ellsworth Road intersection do not experience a significant number of diesel vehicles or result in increased traffic volumes from a significant number of diesel vehicles related to the project.
- The project is not a new bus or rail terminal that has a significant number of diesel vehicles congregating at a single location.
- The project is not an expanded bus or rail terminal and will not have a significant number of diesel vehicles congregating at a single location.
- The project is not in or affecting locations, areas, or categories of sites that are identified in the PM₁₀ implementation plan as sites of violation or possible PM₁₀ violations.

4.2.4 Interagency Consultation for Particulate Matter

On July 14, 2024, ADOT provided the "Project-Level Carbon Monoxide (CO) and Particulate Matter (PM_{10}) Consultation Document" to the following consulting parties for a 30-day review: EPA, FHWA, MAG, ADEQ, and MCAQD. The project was presented as a project that would not be considered a POAQC and would not require PM_{10} hot-spot modeling.

In their response to comments on the consultation document (Attachment 2), FHWA and EPA concurred that the proposed project would not be considered a POAQC and would not require hot-spot modeling. On September 12, 2024, an interagency consultation meeting was held to discuss the ADOT's response to comments concerning the project. There were no discussions

concerning PM₁₀ and the potential for the project to be considered a POAQC. The responses to agency comments are included in Attachment 2. Additionally, there were no additional comments on this air quality report during the comment period provided through October 30, 2024.

4.2.5 Conclusion and Transportation Conformity Results

As discussed above, the project is not a new or expanded highway capacity project that has a significant increase in the number of diesel-fueled vehicles related to the project.

As shown below in Table 8, under the 2050 No-Build Alternative, the highest ADT associated with the proposed project is about 55,000 vehicles per day (for all vehicle types) on Elliot Road from SR 202 to Ellsworth Road. Under the 2050 Build Alternative, the ADT on that segment is about 59,000 vehicles per day, an increase of about 4,000 vehicles per day over the 2050 No-Build Alternative. An increase of 4,000 vehicles per day for all vehicle types (of which about 625 would be trucks, both medium and heavy trucks, not all of which would be diesel-fueled) would not result in the project being considered a project of air quality concern for PM.

Table 8. Elliot Road Average Daily Traffic and Truck Volumes

| | 2023 Existing | | | 2050 No-Build | | | | 2050 Build | | | | Total Truck | |
|---|---------------|-----------------------|--------------|---------------|--------|-----------------------|--------------|--------------|--------|-----------------------|--------------|--------------|--|
| Roadway Segment | ADT | Total Truck ADT | MT Volume | HT Volume | ADT | Total Truck ADT | MT Volume | HT Volume | ADT | Total Truck ADT | MT Volume | HT Volume | AADT Difference (Build - No- Build) |
| Power Road to Sossaman Road | 7,730 | 1,313 | 1,111 | 202 | 27,055 | 4,596 | 3,889 | 707 | 28,353 | 4,816 | 4,075 | 741 | 220 |
| Sossamon Road to 80 th Street | 6,486 | 1,291 | 995 | 296 | 23,609 | 4,699 | 3,622 | 1,077 | 26,040 | 5,183 | 3,995 | 1,188 | 484 |
| 180th Street to Hawes Road | 6,609 | 1,362 | 1,013 | 349 | 29,873 | 6,156 | 4,579 | 1,577 | 30,925 | 6,373 | 4,740 | 1,633 | 217 |
| Hawes Road to SR 202 SB | 7,906 | 2,376 | 1,835 | 541 | 23,244 | 6,985 | 5,395 | 1,591 | 24,560 | 7,381 | 5,700 | 1,681 | 396 |
| SR 202 SB to Ellsworth Road | 23,613 | 3,750 | 2,271 | 1,479 | 54,782 | 8,700 | 5,269 | 3,431 | 58,715 | 9,325 | 5,647 | 3,678 | 625 |
| Ellsworth Road to East of Ellsworth Road | 18,461 | 2,876 | 2,064 | 812 | 27,322 | 4,256 | 3,055 | 1,202 | 30,304 | 4,721 | 3,388 | 1,333 | 465 |
| | | | | | | | | | | | | | |

Notes: ADT – Average Daily Traffic MT – Medium Trucks (vehicles with 2 axles and 6 wheels; gross vehicle weight – 10,000 to 26,400 pounds). HT – Heavy Trucks (vehicles with 3 or more axles; gross vehicle weight greater than 26,400 pounds).

As none of the screening criteria discussed above were met that would suggest the proposed project is one of air quality concern, the 2050 Build Alternative has been determined not to be a project of air quality concern for PM_{10} and as such does not require a quantitative analysis. The proposed project would not be expected to cause a violation of the PM_{10} NAAQS.

Project-level transportation conformity for PM₁₀ has been demonstrated.

4.3 Mobile Source Air Toxics (MSAT) Evaluation

The most recent FHWA MSAT guidance (FHWA 2023) incorporates emission estimates that include the effect of recent EPA rulemakings that will further control motor vehicle emissions in the future. These regulations will result in a substantial decline in MSAT emissions over the next several decades.

Based on an FHWA analysis using the MOVES3 model, FHWA estimates that even if vehicle miles traveled increase by 31 percent from 2020 to 2060, there will be an estimated 76 percent reduction in the total annual emissions for the priority MSATs over the same period (Figure 8).

FHWA's guidance groups projects into three categories for considering potential MSAT effects:

- No analysis for projects without the potential for meaningful MSAT effects
- Qualitative analysis for projects with a low potential for MSAT effects
- Quantitative analysis to differentiate alternatives for projects with a higher potential for MSAT effects

The project is considered to have a low potential for MSAT effects for the following reasons:

- Under the 2050 Build Alternative, average daily traffic volumes on Elliot Road range from about 24,500 ADT to 58,700 ADT and are less than the 140,000 to 150,000 AADT where FHWA guidance suggests a quantitative MSAT analysis could be warranted.
- As discussed above and shown on Figure 8, MSAT emissions are expected to decrease substantially in the future as a result of new engine and fuel standards.



Figure 8. FHWA Projected National MSAT Emission Trends 2020-2060

5. MITIGATION STRATEGIES

5.1 Operation

There were no project-related air quality impacts due to the project; therefore, operational mitigation measures are not required.

5.2 Construction

Short-term air quality impacts may be experienced during construction of the project because of the operation of construction equipment and the slow traffic speeds and idling associated with a construction zone. This would be a localized condition that would end with the completion of construction activities.

The construction contractor would be required to maintain construction equipment in proper working order to minimize exhaust emissions. Contractors would also be required to comply with local air quality and dust control rules, regulations, permits, and ordinances that apply to any work performed and use the most current ADOT best management practices to reduce short-term adverse construction impacts related to air quality (from dust and exhaust).

Fugitive dust generated from construction activities would be controlled in accordance with Maricopa County Rule 310 (Fugitive Dust from Dust-Generating Activities) and ADOT's *Standard Specifications for Road and Bridge Construction*, Section 104.08 (Prevention of Air and Noise Pollution), as well as other local rules and ordinances.

6. **REFERENCES**

ADOT. 2021. Standard Specifications for Road and Bridge Construction.

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Attachment 1 Revised Project-Level Carbon Monoxide (CO) and Particulate Matter (PM10) Consultation Document (October 2024)



Arizona Department of Transportation

Environmental Planning

Final Project - Level Carbon Monoxide (CO) And Particulate Matter (PM₁₀) Consultation Document

Elliot Road: Eastern Maricopa Floodway to Ellsworth Road

MES -0(239)D 0000 MA MES T0359 03D

Final September 2024

Revised August 2024

July 2024

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by ADOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated June 25, 2024, and executed by FHWA and ADOT.

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Project-Level CO and PM₁₀ Interagency Consultation

Project Setting and Description

The City of Mesa (City) is designing a roadway widening project on Elliot Road, between the East Maricopa Floodway (EMF) and Ellsworth Road in Mesa, Maricopa County, Arizona. The project extends about 3.5 miles along Elliot Road between Power Road and 96th Street, and includes approximately 1.8 miles along Sossaman Road, 0.5 mile along 80th Street, 1.6 miles along Hawes Road, 1 mile along State Route 202 Loop (SR 202L), and 1 mile along Ellsworth Road.

The project would be constructed primarily within City right-of-way (ROW) but will require up to 5 acres of new ROW and up to 7 acres of drainage/temporary construction easements from adjacent landowners. The project area includes ROW from privately owned land, State Trust Land administered by the Arizona State Land Department, Maricopa County, Arizona Department of Transportation (ADOT), and Flood Control District of Maricopa County (FCDMC).

Elliot Road primarily consists of one lane in each direction with unpaved shoulders and no medians, turn lanes, street lighting, or sidewalks between the EMF and Hawes Road. East of Hawes Road, Elliot Road transitions to three lanes in each direction with street lighting and intermittent medians and sidewalks. Traffic signals are located at intersections with Sossaman Road, SR 202L, and Ellsworth Road and will be updated as part of the project.

The purpose of this project is to increase capacity on Elliot Road, improve multi-modal traffic flow and mobility options, and support development within the areas adjacent to the project limits.

Project elements include:

- Widening of Elliot Road to match the City's six-lane major arterial section:
 - The existing two-lane roadway along Elliot Road will be widened to three eastbound and three westbound through-traffic lanes and an eastbound and a westbound striped bike lane.
 - The widened roadway will include sidewalks, curb, and gutter, as needed.
 - Gaps addressing the transitions from the project improvements to the existing lane configurations will also be constructed.
 - Intersection improvements will be constructed at Sossaman Road, 80th Street, and Hawes Road.
- Constructing raised medians along Elliot Road between Sossaman Road and State Route (SR) 202L.



- Constructing new sidewalks along Elliot Road between Sossaman Road and SR 202L and between SR 202L and Ellsworth Road, with Americans with Disabilities Act (ADA)-compliant sidewalk ramps at driveways and intersections.
- Developing a management access plan for existing driveways along Elliot Road and constructing driveway improvements as needed.
- Constructing a new eastbound-to-southbound right turn lane at the Elliot Road/Ellsworth Road intersection.
- Constructing drainage improvements along Elliot Road that will discharge into the EMF.
- Installing street lightings to accommodate multi-modal traffic along Elliot Road.
- Modifying or replacing existing traffic signals at intersections along Elliot Road at Sossaman Road, Hawes Road, and Ellsworth Road.
- Installing new a traffic signal at the intersection of Elliot Road and 80th Street.
- Extending the City's intelligent transportation system (ITS) fiber optic backbone to connect the traffic signals along Elliot Road within the project limits.
- Installing new and replacing existing permanent signage and pavement markings, as needed.
- Relocating utilities, as needed.
- Landscaping within the corridor.
- Conducting geotechnical investigations, including pavement borings.

The proposed project is in Maricopa County which is currently designated as a nonattainment or maintenance area for the National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO), eight-hour ozone, and particulate matter less than or equal to ten microns in diameter (PM-10).

The CO Maintenance Plan currently in effect is the "MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area" (MAG, March 2013). As discussed in that plan, there have been no violations of the 1-hour National Ambient Air Quality Standard (NAAQS) for CO (35 parts per million [ppm] since 1984 and no violations of the 8-hour NAAQS (9 ppm) since 1996. There has also been a continuous downward trend in monitored CO concentrations over time and the maintenance demonstration summary described in the 2013 Maintenance Plan details continuing compliance with the CO standard through 2025.

The PM-10 Nonattainment Plan currently in effect is the "The MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area," The effective date of that plan as approved by Environmental Protection Agency (EPA) is July 10, 2014. The MAG 2020 Eight- Hour Ozone Plan-Submittal of Marginal Area Requirements for the Maricopa Nonattainment Area was submitted to EPA on June 29, 2020.

This project is included in the in the Maricopa Association of Governments Regional



Transportation Plan: Momentum 2050 (MAG, 2021) and the Fiscal Year 2022-2025 Transportation Improvement Program (MES-0(239)D – Elliot Road: Eastern Maricopa Floodway (EMF) to Ellsworth Road).

The current conformity determination of the TIP and MOMENTUM 2050 MAG Regional Transportation Plan for the Maricopa nonattainment and maintenance areas and the Pinal County nonattainment areas was made by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) on September 25, 2023.

The project location is shown in Figure 1 and the project study area is shown in Figure 2.









