Project Level PM Quantitative Hot-Spot Analysis - Project of Air Quality Concern Consultation

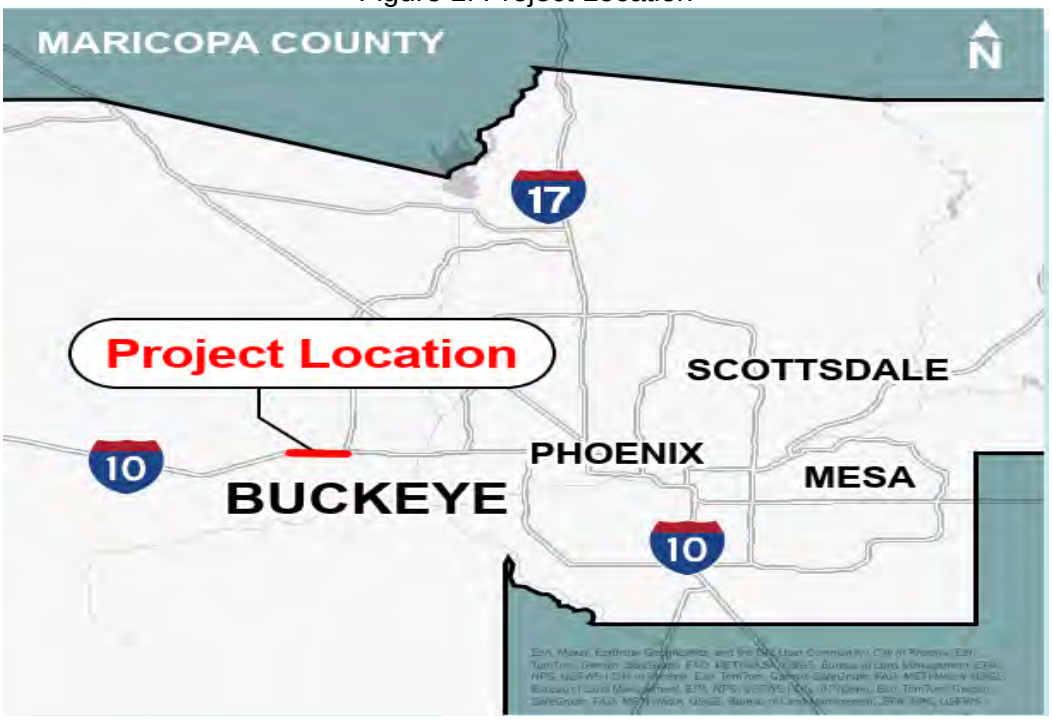
Project Setting and Description

The Arizona Department of Transportation (ADOT), in cooperation with the Federal Highway Administration (FHWA), is preparing a Categorical Exclusion Determination of the proposed improvements to a segment of Interstate 10 (I-10). The proposed project would add one high-occupancy vehicle (HOV) lane in each direction between Verrado Way and Citrus Road by restriping the existing freeway pavement. This project is located within Maricopa County, Arizona, near the City of Buckeye (see Figure 1).

The project is within the Maricopa County Nonattainment Area for particulate matter 10 microns in diameter or less (PM_{10}). MAG issued the 2012 Five Percent Plan for the Maricopa County Nonattainment Area, and the Arizona Department of Environmental Quality (ADEQ) submitted it to the US Environmental Protection Agency (EPA) on May 25, 2012. The US EPA approved this State Implementation Plan (SIP) Revision on June 10, 2014.

The MAG Regional Council approved the Draft MAG Conformity Analysis, which concludes that the Draft FY 2025-2030 MAG TIP and MOMENTUM 2050 Regional Transportation Plan (RTP) meet all applicable federal conformity requirements and are in conformance with applicable air quality plans. The proposed project was approved by the Maricopa Association of Governments (MAG) Regional Council on January 22, 2025, for inclusion in the Transportation Improvement Program (TIP). FHWA made a conformity determination on March 5th, 2025 approving this HOV lane addition.

