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# YMPO RAIL/HEAVY FREIGHT ALIGNMENT STUDY

DECEMBER 2022



Kimley»Horn

IN ASSOCIATION WITH

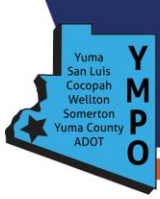


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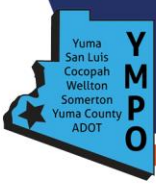




# YMPO RAIL/HEAVY FREIGHT ALIGNMENT STUDY

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# YMPO RAIL/HEAVY FREIGHT ALIGNMENT STUDY

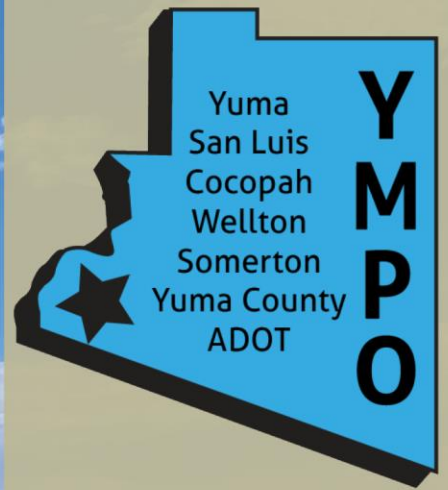
## LIST OF ACRONYMS

ADEQ .....	Arizona Department of Environmental Quality
ADOT .....	Arizona Department of Transportation
APS .....	Arizona Public Service
ATIS.....	Arizona Transportation Information System
BEA .....	Business Economic Area
BLM .....	Bureau of Land Management
BOR.....	Bureau of Reclamation
EJ .....	Environmental Justice
EA.....	Environmental Assessment
EO .....	Environmental Overview
FHWA.....	Federal Highway Administration
FTHL.....	Flat-Tail Horned Lizard
Goldwater AFR.....	Barry M. Goldwater Air Force Range
I-8.....	Interstate 8
L RTP.....	Long-Range Transportation Plan
LUST .....	Leaking Underground Storage Tank
MCAS .....	Marine Corps Air Station
MP .....	Milepost
OPRODE .....	Agency for Promotion of Economic Development in Mexico
POE .....	Port of Entry
RMS .....	Region-Wide Management Strategy
SR .....	State Route
TAC .....	Technical Advisory Committee
UPRR .....	Union Pacific Railroad
U.S.....	United States
US 95 .....	United States Highway 95
WOTUS .....	Waters of the United States
YMPO .....	Yuma Metropolitan Planning Organization





# EXECUTIVE SUMMARY





## EXECUTIVE SUMMARY

## PROJECT BACKGROUND

The Yuma Metropolitan Planning Organization (YMPO) conducted the Rail/Heavy Freight Alignment Study to identify a feasible alignment for a potential rail/heavy freight corridor in the Yuma region. The study expands on the 2013 Yuma County Rail Corridor Study, which found that if a north-south rail line was viable, it should generally follow the State Route (SR) 195 alignment and cross into Mexico near the San Luis II Port of Entry.

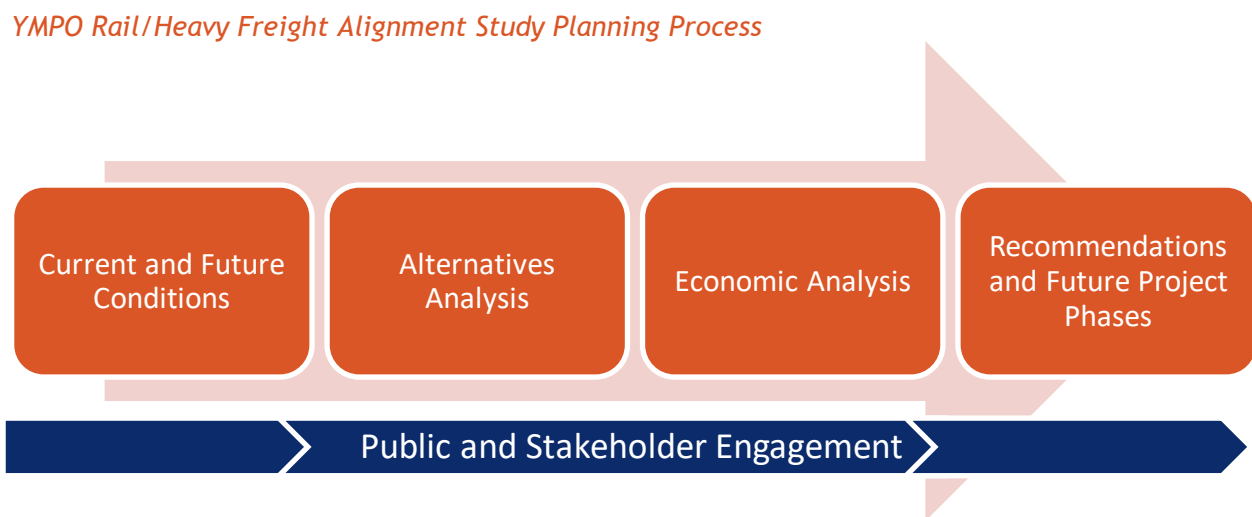
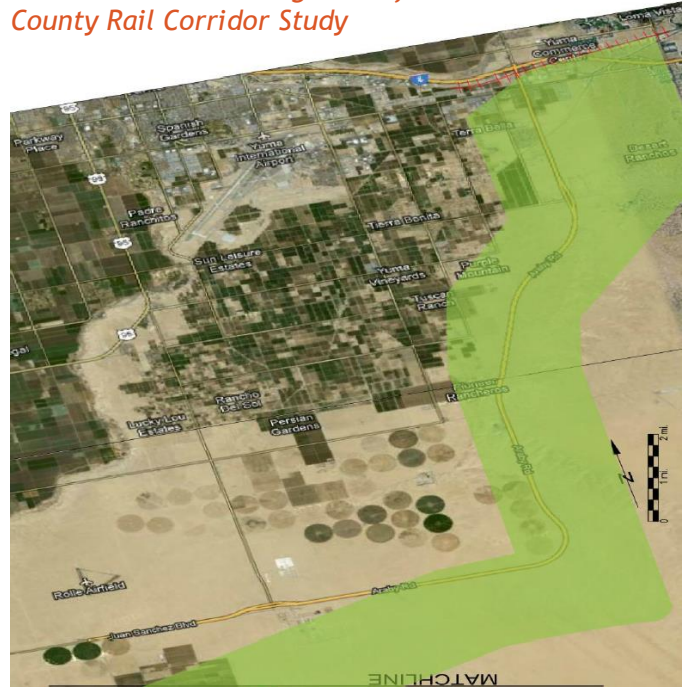
A major consideration from the study was that Punta Colonet, a proposed new seaport on the Pacific Ocean in Mexico, would need to be completed for there to be a good economic case to build the rail line in Yuma County. However, since 2013, Punta Colonet has not progressed into an active project.

Since completion of the 2013 study, the Yuma region has been transformed by new development. Much of this new development activity is in the eastern portion of Yuma, adjacent to the unincorporated Yuma Foothills Area. Ongoing development activity places additional constraints on previously identified rail corridors.

## STUDY PROCESS

The 2022 Rail/Heavy Freight Alignment Study is broken into four main phases as shown below. Extensive public and stakeholder engagement has been conducted throughout the planning effort.

*Recommended Rail Alignment from the 2013 Yuma County Rail Corridor Study*





## CURRENT AND FUTURE CONDITIONS

A comprehensive review of current and anticipated future conditions was included in the study to understand conditions in the study area and recommendations from previous plans and studies that may impact the feasibility of a future rail corridor. Twelve stakeholder interviews were also conducted with local agencies and other stakeholders to identify opportunities and constraints.

The Current and Future Conditions assessment culminated in a consolidated map of opportunities and constraints. Based on these results, the initial alignment alternatives were developed to take advantage of identified opportunities and avoid known constraints.



## ALTERNATIVES ANALYSIS

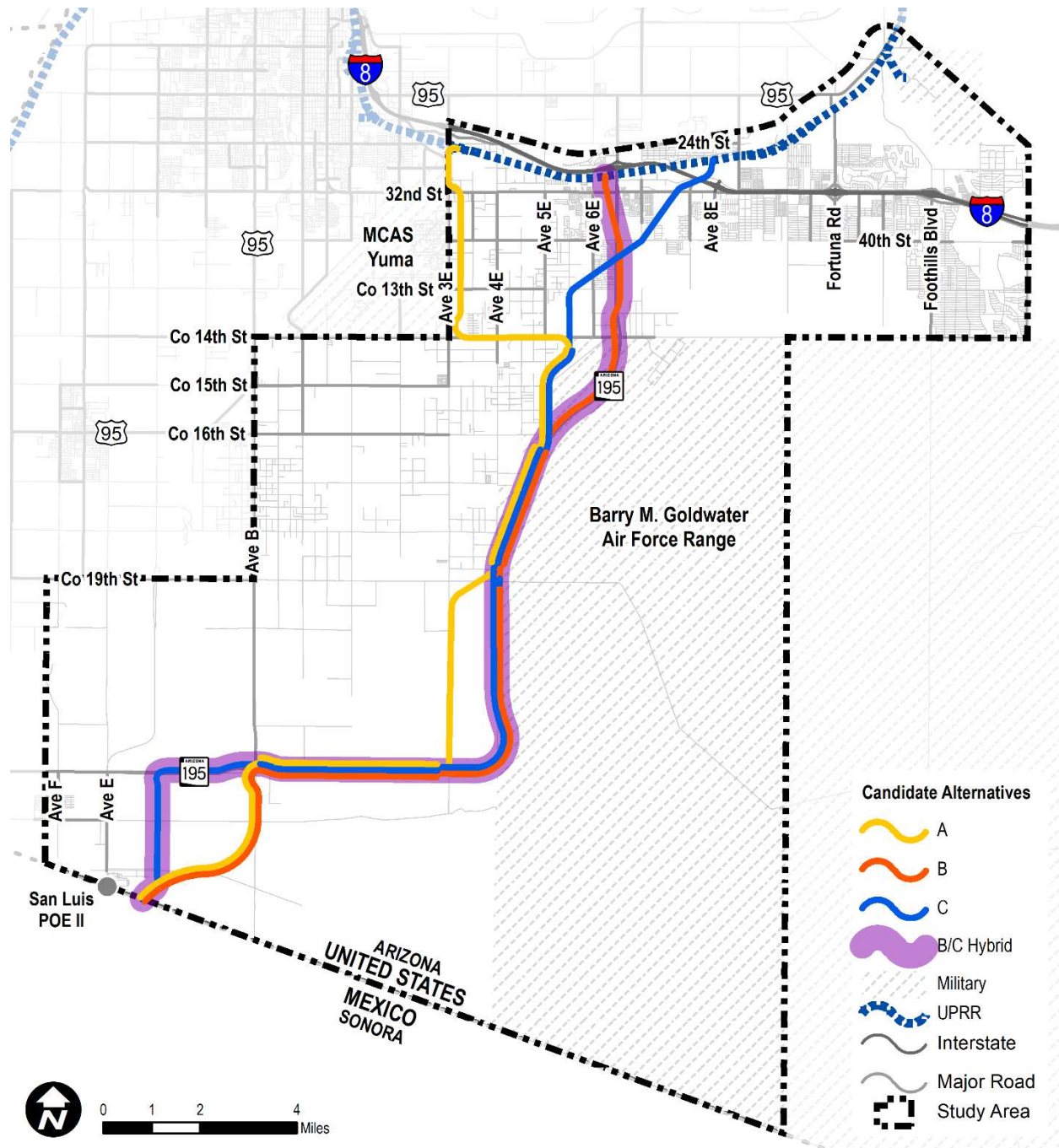
The alternatives analysis is the process by which a broad spectrum of potential alignment alternatives is narrowed down to a single Recommended Alternative. The Rail/Heavy Freight Alignment Study alternatives analysis process included three steps as shown in the graphic below:

- **Conceptual Alternatives** are the broadest set of potential alignment alternatives that are evaluated using a largely qualitative screening process to identify fatal flaws that will make some alignments clearly infeasible.
- **Candidate Alternatives** take the most feasible Conceptual Alternative segments and create continuous alignment alternatives from the U.S. /Mexico border to the Union Pacific Railroad Sunset Line. These alternatives are then evaluated using a more detailed, quantitative screening analysis.
- The **Recommended Alternative** is a single route that performs the best in the Conceptual Alternatives screening process which maximizes the benefits of the rail investment while minimizing negative externalities.