Figure 2. Project Study Area





Carbon Monoxide Project Assessment

The following questionnaire is used to compare the proposed project to a list of project types in 40 CFR 93.123(a) requiring a quantitative analysis of local CO emissions (Hot-spots) in nonattainment or maintenance areas, which include:

- i. Projects in or affecting locations, area, or categories of sites which are identified in the applicable implementation plan as sites of violation or possible violation;
- ii. Projects affecting intersections that are at Level-of-Service D, E, or F, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes related to the project;
- iii. Any project affecting one or more of the top three intersections in the nonattainment area or maintenance area with highest traffic volumes, as identified in the applicable implementation plan; and
- iv. Any project affecting one or more of the top three intersections in the nonattainment or maintenance area with the worst level of service, as identified in the applicable implementation plan.

If the project matches one of the listed project types in 40 CFR 123(a)(1) above, it is considered a project of local air quality concern, and the hot-spot demonstration must be based on quantitative analysis methods in accordance with 40 CFR 93.116(a) and the consultation requirements of 40 CFR 93.105(c)(1)(i).

Projects Affecting CO Sites of Violation or Possible Violation

Does the project affect locations, areas, or categories of sites that are identified in the CO applicable plan or implementation plan submissions, as appropriate, as sites of violation or potential violation?).

NO – The MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County (MAG, March 2013) does not identify sites or categories of potential violation for CO.

Projects with Congested Intersections

Is this a project that affects a congested intersection (LOS D or greater) will change LOS to D or greater because of increased traffic volumes related to the project?

YES – As shown in Table 1, under the 2050 Build Alternative, several intersections in the Elliot Road corridor operate at LOS D or worse in either the AM or PM peak hour.



| Table 1. Intersection Level of Service and Peak-Hour Volumes | | | | | | | | | | | | | |
|--|--|------------------|-------------------------------------|---------------------------------|----------------------|------------------|-------------------------------------|------------------------------------|-------------------------|------------------|-------------------------------------|------------------------------------|---|
| | | 2023 Existin | g Conditions | | | 2050 No Build | | | | 2050 E | Build | | |
| Intersection | LOS (delay, sec.) | Volumes (vph) | Medium Truck Volumes (vph) | Heavy Truck Volumes (vph) | LOS (delay, sec.) | Volumes (vph) | Medium Truck Volumes (vph) | Heavy Truck Volumes (vph) | LOS (delay, sec.) | Volumes (vph) | Medium Truck Volumes (vph) | Heavy Truck Volumes (vph) | Total Truck Volume Difference (Build – No Build, vph) ¹ |
| Sossaman Rd. & | AM: B (10.2) | AM: 959 | AM: 143 | AM: 38 | AM: F (80.2) | AM: 2,751 | AM: 413 | AM: 110 | AM: A (9.2) | AM: 2,910 | AM: 436 | AM: 116 | AM: 29 |
| Elliot Rd. | PM: B (10.1) | PM: 962 | PM: 144 | PM: 38 | PM: F (289.7) | PM: 3,982 | PM: 597 | PM: 159 | PM: C (27.9) | PM: 4,141 | PM: 621 | PM: 166 | PM: 31 |
| 80 th St. & Elliot | AM: | AM: 727 | AM: 109 | AM: 36 | AM: | AM: 2,018 | AM: 303 | AM: 101 | AM: A (6.7) | AM: 2,255 | AM: 338 | AM: 113 | AM: 47 |
| Rd. ² | PM: | PM: 694 | PM: 104 | PM: 34 | PM: | PM: 3,128 | PM: 469 | PM: 156 | PM: A (9.8) | PM: 3,420 | PM: 513 | PM: 171 | PM: 58 |
| Hawes Rd. & | AM: | AM: 825 | AM: 156 | AM: 49 | AM: | AM: 3,114 | AM: 592 | AM: 187 | AM: B (12.4) | AM: 3,250 | AM: 617 | AM: 195 | AM: 33 |
| Elliot Rd. ² | PM: | PM: 993 | PM: 188 | PM: 59 | PM: | PM: 5,219 | PM: 992 | PM: 313 | PM: D (52.9) | PM: 5,384 | PM: 1,023 | PM: 323 | PM: 41 |
| SR 202 SB & | AM: B (18.0) | AM: 1,341 | AM: 214 | AM: 93 | AM: C (31.2) | AM: 3,866 | AM: 619 | AM: 271 | AM: C (25.8) | AM: 4,085 | AM: 654 | AM: 286 | AM: 50 |
| Elliot Rd. | PM: D (36.1) | PM: 2,135 | PM: 341 | PM: 149 | PM: F (153.9) | PM: 6,409 | PM: 1,025 | PM: 449 | PM: E (79.2) | PM: 6,758 | PM: 1,081 | PM: 473 | PM: 80 |
| SR 202 NB & | AM: B (18.5) | AM: 2,562 | AM: 409 | AM: 179 | AM: E (55.2) | AM: 4,994 | AM: 799 | AM: 350 | AM: E (69.0) | AM: 5,414 | AM: 866 | AM: 379 | AM: 96 |
| Elliot Rd. | PM: E (75.4) | PM: 2,528 | PM: 404 | PM: 176 | PM: F (111.5) | PM: 6,815 | PM: 1,090 | PM: 477 | PM: F (108.4) | PM: 7,229 | PM: 1,157 | PM: 506 | PM: 96 |
| Ellsworth Rd. | AM: E | AM: 3,367 | AM: 336 | AM: 168 | AM: F (143.1) | AM: 4,499 | AM: 450 | AM: 225 | AM: D (38.4) | AM: 5,052 | AM: 505 | AM: 253 | AM: 83 |
| & Elliot Rd. | PM: D | PM: 3,309 | PM: 330 | PM: 165 | PM: F (216.5) | PM: 5,356 | PM: 536 | PM: 268 | PM: E (68.2) | PM: 5,899 | PM: 590 | PM: 295 | PM: 81 |
| ¹ Truck Volume I | Truck Volume Difference includes both MT and HT | | | | | | | | | | | | |
| ² Intersection is un | Intersection is unsignalized under 2023 Existing Conditions | | | | | | | | | | | | |
| Source: Dibble, Ju | Source: Dibble, June 2024. Draft Traffic Statement – Elliot Road: Eastern Maricopa Floodway to Ellsworth Road. | | | | | | | | | | | | |

Values in Red – greater than acceptable LOS C

MT – Medium Trucks (vehicles with 2 axles & 6 wheels; gross vehicle weight – 10,000 to 26,400 pounds) HT – Heavy Trucks (vehicles with 3 or more axles;

gross vehicle weight greater than 26,400 pounds).



| Table 2. Elliot Road Average Daily Traffic and Truck Volumes | | | | | | | | | | | | | |
|--|---------------|--------------------|--------------|---------------|--------|--------------------|--------------|--------------|--------|--------------------|---|--------------|-----|
| | 2023 Existing | | | 2050 No-Build | | | 2050 Build | | | | Total Truck ADT Difference (Build - No- Build) | | |
| RoadwaySegment | ADT | Total Truck ADT | MT Volume | HT Volume | ADT | Total Truck ADT | MT Volume | HT Volume | ADT | Total Truck ADT | MT Volume | HT Volume | |
| | | | | | | | | | | | | | |
| Power Road to Sossaman Road | 7,730 | 1,313 | 1,111 | 202 | 27,055 | 4,596 | 3,889 | 707 | 28,353 | 4,816 | 4,075 | 741 | 220 |
| Sossaman Road to 80 th Street | 6,486 | 1,291 | 995 | 296 | 23,609 | 4,699 | 3,622 | 1,077 | 26,040 | 5,183 | 3,995 | 1,188 | 484 |
| 80th Street to Hawes Road | 6,609 | 1,362 | 1,013 | 349 | 29,873 | 6,156 | 4,579 | 1,577 | 30,925 | 6,373 | 4,740 | 1,633 | 217 |
| Hawes Road to SR 202 SB | 7,906 | 2,376 | 1,835 | 541 | 23,244 | 6,985 | 5,395 | 1,591 | 24,560 | 7,381 | 5,700 | 1,681 | 396 |
| SR 202 SB to Ellsworth Road | 23,613 | 3,750 | 2,271 | 1,479 | 54,782 | 8,700 | 5,269 | 3,431 | 58,715 | 9,325 | 5,647 | 3,678 | 625 |
| Ellsworth Road to East of Ellsworth Road | 18,461 | 2,876 | 2,064 | 812 | 27,322 | 4,256 | 3,055 | 1,202 | 30,304 | 4,721 | 3,388 | 1,333 | 465 |

Notes: ADT – Average daily traffic

MT – Medium Trucks (vehicles with 2 axles & 6 wheels; gross vehicle weight – 10,000 to 26,400 pounds).

HT – Heavy Trucks (vehicles with 3 or more axles; gross vehicle weight greater than 26,400 pounds).

Source: Email from Hunter Venne (Dibble Engineering) to Curt Overcast (Newton Environmental Consultants) regarding PM Consultation & Carbon Monoxide Modeling (February 8, 2024)



| | | | 2050 | No-Build | ADT | | | 205 | 0 Build A | DT | | Difference (B |
|-------------------------------|-----------|--------|--------|----------|--------|--------|--------|--------|-----------|--------|--------|---------------|
| Intersection | Veh Class | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | No-Build |
| | | | | | | | | | | | | |
| | Total ADT | 7,028 | 6,580 | 4,199 | 4,167 | 21,973 | 7,694 | 7,072 | 4,259 | 4,605 | 23,630 | 1,657 |
| Sossaman Rd & Elliot Rd | MT | 1,054 | 987 | 630 | 625 | 3,296 | 1,154 | 1,061 | 639 | 691 | 3,545 | 249 |
| | HT | 281 | 263 | 168 | 167 | 879 | 308 | 283 | 170 | 184 | 945 | 66 |
| | | | | | | | | | | | | |
| | Total | 6,790 | 6,573 | 199 | 554 | 14,115 | 7,865 | 7,530 | 199 | 724 | 16,318 | 2,203 |
| 80th St & Elliot Rd | MT | 1,019 | 986 | 30 | 83 | 2,117 | 1,180 | 1,130 | 30 | 109 | 2,448 | 331 |
| | HT | 340 | 329 | 10 | 28 | 706 | 393 | 377 | 10 | 36 | 816 | 110 |
| | | | | | | | | | | | | |
| | Total | 6,538 | 7,011 | 1,090 | 1,892 | 1,6531 | 7,112 | 7,667 | 1,136 | 2,126 | 18,040 | 1,509 |
| Hawes & Elliot Rd | MT | 1,242 | 1,332 | 207 | 360 | 3,141 | 1,351 | 1,457 | 216 | 404 | 3,428 | 287 |
| | HT | 392 | 421 | 65 | 114 | 992 | 427 | 460 | 68 | 128 | 1,082 | 90 |
| | | | | | | | | | | | | |
| | Total | 7,647 | 9,734 | 0 | 12,669 | 30,050 | 8288 | 10,983 | 0 | 14,218 | 33,490 | 3,440 |
| Loop 202 SB Ramps & Elliot Rd | MT | 1,223 | 1,557 | 0 | 2,027 | 4,808 | 1,326 | 1,757 | 0 | 2,275 | 5,358 | 550 |
| | HT | 535 | 681 | 0 | 887 | 2,103 | 580 | 769 | 0 | 995 | 2,344 | 241 |
| | | | | | | | | | | | | |
| | Total | 11,609 | 13,870 | 4,049 | 0 | 29,528 | 12,945 | 15,713 | 4,415 | 0 | 33,073 | 3,545 |
| Loop 202 NB Ramps & Elliot Rd | MT | 1,857 | 2,219 | 648 | 0 | 4,725 | 2,071 | 2,514 | 706 | 0 | 5,292 | 567 |
| | HT | 813 | 971 | 283 | 0 | 2067 | 906 | 1100 | 309 | 0 | 2315 | 248 |
| | | | | | | | | | | | | |
| | Total | 14,791 | 10,948 | 13,092 | 6,598 | 45,428 | 16,822 | 12,470 | 14,911 | 7,540 | 51,743 | 6,315 |
| Ellsworth Rd & Elliot Rd | MT | 1,479 | 1,095 | 1,309 | 660 | 4,543 | 1,682 | 1,247 | 1,491 | 754 | 5,174 | 631 |
| | HT | 740 | 547 | 655 | 330 | 2,271 | 841 | 624 | 746 | 377 | 2,587 | 316 |

MT – Medium Trucks (vehicles with 2 axles & 6 wheels; gross vehicle weight – 10,000 to 26,400 pounds HT – Heavy Trucks (vehicles with 3 or more axles; gross vehicle weight greater than 26,400 pounds). Source: Email from Hunter Venne (Dibble Engineering) to Joonwon Joo (ADOT), et. al. (March 26, 2024)





Table 2 above shows the Average Daily Traffic (ADT) volumes at various locations on Elliot Road from Power Road to Ellsworth Road. Under 2023 Existing Conditions, the ADT ranges from 6,500 vehicles per day (vpd) to more than 23,600 vpd depending on location in the corridor. Under the 2050 Build Alternative, the ADT ranges from about 24,500 vpd to about 58,700 vpd.