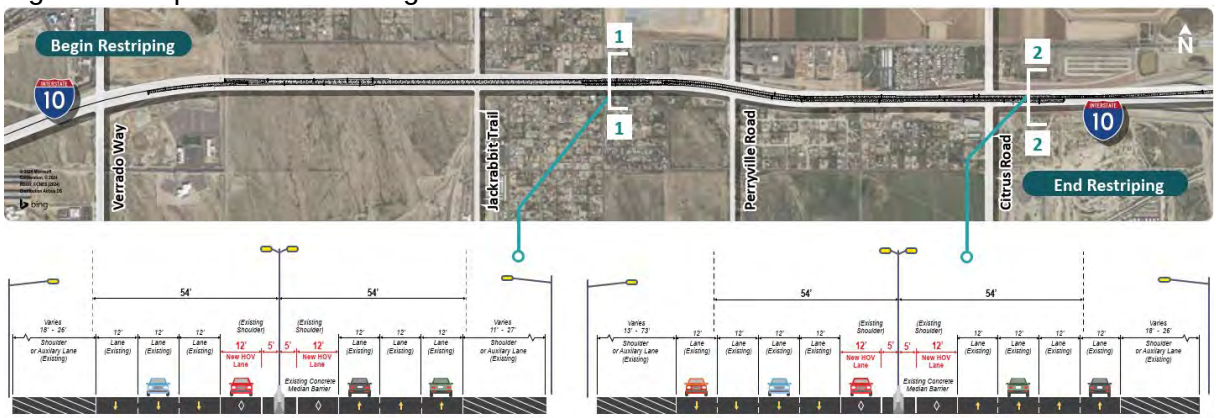
Figure 1. Project Location



This segment of I-10 currently consists of 3 general-purpose lanes (GPL) in each direction. A HOV lane is added on I-10 in both directions of travel within the I-10/State Route 303L system interchange area and continues to the east. The inside shoulder (median side) is approximately 16 feet from the edge of the travel lane to the face of the median barrier.

To respond to the near-term traffic growth that is anticipated, a lane would be added within the existing 16-foot median, resulting the three GP lanes and one HOV lane in each direction of travel. Figure 2 shows typical sections for the proposed project, based on the width of the available shoulder.

Figure 2. Proposed Lane Configuration



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:

i) 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;

ii) 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 to 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;" These examples will be used as the baseline for determining if the project is a project of air quality concern.

Since the issuance of this rulemaking, the Office of Transportation and Air Quality issued additional clarification (EPA-420-F-18-011 June 2018) identifying additional examples that are not projects of air quality concern.

> "For example, the following projects typically do not involve "a significant number of diesel vehicles" or "a significant increase in the number of diesel vehicles" as described in 40 CFR 93.123(b)(1), and thus typically would not need a PM2.5 or PM10 hot-spot analysis:
> • New HOV lanes and ramp HOV lanes which do not involve a "a significant number of diesel vehicles" or "a significant increase in the number of diesel vehicles" as described in 40 CFR 93.123(b)(1);
> • Bus rapid transit projects where the buses are non-diesel, (e.g., CNG buses);
> • New transit stations or transit lines with no diesel vehicles; and
> • Light rail projects powered by electricity."

Based on the project types listed above, the I-10 Verrado Way to Citrus Road Restriping project would not be considered a project of air quality concern. Details to support this conclusion are described in the next section.

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

> NO – This 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 – This expanded highway project does not have a significant increase in the number of diesel vehicles.
>
> The project expands highway capacity by adding one (1) eastbound lane and one (1) westbound lane that operate as HOV only during peak periods and GP during the rest of the day. As shown in Table 1, the absolute number of heavy-duty trucks are projected to increase with the Build Alternative, but there would not be a significant increase in the percentage of heavy-duty trucks using the roadway as compared to the No-Build Alternative. As shown in the last column of Table 1, all but one of the mainline segments are expected to have a lower percentage of truck volume as compared to No-Build. Table 2 presents the same data with an expanded view of the AADT by HOV and GP lanes

