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

Project Setting and Description

Yuma County, in coordination with the Arizona Department of Transportation (ADOT) is planning a roadway construction project that would provide an approximately 7.75 mile-long connection between County 23rd Street (State Route (SR) 195) and County 16th Street (US 95) within and adjacent to the cities of San Luis and Somerton, Yuma County, Arizona (Figure 1). The proposed roadway would begin at the Avenue E and SR 195 intersection, travel northeast and pass to the east of Rolle Airfield, and then extend north to tie into to the existing Avenue D roadway approximately 0.50 mile north of County 16th Street.

The portion of the project area between SR 195 and 0.30 mile north of the County 19th Street alignment is currently undeveloped. The portion of the project area from 0.30 mile north of the County 19th Street alignment to County 18th Street consists of an unpaved roadway (i.e., Avenue D) with gravel shoulders. North of County 18th Street, Avenue D is an asphalt-paved, two-lane roadway with gravel shoulders. The closest existing north south corridors in the vicinity of the project area include Avenue B located 2 miles to the east and Avenue J (US 95) located 6 miles to the west. Future regional growth is anticipated within the communities of San Luis, Somerton, and Yuma, and the existing north-south corridors would not provide sufficient access between the local communities and the Rolle Airfield and the San Luis Port of Entry ll. The purpose of the project is to improve regional mobility and traffic operations by providing a new north-south corridor between San Luis, Somerton and Yuma.

The roadway would include two 12-foot-wide travel lanes (one in each direction), five-foot-wide asphalt-paved shoulders and a 10-foot-wide multiuse path throughout the project limits. Between County 18th Street and County 16th Street, a 12-foot-wide two-way left-turn lane would be added. A westbound right-turn lane, an eastbound left-turn lane, southbound left and right-turn lanes and a curbed median would be constructed at the SR 195 and Avenue E intersection. Northbound and southbound left-turn lanes at the Avenue D and County 19th Street intersection and the Avenue D and County 18th Street intersection would also be constructed. Eastbound and westbound left-turn lanes would be added along County 19th Street at Avenue D. At Avenue D and County 16th Street, right-turn lanes would be added in all four directions.

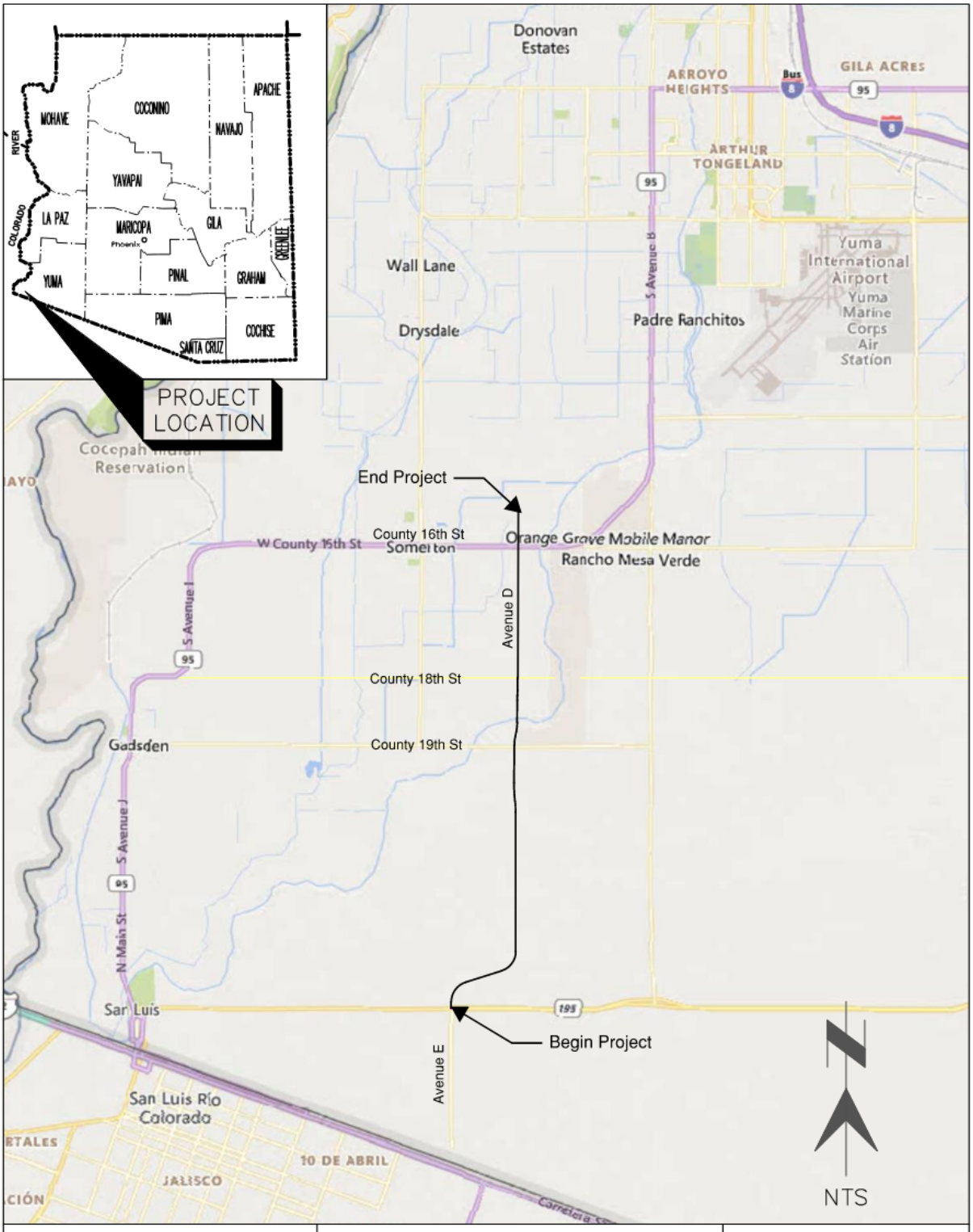
Additionally, the project scope of work includes:

- Installing riprap for approximately 750 feet along both shoulders between County 19th Street and the East Main Canal to stabilize slopes
- Widening the Avenue D crossing over the East Main Canal to accommodate the new roadway alignment, including relocating an existing pump and extending or replacing the existing reinforced concrete pipe at the canal
- Widening and reconstructing the existing Avenue D crossing over the Johnson Lateral and the Southeast Main Drain Canal to accommodate the new roadway width

- Modifying the existing traffic signals at the Avenue E and SR 195 intersection and the Avenue D and County 16th Street intersection to accommodate the project improvements
- Installing stop signs to implement four-way stop control and installing four-way overhead flashing red beacons at the Avenue D and County 19th Street intersection
- Installing stop signs along County 18th Street to implement two-way stop control at the Avenue D and County 18th Street intersection
- Installing stop signs along County 17th Street to implement two-way stop control at the Avenue D and County 17th Street intersection
- Relocating and undergrounding the Harris Lateral irrigation ditch
- Concrete lining the Havens Lateral irrigation ditch for approximately 600 feet south of County 16th Street (US 95)
- Relocating unnamed irrigation ditches and/or installing pipelines to replace irrigation ditches to accommodate project improvements
- Constructing drainage swales along Avenue D as needed
- Installing new or replacing existing signs to meet ADOT standards
- Striping/marking the new roadway and intersections
- Installing rumble strips along the shoulder of Avenue D
- Installing fencing along the new ROW/permanent easement boundaries as needed
- Utility relocations as needed to accommodate project improvements

The project limits include existing County ROW and lands owned and/or managed by the Bureau of Land Management (BLM), Bureau of Reclamation (Reclamation), State of Arizona, and private landowners. The project area consists of 238 total acres and would require approximately 90 acres of new ROW consisting of approximately 68 acres of new permanent easement from the BLM and Reclamation and approximately 22 acres of new ROW from ASLD and private landowners. The new ROW/permanent easement corridor would be 150 feet wide between SR 195 and the East Main Canal, and 100 feet wide between the East Main Canal and the northern limits of the project (0.50 mile north of County 16th Street). Temporary construction easements may be needed for the project for access and staging. Traffic along existing roadways and access to adjacent properties would be maintained throughout construction, and no detours would be needed. Construction is anticipated to begin as early as 2026 and last approximately 18 months. The Preferred Alternative is expected to have 8,190 to 10,000 vehicles per day by the year 2045.

The project is listed in the Yuma Metropolitan Planning Organization (YMPO) 2022-2026 Transportation Improvement Program (TIP) Amendment #13. The project is also included in the YMPO 2022-2045 Regional Transportation Plan (RTP), Amendment 1 as a recommended project in years 2022-2026 and in the ADOT Arizona-Sonora Border Master Plan, 2013. The project is currently listed in the State of Arizona's State Transportation Improvement Program (eSTIP) for fiscal years 2024-2027 and prior. The project is located within a non-attainment area for particulates 10-microns in diameter or less (PM10) for Yuma County.



AVENUE D DESIGN CONCEPT REPORT	FIGURE 1–1 LOCATION MAP	PSOMAS JUNE 2023

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.

The project is within the Yuma planning area with a nonattainment/moderate designation for PM_{10}.

New Highway Capacity

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

Example: total traffic volumes ≥125,000 annual average daily traffic (AADT) and truck volumes ≥10,000 diesel trucks per day (8% of total traffic).