Table 3 shows the intersection ADT & individual turning movements at each intersection on Elliot Road.

Projects Affecting Intersections with Highest Traffic Volumes

Does the project affect one or more of the top three intersections in the CO maintenance area with the highest traffic volumes identified in the CO applicable implementation plan?

NO - There are 6 intersections within the project limits as shown in Table 1, Table 2, and Table 3. The 3 intersections with the highest traffic volumes in the *MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area, March 2013* are located outside the project limits:

- Priest Drive & Southern Avenue
- 16th Street & Camelback Road
- 107th Avenue & Grand Avenue

Projects Affecting Intersections with the Worst Level of Service

Does the project affect one or more of the top three intersections in the CO maintenance area with the worst level of services identified in the CO applicable maintenance plan?

NO - There are 6 intersections within the project limits as shown in Table 1, Table 2, and Table 3. The 3 intersections with worst level of service in the *MAG* 2013 *Carbon Monoxide Maintenance Plan for the Maricopa County Area, March* 2013 are located outside the project limits:

- 7th Avenue & Van Buren Street
- German Road & Gilbert Road
- Thomas Road & 27th Avenue

The modeling conducted for the *MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area,* approved by EPA effective April 4, 2016, demonstrates continuing maintenance of the CO standard through 2025.

The modeling in that plan used 2025 in the future-year evaluation (MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area – Appendices, page 180ff, March 2013). Based on the Motor Vehicle Emissions Simulator (MOVES) model used at that time (MOVES2010b), the highest 1hour modeled CO concentration at the six highest intersections identified in the maintenance plan was 0.5 ppm. The highest 8- hour modeled CO concentration at the six 1.7 ppm which included a background CO concentration of 1.3 ppm.



Based on improved fuel standards and other technological improvements in vehicle operating efficiencies since 2013, including revisions to the MOVES model, it is reasonable to assume that the intersections associated with the proposed project would not exceed the CO NAAQS of 35 ppm (1-hour) or 9 ppm (8-hour) under the 2050 Build Alternative.

Conclusion

As shown in Table 1, under the 2050 Build Alternative the following intersections operate at LOS D or worse in the AM and/or PM peak hours:

- Hawes Road & Elliot Road (PM Peak) LOS D (52.9 sec.)
- Ellsworth Road & Elliot Road (AM Peak) LOS D (38.4 sec.)
- Ellsworth Road & Elliot Road (PM Peak) LOS E (68.2 sec.)
- SR 202 SB & Elliot Road (PM Peak) LOS E (79.2 sec.)
- SR 202 NB & Elliot Road (AM Peak) LOS E (69.0 sec.)
- SR 202 NB & Elliot Road (PM Peak) LOS F (108.4 sec.)

The intersections are to be evaluated for an appropriate hot-spot analysis requirement, as provided in Part B of the Project Assessment.



Project Assessment - Part B

Hot-Spot Determination

Decide which type of hot-spot analysis is required for the project by choosing a category below.

☑ If answered "Yes" to any of the questions in the Project Assessment – Part A

- A <u>quantitative CO hot-spot analysis</u> is required under 40 CFR 93.123(a)(1).
- Check **If** a formal air quality report for conformity is required for this project.
- The applicable air quality models, data bases, and other requirements specified in 40 CFR part 51, Appendix W (Guideline on Air Quality Models) should be completed as documented below.

The LOS and intersection volumes at the SR 202 northbound and southbound traffic interchange and the Elliot Road/Ellsworth Road intersection exceed the allowable thresholds for use of FHWA's Categorical Hot-Spot Finding tool; therefore, a quantitative hot-spot analysis is required for the interchange and the intersection

Methodologies and assumptions for the CO hot-spot modeling are provided in Attachment A, **"Project Level CO Quantitative Hot-Spot Analysis – Consultation Document."**

· Or

□ Check **If** the project fits the condition of the "**CO Categorical Hot-Spot Finding**" and attach all supporting materials to this document.

In the January 24, 2008, Transportation Conformity Rule Amendments, EPA included a provision at 40 CFR 93.123(a)(3) to allow the U.S. DOT, in consultation with EPA, to make categorical hot-spot findings in CO nonattainment and maintenance areas if appropriate modeling showed that a type of highway or transit project would not cause or contribute to a new or worsened air quality violation of the CO NAAQS or delay timely attainment of the NAAQS or required interim milestone(s), as required under 40 CFR 93.116(a).

Projects Fitting the Condition of the CO Categorical Hot-Spot Finding (Updated 2/1/23)

If the project's parameters fall within the acceptable range of modeled parameters, use FHWA 2023 CO Categorical Hot-Spot Finding Spreadsheet Tool: <u>https://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/ c_mcf_2023/index.cfm</u>

□ If answered "No" to all of the questions in the Project Assessment – Part A

- A <u>qualitative CO analysis</u> is required under 40 CFR 93.123(a)(2). The demonstrations required by 40 CFR 93.116 Localized CO, PM10, and PM2.5 violations (hot-spots) may be based on either:



- (i) Quantitative methods that represent reasonable and common professional practice;

□ Check **If** an Air Quality Report <u>includes CO modeling</u> for NEPA EA/EIS use this report to satisfy option (i)

- Or
- (ii) A qualitative consideration of local factors if this can provide a clear demonstration that the requirements of 40 CFR 93.116 are met.
- -

 \Box Check **If** there is an Air Quality Report that <u>does not include</u> CO modeling for NEPA EA/EIS use this report to satisfy (ii)

□ Check **If** the project is a CE under NEPA that does not require Air Quality Report for NEPA EA/EIS use this Questionnaire to add additional justification to satisfy (ii)



Project-Level PM₁₀ Consultation Project of Air Quality Concern

PM₁₀ Project Assessment

The following questionnaire is used to compare the proposed project to a list of project types in 40 CFR 93.123(b) requiring a quantitative analysis of local particulate emissions (Hot-spots) in nonattainment or maintenance areas, which include:

- New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;
- Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of an increase in traffic volumes from a significant number of diesel vehicles related to the project;
- iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
- iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
- v) Projects in or affecting locations, areas, or categories of sites which are identified in the PM_{10} or $PM_{2.5}$ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

If the project matches one of the listed project types in 40 CFR 123(b)(1) above, it is considered a project of local air quality concern, and the hot-spot demonstration must be based on quantitative analysis methods in accordance with 40 CFR 93.116(a) and the consultation requirements of 40 CFR 93.105(c)(1)(i). If the project does not require a PM hot-spot analysis, a qualitative assessment will be developed that demonstrates that the project will not contribute to any new localized violations, increase the frequency of severity of any existing violations, or delay the timely attainment of any NAAQS or any required emission reductions or milestones in any nonattainment or maintenance area.

On March 10, 2006, EPA published *PM2.5 and PM10 Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New PM2.5 and Existing PM10 National Ambient Air Quality Standards; Final Rule* describing the types of projects that would be considered a project of air quality concern and that require a hot-spot analysis (71 FR 12468-12511). Specifically on page 12491, EPA provides the following clarification: "Some examples of *projects of air quality concern* that would be covered by §93.123(b)(1)(i) and (ii) are: A project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT) and 8% or more of such AADT is diesel truck traffic;" .." Expansion of an existing highway or other facility that



affects a congested intersection (operated at Level-of-Service D, E, or F) that has a significant increase in the number of diesel trucks;" While these examples were provided in the rulemaking, interagency consultation will be used to determine if a project is of air quality concern.

New Highway Capacity

Is this a new highway project that has a significant number of diesel vehicles?

NO - The proposed project is not a new highway project.

Expanded Highway Capacity

Is this an expanded highway projects that have a significant increase in the number of diesel vehicles?

NO – The proposed project is not an expanded highway capacity project that has a significant increase in the number of diesel-fueled vehicles related to the project. As shown in Table 2 above, the average daily traffic (ADT) volumes on Elliot Road from Power Road to Ellsworth Road range from about 6,500 to 23,600 vehicles per day (vpd) under 2023 Existing Conditions to about 24,500 to 58,700 vpd under the 2050 Build Alternative depending on location within the corridor.

Compared to the 2050 No-Build Alternative, the total truck ADT under the 2050 Build Alternative increases by about 200 to 625 trucks per day as a result of the project. In addition, the total truck volumes shown in Table 2 include both medium- and heavy- duty trucks, not all of which would be diesel-fueled. The combined medium- and heavy-duty truck ADT represents a worst-case assumption when considering if the increase in truck volumes represents a significant increase in the number of diesel-fueled vehicles resulting from the project.

Projects with Congested Intersections

Is this a project that affects a congested intersection (LOS D or greater) that has a significant number of diesel trucks, <u>OR</u> will change LOS to D or greater because of an increase in traffic volumes from a significant number of diesel trucks related to the project?

NO – This is not a project that affects a congested intersection at LOS D or that will change to LOS D (or greater) because of a significant increase in the number of diesel-fueled trucks resulting from the project (see discussion above and Table 1 and Table 2).

As shown in Table 1, the total truck volumes (medium trucks and heavy trucks) increase by less than 100 trucks per hour in both the AM and PM peak hours under the 2050 Build Alternative compared to the 2050 No-Build Alternative.

The total truck volumes are not deemed to constitute a significant number of diesel-fueled vehicles or represent a significant increase in the volume of diesel-fueled vehicles related to the project.



New Bus and Rail Terminals

Does the project involve construction of a new bus or intermodal terminal that accommodates a significant number of diesel vehicles?

NO - The proposed project does not involve construction of new bus or rail terminals.

Expanded Bus and Rail Terminals

Does the project involve an existing bus or intermodal terminal that has a large vehicle fleet where the number of diesel buses (or trains) increases by 50% or more, as measured by arrivals?

NO – The proposed project does not involve an existing bus or intermodal terminal.

Project of Air Quality Concern Determination

Under the 2050 Build Alternative, average daily traffic volumes on Elliot Road range from about 24,500 vpd to 58,700 vpd at the SR 202/Elliot Road TI. The increase in diesel-fueled truck volumes due to the project are less than 650 trucks per day compared to the 2050 No-Build Alternative and include both medium- and heavy-duty trucks, not all of which are diesel-fueled (that is, the truck volumes represent a worst-case condition and likely overstate the number of diesel-fueled trucks in the project area). While overall traffic volumes are expected to increase, the project does not significantly increase diesel-fueled total truck volumes.

In addition, total truck volumes at all intersections in the project corridor increase by less than 100 trucks per hour compared to the 2050 No-Build Alternative in both the AM and PM peak hours.

The March 2006, *PM2.5 and PM10 Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New PM_{2.5} and Existing PM₁₀ National Ambient Air Quality Standards; Final Rule* (71 Federal Register 12486-12511) also provided examples of projects that would not be covered by 40 CFR 93.123(b)(1) and would not require a PM_{2.5} or PM₁₀ hot-spot analysis.

The proposed project fits as "any new or expanded highway project that primarily services gasoline vehicle traffic (i.e., does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at Level-of-Service D, E, or F."

As a result, the proposed improvements on Elliot Road from Power Road to Ellsworth Road are NOT of Air Quality Concern and will not require a PM hot-spot analysis.