Based on the analysis in the Conceptual Alternatives screening process, a hybrid of two of the Candidate Alternatives (B and C) appears to have the fewest negative impacts on surrounding land uses and the regional transportation system. As shown in the map below, this hybrid corridor would comprise Alternative C south of County 16<sup>th</sup> Street and then follow the alignment of Alternative B north of County 16<sup>th</sup> Street.





## RECOMMENDATIONS AND FUTURE PROJECT PHASES

Due to several limiting factors affecting the feasibility of constructing a north-south rail line in the study area, shown below, **no Recommended Alternative can be identified at this time.**



### Barry M. Goldwater Air Force Range Easement

During stakeholder engagement, the current representatives of the Air Force Range are opposed to any rail alignment that requires an easement through military land. Support from the then-current commander of the Marine Corps Air Station Yuma would need to be obtained before the project can move forward.



### Public Opposition

The prevalent opinion of the members of the public that participated in the project was negative toward any north-south rail alignment in the region. Public opinion would need to change through additional engagement or through regional circumstances changing over time before the project could be politically feasible.



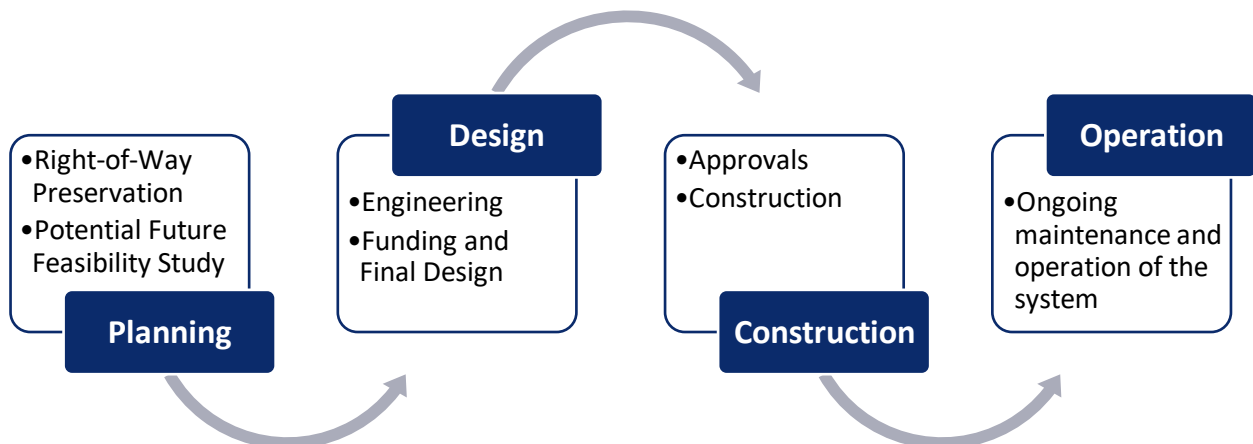
### Continuation of the Rail Line in Mexico

While Mexican stakeholders were engaged throughout this process, a feasibility study has not yet been conducted in Mexico to evaluate a north-south rail alignment south of the border. Assurances that the rail line would continue in Mexico would be needed before the project can move forward.

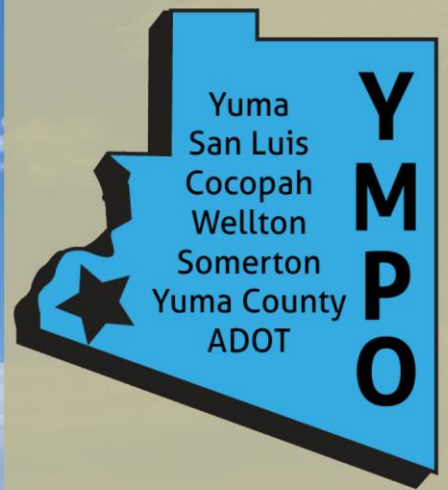
In addition to the rail alignment itself, two additional facilities will need to be constructed:

- **Border Inspection Facility.** A border inspection facility is required to inspect rail from Mexico. Two large parcels along SR 195 near the Avenue 3E alignment were identified as potential sites for the inspection facility.
- **Intermodal Facility.** A facility would be needed along the Union Pacific line to transfer freight to Union Pacific or to trucks. Three potential sites were identified, along with the opportunities and constraints of each site.

Should the project move beyond this feasibility study, there are several major project development phases before the rail line would be operational as shown in the graphic below. Each of these phases will likely take several years to complete and will have additional public and stakeholder engagement opportunities.







# INTRODUCTION



# 1. INTRODUCTION

## PROJECT HISTORY AND OVERVIEW

The Yuma Metropolitan Planning Organization (YMPO) conducted the Rail/Heavy Freight Alignment Study to identify a feasible alignment for a potential rail/heavy freight corridor in the Yuma region. The study expands on the 2013 Yuma County Rail Corridor Study, which recommended multiple rail corridor options between Sonora, Mexico, and Yuma County. In addition, the 2013 study explored opportunities for freight-related economic development. Two of the 2013 alternatives (Alternatives 6 and 7) collectively evaluated benefits of an industrial park near San Luis and a connection from the United States (U.S.)/Mexico border north to the Union Pacific Railroad (UPRR) Sunset Route that runs roughly parallel to Interstate 8 (I-8). These two alternatives served as the launch point for the 2022 YMPO Heavy Rail/Freight Alignment Study.

Since completion of the 2013 study, the Yuma region has been transformed by new development. Much of this new development activity exists in the eastern portion of Yuma, adjacent to the unincorporated Yuma Foothills Area. Ongoing development activity places additional constraints on previously identified rail corridors.

## GOALS AND OBJECTIVES

The 2022 YMPO Rail/Heavy Freight Alignment Study builds upon the 2013 analysis to define the rail corridor from the U.S./Mexico border north to the UPRR. The goal of the study was to identify a recommended location for a 500-foot-wide corridor, which could ultimately accommodate a freight rail facility as well as other utilities that could co-locate in the rail corridor. Study objectives are:

- Review data, findings, and conclusions from previous plans and studies, including the 2013 Yuma County Rail Corridor Study.
- Update a commodity flow summary of existing and future freight movements by origin/destination, mode, volume, and value. The summary identifies economic trends and forecasts that would affect the YMPO study area.
- Identify border rail crossing opportunities that will accommodate anticipated freight flows from U.S./Mexico freight interests to and through the YMPO region.
- Establish an alignment for a potential regional freight rail connection between the U.S./Mexico border near San Luis and the UPRR.
- Provide an economic impact analysis of constructing the rail line and potential economic benefits from attracting new employers to the region as a result of rail access.

## PLANNING PROCESS

Major phases of the YMPO Rail/Heavy Freight Alignment Study planning process are shown in **Figure 1**. The study is broken into four primary phases: Current and Future Conditions, Alternatives Analysis, Economic Analysis, and Recommendations and Future Project Phases. A robust public and stakeholder engagement effort was made throughout all phases of the study process. Additionally, the YMPO Technical Advisory Committee (TAC) and Executive Board were included at key decision points throughout the process to guide the study's aims and recommendations.



Figure 1. YMPO Rail/Heavy Freight Alignment Study Planning Process



- **Current and Future Conditions** includes investigation into the current state of the study area that may be impactful to constructing a north-south rail alignment including recommendations from previous plans and studies, an analysis of the transportation system, desired future land uses, and a high-level environmental overview.
- **Alternatives Analysis** is a multi-step process to define a wide range of potential alignment alternatives and perform both qualitative and quantitative analyses to determine which of the alignments maximizes the benefits of implementing freight rail and minimizes the negative externalities.
- **Economic Analysis** consolidates research on the existing and forecasted freight movements through Yuma County as well as what the benefits of attracting new employment through a freight rail alignment could be to local communities.
- **Recommendations and Future Project Phases** provides the final recommended alignment alternative as well as what future phases of the project development and implementation process would be if the region decides to move forward with implementing rail.

## WORKING PAPERS

This document is a streamlined version of three interim documents, called working papers, that were prepared throughout the study process. These working papers generally follow the same process and order of content as this document. The three working papers are entitled:

- Working Paper 1: Current and Future Conditions
- Working Paper 2: Alternatives Analysis
- Working Paper 3: Economic Impact Analysis

These working papers include more detailed information than this document as well as technical appendices and more in-depth public and stakeholder engagement results. The working papers can be accessed through the YMPO website.

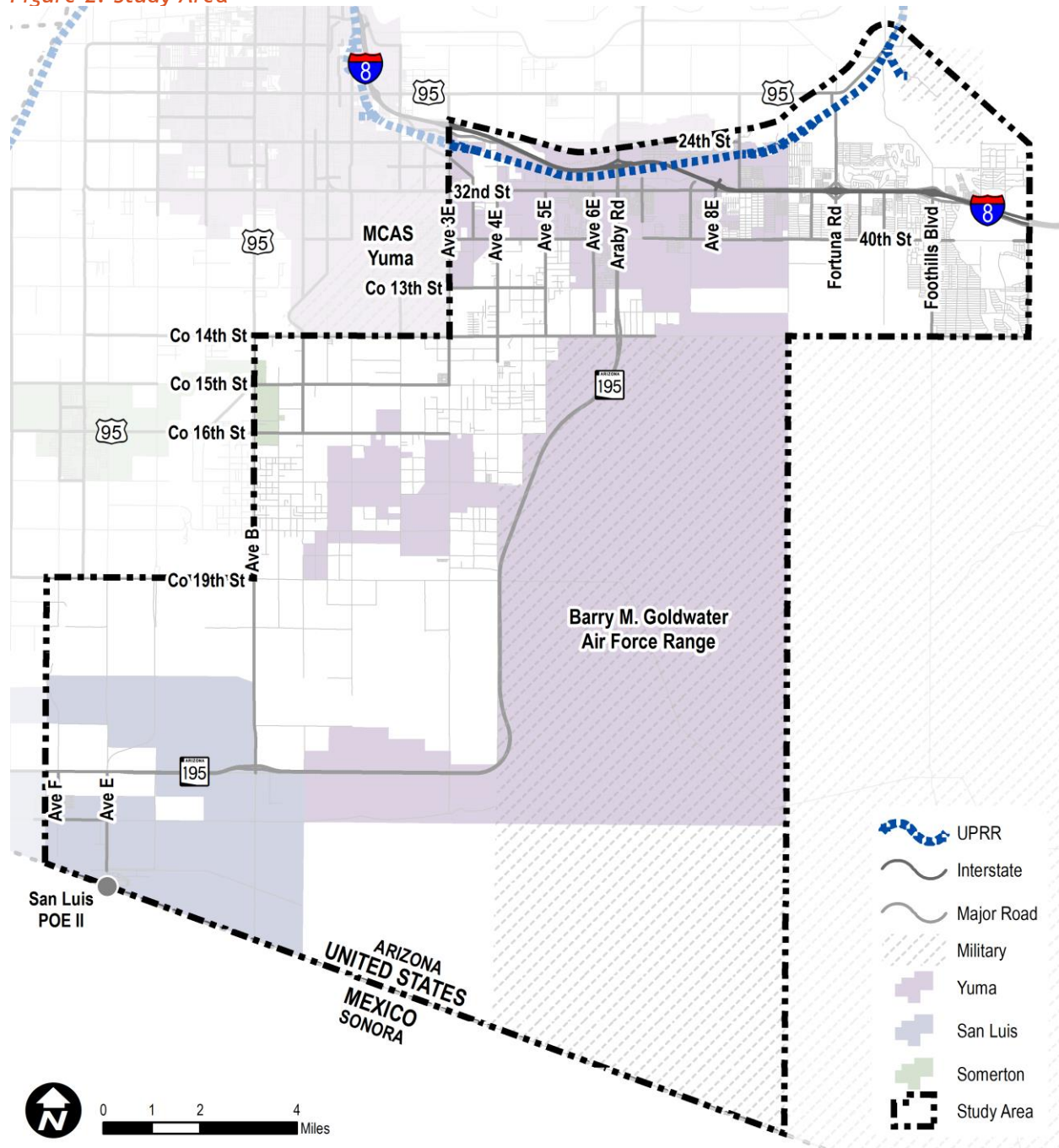
## STUDY AREA

The study area comprises over 240 square miles and incorporates the eastern reaches of the cities of Yuma, San Luis, and Somerton along with portions of unincorporated Yuma County as shown in **Figure 2**. This study area was selected because it roughly follows the recommended alignment from the 2013 study while providing flexibility to evaluate new alternatives.