Table 1. Mainline AADT and Truck Percentage

Mainline Segment		No-Build			Build			Difference (Build - No-Build)		
		Total AADT	Truck AADT	Truck (%)	Total AADT	Truck AADT	Truck (%)	Total AADT	Truck AADT	Truck (%)
a	I-10 east of EB Exit 120	164,973	51,617	31.3%	171,116	54,039	31.6%	6,144	2,422	0.3%
b	I-10 between N Verrado Way and N Jackrabbit Trail	189,844	54,028	28.5%	164,041	47,007	28.0%	13,094	2,880	-0.4%
c	I-10 East of EB Exit 121	177,772	53,205	29.9%	154,400	46,307	29.1%	15,524	3,002	-0.9%
d	I-10 between N Jackrabbit Trail and N Perryville Rd	195,628	54,911	28.1%	175,132	48,025	27.1%	18,401	3,015	-1.0%
e	I-10 East of EB Exit 122	183,438	54,099	29.5%	161,813	47,171	28.2%	19,175	3,111	-1.3%
f	I-10 between N Perryville Rd and Citrus Rd	207,253	56,357	27.2%	185,830	49,456	26.3%	19,377	3,138	-0.9%
g	I-10 East of EB Exit 123	200,220	56,069	28.0%	174,961	48,902	27.4%	14,682	2,915	-0.6%
h	I-10 between EB Exit 124A and 124B	156,668	47,656	30.4%	139,991	43,241	29.8%	9,815	2,029	-0.6%
i	I-10 East of EB Exit 124B	148,106	43,775	29.6%	129,088	37,869	28.5%	7,474	538	-1.1%

Source: 2050 TDM provided by MAG in October 2024

Table 2. Mainline AADT and Truck Percentage by Lane Type

Mainline Segment		No-Build 2050				Build 2050				Difference (Build - No-Build)			
		HOV (total)	HOV Trucks	GP (total)	GP (trucks)	HOV (total)	HOV Trucks	GP (total)	GP (trucks)	HOV (total)	HOV Trucks	GP (total)	GP (trucks)
a	I-10 east of EB Exit 120 (near N Verrado Way)	0	0	164,973	51,617	0	0	171,116	0	0	0	6,144	2,422
b	I-10 between N Verrado Way and N Jackrabbit Trail	0	0	189,844	54,028	38,897	9,901	164,041	38,897	38,897	9,901	-25,803	-7,021
c	I-10 East of EB Exit 121 (near N Jackrabbit Trail)	0	0	177,772	53,205	38,897	9,901	154,400	38,897	38,897	9,901	-23,373	-6,898
d	I-10 between N Jackrabbit Trail and N Peryville Rd	0	0	195,628	54,911	38,897	9,901	175,132	38,897	38,897	9,901	-20,496	-6,886
e	I-10 East of EB Exit 122 (near N Perryville Rd)	0	0	183,438	54,099	40,800	10,039	161,813	40,800	40,800	10,039	-21,625	-6,928
f	I-10 between N Peryville Rd and Citrus Rd	0	0	207,253	56,357	40,800	10,039	185,830	40,800	40,800	10,039	-21,423	-6,901
g	I-10 East of EB Exit 123 (near Citrus Rd)	0	0	200,220	56,069	39,940	10,082	174,961	39,940	39,940	10,082	-25,259	-7,167
h	I-10 between EB Exit 124A and 124B	8,821	2,304	147,847	45,352	26,492	6,444	139,991	17,671	17,671	4,140	-7,856	-2,112
i	I-10 East of EB Exit 124B	8,821	2,304	139,285	41,472	26,492	6,444	129,088	37,869	17,671	4,140	-10,197	-3,602

Source: 2050 TDM provided by MAG in October 2024

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, OR 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 – The project does not affect a congested intersection that has a significant number of diesel trucks.

The project includes 3 intersections with LOS D, E, or F in the analysis year 2050; however, these intersections do not have a significant number of diesel trucks. As shown in Table 3, the eastbound and westbound interchanges at N Perryville Rd and the eastbound interchange at Citrus Rd are projected to remain D or greater under the Build Alternative. Table 4 summarizes the AADT and truck volume at each intersection and demonstrates that the truck volumes are the percentage of trucks increases by less than 1% as a result of the project.