Attachment A

Project-Level CO Quantitative Hot-Spot Analysis – Modeling Assumptions



Project Level CO Quantitative Hot-Spot Analysis – Modeling Assumptions

The Arizona Department of Transportation (ADOT) developed the following consultation document for the projects of air quality concern that are funded by Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). The purpose of this document is to describe the methods, models and assumptions used for a CO quantitative Hot-spot analysis as required in 40 CFR 93.105(c)(1)(a), 93.123, 93.116.

Completing a Carbon Monoxide (CO) Hot-Spot Analysis

The general steps required to complete a quantitative CO hot-spot analysis are outlined below and described in detail in the EPA guidance document "Using MOVES3 in Project-Level Carbon Monoxide Analyses" EPA-420-B-21-047, December 2021, and "Guideline for Modeling Carbon Monoxide from Roadway Intersections" EPA-454/R-92-005, November 1992.



^{*} Described in the previous section.

^{**} How these Steps/Assumptions are planned are described in this document below.



Methods, Models and Assumptions for CO

| Table 4. Methods, Models and Assumptions | | | | | |
|---|--|--|--|--|--|
| Estimate On-Road Motor Vehicle Emissions (Step 3) | | | | | |
| MOVES3.1 | Description | Data Source | | | |
| Scale | On road, Project, Inventory | EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.2. | | | |
| Time Span | The EPA 1992 Guideline conservatively uses a typical peak-hour traffic activity in one MOVES run to generate emission rates. The worst-case modeling scenario using January when CO emissions are typically greater due to colder temperatures and during the PM peak-hour will be selected. The FY 2022- 2025 TIP indicates that the project will be open to traffic in 2027; therefore, 2027 MOVES emission rates will be used to represent the Year of Opening emission rates and will be used with 2050 traffic volumes (the year with maximum traffic volumes) to model worst-case emissions associated with the project. | EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.3 | | | |
| Geographic Bounds | Maricopa County | EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.4 | | | |
| Onroad Vehicles | All Fuels and Source Use Types | EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.5 | | | |
| Road Type | Urban Unrestricted | EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.6 | | | |
| Pollutants and Processes | CO Running Exhaust, CO Crankcase Running Exhaust | EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.7 | | | |
| Output | Database will be created, Grams, Miles, Distance Traveled, and Population will be selected. Emissions process will be selected in the Output Emissions Detail. Emission rates for each process can be appropriately summed to calculate aggregate CO emission rates for each MOVES link. | EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Sections 2.3.8 and 2.3.9 | | | |



| 00 1011 10110 100 | 57 05D | |
|-------------------|--|--|
| Project Data | Database and MOVES3.1 templates will be | EPA 1992 Guideline, Section 4.7.1., |
| Manager | created to include local project data and | Using MOVES3 in Project-Level Carbon |
| | information included in MAG's Spring 2023 | Monoxide Analyses, Section 2.1, 2.4 for |
| | Conformity evaluation for I/M programs | Links; the required data necessary to be |
| | and Age Distribution which are consistent | consistent with regional emissions |
| | with the regional models. For meteorology | analysis (40 CFR 3.123(c)(3)). |
| | data, the average temperature and humidity | |
| | in January will be derived from National | See Table 5 below for details. |
| | Weather Service data for a 5-year period | |
| | (2019 to 2023) and the default MOVES fuel | |
| | data will be used as strongly recommended | |
| | by the EPA (Using MOVES3 in Project-level | |
| | Carbon Monoxide Analyses (2021), page 24). | |
| | Links and Link Source Type will be specific | |
| | to the project as provided in the traffic | |
| | analysis; any missing information will use | |
| | default MOVES3.1 data. After running | |
| | MOVES, the MOVES CO_CAL3QHC_EF | |
| | post-processing | |
| | script is run. | |
| Select Air Qua | lity Model, Data Inputs, and Receptors (Step 4 | 4) |
| | | |



| | Table 4. Methods, Models and | 1 Assumptions |
|------------------------------------|--|---|
| CAL3QHC | Description | Data Source |
| Emissions Sources | Emissions Rates in grams/mile and grams/hour will be developed using the inputs described in MOVES3.1 section above. The free flow and queue links defined for modeling with MOVES3.1 will be used as inputs to CAL3QHC. | 1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, EPA-454/R-92-005, November 1992. Section 4.2.3.1 (Models for Carbon Monoxide) of Appendix W to 40 CFR Part 51, refers to the November 1992 guidance above as appropriate for CO screening analyses of intersection projects |
| Receptor Locations | At least 3m from the roadways at an average breathing height of 1.8m, nearby occupied lots, vacant lots, sidewalks, and any locations near where the general public has continuous access. Receptors are located along the right-of-way line (where, and if, appropriate) and at sidewalk locations (as determined from aerial imagery and a project design file) (see the following figures for a graphical representation of the model setup at the Elliot Road/SR 202 TI and the Elliot Road/Ellsworth Road intersection, including receptor locations and links). | 1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 2.2 |
| Traffic and Geometric Design | Lane Configuration, Lane Width, Signalization, Turning Movements, Median Width, Traffic Volume, Level of Service, Grade, % of Heavy- Duty Trucks, and Peak Hour Average Approach Speed. Data will be derived from the traffic analyses, design files and signal timing analyses | 1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 4.7.4 |
| Meteorology | The following meteorology options will be used as recommended in the CO Guideline: a worst-case wind speed of 1 m/s, 10- degree wind intervals from 0 to 355 degrees, a mixing height of 1,000 m, and stability class D. A surface roughness of 175 cm will be used as representative of an urban environment. | 1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 4.7.1 |
| Persistence Factor | For a separate project the Maricopa County Air Quality Department (MCAQD) derived a persistence factor of 0.86 using 1-hour and 8-hour CO monitor data from the West Phoenix monitor (2020 to 2022). The nearest CO monitor to the Elliot Road/SR 202 TI is the Mesa Station (310 South Brooks), about 12 miles NW of the Elliot Road corridor. Because the calculated persistence factor derived by the MCAQD is greater than the default persistence factor of 0.7 recommended in the 1992 CO Guideline, the | 1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 4.7.2 |



| higher (that is, more conservative) persistence factor of 0.86 will be used to estimate 8-hour CO concentrations from 1- |
|--|
| hour concentrations. |

Determine Background Concentrations (Step 6)



| | Table 4. Methods, Models and | Assumptions |
|-----------------------|--|---|
| Background Monitor | As discussed below, the Mesa CO monitor located at 310 South Brooks is about 12 miles northwest of the Elliot Road/SR 202 TI and is the nearest active CO monitor. | 1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 4.7.3 |
| | As shown in Table 9, over the last three years of available monitoring data (2020 to 2022), the highest 1-hour and 8-hour concentrations were 3.2 ppm and 1.6 ppm, respectively. In addition, the Mesa Monitor meets all requirements of 40 CFR Part 58 Subpart G – Appendices A, C, D, and E related to QA requirements for monitors, monitoring methodology, and network design). | |
| | 3.2 ppm will be added to the maximum modeled hourly concentration and compared to the NAAQS. 1.6 ppm will be added to the maximum 8-hour modeled concentration. | |

| | Table 5. Project Data Mana | iger Inputs |
|------------------|--|--|
| Input | Level of Detail/notes | Possible Data Source |
| Meteorology | Same for build and no-build scenarios. The average temperature and humidity were determined by averaging all hourly temperatures for January (2019 to 2023) from the National Weather Service. The average temperature of 53.7 degrees F and the average relative humidity of 44.0% will be used in all MOVES runs. | ADEQ, MPO EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.1 |
| Age Distribution | Same for Build and No-Build scenarios using data from the latest regional conformity analysis provided by MAG in the Spring 2023 conformity evaluation. | ADOT, MPO EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.2 |
| Fuel | MOVES default fuel supply and fuel formulations as recommended by the EPA. | MPO, MOVES defaults EPA Using MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.4.3 |
| I/M Programs | Same for Build and No-Build scenarios using data from the latest regional CO conformity analysis provided by MAG in the Spring 2023 conformity evaluations. | MPO, MOVES defaults EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.4 |
| Retrofit Data | Not applicable for the proposed project. | Project specific modeling EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.5 |



| | Table 5. Project Data Mana | iger Inputs |
|----------------|--|---|
| Input | Level of Detail/Notes | Possible Data Source |
| Links | The Elliot Road/SR 202 TI and the Elliot Road/Ellsworth Road intersection will be divided into links for the No-Build and Build Alternative which are the same for the proposed project (that is, there are no interchange or intersection improvements such as additional turn lanes or ramp improvements resulting from the project). | Project specific modeling, ADOT, MPO EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.6 |
| | Each link's length (in miles), traffic volume (vehicles per hour), average speed (miles per hour) and road grade (percent) will be specified. Roadway and ramp segments within about 1,000 feet of the interchange will be included (see the following figures for a representation of the interchange and intersection configurations, including receptor locations and links). | |
| Link Source | Source type distribution will be represented | Project specific modeling, ADOT, MPO |
| Types | by the regional fleet for each road type and analysis year, based on data from the latest regional Spring 2023 CO conformity analysis provided by MAG. | EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.7 |
| Link Drive | Average speed and road type (Option 1) will | Project specific modeling, ADOT, MPO |
| Schedules, | be used in the Links Importer based on | EPA Using MOVES3 in Project-Level |
| Operating Mode | posted speed limits. Data to develop project | Carbon Monoxide Analyses, Section |
| Distribution | specific drive schedules and operating mode distributions are not available. | 2.4.8, 2.4.9 |
| Off-Network, | Not applicable for the proposed project as no | EPA Using MOVES3 in Project-Level |
| Hotelling | project elements involve off network or hotelling activities (park & ride facilities, for example). | Carbon Monoxide Analyses, Section 2.4.10 |

| - | Fable 6. Construction Emissions (| (Only if Applicable) |
|--------------|---|--------------------------------------|
| Construction | Construction Emissions will be addressed | 40CFR93.123(c)(5)"Each site which is |
| Emissions | qualitatively as construction is not expected | affected by construction-related |
| | to last longer than 5 years at any individual | activities shall be considered |
| | site. In the context of CO, this is usually | separately, using established |
| | excess CO emissions due to traffic delay | "Guideline" methods." If |
| | and/or detours. | applicable, include analysis as an |
| | | Appendix to the Air Quality Report. |

Project Level CO Hot-Spot Analysis Methodologies

Determine the Approach, Models, and Data

The project is in the Maricopa County CO maintenance area; therefore, it is subject to project level CO conformity requirements. To demonstrate project conformity, the CO concentrations near the Elliot Road/SR 202 interchange cannot exceed the national ambient air quality standards (NAAQS) shown below:



- 1-hour CO standard: 35 ppm
- 8-hour CO standard: 9 ppm

The quantitative CO hot-spot analysis will be performed for the following analysis years at the Elliot Road/SR 202 interchange and the Elliot Road/Ellsworth Road intersection:

- 2050 No Build
- 2050 Build Alternative

The CO hot-spot analysis will follow the steps outlined above in the "Completing a Carbon Monoxide (CO) Hot-Spot Analysis" as appropriate for the proposed project. CO hot-spot modeling will be performed using MOVES3.1 model and the CAL3QHC air quality dispersion model. The analysis will follow EPA's *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (EPA 1992), User's *Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections (Revised)* (EPA 1995) and Using MOVES3 in Project-Level Carbon Monoxide Analyses (EPA, 2021).

As discussed above in the "Project Level CO Hot-Spot Consultation Document," the Elliot Road/SR 202 interchange (NB and SB ramps) and Elliot Road/Ellsworth Road intersection are proposed for quantitative CO hot- spot modeling in both the AM and PM peak-hour (for completeness) because they represent the combination of traffic volumes and intersection delay that will result in maximum CO emissions when modeled and are appropriate for demonstrating air quality conformity for the proposed project.

The Elliot Road/SR 202 interchange and Elliot Road/Ellsworth Road intersection will be modeled for the following alternatives and time periods:

- 2050 No Build Alternative (AM and PM peak-hour)
- 2050 Build Alternative (AM and PM peak-hour) (2027 input data and emission rates will be used to provide a conservative estimate of 2050 emissions)

Estimate On-Road Motor Vehicle Emissions with MOVES3.1

Vehicle emissions will be estimated using emission factors derived EPA's MOVES3.1 model. MOVES3.1 emission modeling will follow the guidelines, methods, and assumptions shown above in Tables 4 and 5. MOVES3.1 input files for regional fuel specifications, fleet age distribution, speed distributions, and source use types will be obtained from MAG's Spring 2023 Conformity evaluations to reflect the most recent local conditions used in regional transportation emissions analyses (note: all references below referring to MAG-supplied data will refer to data from the Spring 2023 conformity evaluations). CO modeling will be conducted under wintertime conditions (January) when CO emissions are likely to be the highest due to colder weather.