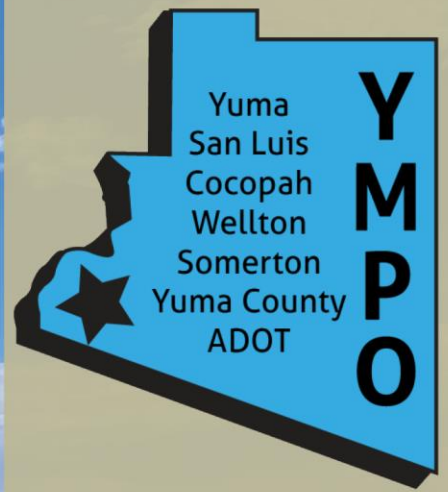
The study area is bounded by:

- The UPRR Sunset Route to the north
- Avenue 15E in the Foothills area and the eastern boundary of the City of Yuma in the Barry M. Goldwater Air Force Range (Goldwater AFR) to the east
- The U.S./Mexico border to the south
- Avenue F, Avenue B, and Avenue 3E to the west

Figure 2: Study Area







# CURRENT AND FUTURE CONDITIONS



## 2. CURRENT AND FUTURE CONDITIONS

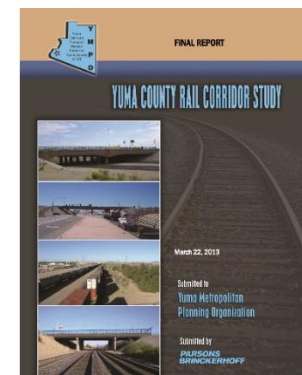
### PREVIOUS PLANS AND STUDIES

Several regional and municipal plans and studies have informed the Rail/Heavy Freight Alignment Study to ensure it considers other recent planning efforts. These reports noted future development, land uses, and potential economic growth in Yuma County which may serve as either opportunities or constraints to freight rail implementation.

#### 2013 YUMA COUNTY RAIL CORRIDOR STUDY

The *Yuma County Rail Corridor Study* was completed in 2013 and explored opportunities for freight-stimulated economic development, freight mobility, and freight access. The study identified alternatives to implement a new rail alignment between the UPRR Sunset Route and the Ferromex Calexico subdivision, crossing the border near San Luis II Port of Entry (POE) and ultimately connecting to a proposed new seaport on the Pacific Ocean at Punta Colonet, Baja California, Mexico. Major conclusions and considerations that arose out of this study include:

- If the Port of Punta Colonet were built and handled significant container volumes, the benefits of building a rail line through Yuma County would likely justify the investment. If this port is not built, it is unlikely that the investment would be justified by local freight needs, many of which are perishable goods that are not typically transported by rail.
- If a north-south rail line were built in Yuma County, most stakeholders supported an alignment that roughly parallels State Route (SR) 195 to connect an international rail crossing near the San Luis II POE to the UPRR. However, there are several obstacles, including environmental and political challenges, to constructing a railroad along this alignment.
- A new rail line could attract additional employment opportunities to large available plots of land in eastern San Luis and near Wellton. Additionally, a transload facility could provide additional points of access for Yuma County businesses to the rail network.

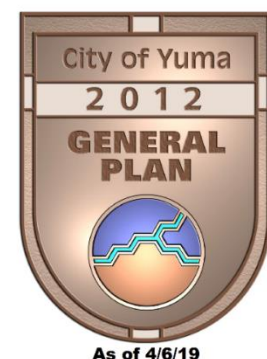


#### CITY OF YUMA GENERAL PLAN

The *City of Yuma General Plan* provides guidance to the City for future land use and development. Pertinent land uses comprise agricultural land on the outskirts of the city, with a variety of residential and commercial land uses near the east and west portions of I-8. Industrial and agricultural development is proposed to the south and the east of Marine Corps Air Station (MCAS) Yuma, with the proposed industrial area adjacent to rural-density residential development.

Recommendations from the General Plan include:

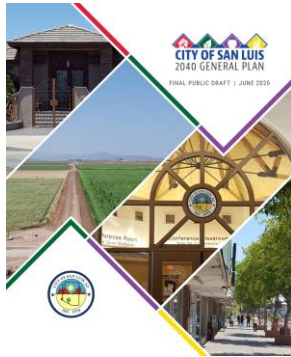
- MCAS Yuma and the surrounding area be protected from urban encroachment by minimizing residential development
- Minimizing encroachment on operations at the Goldwater AFR by excluding utility expansion within a mile of the Goldwater AFR limits





- Implement and expanded freight and passenger rail network to provide economic opportunities
- The plan supports enhancements, improvements, and expansion of rail lines throughout the Yuma area, including the Sunset Route and Wellton Branch

## CITY OF SAN LUIS GENERAL PLAN



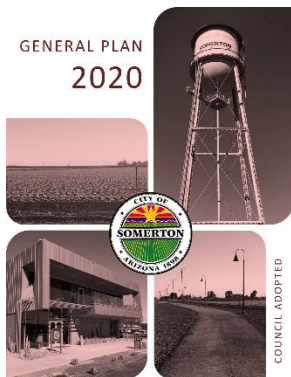
The *City of San Luis General Plan* guides local government policy and actions to meet the City's goals. Growth areas and policies were established to promote development in appropriate areas and provide opportunities for natural growth of San Luis. The 'Central Growth Area' encompasses the area from Avenue F to east of Avenue E and north of the San Luis POE II to just north of SR 195.

The Central Growth Area is planned to include high-density residential, shopping, entertainment, and employment land uses. Near the POE, it is anticipated that commercial uses will be developed to support commercial freight traffic crossing, including transportation and warehousing companies. The General Plan also developed a Circulation Plan to establish

a vision for the transportation network. The Circulation Plan proposes future arterial roadways, in a grid pattern, north and east of San Luis II POE and west of Avenue A.

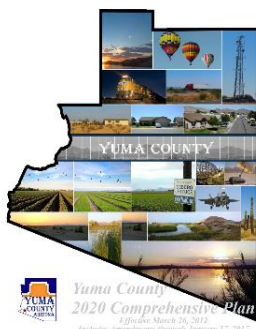
The General Plan references the 2013 Yuma County Rail Study, stating that the addition of a rail alignment has potential for positive effects on economic development in the city.

## CITY OF SOMERTON GENERAL PLAN



The *Somerton General Plan* was drafted in 2020 and is intended to guide development over the next 20 years. The future land use plan denotes the portion of Somerton within the project study area to be designated as agricultural land. The General Plan identified a growth area to focus development within the city, which is not within the project study area. There are no roadway circulation improvements identified within the project study area.

## YUMA COUNTY COMPREHENSIVE PLAN



The *Yuma County Comprehensive General Plan* was ratified in 2020 and was developed to aid Yuma County in preserving the natural beauty of the community and to improve quality of life for all residents. Designated planning areas were established to allow for an in-depth understanding of specific regions of the county. The Yuma Mesa Planning Area, which forms a large portion of the project study area, aims to retain rural and agricultural activity, and limit commercial and industrial development.

The Goldwater AFR has a buffer area that constrains land use on surrounding land to the west and north of the range.

## YMPO LONG-RANGE TRANSPORTATION PLAN

The *YMPO Long-Range Transportation Plan (LRTP)* was developed to assess regional transportation performance and needs, create improvement and implementation plans for the MPO, and implement policies that prioritize and implement projects that address safety, pavement, mobility, bridge, and freight needs in Yuma County.

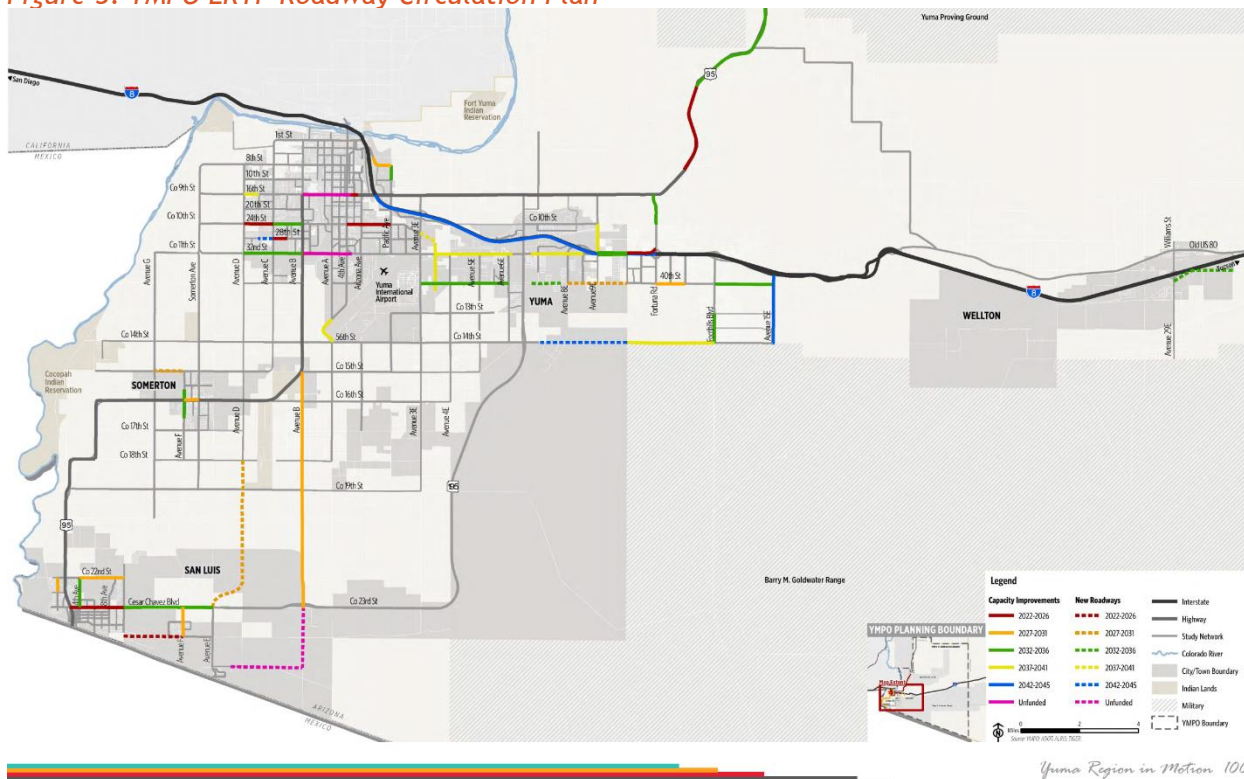
The LRTP identifies the importance of freight mobility for the region, stating that the efficient movement of freight is important to the region's economic growth, especially due to sharing borders with both California and Mexico. The Plan mentions the YMPO Rail/Heavy Freight Corridor Alignment Study, stating that the addition of the rail corridor will produce a safe and efficient freight transportation network and provide regional connectivity between Sonora and the Yuma area.