Table 3. Overall Intersection Level of Service (LOS)

		Existing				No-Build 2050				Build 2050			
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Intersection	Direction	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
Verrado	EB	D	52.6	C	23.1	B	12.0	B	17.5	B	16.1	B	17.1
	WB	B	12.6	C	31.5	B	18.6	B	18.5	B	19.9	B	19.7
Jackrabbit	EB	C	23.6	C	22.5	D	40.7	C	20.6	C	24.5	C	21.0
	WB	D	27.0	E	41.0	C	32.3	B	17.2	B	17.1	B	19.1
Perryville	EB	C	22.0	D	42.6	F	96.7	E	72.8	F	148.1	E	79.0
	WB	B	15.2	B	18.7	D	53.3	E	65.6	F	88.5	E	67.2
Citrus	EB	C	22.7	B	16.7	B	13.3	D	50.9	B	17.3	D	46.6
	WB	B	17.8	C	26.8	B	14.1	C	21.7	B	17.1	C	21.5

Source: Existing counts and 2050 TDM provided by MAG in October 2024

Table 4. 2050 Intersection Volumes

Intersection	Direc-tion	Existing 2023			No-Build 2050			Build 2050			Difference (Build - No-Build)		
		Total AADT	Truck AADT	Truck (%)	Total AADT	Truck AADT	Truck (%)	Total AADT	Truck AADT	Truck (%)	Total AADT	Truck AADT	Truck (%)
Verrado	EB	28,452	2,219	7.80%	35,500	2,379	6.70%	39,200	2,666	6.80%	3,700	287	0.10%
	WB	33,784	2,399	7.10%	38,878	2,449	6.30%	43,847	2,762	6.30%	4,969	313	0.00%
Jackrabbit	EB	14,237	769	5.40%	33,615	2,118	6.30%	32,867	2,103	6.40%	-748	-14	0.10%
	WB	19,011	1,122	5.90%	45,824	3,208	7.00%	45,013	3,151	7.00%	-812	-57	0.00%
Perryville	EB	13,465	848	6.30%	37,684	2,713	7.20%	31,416	2,450	7.80%	-6,268	-263	0.60%
	WB	14,883	1,027	6.90%	43,173	3,065	7.10%	30,944	2,352	7.60%	-12,229	-714	0.50%
Citrus	EB	9,474	540	5.70%	22,641	634	2.80%	24,164	725	3.00%	1,524	91	0.20%
	WB	10,436	605	5.80%	19,632	589	3.00%	22,217	755	3.40%	2,585	166	0.40%

Source: 2050 TDM provided by MAG in October 2024

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 project does not involve construction of a new bus or intermodal terminal.

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 project does not involve an existing bus or intermodal terminal.

Projects Affecting PM Sites of Violation or Possible Violation

Does the project affect locations, areas or categories of sites that are identified in the PM_{10} or $PM_{2.5}$ applicable plan or implementation plan submissions, as appropriate, as sites of violation or potential violation?

NO – None of these intersections are specifically identified in applicable plans as sites of violation potential violation.

Within the Maricopa County nonattainment area, the National Ambient Air Quality Standard has not yet been attained for PM_{10} particulate pollution. The area is classified as a Serious Area under the Clean Air Act. Consequently, the MAG 2012 Five Percent Plan for PM_{10} has been prepared to meet the requirements in Section 189(d) of the Clean Air Act and improve air quality in the Maricopa County nonattainment area. The plan is required to reduce PM_{10} emissions by at least five percent per year until the standard is attained as measured by the monitors. The plan presents a variety of control measures and projects that have been implemented to reduce PM_{10}. The plan does not identify specific locations or monitors as sites of potential violation.