As discussed in the MOVES Guidance, free-flow emission rates will be used for approach and departure links in the dispersion model and idle emission rates (0



mph) rates will be used for queue links (that is, traffic stopped at signalized intersections).

Traffic volumes on individual intersection links (approach, departure, and queue) will be obtained from data included in the traffic report. Link coordinates (northings and eastings) will be derived from a project design file provided by the traffic engineers.

Running exhaust and crankcase running exhaust emissions processes will be included in the modeling. To make the emissions evaluation conservative, the evaluation will use higher emission rates from 2027 when, according to the FY 2022 – 2025 TIP, the project is expected to be open to traffic and the traffic volumes from 2050 to estimate the vehicle emissions in 2050.

A summary of the MOVES3.1 inputs for the CO emission analysis are shown in Tables 4, 5, and 7. Electronic MOVES files will be available as an appendix to the final air quality technical report.

| MOVES Analysis Input Selection | Data Source |
|-----------------------------------|--|
| Scale | Project level Inventory |
| Time Span | Years: 2050 (2027 input data will be used for a conservative estimate of |
| 1 | 2050 emissions) |
| | Hours: AM and PM Peak |
| | Hour |
| | Month: January |
| | Weekdays |
| Geographic Bounds | AZ/Maricopa County |
| Vehicles and Equipment | All fuels and source-use type combinations |
| Road Type | Urban unrestricted |
| Pollutants and Processes | CO (Running Exhaust and Crankcase running exhaust) |
| Project Data Manager Inputs | Data Source |
| I/M Programs | MAG Supplied Data |
| Age Distribution | MAG Supplied Data |
| Fuel | MAG Supplied Data |
| Meteorology Data | Average January temperatures derived from National Weather Service for 5-year period (2019 to 2023) |
| Links | Link Length: 1 |
| | Link Volume: 1 |
| | Link Speed: Idle, and 5-60 mph in 5 mph increments |
| | Link Average Grade: maximum plus or minus 2% on TI ramps (to |
| | generate worst-case emission rates) |
| Link Source Types | Derived from MAG Supplied Data |

Table 7. MOVES Inputs for the CO Hotspot Analysis



Select Air Quality Model, Data Inputs, and Receptors Using CAL3QHC

The CAL3QHC dispersion model will be used to estimate peak 1-hour CO concentrations near the Elliot Road/SR 202 TI and Elliot Road/Ellsworth Road intersection. Eight-hour CO concentrations will be obtained by multiplying the highest peak-hour CO estimates by a calculated persistence factor of 0.86 calculated according to EPA guidance for a separate project in a more urbanized area of Maricopa County.

Figure 3, Figure 4, and Figure 5 show the link configurations and receptor locations for the Elliot Road/SR 202 TI (NB and SB ramps) and the Elliot Road/Ellsworth Road intersection under the 2050 No-Build and 2050 Build Alternatives.

The CAL3QHC modeling inputs to be used in the dispersion analysis include:

- Free flow links to extend 1,000 feet or more from the interchange
- Queue links to begin at the interchange stop bars
- Traffic activity within about 1,000 feet of the interchange to be included
- Receptors placed at crosswalk locations nearest the interchange and spaced at approximately 25-meter intervals outside of the mixing zone at locations where the general public would have continuous access. Receptors are not included on the SR 202 ramps as pedestrians are prohibited from accessing the ramps.





Figure 3. Elliot Road/SR 202 TI (SB) - No-Build and Build Alternative





Figure 4. Elliot Road/SR 202 TI (NB) – No-Build and Build Alternative





Figure 5. Elliot Rd/Ellsworth Road – No-Build and Build Alternative



CAL3QHC input parameters appropriate for the selected interchange and intersection (using recommendations suggested in the 1992 Guidance are shown in Table 8. CAL3QHC modeling files will be available as an appendix to the final air quality technical report.

| Parameter | ~ |
|---------------------------|---|
| | |
| Surface roughness | 175 cm (representative of city land use – office environment) |
| Wind speed | 1 m/s |
| Stability class | D (representative of urban environment) |
| Mixing height | 1,000 m |
| Wind direction increment | 10 degrees |
| Receptor height | 1.8 m |
| Source height | 0 m |
| Signal type | Actuated |
| Intersection arrival rate | Average progression |

Table 8. CAL3QHC Inputs

Traffic data will be derived from the traffic analysis prepared for the proposed project. Output of intersection turning movements and signal timing provided from the project engineers will be used in the CAL3QHC modeling under the No Build and Build Alternatives.

Background CO Concentrations

Microscale modeling is used to predict CO concentrations resulting from motor vehicle emissions, using roadways immediately adjacent to the locations at which predictions are being made. A CO background concentration will be added to the CAL3QHC modeling results to account for background CO concentrations of the area from other sources.

Background CO concentrations were obtained from EPA's Monitor Values Report for the Mesa Station (310 South Brooks) about 12 miles northwest of the interchange for the years 2020 to 2022. Table 9 shows the maximum 1-hour and 8-hour CO concentration recorded at the Mesa Station during that period.

As shown in Table 9, the highest 1-hour and 8-hour CO concentrations recorded at the Mesa Station over the 3-year period were 3.2 ppm and 1.6 ppm, respectively. In addition to CO, the Mesa Station monitors for O₃, PM₁₀, and PM_{2.5}. Because this monitor is in an urban area of Maricopa County, it is appropriate for using as a background concentration for assessing potential CO impacts to individuals.

Figure 6 shows the location of the Mesa CO monitor in relation to the Elliot Road/SR 202 TI and Elliot Road/Ellsworth Road intersection. Figure 7 shows a wind rose associated with the Mesa monitor. As shown in Figure 6, prevailing winds are generally from the east and west (about 8% of the time during the year) at wind speeds of less than 10 miles per hour.



The Mesa Station is the closest monitoring site to the Elliot Road/SR 202 TI and Elliot Road/Ellsworth Road intersection. Because this site is the closest monitor to the project corridor, it will be used as the background concentrations in CAL3QHC modeling to produce the maximum (that is, worst-case) CO emission estimates.

- 1-hour CO background concentration: 3.2 ppm
- 8-hour CO background concentration: 1.6 ppm

The CAL3QHC modeling results will be added to the background concentrations to obtain the design values for the interchange. The design values will then be compared to the NAAQS to determine if the project would cause an exceedance of the CO air quality standards. If the design values are less than the NAAQS, the project will not cause new violations of CO in the project area.



E McDowell Rd E McDowell Rd E McDowell Rd E McKellips Rd E McKellips Rd E McKellips Rd Recker PZ Vista Dr Dr Ales N Gre N Higley N Mes In Val E Brown Rd **Mesa Monitor** Cen **310 South Brooks** Rio Salado Pkwy Tempe E University Dr E University Dr W University Dr niversity Dr University Dr Mesa E Main St Apache Blvd W Main St E Main St E Broadway Rd E Broadway Rd W Broadway Rd Rd à tapley E Southern Ave W Southern Ave outhern Ave E Southern Ave 5 60 60 E Baseline Rd Elliot Road/SR202 TI E Baseline Rd W Baseline Rd Baseline Rd E Guadalupe Rd 2 W Guadalupe Rd EG Mc W Elliot Rd EElliotRd iotRd E Elliot Rd 87 Vista E Warner Rd E Warner Rd W Warner Rd Gilbert Rd Higley E Ray Rd 100 z W Ray Rd E Ray Rd W Ray Rd ż Phoenix-Me sa Gateway E William Field Ro W Chandler Blvd Chandler E Chandler Blvd Airport Frye Rd 5 E Pecos Rd AZ-202-LOOP W W Pecos Rd E Pecos Rd ny 202 E Germann Rd Legend **U**6 \mathbb{N} Environmental Consulting, LLC Project Limit Revised: 2/20/2024 SOURCE: World Street Map Elliot Road Monitor Location

Figure 6. Mesa CO Monitor Location

September 2024



Figure 7. Mesa Wind Rose



Period: 01/01/2021-12/31/2023


| Table 9. Mesa Carbon Monoxide Monitor | | | | | |
|---|--|---|--|--|--|
| Monitor | Distance to Elliot Road/SR 202 TI | 2020 Maximum CO Concentration (1- hour/8-hour) | 2021 Maximum CO Concentration (1-hour/8-hour) | 2022 Maximum CO Concentration (1- hour/8-hour) | |
| | | | | | |
| Mesa Station (310 S. Brooks) | 12.0 miles SE | 3.2/1.6 | 1.7/1.1 | 2.1/1.3 | |
| | | | | | |
| Source: US EPA AirData (https://www.epa.gov/outdoor-air-quality-data/monitor-values-report, accessed February 16, | | | | | |
| 2024) Values in Red – highest 1-hour and 8-hour CO concentrations over the 2020 to 2022 timeframe | | | | | |
| Concentrations shown in parts per million (ppm) | | | | | |

Attachment 2 Interagency Consultation



ADOTAirNoise - ADOT <adotairnoise@azdot.gov>

Fwd: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

1 message

Beverly Chenausky <bchenausky@azdot.gov> To: ADOTAirNoise - ADOT <adotairnoise@azdot.gov> Thu, Oct 31, 2024 at 10:15 AM

------ Forwarded message ------From: Wickersham, Lindsay (she/her/hers) <wickersham.lindsay@epa.gov> Date: Fri, Oct 18, 2024 at 7:38 AM Subject: RE: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359 To: Beverly Chenausky <bchenausky@azdot.gov>

Hi Beverly,

Just wanted to confirm that we had no comments on this document. Sorry for the late confirmation and great job!

Thanks,

Lindsay

Lindsay Wickersham (she/hers) | 415-947-4192

Physical Scientist | Planning Section (AIR-2-1) | Air and Radiation Division | US EPA - Region 9

From: Beverly Chenausky

bchenausky@azdot.gov>

Sent: Thursday, September 19, 2024 12:15 PM

To: Transportationconformity <transportationconformity@azdeq.gov>; Matthew Poppen <MPoppen@azmag.gov>; Wickersham, Lindsay (she/her/hers) <wickersham.lindsay@epa.gov>; Johanna.Kuspert@maricopa.gov; rebecca.yedlin@dot.gov; Hansen, Alan (FHWA) <Alan.Hansen@dot.gov>

Cc: Dean Giles <dgiles@azmag.gov>; Meek, Clifton <meek.clifton@epa.gov>; Perez, Idalia (she/her/hers)

Control and a status and a s

Caution: This email originated from outside EPA, please exercise additional caution when deciding whether to open attachments or click on provided links.

Please find attached the draft air quality report for review. As discussed in last week's meeting, this report summarizes all the interagency consultation comments, the final model, methods, and planning assumptions used for the project-level CO analysis. The attachments in the report (described below) summarize all the prior agency reviews based on the comment resolution discussions on September 12th, 2024, as such, the hot-spot analysis commenced with those agreed upon modeling assumptions. ADOT is requesting that any comments on the body of the draft air quality report (33 pages) be provided by **October 7th, 2024**.

Summary of the report attachments already reviewed:

Attachment 1 Revised Project-Level Carbon Monoxide (CO) and Particulate Matter (PM10) Consultation Document (Final September 2024).

Attachment 2 Interagency Consultation

Attachment 3 MOVES3.1 and CAL3QHC Input Files

MOVES 3.1 Modeling Files

https://azdot.my.workfront.adobe.com/document/public/view?publicToken=sGcgyFt9ALktO85faWv3E1GKHJJ0dO PkGHkTfW3pEqCc6vjYnczy4W66Z9oRDi4skIfuMSL9Hvy8riILx2tgaQ==&endcap

and

Calc3 Modeling files

https://azdot.my.workfront.adobe.com/document/public/view?publicToken=hYfqLuhBypFg383r0UoeHTWeKQ6xOO oGwFPXgd5ftt1y_rCyfNsKgLTPnPZOxeZilwDfrQW9mPXV4ekKO7E-2A==&endcap

NOTE: Please refer to this updated modeling set, in review there was an error in some places in the surface roughness value it was corrected as noted in the documentation (175 cm), there were no changes in the modeling results as a result of this correction.