NO - Although this is a new highway project, projected traffic volumes and truck volumes are estimated to be low and would not have a significant number of diesel vehicles. Per the Traffic Analysis for Avenue D: County 18th Street to County 16th Street (March 2023) and the Avenue E, SR 195 to County 18th Street Traffic Engineering Report (February 2015), the 2045 traffic volumes will be between 8,190 and 10,000 vehicles per day with approximately 12.0% medium trucks and 1.7% heavy trucks, not all of which would be diesel-fueled. See Table 1 for additional information.

Table 1. Average Daily Traffic and Truck Volumes – Roadway Segments

	2022 Existing				2045 No-Build[1]				2045 Build[1]				Total Truck ADT Difference (Build - Existing)
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	
Avenue D, County 16th to County 18th	2,238	307	269	38	2,810	385	337	48	8,190	1,122	983	139	815
Avenue E, County 18th to SR 195	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10,000	1,370	1,200	170	1,370

[1] Traffic volumes were projected to Year 2045 for both a No-Build and Build Scenario. South of County 18th, the roadway would not exist without the project. Build volumes were taken from the *Traffic Analysis for Avenue D: County 18th Street to County 16th Street* (Psomas, March 2023) and the *Avenue E, SR 195 to County 18th Street Traffic Engineering Report* (Psomas, February 2015). The Avenue E study included 2033 volume estimates, but recent review for the 2024 RAISE Grant application showed that the 2033 projections are now likely to match (or slightly exceed) projected 2045 volumes. Future truck percentages for Avenue E were assumed to match those for Avenue D.

Expanded Highway Capacity

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

Example: the build scenario of the expanded highway or expressway causes a significant increase in the number of diesel trucks compared with the no-build scenario, truck volumes > 8% of the total traffic.

NO – This is not an expanded highway project that has a significant number of diesel vehicles; the project involves shoulder widening of an existing roadway and a new roadway connection.

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 involves shoulder widening of an existing roadway and a new roadway connection. It would not affect a congested intersection (LOS D or greater) that has a significant number of diesel trucks, nor will this project change LOS to D or greater at any intersection because of a significant increase in diesel truck volume.

The County 19th Street/Avenue D intersection would be a new intersection that would operate at LOS D in the PM peak hour; however the total truck volume is only 111 vph and not all trucks would be diesel-fueled. See Tables 2 and 3 for additional information.

Table 2. Average Daily Traffic and Truck Volumes – Intersections

	2022 Existing				2045 No-Build[1]				2045 Build[1]				Total Truck ADT Difference (Build - Existing)
Intersection	**ADT**	**Total Truck ADT**	**MT Volume**	**HT Volume**	**ADT**	**Total Truck ADT**	**MT Volume**	**HT Volume**	**ADT**	**Total Truck ADT**	**MT Volume**	**HT Volume**	
County 16th St/Avenue D[6]	18,098	1,333	1,182	151	22,752	1,676	1,486	190	36,902	3,053	2,699	354	1,702
County 17th St/Avenue D[7]	2,216	307	269	38	2,786	386	338	48	7,968	1,114	976	138	807
County 18th St/Avenue D[7]	377	52	45	6	464	64	56	8	6,209	851	745	106	799
County 19th St/Avenue D[8]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12,829	1,758	1,540	218	1,758
State Route 195/Avenue E[6]	9,797	725	539	186	12,399	1,654	1,449	205	26,374	3,613	3,165	448	2,888

[1] Traffic volumes were projected to Year 2045 for both a No-Build and Build Scenario. South of County 18th, the roadway would not exist without the project. Build volumes were taken from the *Traffic Analysis for Avenue D: County 18th Street to County 16th Street* (Psomas, March 2023) and the *Avenue E, SR 195 to County 18th Street Traffic Engineering Report* (Psomas, February 2015). The Avenue E study included 2033 volume estimates, but recent review for the 2024 RAISE Grant application showed that the 2033 projections are now likely to match (or slightly exceed) projected 2045 volumes. Future truck percentages for Avenue E were assumed to match those for Avenue D.