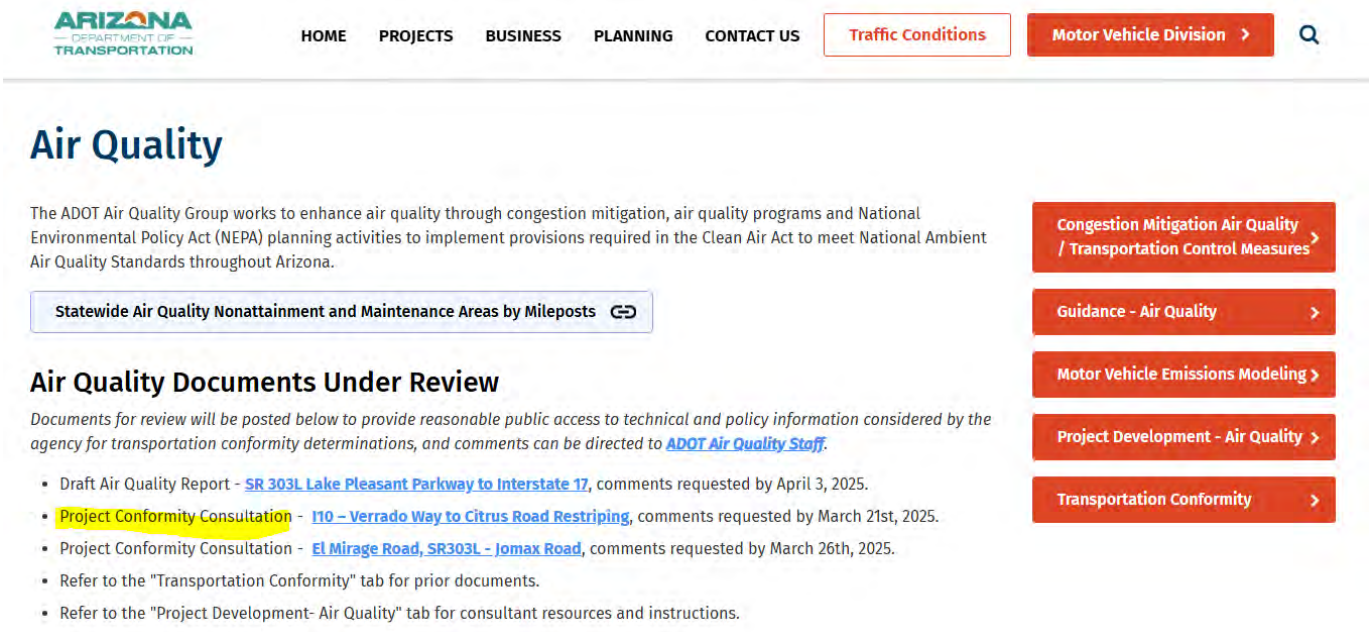
A PM_{10} monitoring station is located four (4) miles south of the project area in the city of Buckeye. The Buckeye monitor recorded elevated concentrations of PM10 in 2021, which Maricopa County Air Quality Department has identified as an Exceptional Event (EE). If EPA concurs with the EE demonstration package, then the monitor will not have violated the NAAQS during the most recent three-year period. Annual statistics for 2024 are not final until May 1, 2025. The maximum monitored 24-hour concentration in 2024 is less than the NAAQS, and it is not likely that the three-year period of 2022-2024 would result in an exceedance. It is not anticipated that the project would exacerbate an existing violation of the NAAQS at the Buckeye monitor.

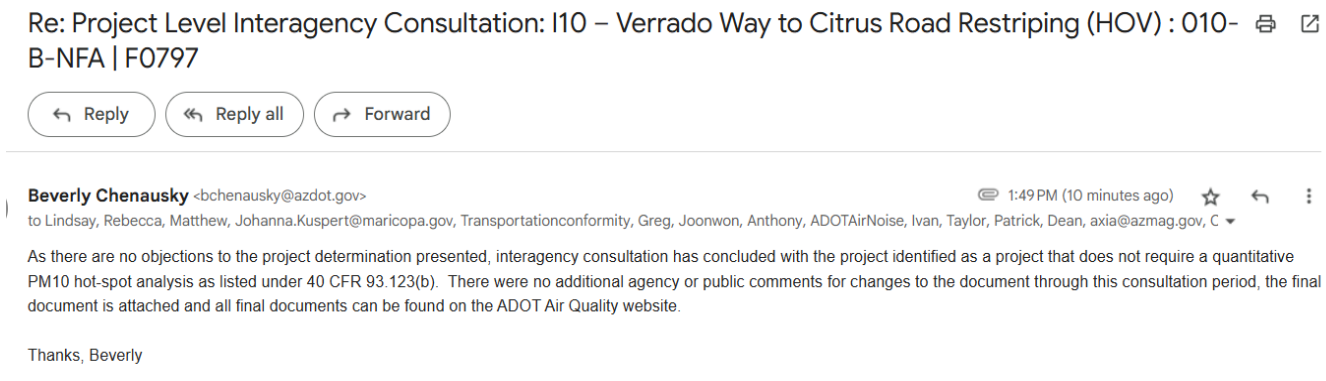
Project Determination

The MAG travel demand model (provided in October 2024) does not indicate a significant increase in diesel truck traffic volume due to the Project on mainline segments or signalized intersections. Therefore, ADOT is recommending that this project is not a project of air quality concern and does not require a PM_{10} quantitative analysis.