The YMPO LRTP designated SR 195 as an overweight truck route as well as a hazardous cargo route. Roadway improvements and new roadways are planned in the YMPO region. New roadways in the study area include:

- A connection of Avenue D and Avenue E from SR 195 to County 18<sup>th</sup> Street
- A new connection from County 25<sup>th</sup> Street and Avenue E to SR 195 and Avenue B
- Completion of County 14<sup>th</sup> Street between SR 195 and Foothills Boulevard
- Completion of 40<sup>th</sup> Street/County 12<sup>th</sup> Street between SR 195 and Avenue 10E

The proposed improvements to roadway circulation within YMPO and the study area are shown in **Figure 3**.

**Figure 3: YMPO LRTP Roadway Circulation Plan**





## ARIZONA-SONORA BORDER MASTER PLAN

The *Arizona-Sonora Border Master Plan*, completed in 2013, provides a roadmap for improving efficiency and effectiveness of the transportation system between Arizona and Sonora. The plan evaluated a variety of multimodal transportation projects along the Arizona-Sonora border, including POE projects, multimodal infrastructure, and rail projects. Projects were evaluated by:

- Cost
- Project readiness
- Capacity
- Regional benefits
- POE connectivity

A new north-south rail connection located near the San Luis II POE was evaluated as a potential project in this effort. Among eight rail projects evaluated in the plan, a new rail corridor at San Luis II ranked fifth, scoring well in POE connectivity, but scoring poorly for cost effectiveness and project readiness.

Many of the projects in the 2013 Arizona-Sonora Border Master Plan have been completed or are funded for construction. ADOT is updating the plan to re-evaluate projects that have not been implemented and to address new needs that have arisen since the 2013 plan was completed.

## ARIZONA STATE FREIGHT PLAN

The *Arizona State Freight Plan* analyzes factors affecting freight use and performance, including population, workforce, technology, policy, and industry developments. The report identifies the importance of Arizona's freight system in providing connectivity to California and neighboring states with high freight destination routes such as the UPRR Sunset Route.

According to the Freight Plan, Mexico is the second-largest trading partner for Arizona in both imports and exports, behind only California. The report identified the limited POE highway and rail capacity as well as the limited roadway connections within the state as definitive weaknesses of the freight transportation system that result in poor reliability at the U.S./Mexico border.

The Freight Plan identifies I-8, including the segment running through the study area, as a "key commerce corridor." I-8 from the California border to United States Highway 95 (US 95), just northwest of the project study area, is identified as a truck congestion bottleneck throughout the state. There are no intermodal or transload operations facilities within the greater Yuma area, as the UPRR connects to intermodal rail terminals in Phoenix or Tucson. The UPRR services more than 50 trains per day, with 14,400 carloads originating in Arizona and 77,700 terminating in the state.

The Freight Plan recommends policies to improve freight flows, including the support of economic development through freight rail. Integration of freight rail as development occurs is important in supporting regional and statewide economic development. It is also predicted that additional freight rail capacity may also mitigate highway related capacity issues.

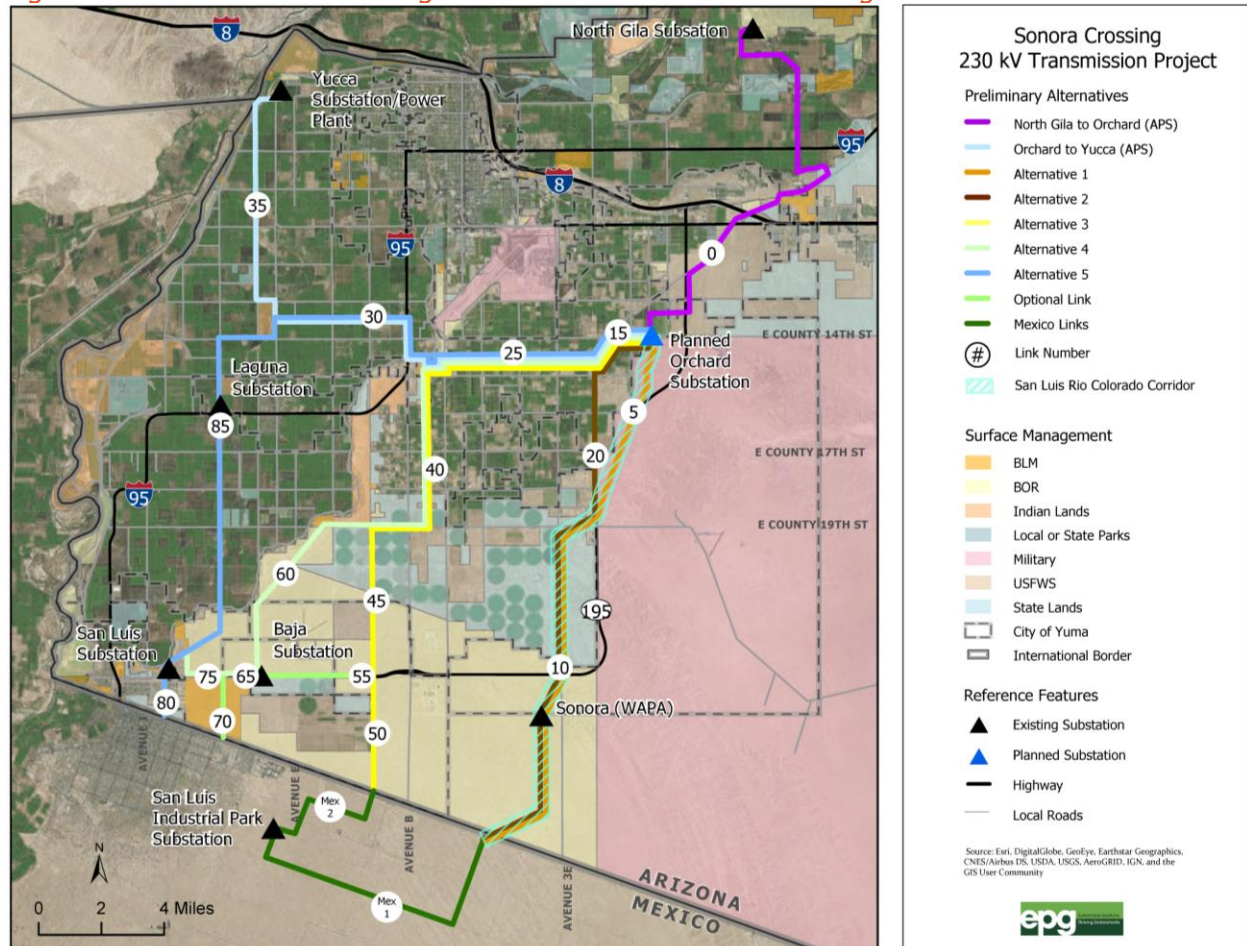
## SONORA CROSSING ELECTRIC TRANSMISSION LINE

The Sonora Crossing is a proposed 230-kilovolt powerline project that would connect a new substation in eastern Yuma, named the Orchard Substation, with the San Luis Rio Colorado Industrial Park located on the east side of San Luis Rio Colorado, Sonora, Mexico. Sonora Crossing is being pursued by a private developer of electric transmission infrastructure called TransCanyon. The project would provide additional power capacity and system redundancy to the power system in southern Yuma County and San Luis to accommodate growing demand as well as provide a connection across the Mexican border to provide additional reliability to the growing industrial park in San Luis Rio Colorado.

Arizona Public Service (APS), the power utility that provides service to the area, is coordinating with TransCanyon, and has recently constructed a new transmission line from its existing North Gila Substation to the new Orchard Substation.

Figure 4 shows the proposed alignment of the Sonora Crossing project from the Orchard Substation to the San Luis Rio Colorado Industrial Park as well as the APS project to connect the North Gila and Orchard Substations. This alignment could provide an opportunity to co-locate electrical transmission and rail infrastructure in a single right-of-way.

Figure 4: Planned Sonora Crossing Transmission Line Alternative Alignments



## SAN LUIS NATURAL GAS DISTRIBUTION FEASIBILITY STUDY

A feasibility study to extend a natural gas pipeline from Yuma to San Luis to provide distribution and service to the City of San Luis was conducted to determine if it is economically feasible to provide this service to San Luis residents and businesses. Based on the growth of San Luis and the balance of land uses, it was determined that an investment to expand natural gas service and build a compressed natural gas station could be recouped within 10 to 12 years and would provide economic and environmental benefits to the area.

A specific alignment for a natural gas pipeline extension was not determined but would need to extend from approximately Avenue 2E and County 19<sup>th</sup> Street to San Luis. This alignment could provide an opportunity to co-locate rail and natural gas infrastructure within the study area.



## OPPORTUNITIES AND CONSTRAINTS

### Opportunities

- The Yuma General Plan and Yuma County Comprehensive Plan both discuss limiting residential growth near MCAS Yuma and the Goldwater AFR. These areas provide an opportunity to route the freight rail where it will have minimal impact on nearby homes.
- The San Luis General Plan is supportive of a freight rail connection with Mexico and planned land uses in eastern San Luis are supportive of a freight rail alignment.
- The Sonora Crossing and Natural Gas Feasibility Studies indicate a need for a north-south alignment to run additional utilities that could be co-located with rail to offset some of the cost of acquiring land for right-of-way.

### Constraints

- The City of Yuma General Plan and Yuma County Comprehensive Plan envision rural-density residential and farming to continue throughout much of the study area, while discouraging commercial and industrial development.
- The Arizona-Sonora Border Master Plan reviewed a potential north-south rail alignment in Yuma County and did not determine that it should be a top priority at the time.

## TRANSPORTATION SYSTEM

### EXISTING RAIL NETWORK

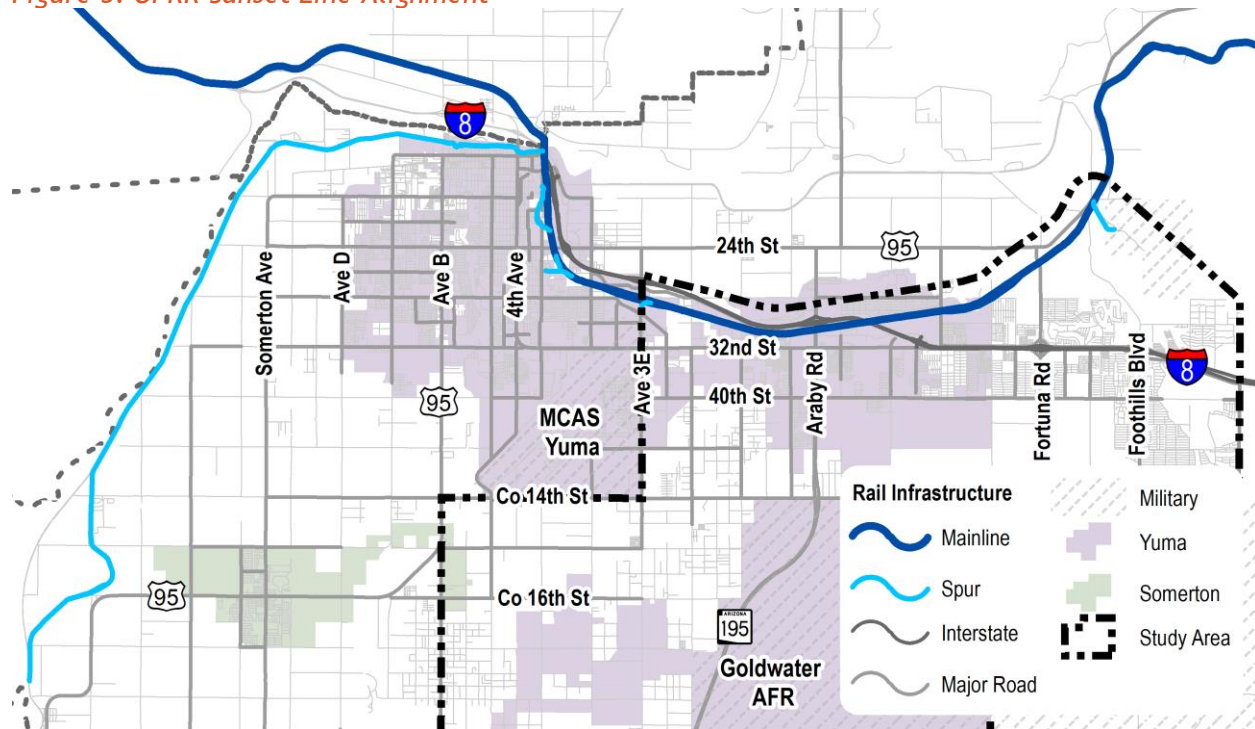
The UPRR Sunset Route is a Class I railway, spanning from California to Louisiana. **Figure 5** shows the UPRR Sunset Route mainline alignment through the Yuma area along with spurs from the mainline. West of Araby Road, the mainline roughly parallels I-8 through central Yuma and into California. To the east of Araby Road, the mainline curves northward to follow the Gila River before rejoining I-8 near Wellton.