Table 3. Intersection Level of Service and Peak-Hour Volumes

Intersection	Existing Conditions[1]				2045 Build (Recommended Geometry)[2]					
	LOS (delay, sec.)	Volumes (vph)	Medium Truck Volumes (vph)[3]	Heavy Truck Volumes (vph)[3]	Future Cond.	LOS (delay, sec.)	Volumes (vph)	Medium Truck Volumes (vph)[4]	Heavy Truck Volumes (vph)[4]	Total Truck Volume Difference (Build - Existing, vph)[5]
County 16th St/Avenue D[6]	AM: B (12) PM: B (11)	AM: 1,349 PM: 1,434	AM: 162 PM: 172	AM: 23 PM: 24	No Build	AM: B (13) PM: B (12)	AM: 1,696 PM: 1,803	AM: 204 PM: 216	AM: 29 PM: 31	AM: 48 PM: 51
					Build	AM: B (17) PM: B (16)	AM: 2,819 PM: 2,859	AM: 338 PM: 343	AM: 48 PM: 49	AM: 201 PM: 195
County 17th St/Avenue D[7]	AM: A (10) PM: A (10)	AM: 169 PM: 172	AM: 20 PM: 21	AM: 3 PM: 3	No Build	AM: B (10) PM: B (10)	AM: 212 PM: 216	AM: 25 PM: 26	AM: 4 PM: 4	AM: 6 PM: 6
					Build	AM: B (15) PM: B (15)	AM: 609 PM: 617	AM: 73 PM: 74	AM: 10 PM: 10	AM: 60 PM: 61
County 18th St/Avenue D[7]	AM: A (9) PM: A (9)	AM: 27 PM: 20	AM: 3 PM: 2	AM: 0 PM: 0	No Build	AM: A (9) PM: A (9)	AM: 33 PM: 25	AM: 4 PM: 3	AM: 1 PM: 0	AM: 2 PM: 1
					Build	AM: C (17) PM: C (17)	AM: 561 PM: 295	AM: 67 PM: 35	AM: 10 PM: 5	AM: 74 PM: 38
County 19th St/Avenue D[8]	AM: N/A PM: N/A	AM: N/A PM: N/A	AM: N/A PM: N/A	AM: N/A PM: N/A	No Build	AM: N/A PM: N/A	AM: N/A PM: N/A	AM: N/A PM: N/A	AM: N/A PM: N/A	AM: N/A PM: N/A
					Build	AM: C (20) PM: D (36)	AM: 975 PM: 810	AM: 117 PM: 97	AM: 17 PM: 14	AM: 134 PM: 111
State Route 195/Avenue E[6]	AM: A (3) PM: A (4)	AM: 572 PM: 664	AM: 31 PM: 37	AM: 11 PM: 13	No Build	AM: A (3) PM: A (4)	AM: 705 PM: 818	AM: 85 PM: 98	AM: 12 PM: 14	AM: 55 PM: 62
					Build	AM: C (21) PM: C (30)	AM: 1,836 PM: 1,851	AM: 220 PM: 222	AM: 31 PM: 31	AM: 209 PM: 204

[1] Existing conditions from County 16th and County 17th at Avenue D are from 2022; existing conditions for County 18th/Avenue D and SR 195/Avenue E are from 2012.
[2] The Avenue E study included 2033 volume estimates, but recent review for the 2024 RAISE Grant application showed that the 2033 projections are now likely to match (or slightly exceed) projected 2045 volumes. Therefore, the original projected operations are assumed to be valid for 2045 conditions.
[3] Truck volume for County 18th/Avenue D was not collected; percentages from County 16th and County 17th were used to estimate volumes.
[4] Truck percentages from County 16th and County 17th were used to estimate future truck volumes for consistency along the corridor.
[5] Truck Volume Difference includes both MT and HT
[6] Signalized intersection.
[7] Stop-Controlled delay on intersecting minor street.
[8] All-way stop-controlled intersection..
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: Traffic volumes provided by Psomas, derived from data and analysis documented in *Traffic Analysis for Avenue D: County 18th Street to County 16th Street* (Psomas, March 2023) and the *Avenue E, SR 195 to County 18th Street Traffic Engineering Report* (Psomas, February 2015).

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 – This project does not involve new bus or rail terminals; therefore, this project type is not in the project area nor addressed in the project assessment.

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 – This project does not involve an expansion of an existing bus or rail terminals; therefore, this project type is not in the project area nor addressed in the project assessment.

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 – The PM_{10} State Implementation Plans (SIPs) did not identify any specific sites or potential sites of violation. The project site is located within an area with rural and agricultural development that does not have any nearby substantial air pollutant emission sources. In addition, the project involves development of roadway improvement infrastructure needed improve regional mobility and traffic operations by providing a new north-south corridor between San Luis, Somerton and Yuma. As such, the project will accommodate future traffic demand, reduce traffic congestion which will reduce idling related air pollution emissions, and will not result in a violation of the PM_{10} standard.

POAQC Determination

The project is not anticipated to have a significant number of diesel vehicles; the diesel truck volumes are low at max projected between 574 and 780 truck AADT in 2045. The project does not impact LOS D or worse intersections with a significant number of diesel vehicles. Since the project would involve the construction of newly paved roadway, it would result in reduced traffic wait times and reduced PM_{10} emissions from the paving of an unpaved surface from the existing unused agricultural land.

Therefore, ADOT is presenting this project for interagency consultation in accordance with 40 CFR 93.105 as a Project that is NOT of Air Quality Concern and thereby will not require a PM hot-spot analysis.