Appendix: Interagency Consultation Documentation

There were no public comments received on this consultation.





Gmail Agency Comments Beverly Chenausky <bchenausky@azdot.gov>

RE: Project Level Interagency Consultation: I10 – Verrado Way to Citrus Road Restriping (HOV) : 010-B-NFA | F0797

Wickersham, Lindsay <wickersham.lindsay@epa.gov> Fri, Mar 7, 2025 at 1:45 PM
To: "Frohning, Rebecca" <Rebecca.Frohning@wsp.com>, Beverly Chenausky <bchenausky@azdot.gov>, Matthew Poppen <MPoppen@azmag.gov>, "Johanna.Kuspert@maricopa.gov" <Johanna.Kuspert@maricopa.gov>, Transportationconformity <transportationconformity@azdeq.gov>
Cc: "Fly, Greg" <GREG.FLY@wsp.com>, Joonwon Joo <jjoo@azdot.gov>, "Scolaro, Anthony" <Anthony.Scolaro@wsp.com>, ADOTAirNoise - ADOT <adotairnoise@azdot.gov>, Ivan Racic <iracic@azdot.gov>, Taylor Zimmer <tzimmer@azdot.gov>, Patrick O'Leske <poleske@azdot.gov>, Dean Giles <dgiles@azmag.gov>, "axia@azmag.gov" <axia@azmag.gov>, Caitlyn Zaremba <zaremba.caitlyn@azdeq.gov>, "Meek, Clifton" <meek.clifton@epa.gov>, "Oconnor, Karina" <OConnor.Karina@epa.gov>

Thank you Rebecca for sending over this additional information and amending the POAQC documentation!

After reviewing this new document I agree that this is not a POAQC, and that a PM10 hot spot is **not** required.

Rationale:

Per EPA's PM Hot Spot FAQ document (PM Hot-spot Analyses: Frequently Asked Questions (EPA-420-F-18-011, June 2018)_), page 4, this project falls under a, "**New HOV lanes** and ramp HOV lanes which do not involve a "a significant number of diesel vehicles" or "a significant increase in the number of diesel vehicles" as **described in 40 CFR 93.123(b)(1).**

Per 40 CFR 93.123(b)(1) *PM_{10}* and *$PM_{2.5}$ hot-spot analyses.*

(1) The hot-spot demonstration required by § 93.116 must be based on quantitative analysis methods for the following types of projects:

(i) 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;

(ii) 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 increased traffic volumes from a significant number of diesel vehicles related to the project;

In regards to

- *93.123(b)(1)(i)*: I agree that this is not a new highway project, and the expansion of this highway by adding the HOV lane will not lead to a significant increase in the number of diesel vehicles

- *93.123(b)(1)(ii)*- Looking at the existing data that was provided, I agree that the intersections at LOS D,E, or F do not have a significant number of diesel vehicles, and agree that the intersections that change to a LOS of D, E,or F do not change due to increased traffic volumes from a significant number of diesel vehicles related to the project.

Thank you and let me know if you have any questions for me.

Best,

Lindsay

Lindsay Wickersham | 415-947-4192

Physical Scientist | Planning Section | Air and Radiation Division | US EPA - Region 9

From: Frohning, Rebecca <Rebecca.Frohning@wsp.com>
Sent: Friday, March 7, 2025 10:34 AM
To: Wickersham, Lindsay <wickersham.lindsay@epa.gov>; Beverly Chenausky <bchenausky@azdot.gov>; Matthew Poppen <MPoppen@azmag.gov>; Johanna.Kuspert@maricopa.gov; Transportationconformity <transportationconformity@azdeq.gov>
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Subject: RE: Project Level Interagency Consultation: I10 – Verrado Way to Citrus Road Restriping (HOV) : 010-B-NFA | F0797

Hello, Lindsay. Since Beverly is currently out of the office, I am sending you an updated consultation form that includes the existing AADT information you requested. Columns were added to Table 4 to show the existing total AADT and truck AADT.