One major spur exists in the study area along the UPRR mainline. The spur begins in downtown Yuma and generally follows the Colorado River to the west of Yuma and Somerton ending near County 18<sup>th</sup> Street southwest of Somerton. The spur is in poor condition and rests on soil likely unsuitable for frequent train use. Several additional small spurs are present in the Yuma area including:

- South of downtown Yuma on the west side of the UPRR mainline near 10<sup>th</sup> Street
- South of downtown Yuma on the west side of the UPRR mainline near 20<sup>th</sup> Street
- South of the UPRR mainline east of Avenue 3E extending to north of 32<sup>nd</sup> Street
- South of the UPRR mainline near US 95 and Rifle Range Road

These spurs could provide an opportunity for connecting to the UPRR Sunset Route.

Figure 5: UPRR Sunset Line Alignment



## EXISTING AND PLANNED REGIONAL ROADWAY SYSTEM

The existing roadway network within the Study Area can be defined by roadway functional classification, provided by the Arizona Department of Transportation (ADOT) Arizona Traffic Information System (ATIS) database. Functional classification provides a standard that classifies roadways and highways according to access and use. Classification is determined by mobility and access characteristics to determine the hierarchy of the roadway.

Three main functional classes are defined by the Federal Highway Administration (FHWA)—arterial, collector, and local—based on a roadway’s speed, vehicle capacity, and relationships with the surrounding roadways network. The federal function classification map for the study area is shown in **Figure 6** along with planned future connections and their assumed federal functional classifications.

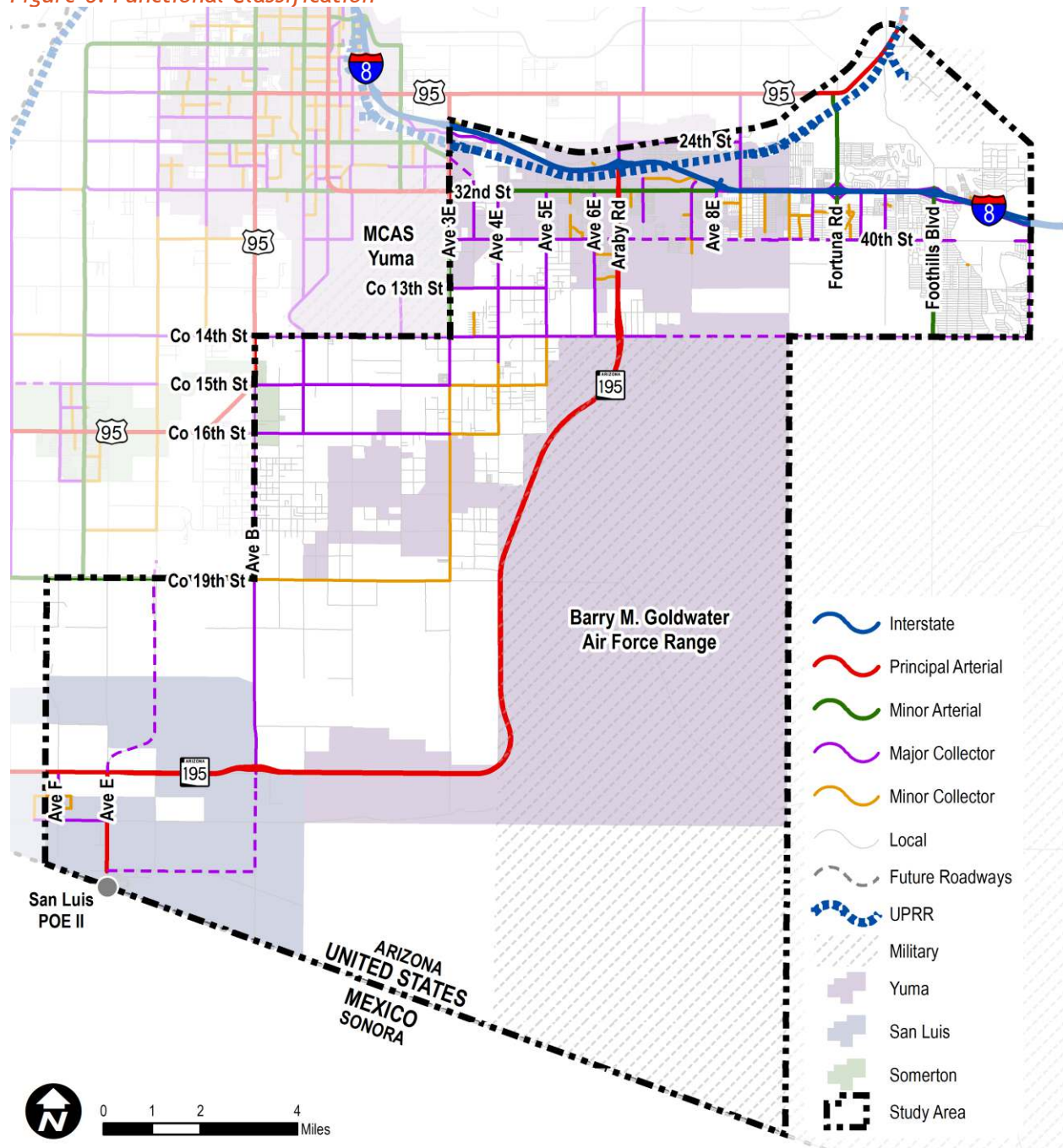
I-8 runs through the study area and is classified as an interstate. SR 195 (Araby Road) and Avenue E in San Luis are the highest classified roadways in the study area as the only principal arterials. Another major regional roadway is 32<sup>nd</sup> Street, which is classified as a minor arterial. These major roadways may provide an opportunity for aligning a new freight rail system as they are intended to provide only limited access to adjacent land.

Several new major roadway connections are planned within the study area which could provide an opportunity to acquire additional right-of-way for a rail alignment. New roadway connections include:

- Avenue E/Avenue D between SR 195 and County 19<sup>th</sup> Street
- A new roadway connecting the San Luis II POE with SR 195 at Avenue B
- County 14<sup>th</sup> Street from SR 195 to Foothills Boulevard
- 40<sup>th</sup> Street from Avenue 6E to Avenue 10E



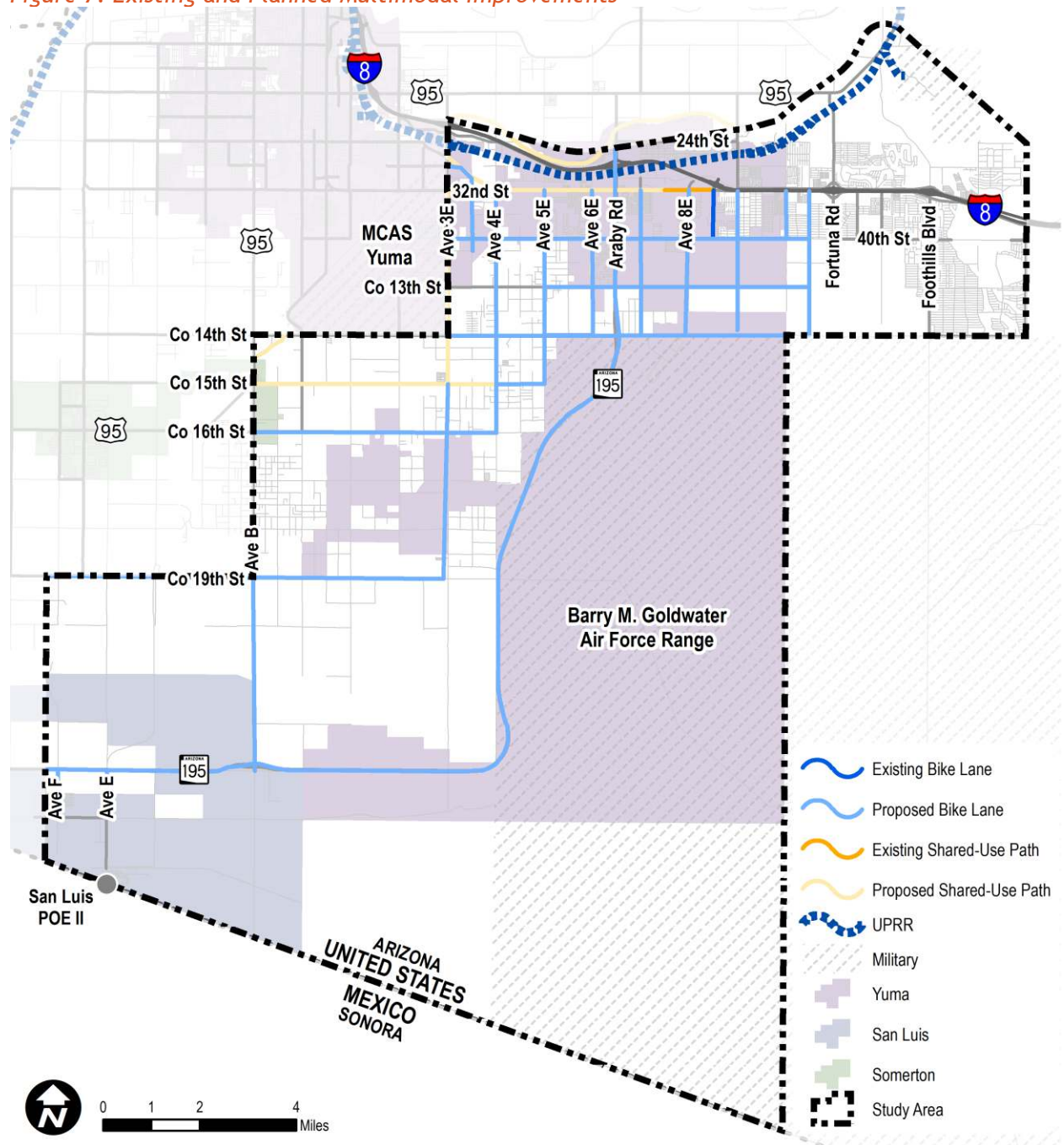
Figure 6: Functional Classification



## EXISTING AND PLANNED TRAIL SYSTEM

Existing and proposed shared-use pathways within the study area are shown in **Figure 7**. The only existing trail in the study area is on 32<sup>nd</sup> Street between Avenue 7E and Avenue 9E.