Please let me know if you have additional questions or concerns.

Beverly Chenausky ASSISTANT ENVIRONMENTAL ADMINISTRATOR ARIZONA DEPARTMENT OF TRANSPORTATION MD EM02, 206 S. 17th Ave. Phoenix, AZ 85007 480.390.3417 Website: azdot.gov

On Mon, Aug 26, 2024 at 1:03 PM Beverly Chenausky

schenausky@azdot.gov> wrote:

Please find attached the response to comments for this consultation period, the revised document is attached with the revisions noted in the comment form. There was a request to model all the intersections included in the document and

10/31/24, 10:24 AM

State of Arizona Mail - Fwd: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

remove references to use of the categorical finding, that information was removed and the additional modeling files can be found at this link.

https://azdot.my.workfront.adobe.com/document/public/view?publicToken=hvZdVPJet1XTXw7GO0zWosyBdufnxP jrWqp6UcUSEGOzhWGX5vkjbFLiQs1zbjHnqDddVkiFW7Iz6N31pXJeCw==&endcap

The project team believes all the comments have been incorporated and will be available to discuss the corrections and the final modeling files at the next ADOT Coordination meeting (details provided below). As this is not the first review of the modeling assumptions and associated files, we ask if there are any additional modeling corrections that are provided prior to September 12th, 2024 meeting.

ADOT Transportation Conformity Coordination Thursday, September 12 · 11:00am – 12:00pm Time zone: America/Phoenix Google Meet joining info Video call link: https://meet.google.com/usc-ivuz-eof Or dial: (US) +1 585-667-0052 PIN: 813 049 123# More phone numbers: https://tel.meet/usc-ivuz-eof?pin=9640464285692

Thank you,

Beverly

On Mon, Jul 15, 2024 at 2:44 PM Beverly Chenausky <<u>bchenausky@azdot.gov</u>> wrote:

To All:

ADOT is presenting the following project, **Elliot Road: Eastern Maricopa Floodway to Ellsworth Road**, for interagency consultation, per 40 CFR 93.105, with the recommendation that this project is not a project of Air Quality Concern and thereby will not require a PM10 hot-spot analysis and as a project that will require a quantitative CO hot-spot analysis as described in the attached document.

The Purpose of this document is to describe the methods, models and assumptions used for a quantitative CO hotspot analysis and to review the associated modeling files as required in 40 CFR 93.105(c)(1)(i), 93.123, 93.116. It is requested that the consulted parties provide comments or questions on the methods, models and assumptions or modeling files within **30 days**, a non-response will be interpreted as concurrence with the planning assumptions as described in the attached document(s). A comment form has also been provided for any agency wishing to provide formal comments.

Due to email size limitations, ADOT is including the modeling files in a zip file through Adobe WorkFront (link below). Please forward as needed and let me know if you have any questions.

https://azdot.my.workfront.com/document/public/view?publicToken=3wMuLm9FFthWEUpAFSxh6skB_ Fnv7LcNO2bxYKTxROfy6Nby7mbPM_BLyXoMuHntDsXaO-QfiWrtsiQAKHcLNw==&endcap

Beverly T. Chenausky

10/31/24, 10:24 AM

State of Arizona Mail - Fwd: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

Assistant Environmental Administrator

Air & Noise, Hazmat and Standards & Training

205 South 17th Avenue, MD EM02 Phoenix, AZ 85007 C: 480.390.3417

azdot.gov



ADOTAirNoise - ADOT <adotairnoise@azdot.gov>

RE: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

1 message

Dresser, Christopher (FHWA) <christopher.dresser@dot.gov>

Wed, Oct 2, 2024 at 2:20 PM

To: "bchenausky azdot.gov" <bchenausky@azdot.gov>

Cc: Transportationconformity <transportationconformity@azdeq.gov>, Matthew Poppen <mpoppen@azmag.gov>,

"Wickersham, Lindsay (she/her)" <wickersham.lindsay@epa.gov>, "Johanna Kuspert (AQD)"

Thanks, Beverly. The updated files look good. I have no further comments.

-Chris

From: Beverly Chenausky

bchenausky@azdot.gov>

Sent: Wednesday, October 2, 2024 3:14 PM

To: Dresser, Christopher (FHWA) < christopher.dresser@dot.gov>

Cc: Transportationconformity <transportationconformity@azdeq.gov>; Matthew Poppen <mpoppen@azmag.gov>; Wickersham, Lindsay (she/her) <wickersham.lindsay@epa.gov>; Johanna Kuspert (AQD)

<Johanna.Kuspert@maricopa.gov>; Yedlin, Rebecca (FHWA) <Rebecca.Yedlin@dot.gov>; Hansen, Alan (FHWA) <Alan.Hansen@dot.gov>; Dean Giles <dgiles@azmag.gov>; Clifton Meek <meek.clifton@epa.gov>; Perez, Idalia

(she/her/hers) <perez.idalia@epa.gov>; Halle, Greta (FHWA) <greta.halle@dot.gov>; Paul O'brien

<POBrien@azdot.gov>; Joonwon Joo <jjoo@azdot.gov>; Ledezma, Andrew (he/him/his) <Ledezma.Andrew@epa.gov>; Karina O'Conner <oconnor.karina@epa.gov>; Curt Overcast <estreetcmo@gmail.com>; Angela Newton

<angle@newtonec.com>; ADOTAirNoise - ADOT <adotairnoise@azdot.gov>; Noel, George (FHWA) <George.Noel@dot.gov>; Paul Balch <paul.balch@dibblecorp.com>; Victoria Casteel <Victoria.Casteel@swca.com>; Morgan Ghods <mghods@azdot.gov>; Jason James <jjames6@azdot.gov>; MPD Programming - ADOT

<mpdprogramming@azdot.gov>; Katie Rodriguez <krodriguez@azdot.gov>

Subject: Re: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

The MOVES modeling files were revised on August 26, 2024 to generate emission rates for -2% and +2% average grades at the SR202/Elliot Road Traffic Interchange ramps (NB and SB). The revised emission rates were then incorporated into the appropriate approach and departure links in CAL3QHC at the TI. The CAL3QHC files using the revised emission rates (Elliot_CAL3QHC_NoBuild_Build_8.26.24) were provided to the IAC team for review. However, the updated MOVES files (MOVES Files_8.26.24) did not load properly in Workfront, the older files were retained that did not include the updated links with -2% and +2%; average road grades and were inadvertently provided instead.

The attached link includes the correct MOVES files (dated 8.26.24), as well as the EmissionFactors_v2 spreadsheet

State of Arizona Mail - RE: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

showing emission rates and average grades used in the revised modeling. Also included is the MOVES_Inputs_82525 spreadsheet showing MOVES inputs including the expanded links file showing average grades from -2% to +2%.

We apologize for this oversight and hope the attached files help to clarify the modeling.

https://azdot.my.workfront.adobe.com/document/public/view?publicToken=pLQJ0N6RAez6gIYCC2Oxlu-7gW8eDj6dHIAGpncLBvcUpCzEU--Dm8tisIYsUihe2dypYnBEMQum7OTjeFjW_Q==&endcap

Beverly

On Wed, Oct 2, 2024 at 9:26 AM Dresser, Christopher (FHWA) <christopher.dresser@dot.gov> wrote:

Thank you for the opportunity to review the updated modeling files. The documentation indicates that a "worst-case" assumption of 2% grade was used to generate rates in MOVES. The CAL3 modeling files still appear to pull the 1%, 0% and -1% emission factors. That's fine if that's the true grades of the links, just clarify in the write-up. However, I wanted to note that the rates for NB through approach and NB through departure do not match the rates shown in the Elliot_2027Rates.xls spreadsheet for their respective speed/grade combinations.

Can you clarify what was done to address my original comment? In the response to comments, ADOT indicates that new +/- 2% grades were assumed in MOVES – however that does not appear to have been done in the updated modeling files. We understand that regardless of which emission rate is used, the project will still show concentrations far below the NAAQS. Please reach out with any questions so we can reach a quick resolution to this point.

Thanks,

-Chris

From: Beverly Chenausky <<u>bchenausky@azdot.gov</u>> Sent: Thursday, September 19, 2024 1:15 PM

To: Transportationconformity <transportationconformity@azdeq.gov>; Matthew Poppen <mpoppen@azmag.gov>; Wickersham, Lindsay (she/her) <wickersham.lindsay@epa.gov>; Johanna Kuspert (AQD)

<Johanna.Kuspert@maricopa.gov>; Yedlin, Rebecca (FHWA) <Rebecca.Yedlin@dot.gov>; Hansen, Alan (FHWA) <Alan.Hansen@dot.gov>

Cc: Dean Giles <dgiles@azmag.gov>; Clifton Meek <meek.clifton@epa.gov>; Perez, Idalia (she/her/hers) <perez.idalia@epa.gov>; Halle, Greta (FHWA) <greta.halle@dot.gov>; Paul O'brien <POBrien@azdot.gov>; Joonwon Joo <jjoo@azdot.gov>; Ledezma, Andrew (he/him/his) <Ledezma.Andrew@epa.gov>; Karina O'Conner <oconnor.karina@epa.gov>; Curt Overcast <estreetcmo@gmail.com>; Angela Newton <angie@newtonec.com>; ADOTAirNoise - ADOT <adotairnoise@azdot.gov>; Dresser, Christopher (FHWA) <christopher.dresser@dot.gov>; Noel, George (FHWA) <George.Noel@dot.gov>; Paul Balch <paul.balch@dibblecorp.com>; Victoria Casteel <Victoria.Casteel@swca.com>; Morgan Ghods <mghods@azdot.gov>; Jason James <jjames6@azdot.gov>; MPD Programming - ADOT <mpdprogramming@azdot.gov>; Katie Rodriguez <krodriguez@azdot.gov> Subject: Re: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To All:

Please find attached the draft air quality report for review. As discussed in last week's meeting, this report summarizes all the interagency consultation comments, the final model, methods, and planning assumptions used for the project-level CO analysis. The attachments in the report (described below) summarize all the prior agency reviews based on the comment resolution discussions on September 12th, 2024, as such, the hot-spot analysis commenced with those agreed upon modeling assumptions. ADOT is requesting that any comments on the body of the draft air quality report (33 pages) be provided by **October 7th, 2024**.

Summary of the report attachments already reviewed:

Attachment 1 Revised Project-Level Carbon Monoxide (CO) and Particulate Matter (PM10) Consultation Document (Final September 2024).

Attachment 2 Interagency Consultation

Attachment 3 MOVES3.1 and CAL3QHC Input Files

MOVES 3.1 Modeling Files

https://azdot.my.workfront.adobe.com/document/public/view?publicToken=sGcgyFt9ALktO85faWv3E1GKHJJ0dO PkGHkTfW3pEqCc6vjYnczy4W66Z9oRDi4skIfuMSL9Hvy8rilLx2tgaQ==&endcap

and

Calc3 Modeling files

https://azdot.my.workfront.adobe.com/document/public/view?publicToken=hYfqLuhBypFg383r0UoeHTWeKQ6xOO oGwFPXgd5ftt1y_rCyfNsKgLTPnPZOxeZilwDfrQW9mPXV4ekKO7E-2A==&endcap

NOTE: Please refer to this updated modeling set, in review there was an error in some places in the surface roughness value it was corrected as noted in the documentation (175 cm), there were no changes in the modeling results as a result of this correction.

Please let me know if you have additional questions or concerns.



Beverly Chenausky

ASSISTANT ENVIRONMENTAL ADMINISTRATOR

ARIZONA DEPARTMENT OF TRANSPORTATION

MD EM02, 206 S. 17th Ave.