Thank you,

Rebecca Frohning

Rebecca Frohning

Assistant Vice President

Sustainable Infrastructure – Air Quality and Greenhouse Gases

She/her

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From: Wickersham, Lindsay <wickersham.lindsay@epa.gov>
Sent: Thursday, March 6, 2025 5:48 PM
To: Beverly Chenausky <bchenausky@azdot.gov>; Matthew Poppen <MPoppen@azmag.gov>; Johanna.Kuspert@maricopa.gov; Transportationconformity <transportationconformity@azdeq.gov>
Cc: Frohning, Rebecca <Rebecca.Frohning@wsp.com>; Fly, Greg <GREG.FLY@wsp.com>; Joonwon Joo <jjoo@azdot.gov>; Scolaro, Anthony <Anthony.Scolaro@wsp.com>; ADOTAirNoise - ADOT <adotairnoise@azdot.gov>; Ivan Racic <iracic@azdot.gov>; Taylor Zimmer <tzimmer@azdot.gov>; Patrick O'Leske <poleske@azdot.gov>; Dean Giles <dgiles@azmag.gov>; axia@azmag.gov; Caitlyn Zaremba <zaremba.caitlyn@azdeq.gov>; Meek, Clifton <meek.clifton@epa.gov>; Oconnor, Karina <OConnor.Karina@epa.gov>
Subject: RE: Project Level Interagency Consultation: I10 – Verrado Way to Citrus Road Restriping (HOV) : 010-B-NFA | F0797

Hi Beverly,

Thank you for sharing this document with us for our review. Do you have the total AADT and Truck AADT of the existing conditions at the intersections listed in table 3 and table 4? I would be interested in seeing this data and request that it be added to the POAQC Consultation.

Thank you,

Lindsay

Lindsay Wickersham | 415-947-4192

Physical Scientist | Planning Section | Air and Radiation Division | US EPA - Region 9

From: Beverly Chenausky <bchenausky@azdot.gov>
Sent: Thursday, March 6, 2025 12:01 PM
To: Matthew Poppen <MPoppen@azmag.gov>; Johanna.Kuspert@maricopa.gov; Transportationconformity <transportationconformity@azdeq.gov>; Wickersham, Lindsay <wickersham.lindsay@epa.gov>
Cc: Frohning, Rebecca A. <Rebecca.Frohning@wsp.com>; Fly, Greg <GREG.FLY@wsp.com>; Joonwon Joo <jjoo@azdot.gov>; Scolaro, Anthony J. <Anthony.Scolaro@wsp.com>; ADOTAirNoise - ADOT <adotairnoise@azdot.gov>; Ivan Racic <iracic@azdot.gov>; Taylor Zimmer <tzimmer@azdot.gov>; Patrick O'Leske <poleske@azdot.gov>; Dean Giles <dgiles@azmag.gov>; axia@azmag.gov; Caitlyn Zaremba <zaremba.caitlyn@azdeq.gov>; Meek, Clifton <meek.clifton@epa.gov>; Oconnor, Karina <OConnor.Karina@epa.gov>
Subject: Project Level Interagency Consultation: I10 – Verrado Way to Citrus Road Restriping (HOV) : 010-B-NFA | F0797

To All:

ADOT is presenting the following project, **I10 – Verrado Way to Citrus Road Restriping (HOV),** for interagency consult ation, 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. ADOT is requesting responses to the attached document within **10 business days**; a non-response will be interpreted as concurrence that the project is not a project of air quality concern and does not require a hot-spot analysis. If any consulted party believes this project should be treated as a project of air quality concern that requires a Quantitative PM hot-spot analysis, please document the appropriate section under 40 CFR 93.123 (b) that applies to the project and describe why the project should be treated as a project of air quality concern.

Beverly Chenausky

ASSISTANT ENVIRONMENTAL ADMINISTRATOR

ARIZONA DEPARTMENT OF TRANSPORTATION

MD EM02, 206 S. 17th Ave.

Phoenix, AZ 85007

480.390.3417

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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. 326 and a Memorandum of Understanding dated December 20, 2023, and executed by FHWA and ADOT.

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