Figure 7: Existing and Planned Multimodal Improvements



Future additional trails are proposed on:

- 32<sup>nd</sup> Street from Avenue 3E to the existing trail beginning at Avenue 7E
- Avenue 3E from County 15<sup>th</sup> Street to US 95
- County 15<sup>th</sup> Street from Avenue B to Avenue 4E
- North of I-8 following the interstate alignment



There is one roadway with bike lanes within the study area, Avenue 8½E. Most major roadways within the study area have proposed bicycle lanes, per the YMPO LRTP. The planned trails and bicycle lanes could be constraints to implementing rail as pedestrian interaction with the rail line should be as limited as possible and bicycle crossings of freight rail lines can cause safety hazards.

## OPPORTUNITIES AND CONSTRAINTS

The following are locations that enable or prohibit future rail alternatives based on the existing conditions analysis.

### Opportunities

- The SR 195 alignment provides a continuous alignment with minimal interaction with other roadway facilities through most of the study area
- The planned roadways in eastern San Luis (Avenue D/Avenue E connection and Connection from the San Luis II POE to SR 195 and Avenue B) and eastern Yuma (40<sup>th</sup> Street and County 14<sup>th</sup> Street extensions) could provide an opportunity to acquire right-of-way for the dual purpose of a railroad and new roadway
- The existing spurs on the UPRR Sunset Route could provide an opportunity for a future alignment since they already intersect UPRR, and it would be easier to implement rail in locations where this has historically existed

### Constraints

- I-8 forms an east-west barrier that will likely require a grade separation of any future north-south rail alignment if it crosses I-8
- The planned trails and bicycle lanes in the YMPO LRTP could be constraints to implementing a rail line because interaction between pedestrians, bicycles, and freight rail should be minimized

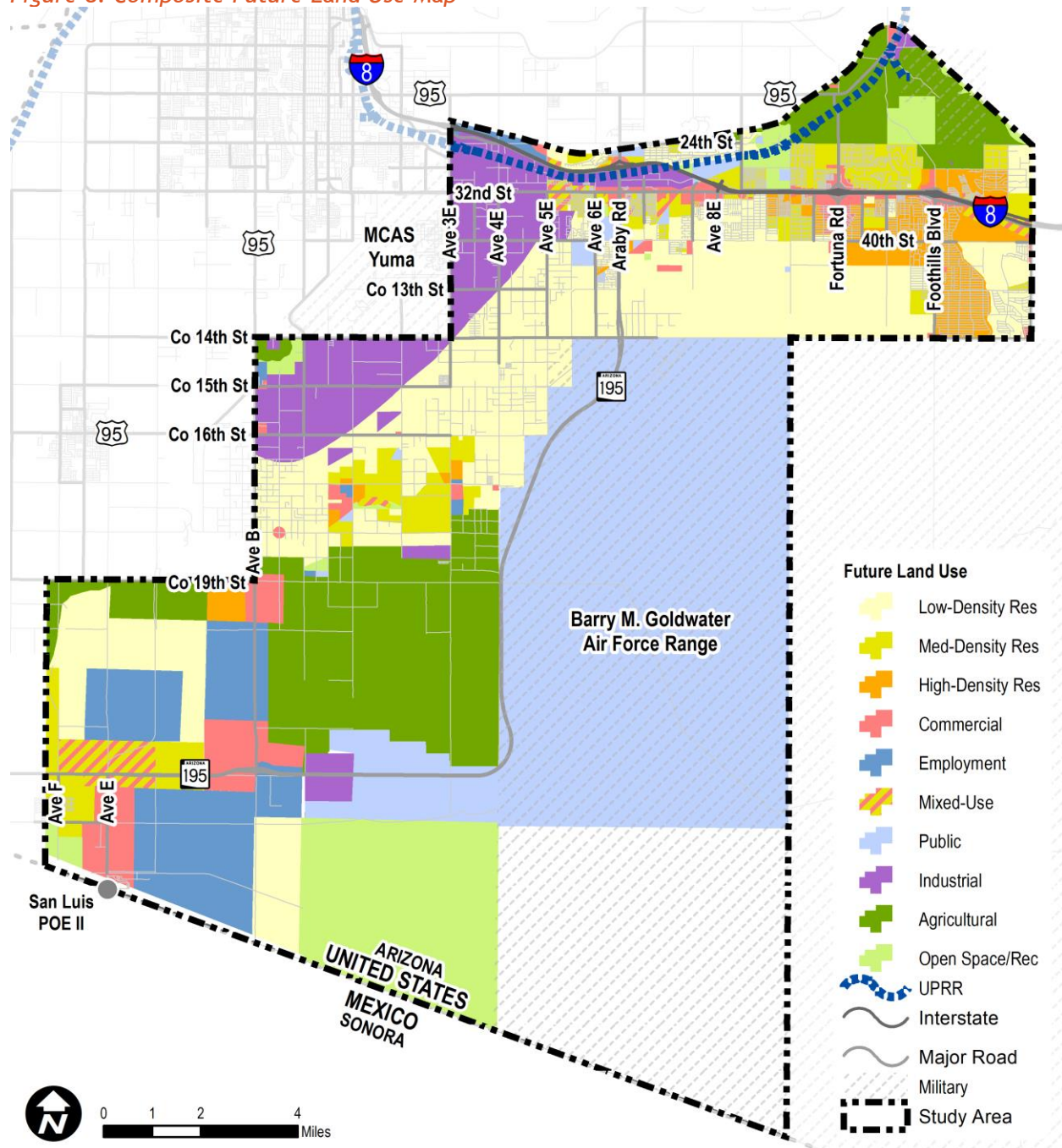
## FUTURE LAND USE

Understanding future land uses as envisioned by local governments within the study area is key to evaluating the potential impacts of potential rail alignments. A comprehension of future land use also informs mitigation strategies that may need to be explored. Future land uses were reviewed from:

- **Yuma Mesa Planning Area.** Agriculture land on the outskirts of Yuma is anticipated to be maintained. Industrial land uses are envisioned between I-8 and 32<sup>nd</sup> Street. Agriculture and Industrial land use are planned to be adjacent to MCAS Yuma to the south and east. Rural-density residential is envisioned surrounding industrial and agricultural development.
- **City of San Luis Future Land Use Plan.** Commercial and employment-focused developments are anticipated to surround the San Luis II POE. Residential land is anticipated in the far southeast portion of San Luis. The agriculture land in the northeast of the city is planned to be maintained into the future.
- **City of Somerton Future Land Use Plan.** The land within the project study area is planned for agricultural/industrial use, with a small portion of commercial land adjacent to the study area boundary.
- **Yuma County Future Land Use Plan.** The land just south of Yuma city limits, adjacent to the Goldwater AFR is anticipated to be rural-density residential and remain agricultural to the south. This will result in minimal planned development south of Yuma. Land at the border of Arizona and Sonora, adjacent to the Goldwater AFR, is denoted as a sensitive area/resource land and will remain undeveloped.

The future land use plans from City of Yuma, City of San Luis, City of Somerton, and Yuma County were compiled into a composite future land use map applied to the study area as shown in **Figure 8**. Industrial land use opportunities are just south and east of MCAS as well as following the I-8 corridor to the west of Araby Road. Land north and to the west of the Goldwater AFR is constrained by rural-density residential and agricultural land.

*Figure 8: Composite Future Land Use Map*





## OPPORTUNITIES AND CONSTRAINTS

### Opportunities

- Land uses that are generally favorable to rail development, such as industrial or employment-focused land uses, are envisioned for areas around the San Luis II POE, near MCAS Yuma, and along the I-8 corridor west of Avenue 8½E.

### Constraints

- Land uses that are unfavorable to rail development, such as residential and agricultural, are present throughout the central portion of the study area, along the SR 195 corridor, and along the I-8 corridor east of Avenue 8½E.

## ENVIRONMENTAL OVERVIEW

This Environmental Overview (EO) includes descriptions of the existing environmental resources within the study area. This EO also contains potential known environmental issues, constraints, and opportunities and serves as a planning tool during improvement alternatives development and evaluation.

- Biological Resources.** There is no federally designated Critical Habitat within the project area. There are seven federally threatened, endangered or candidate species that should be evaluated during future phases of study in the study area:
  - Sonoran Pronghorn
  - Southwestern Willow
  - Yellow-billed Cuckoo
  - Yuma Ridgeways Rail
  - Sonoran Desert Tortoise
  - Razorback Sucker
  - Flat-tailed Horned Lizard

There are also eight State-listed species have been documented within three miles of the study area:

- Western Burrowing Owl
- Resplendent Shovel-nosed Snake
- Western Yellow Bat
- Rosy Boa
- California Leaf-nosed Bat
- Goode's Horned Lizard
- Yuma Hispid Cotton Rat
- Yuma Desert Fringe-toed Lizard

During the environmental clearance process, biological resources should be evaluated, and federal and state resources should be reviewed to determine if new species have been identified or any changes in listing statuses have occurred.

- Wetland and Riparian Areas.** According to the National Wetlands Inventory Wetlands Mapper<sup>1</sup>, riverine (ephemeral washes) and freshwater forested/shrub wetland are within the study area. Potential impacts to these resources should be evaluated during the environmental clearance process.
- Section 401/404 of the Clean Water Act.** Based on a review of aerial photography, numerous named and unnamed ephemeral washes are present within the study area. It is anticipated that these features could be determined to be potentially jurisdictional Waters of the U.S. (WOTUS) by the U.S. Army Corps of Engineers. An evaluation to determine boundaries of WOTUS should be conducted during the design phase of the project to avoid and minimize impacts to potential WOTUS. The project should be designed to avoid and

<sup>1</sup> USFWS. 2022. National Wetlands Inventory Wetlands Mapper. Accessed January 4, 2022. <https://www.fws.gov/wetlands/data/Mapper.html>

minimize impacts to the extent practicable, and if there are unavoidable impacts to WOTUS, a Section 404/401 permit will be required.

- **Floodplain Encroachment.** Areas that are within the 100-year floodplain could be constraints to constructing a rail alignment. Floodplains in the study area are all located in the far northeast area of the study area in the Fortuna Foothills area where runoff from the Gila Mountains has the potential for flooding typically dry washes.
- **Sole Source Aquifer.** The project is not located within the limits of a Sole Source Aquifer; therefore, no impacts are anticipated. This should be reevaluated during the environmental clearance process.
- **Cultural Resources.** Based on preliminary review, there are 84 cultural sites that extend into the study area, 14 of which are determined eligible for inclusion in the National Register of Historic Places and would require mitigation. Of the sites, 48 are either unevaluated, recommended not eligible, or recommended eligible and would require more research. Potential impacts to cultural resources should be evaluated during the environmental clearance process.
- **Section 4(f) Resources.** The project is subject to Section 4(f) of the United States Department of Transportation Act of 1966 (49 U.S.C. 303). Based on preliminary review, public parks are located within the study area, including Terraces Park and Saguaro Park. Potential impacts to these Section 4(f) resources should be evaluated during the environmental clearance process.
- **Section 6(f) Resources.** Section 6(f) of the Land and Water Conservation Fund Act of 1965 (16 U.S.C. 4601-4 et seq.) applies to all transportation projects, regardless of funding source or approval authority, which propose to use land from a Section 6(f) property. Based on preliminary review, there are no potential protected Section 6(f) properties in the study area; therefore, Section 6(f) analysis/consultation is not required. This conclusion should be reevaluated during the environmental clearance process.
- **Visual Resources.** The overall visual character of the study area varies. The southern portion is dominated by native desert, while the eastern portion consists of military land use, the western portion is largely rural residential development and agricultural land use, and the northern portion consists of residential and commercial development. Land ownership in the study area includes Bureau of Land Management (BLM), Bureau of Reclamation (BOR), Cocopah Indian Reservation, military (Goldwater AFR and MCAS Yuma), Arizona State Land Department, and privately owned lands. BLM Visual Resource Management areas of Class III and IV are within the study area. Potential visual resource impacts should be analyzed during the environmental clearance process.
- **Scenic and Historic Routes.** There are no scenic routes in the project area. US 95 is a historic route located near the study area. Potential impacts should be evaluated during the environmental clearance process.
- **Socioeconomic Impacts.** Socioeconomic analysis is an examination of how a proposed project will impact the overall social and economic character of an area and the well-being of current and future residents of the affected community. Community demographics, safety, public services, employment and income levels, housing, and visual quality are socioeconomic parameters that should be analyzed during the environmental clearance process.
- **Title VI/Environmental Justice Populations.** Title VI/Environmental Justice (EJ) evaluations are part of the larger socioeconomic analysis discussed previously. Demographics to be analyzed during the environmental clearance process include racial and ethnic minorities, age, gender, elderly, female head of household, low-income, and disabled



populations. These Title VI/EJ populations should be analyzed further during the environmental clearance process.