Phoenix, AZ 85007

480.390.3417

Website: azdot.gov

On Mon, Aug 26, 2024 at 1:03 PM Beverly Chenausky

bchenausky@azdot.gov> wrote:

Please find attached the response to comments for this consultation period, the revised document is attached with the revisions noted in the comment form. There was a request to model all the intersections included in the

State of Arizona Mail - RE: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

document and remove references to use of the categorical finding, that information was removed and the additional modeling files can be found at this link.

https://azdot.my.workfront.adobe.com/document/public/view?publicToken=hvZdVPJet1XTXw7GO0zWosyBdufnxP jrWqp6UcUSEGOzhWGX5vkjbFLiQs1zbjHnqDddVkiFW7Iz6N31pXJeCw==&endcap

The project team believes all the comments have been incorporated and will be available to discuss the corrections and the final modeling files at the next ADOT Coordination meeting (details provided below). As this is not the first review of the modeling assumptions and associated files, we ask if there are any additional modeling corrections that are provided prior to September 12th, 2024 meeting.

ADOT Transportation Conformity Coordination Thursday, September 12 · 11:00am – 12:00pm Time zone: America/Phoenix Google Meet joining info Video call link: https://meet.google.com/usc-ivuz-eof Or dial: (US) +1 585-667-0052 PIN: 813 049 123# More phone numbers: https://tel.meet/usc-ivuz-eof?pin=9640464285692

Thank you,

Beverly

On Mon, Jul 15, 2024 at 2:44 PM Beverly Chenausky <<u>bchenausky@azdot.gov</u>> wrote:

To All:

ADOT is presenting the following project, **Elliot Road: Eastern Maricopa Floodway to Ellsworth Road**, for interagency consultation, per 40 CFR 93.105, with the recommendation that this project is not a project of Air Quality Concern and thereby will not require a PM10 hot-spot analysis and as a project that will require a quantitative CO hot-spot analysis as described in the attached document.

The Purpose of this document is to describe the methods, models and assumptions used for a quantitative CO hot-spot analysis and to review the associated modeling files as required in 40 CFR 93.105(c)(1)(i), 93.123, 93.116. It is requested that the consulted parties provide comments or questions on the methods, models and assumptions or modeling files within **30 days**, a non-response will be interpreted as concurrence with the planning assumptions as described in the attached document(s). A comment form has also been provided for any agency wishing to provide formal comments.

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https://azdot.my.workfront.com/document/public/view?publicToken=3wMuLm9FFthWEUpAFSxh6skB_ Fnv7LcNO2bxYKTxROfy6Nby7mbPM_BLyXoMuHntDsXaO-QfiWrtsiQAKHcLNw==&endcap

Beverly T. Chenausky

State of Arizona Mail - RE: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

Assistant Environmental Administrator

Air & Noise, Hazmat and Standards & Training

205 South 17th Avenue, MD EM02 Phoenix, AZ 85007 C: 480.390.3417

azdot.gov





ADOTAirNoise - ADOT <adotairnoise@azdot.gov>

Re: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

1 message

Beverly Chenausky < bchenausky@azdot.gov>

Mon, Aug 26, 2024 at 1:03 PM

To: Transportationconformity <transportationconformity@azdeq.gov>, Matthew Poppen <mpoppen@azmag.gov>, "Wickersham, Lindsay (she/her)" <wickersham.lindsay@epa.gov>, "Johanna Kuspert (AQD)" <Johanna.Kuspert@maricopa.gov>, Rebecca Yedlin <rebecca.yedlin@dot.gov> Cc: Dean Giles <dgiles@azmag.gov>, Clifton Meek <meek.clifton@epa.gov>, "Perez, Idalia (she/her/hers)" <perez.idalia@epa.gov>, "Halle, Greta (FHWA)" <greta.halle@dot.gov>, Paul O'brien <POBrien@azdot.gov>, Joonwon Joo <jjoo@azdot.gov>, "Ledezma, Andrew (he/him/his)" <Ledezma.Andrew@epa.gov>, Karina O'Conner <oconnor.karina@epa.gov>, Curt Overcast <estreetcmo@gmail.com>, Angela Newton <angie@newtonec.com>, ADOTAirNoise - ADOT <adotairnoise@azdot.gov>, "Dresser, Christopher (FHWA)" <christopher.dresser@dot.gov>, "Noel, George (FHWA)" <George.Noel@dot.gov>, Paul Balch <paul.balch@dibblecorp.com>, Victoria Casteel <Victoria.Casteel@swca.com>, Morgan Ghods <mghods@azdot.gov>, Jason James <jjames6@azdot.gov>, MPD Programming - ADOT <mpdprogramming@azdot.gov>, Katie Rodriguez <krodriguez@azdot.gov>

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ADOT Transportation Conformity Coordination Thursday, September 12 · 11:00am – 12:00pm Time zone: America/Phoenix Google Meet joining info Video call link: https://meet.google.com/usc-ivuz-eof Or dial: (US) +1 585-667-0052 PIN: 813 049 123# More phone numbers: https://tel.meet/usc-ivuz-eof?pin=9640464285692

Thank you, Beverly

On Mon, Jul 15, 2024 at 2:44 PM Beverly Chenausky <<u>bchenausky@azdot.gov</u>> wrote: To All:

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State of Arizona Mail - Re: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

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Beverly T. Chenausky **Assistant Environmental Administrator** Air & Noise, Hazmat and Standards & Training 205 South 17th Avenue, MD EM02 Phoenix, AZ 85007 C: 480.390.3417 azdot.gov



2 attachments

T0359_Interagency Consultation Comment Form_8.23.24_corrected.pdf 128K

T0359_Interagency Consulation_08262024.pdf



Beverly Chenausky <bchenausky@azdot.gov>

RE: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

1 message

Yedlin, Rebecca (FHWA) <Rebecca.Yedlin@dot.gov>

Thu, Aug 8, 2024 at 7:52 AM

To: "bchenausky azdot.gov" <bchenausky@azdot.gov>, Transportationconformity <transportationconformity@azdeq.gov>, Matthew Poppen <mpoppen@azmag.gov>, "Wickersham, Lindsay (she/her)" <wickersham.lindsay@epa.gov>, "Johanna Kuspert (AQD)" <Johanna.Kuspert@maricopa.gov>

Cc: Dean Giles <dgiles@azmag.gov>, Clifton Meek <meek.clifton@epa.gov>, "Perez, Idalia (she/her/hers)" <perez.idalia@epa.gov>, "Halle, Greta (FHWA)" <greta.halle@dot.gov>, Paul O'brien <POBrien@azdot.gov>, Joonwon Joo <jjoo@azdot.gov>, "Ledezma, Andrew (he/him/his)" <Ledezma.Andrew@epa.gov>, Karina O'Conner <oconnor.karina@epa.gov>, Curt Overcast <estreetcmo@gmail.com>, Angela Newton <angie@newtonec.com>, ADOTAirNoise - ADOT <adotairnoise@azdot.gov>, "Dresser, Christopher (FHWA)" <christopher.dresser@dot.gov>, "Noel, George (FHWA)" <George.Noel@dot.gov>, Paul Balch <paul.balch@dibblecorp.com>, Victoria Casteel <Victoria.Casteel@swca.com>, Lisa Danka <ldanka2@azdot.gov>, Morgan Ghods <mghods@azdot.gov>, "Hansen, Alan (FHWA)" <Alan.Hansen@dot.gov>

FHWA has comments on the documentation provided. They are captured in the attached comment form for your use.

Please let me know if you have any questions. Thanks, Rebecca

From: Beverly Chenausky < bchenausky@azdot.gov>

Sent: Monday, July 15, 2024 2:45 PM

To: Transportationconformity <transportationconformity@azdeq.gov>; Matthew Poppen <mpoppen@azmag.gov>; Wickersham, Lindsay (she/her) <wickersham.lindsay@epa.gov>; Johanna Kuspert (AQD) <Johanna.Kuspert@maricopa.gov>; Yedlin, Rebecca (FHWA) <Rebecca.Yedlin@dot.gov> Cc: Dean Giles <dgiles@azmag.gov>; Clifton Meek <meek.clifton@epa.gov>; Perez, Idalia (she/her/hers) <perez.idalia@epa.gov>; Halle, Greta (FHWA) <greta.halle@dot.gov>; Paul O'brien <POBrien@azdot.gov>; Joonwon Joo <jjoo@azdot.gov>; Ledezma, Andrew (he/him/his) <Ledezma.Andrew@epa.gov>; Karina O'Conner <oconnor.karina@epa.gov>; Curt Overcast <estreetcmo@gmail.com>; Angela Newton <angie@newtonec.com>; ADOTAirNoise - ADOT <adotairnoise@azdot.gov>; Dresser, Christopher (FHWA) <christopher.dresser@dot.gov>; Noel, George (FHWA) <George.Noel@dot.gov>; Paul Balch <paul.balch@dibblecorp.com>; Victoria Casteel <Victoria.Casteel@swca.com>; Lisa Danka <ldanka2@azdot.gov>; Morgan Ghods <mghods@azdot.gov> Subject: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

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State of Arizona Mail - RE: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

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Beverly T. Chenausky

Assistant Environmental Administrator

Air & Noise, Hazmat and Standards & Training

205 South 17th Avenue, MD EM02 Phoenix, AZ 85007 C: 480.390.3417

azdot.gov

T0359_Interagency Consultation Comment Form_FHWA RC.xlsx
 82K



Beverly Chenausky <bchenausky@azdot.gov>

RE: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

1 message

Wickersham, Lindsay (she/her/hers) <wickersham.lindsay@epa.gov> Tue, Sep 3, 2024 at 11:14 AM To: Beverly Chenausky

bchenausky@azdot.gov>, Transportationconformity <transportationconformity@azdeq.gov>, Matthew Poppen

Merebecca.yedlin@dot.gov>, "Johanna.Kuspert@maricopa.gov" <Johanna.Kuspert@maricopa.gov>, "rebecca.yedlin@dot.gov>

Car Dear Cilea (drilleg@eremote grave "March: Cliffers" (march: cliffers")

Wickersham, Lindsay (bcher/hers)

Car Dear Cilea (drilleg@eremote grave "March: Cliffers")

(march: cliffers")

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Hi Beverly,

Thank you for updating this document with the 2023 Level of Service data. After reviewing this new information we concur that this project is not a project of air quality concern and does NOT need a PM hot spot analysis. We will review the rest of the materials and share any additional comments with you by Thursday, September 12.

Best,

Lindsay

Lindsay Wickersham (she/hers) | 415-947-4192

Physical Scientist | Planning Section (AIR-2-1) | Air and Radiation Division | US EPA - Region 9

From: Beverly Chenausky

bchenausky@azdot.gov>

Sent: Monday, August 26, 2024 1:04 PM

To: Transportationconformity <transportationconformity@azdeq.gov>; Matthew Poppen <MPoppen@azmag.gov>; Wickersham, Lindsay (she/her/hers) <wickersham.lindsay@epa.gov>; Johanna.Kuspert@maricopa.gov; rebecca.yedlin@dot.gov

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Thank you,

Beverly

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9/17/24, 11:34 AM

State of Arizona Mail - RE: Interagency Consultation: Elliot Road: Eastern Maricopa Floodway to Ellsworth Road T0359

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Beverly T. Chenausky

Assistant Environmental Administrator

Air & Noise, Hazmat and Standards & Training

205 South 17th Avenue, MD EM02 Phoenix, AZ 85007 C: 480.390.3417

azdot.gov



Air Quality

The ADOT Air Quality Group works to enhance air quality through congestion mitigation, air quality programs and National Environmental Policy Act (NEPA) planning activities to implement provisions required in the Clean Air Act to meet National Ambient Air Quality Standards throughout Arizona.

Statewide Air Quality Nonattainment and Maintenance Areas by Mileposts 🕞

Air Quality Documents Under Review

Documents for review will be posted below to provide reasonable public access to technical and policy information considered by the agency for transportation conformity determinations, and comments can be directed to <u>ADOT Air Quality Staff</u>.

- Interagency Consultation Document for <u>US 95, Wellton-Mohawk Canal to Imperial Dam Road</u>, comments through October 30, 2024.
- Interagency Consultation Document for **Douglas International Port of Entry Connector Road**, comments through August 30, 2024.
- Interagency Consultation Document for <u>Elliot Road: Eastern Maricopa Floodway to Ellsworth Road</u>, comments through August 14, 2024.
- Refer to the "Transportation Conformity" tab for prior documents.
- Refer to the "Project Development- Air Quality" tab for consultant resources and instructions.