- **Hazardous Materials.** Based on a review of the Arizona Department of Environmental Quality (ADEQ) eMaps, there is one service station with an open leaking underground storage tank (LUST) case on the northeast corner of 32nd Street and Araby Road. This case involves soil contamination. A Preliminary Initial Site Assessment should be prepared during the environmental clearance process to further investigate the potential for facilities with hazardous materials concerns.
- **Noise.** Noise-sensitive receptors are located in the study area. Alternatives that may impact sensitive noise receptors would likely require noise analysis. Potential noise impacts should be evaluated during the environmental clearance process.
- **Stormwater Permit.** The project would disturb more than one acre of land; if that is the case, a Section 402 (Arizona Pollutant Discharge Elimination System) permit and a Stormwater Pollution Prevention Plan would be required from the ADEQ. The need for these permits should be evaluated during the environmental clearance process.
- **Air Quality.** The project is partially located in a nonattainment area for ozone and most of the project is within a nonattainment area for particulate matter 10. Air quality impacts should be evaluated further during the environmental clearance process.
- **Public/Agency Scoping.** Public/agency scoping should be completed during the environmental clearance process in the form of scoping letters and be documented.

## SR 195 ENVIRONMENTAL DOCUMENTATION AND AGREEMENTS

### *Flat-Tailed Horned Lizard*

Notable on the Arizona Special Status Species list is a species called the flat-tailed horned lizard (FTHL) because it has an established multi-agency conservation agreement. The parties to the Conservation Agreement established a Working Group which subsequently developed a document called the FTHL Range-wide Management Strategy (RMS). This RMS document includes extensive discussion of the Goldwater AFR.

SR 195 was built following an Environmental Assessment (EA) which discussed the FTHL situation in detail, with specific mitigation commitments. A key mitigation commitment was compensation for all FTHL habitat lost due to direct construction (623 acres), as well as habitat isolated (an additional 3,654 acres) and thus rendered unusable due to landscape fragmentation. ADOT agreed to have the impacted lands appraised and to pay the monetary equivalent to BLM which, in turn, would identify and prioritize acquisition of another suitable habitat nearby. This compensation was to occur at a ratio of up to six acres compensated for each one acre of habitat lost.

The FTHL is likely to be encountered by any corridor alternatives in the eastern portion of the study area and will likely require similar mitigation measures as those in the SR 195 EA. In particular, if a Recommended Alternative impacts land under BLM control, mitigation measures for the FTHL will be required.

### *Other Species Addressed in the SR 195 EA*

FTHL was the species receiving most of the attention in ADOT's 2005 EA for SR 195, but several other species were also assessed:

- Sonoran pronghorn
- Peirson's milk-vetch
- Mountain Plover
- Cowles fringe-toed lizard
- Sand food

It may be appropriate to include consideration of these species identified by the SR 195 EA in the eventual biological field assessment for the recommended corridor.

## OPPORTUNITIES AND CONSTRAINTS

### Opportunities

- Other than the FTHL, there are not anticipated to be major impacts to threatened or endangered species in the study area.
- Floodplains are only present in the far northeast corner of the study area.
- There are few Section 4(f) and no Section 6(f) resources in the study area.
- There is only one known source of hazardous material contamination in the study area.
- The study is in an air quality non-attainment area, which may be a benefit to constructing infrastructure that reduces overall freight emissions, such as converting truck trips to rail.

### Constraints

- The FTHL presents a major obstacle to constructing a rail alignment to the east or south of the SR 195 corridor, particularly within the Goldwater AFR.
- There are several environmental factors that will need to be evaluated in future phases of study, such as wetlands, cultural resources, and socioeconomic impacts. Mitigation strategies may need to be developed for these, depending on the selected alignment alternative.

## OPPORTUNITIES AND CONSTRAINTS SUMMARY

Within each of the preceding sections, opportunities and constraints have been listed. Most of these opportunities and constraints geographically impact the feasibility of rail alignment alternatives. These geographic opportunities and constraints have been mapped in **Figure 9** to highlight where potential alternatives should be developed and where there are major locations to avoid with potential rail alignment alternatives.

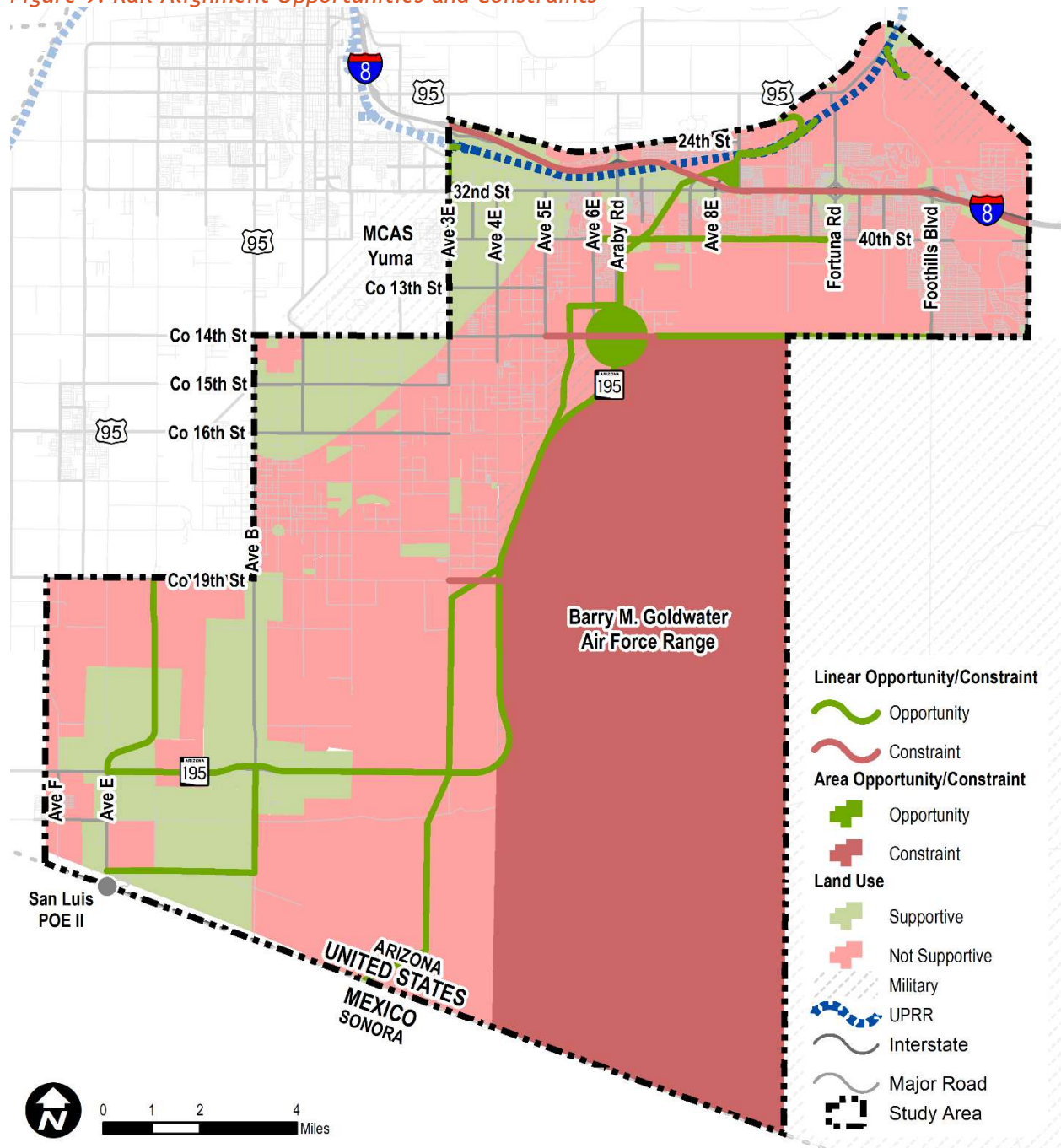
One of the major factors in the viability of rail alternatives is future land use. Future land uses have been categorized to show whether land uses are generally supportive or not supportive of rail implementation. **Table 1** shows how land uses were categorized.

**Table 1: Future Land Use Opportunities and Constraints**

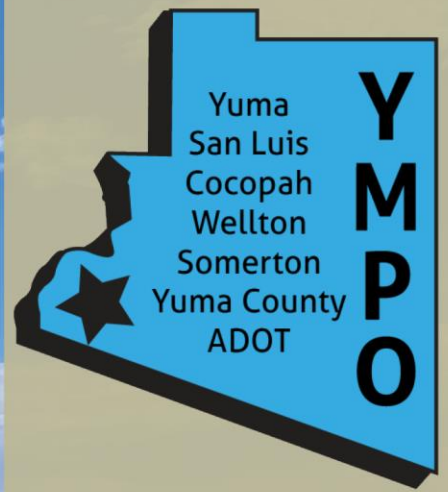
Land Use	Opportunity	Constraint
Low-Density Residential		X
Medium-Density Residential		X
High-Density Residential		X
Commercial	X	
Employment	X	
Mixed-Use	X	
Public		X
Industrial	X	
Agricultural		X
Open Space/Recreation		X



Figure 9: Rail Alignment Opportunities and Constraints







# ALTERNATIVES ANALYSIS



## 3. ALTERNATIVES ANALYSIS

The purpose of the alternatives analysis is to identify, evaluate, and compare north-south rail alignments that are most promising for meeting the goals and objectives of the YMPO Rail/Heavy Freight Alignment Study. The objective of the analysis was to select a Recommended Alternative for future consideration.

### RAIL INFRASTRUCTURE REQUIREMENTS

Based on the most recent track engineering standards from UPRR (September 21, 2020), the following design parameters are determined to be most appropriate for a new north-south rail facility:

- **Geometry (horizontal alignment only)**
  - 40 miles per hour track design speed (Class 3 track); typical for regional track
  - 1" unbalance on curves
  - Maximum horizontal curve of 5° (chord definition)
  - Number 20 Common Standard Turnout—along the mainline
  - Number 11 Common Standard Turnout—for access to industry
- **Roadbed and Rail Section**
  - 136lb RE Rail, welded
  - Wooden ties (steel ties could also be considered in future design processes)
- **Right-of-Way**
  - 100' typical right-of-way for mainline segments (a typical cross-section is shown in **Figure 10**).
  - Varying right-of-way of between 100' and 500' for segments with sidings depending on access requirements and terrain (a typical cross section is shown in **Figure 11**).