Air Quality: Agency Contacts

- <u>Maricopa County Dust Control Training</u>
- <u>Maricopa County Air Quality</u>
- Pinal County Air Quality
- Pima County Air Quality
- ADEQ Air Quality

Current Air Quality Links

- <u>Maricopa County</u>
- <u>Pima County</u>
- <u>Pinal County</u>
- Santa Cruz County (Nogales)
- Yuma County

Dust Advisories

Congestion Mitigation Air Quality / Transportation Control Measures

Guidance - Air Quality

Motor Vehicle Emissions Modeling

>

>

>

10/31/24, 10:19 AM

Projects | City of Mesa

Projects





| ELLIOT ROAD: EAST MARICOPA FLOODWAY (EMF) TO ELLSWORTH ROAD PROJECT NO. CP0982 FEDERAL AID NO. MES-0(239)D TRACS NO. 0000 MA MES T0359 03D | | | | |
|---|---|--|--|--|
| | The scope of work for this project includes: | | | |
| | Widening of the existing two-lane road along Elliot Road to three eastbound and three westbound through-traffic lanes and an eastbound/westbound striped bike lane Raised medians and new sidewalk along Elliot Road between Sossaman Road and L-202 | | | |
| INFORMATION | Drainage improvements along Elliot Road that will discharge into the EMI Street light improvements, modifying or replacing existing traffic signals a the intersections of Elliot Road/Sossaman Road and Hawes Road/Ellswor Road, and installing a new traffic signal at the intersection of Elliot Road and 80th Street | | | |
| | Project Area Map | | | |
| | A project-level transportation conformity hot-spot analysis was also developed for this project. The draft report is available for public review and comment through October 30, 2024 on <u>Arizona's Department of Transportation website</u> . | | | |
| SCHEDULE | Construction is anticipated to begin in late 2025 and last approximately 20 months. In general, traffic on all roads will be maintained during construction. Public meetings for this project are to be determined. | | | |
| CONTACT | For more information, contact the City of Mesa Engineering Department at Engineering.Info@MesaAz.gov or 480-644-3800. | | | |

Thursday, September 12, 2024

Google Meet ADOT Transportation Conformity Coordination Thursday, September 12 · 11:00am – 12:00pm Time zone: America/Phoenix Google Meet joining info Video call link: https://meet.google.com/usc-ivuz-eof Or dial: (US) +1 585-667-0052 PIN: 813 049 123# More phone numbers: https://tel.meet/usc-ivuz-eof?pin=9640464285692 Notes added within each agenda item.

1. WELCOME & INTRODUCTIONS

2. REVIEW PROJECTS

Active Projects for Discussion (Specific Projects will be listed below)

- T0359 Elliot Road: Eastern Maricopa Floodway to Ellsworth Road (Mesa)
 - Additional Modeling information provided to interagency consultation team on 08/26/2024
- F0534 Douglas International Commercial Port-Of-Entry Connector Road Study
 - Continue discussion on project level air quality consultation discussions in August 2024
- Upcoming Consultation: F0608, US 95, Wellton Mohawk Canal Road to Imperial Dam Road

<u>327 MOU Major Studies Monitoring Spreadsheet (General Updates)</u>

- Are there any project barriers and/or additional information needed on ADOT projects on 327 Major Studies Spreadsheet?
- Are there any other project specific breakout meetings that were not discussed?

3. OPEN DISCUSSION

- PROCESS/PROGRAM UPDATES
- ROUNDTABLE

Thursday, September 12, 2024

Google Meet ADOT Transportation Conformity Coordination

Thursday, September 12 · 11:00am – 12:00pm

Time zone: America/Phoenix

Google Meet joining info

Video call link: https://meet.google.com/usc-ivuz-eof

Or dial: (US) +1 585-667-0052 PIN: 813 049 123#

More phone numbers: https://tel.meet/usc-ivuz-eof?pin=9640464285692

Notes added within each agenda item.

1. WELCOME & INTRODUCTIONS

Don Smith, Ace Malisos (Kimley-Horn), Alan Hansen, Allison Fluitt, AmandaLuecker, Amy Seeds, EPA R9, Andrew Ledezma (EPA), Anissa Foster, Beverly Chenausky, Beverly Chenausky's Presentation, Chris, Curt Overcast, Dan Gabiou, FHWA, George Noel, Greta Halle (FHWA), Jason James, Joonwon Joo, Katie Rodriguez, Leigh Oesterling, FHARC, Lindsay Wickersham, Michael Dorantes, EPA, Mike G, Robert Tworek, Robert Tworek's Presentation, Sophia La Herran, William Tsui

2. REVIEW PROJECTS

Active Projects for Discussion (Specific Projects will be listed below)

- T0359 Elliot Road: Eastern Maricopa Floodway to Ellsworth Road (Mesa)
 - Additional Modeling information provided to interagency consultation team on 08/26/2024
 - Detailed Discussions on the comment resolution form provided to confirm corrections made
 - Revise, the Link tab to incorporate average grades between minus 2% plus 2%. And what I did was we applied a minus 2%. Grade emission rate to the Volumes to Elliot Road. And then likewise we included a plus 2% emission rate on the departure links to Sr from Elliot.

- Revised Table 1 of the document to include existing conditions, and minor edits.
- Next Steps draft air quality report will be sent out to agencies.
- F0534 Douglas International Commercial Port-Of-Entry Connector Road Study
 - Continue discussion on project level air quality consultation discussions in August 2024
 - Discussed tasks done to date and items that are outstanding and overall approach regarding de minimis finding for truck emission impacts to James Ranch Road.
 - EPA noted that even if a De Minimis finding is the goal, there is still technical analysis to be done to confirm that finding.
 - ADOT understands the need to document the outcome and that technical analysis still needs to be worked through.
 - FHWA recommended that as ADOT is working with the analysis if there are any questions feel free to reach out.
 - Kimley Horn (Alisson Fluit/Robert T) went through comment responses and identified that Paul Spur monitor to be used and asked for feedback
 - FHWA gave feedback that for arguments sake that it might be easier to point to more conservative monitors so that we can answer questions if needed and show we used worst case monitors
 - ADOT/Kimley Horn will re-download 2023 monitoring data to reconfirm accurate numbers
 - EPA Asked for clarification on AERMOD monitoring data and which was more conservative (Douglas Rd). Agreed with FHWA comments on not using interpolated data.
 - ADOT/Kimley Horn communicated they are working through the analysis and final outputs to the updated study area; anticipated to be able to submit the updated report for early consultation early look by the end of next week (week of 9/20/2024)
 - Beverly suggested rechecking the Regional Conformity analysis to make sure no changes to references to the study area in that document.
- Upcoming Consultation: F0608, US 95, Wellton Mohawk Canal Road to Imperial Dam Road

- ADOT communicated that consultation for this project going out 9/13/2024, this is a re-evaluation project that will involve widening that is related to the recent F0605 project. No high LOS in current or future build years, no significant differences from original EA
- 327 MOU Major Studies Monitoring Spreadsheet (General Updates)
 - Are there any project barriers and/or additional information needed on ADOT projects on 327 Major Studies Spreadsheet?
 - Are there any other project specific breakout meetings that were not discussed?
- 3. OPEN DISCUSSION
 - PROCESS/PROGRAM UPDATES
 - ROUNDTABLE

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Interagency Consultation Comments

Environmental Planning

| Project Name: | Elliott Rd_E Maricopa Fldwy to Ellsworth | | E Maricopa Fldwy to Ellsworth Name: Leigh Oesterling and Chris Dresser | | |
|---------------------------------|--|-------|--|---|---|
| Project Number(s): | : T0359 | | Agency: FHWA Resource Center | | |
| Document Name: | e: T0359_Interagecny Consultation_07152024 | | ation_07152024 | Name: Lindsay Wickersham | |
| Document Date: 07152024 | | | Agency: EPA | COMMENT RESOLUTION | |
| | | | | | For ADOT USE |
| Page Number | Paragraph | Table | Other | Comment | Response Notes |
| | | | | | |
| | | | Federa | l Higway Administration | |
| 12 | | | Part B | CO Categorical Hot-Spot Finding cannot be applied. Per the page 6 and page 9 of the January 31, 2023 FHWA CO Categorical Hot-Spot Memo, all intersections requiring analysis, must fall within acceptable ranges for all the parameters in order to rely on the CO categorical hot-spot finding. SR 202 NB & Elliot Rd is LOS F in the PM peak 2050 Build condition and does not meet the Peak Hour LOS parameter. | Consultation document revised to remove Categorical Hot-Spot Finding tool results. |
| 12 | | | Part B | The intersectons to be included in the hot-spot analysis (3 highest traffic volumes & 3 worst LOS/delay) are: SR 202SB & Elliot Rd (PM peak) SR 202NB & Elliot Rd (PM peak) Ellsworth & Elliot Rd (PM peak) | Consultation document revised to include hot-spot modeling at the Ellsworth Road/Elliot Road intersection in addition to the SR 202/Elliot Road interchange (NB and SB ramps). For completeness the TI and intersection were modeled for the No Build and Build scenarios in both the AM and PM peak hours. |
| 19 | | | POAQC Deter. | concur with conclusion that project is NOT a project of air quality concern for PM | Comment noted. No document revisions required. |
| 29 | | | | In Table 7: MOVES Inputs, the text suggests that emission rates from links set at 2% grade were used to generate "worst-case emission rates." However, the modeling files appear to use rates derived from links set to 0% grade (pulled from a lookup table with rates at -1%, 0%, and 1% grade). Are all links in the intersection at 0% grade? If not, please use the appropriate grade and emission rates and update the text accordingly - or re-model with links set at 2% grade if the conservative approach is preferred. | Per the comment, the SR 202/Elliot Road MOVES modeling has been revised to incorporate a -2% grade on offramps (traffic descending from SR 202 to Elliot Road) and +2% for onramps (traffic ascending from Elliot Road to SR 202) to reflect worst-case grade conditions. |
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| Environmental Protection Agency | | | | | |
| 7 | | 1 | | Please provide the current LOS at the intersections being analyzed for this project. We are unable to comment on if this project is a POAQC or not until we see this data added to this table. | Per the comment, Table 1 of the consultation document revised to include 2023 Existing Conditions volumes. |

| 1 | 4 | | Please provide soem more detail on what assumptions are being used to project out truck volumes to the future years. Do these values consider the impact of having additional lanes/capacity increasing trucking in the project area? What zoning maps are currently being used for the modeling, and does the projected years consider changes to the zoning/land use that will be in place in future years? | The traffic studies for the known developments planned in the area were used as a reference for traffic and understnding the zoning for those parcels. The truck volumes were calculated based on a mix of the traffic studies and the existing information for this area where truck percentages were applied to the overall traffic volumes. Zoning maps were not used. |
|------------|---|---|---|--|
| 11 | | | There is a small typo on page 11, 3rd bullet under conclusion, Ellsworth Road & Elliot "Roat" | Text corrected. |
| p.7 & p.14 | | 1 | It looks like the volumes per hour for Ellsworth Road and Elliot Road are 5,052 vph for the am peak, and 5,899 for the PM peak. The categorical exclusion uses 2640 vehicles. Please clarify why the Categorical exclusion is appropriate for this intersection despite having more vehicles than in the example analysis. Please also address this Hawes & Elliot which has 5,484 vph in the PM peak. | Per the FHWA comment above, the Categorical Hot-Spot Finding text has been removed from the consultation document. For EPA's clarification, use of the tool is predicated on the highest hourly approach volume at an intersection, not the overall interection ADT. As noted in the instructions for using the tool: The volume approaching the intersection during the peak hour. Enter the maximum among the four approaches. |
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Attachment 3 MOVES3.1 and CAL3QHC Input Files

Project-Level emissions modeling files are available at ADOT Environmental Planning and are available upon request or through the Workfront links below:

MOVES3.1 Modeling Files and associated traffic data https://azdot.my.workfront.adobe.com/document/public/view? publicToken=sGcgyFt9ALktO85faWv3E1GKHJJ0dOPkGHkTfW3pEqCc6vjYnczy4W66Z9o RDi4sklfuMSL9Hvy8rilLx2tgaQ==&endcap

CAL3QHC Input Files https://azdot.my.workfront.adobe.com/document/public/view? publicToken=hYfqLuhBypFg383r0UoeHTWeKQ6xOOoGwFPXgd5ftt1y_rCyfNsKgLTPnPZO xeZilwDfrQW9mPXV4ekKO7E-2A==&endcap