*Figure 10: Typical Mainline Cross-Section*

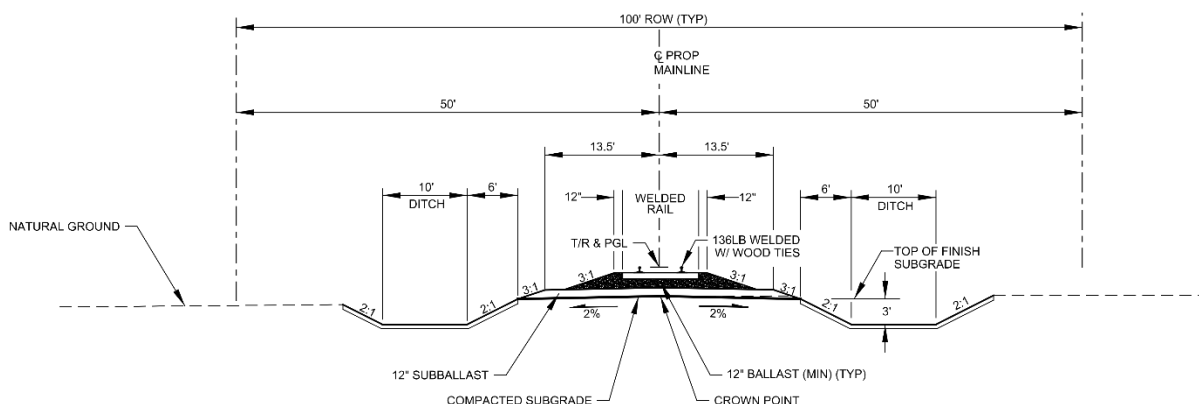
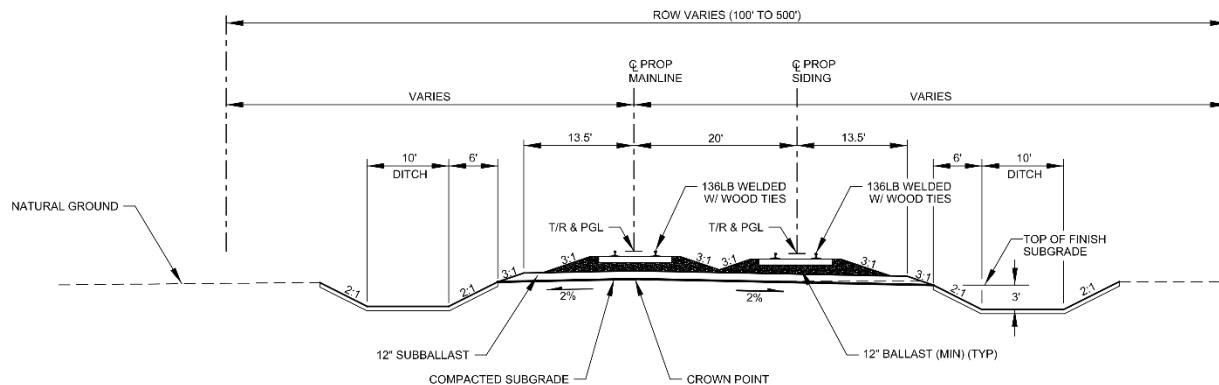


Figure 11: Typical Mainline with Siding Cross-Section



## Border-Related Infrastructure Requirements

In addition to the typical infrastructure and right-of-way requirements for the railroad mainline, additional infrastructure and land will be required for a border-related inspection facility. Rail cars from Mexico are required to be inspected within 35 miles of the U.S./Mexico border; however, most rail inspection and intermodal facilities are located within 10 miles of the border.

The specific size needed for this international inspection and intermodal facility is dependent on the number of rail cars, trucks, and lifts. Generally, these facilities tend to be approximately 230 acres in size, approximately 10,000 feet long by 1,000 feet wide running parallel to the mainline track.

## CONCEPTUAL ALIGNMENT ALTERNATIVES

### CONCEPTUAL ALTERNATIVES

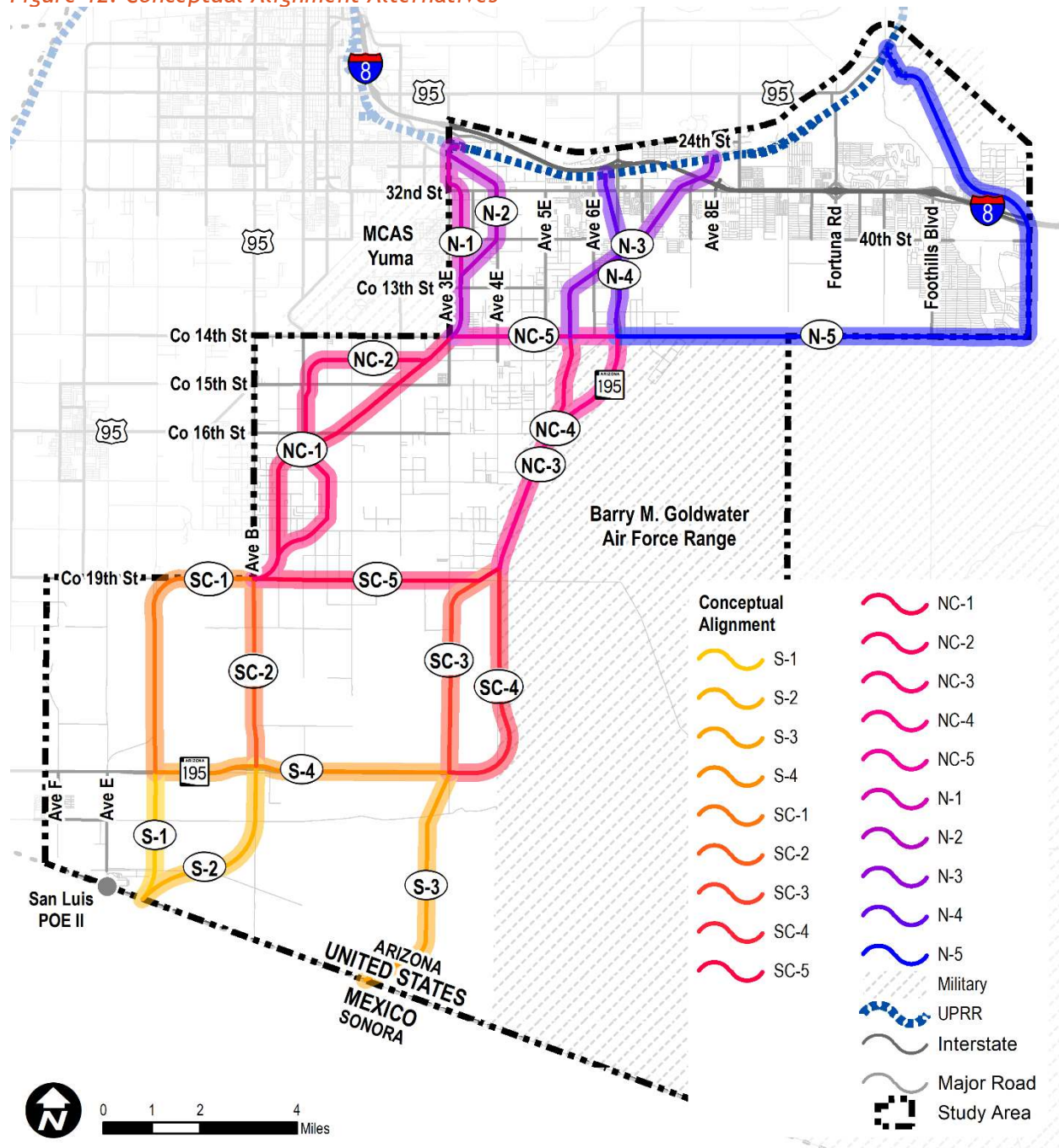
The following Conceptual Alternatives, shown in **Figure 12**, are the preliminary alternatives identified to meet the goals and objectives of the YMPO Rail/Heavy Freight Alignment study. Conceptual Alternatives are intended to be a broad “universe of potential alternatives” within the study area. The process of identifying conceptual alternatives included the consideration of:

- Future land use maps from local municipalities and Yuma County
- Identified opportunities and constraints from the first round of stakeholder interviews and existing conditions research
- Existing or anticipated right-of-way availability

The Conceptual Alternatives were grouped into four categories geographically: South, South-Central, North-Central, and North.



Figure 12: Conceptual Alignment Alternatives



## SOUTH ALTERNATIVES

The South Alternatives are in the portion of the study area that stretches from the U.S./Mexico border to the east-west section of SR 195. The four South Alternatives have connections to the SR 195 right-of-way and provide access to Mexico just east of the San Luis II Border POE and through a site proposed for the Sonora Crossing Transmission Line Project.

- S-1 connects from the border just east of the San Luis II POE to SR 195 following the Avenue D alignment.
- S-2 connects from the border just east of the San Luis II POE to SR 195 following a future County 25<sup>th</sup> Street and Avenue B connection.
- S-3 connects from the Mexican border to SR 195 following the proposed alignment of the Sonora Crossing Transmission Line Project.
- S-4 offers connections between for the other South Alternatives via the SR 195 alignment.

### ***SOUTH-CENTRAL ALTERNATIVES***

The five South-Central alignment alternatives provide options for connecting through the four-mile span between SR 195 and County 19<sup>th</sup> Street.

- SC-1 connects from SR 195 to County 19<sup>th</sup> Street via the Avenue D alignment, then turns eastward along the County 19<sup>th</sup> Street alignment to Avenue B.
- SC-2 connects from SR 195 to County 19<sup>th</sup> Street via the Avenue B alignment.
- SC-3 connects from SR 195 to County 19<sup>th</sup> Street just west of SR 195 following the proposed Sonora Crossing alignment.
- SC-4 follows the SR 195 alignment from the Sonora Crossing path to County 19<sup>th</sup> Street.
- SC-5 offers connections between the other South-Central Alternatives along the County 19<sup>th</sup> Street alignment.

### ***NORTH-CENTRAL ALTERNATIVES***

The five North-Central alignment alternatives provide options for connecting through the five-mile span from County 19<sup>th</sup> Street to County 14<sup>th</sup> Street.

- NC-1 connects County 19<sup>th</sup> Street to County 14<sup>th</sup> Street via the B Main Lateral Canal.
- NC-2 connects County 19<sup>th</sup> Street to County 14<sup>th</sup> Street via the A8-9 Lateral Canal.
- NC-3 connects from the intersection of SR 195 and County 19<sup>th</sup> Street to County 14<sup>th</sup> Street west of Avenue 6E following the proposed Sonora Crossing alignment.
- NC-4 follows the SR 195 alignment from County 19<sup>th</sup> Street to County 14<sup>th</sup> Street.
- NC-5 offers connections between the other North-Central alternatives via the County 14<sup>th</sup> Street alignment.

### ***NORTH ALTERNATIVES***

The five Northern Alignment alternatives connect from County 14<sup>th</sup> Street to the UPRR Sunset Line.

- N-1 travels from the intersection of County 14<sup>th</sup> Street and Avenue 3E and follows a north-south alignment just east of Avenue 3E until it intersects with an existing rail spur from the UPRR line.
- N-2 connects from the intersection of County 14<sup>th</sup> Street and Avenue 3E and follows the B Canal right-of-way to an existing rail spur from the UPRR line.
- N-3 follows right-of-way obtained by APS for a new transmission line now under construction that connects from County 14<sup>th</sup> Street west of Avenue 6E and follows the Gila Gravity Main Canal to the UPRR line.
- N-4 follows the SR 195/Araby Road alignment from County 14<sup>th</sup> Street to the UPRR line.
- N-5 connects from the intersection of SR 195 and County 14<sup>th</sup> Street to the east following the County 14<sup>th</sup> Street alignment to Avenue 15E where it turns northward and crosses I-8 to connect with an existing rail spur from the UPRR line near Rifle Range Road.



## CONCEPTUAL ALTERNATIVES SCREENING

### SCREENING MATRIX METHODOLOGY

The Conceptual Alternatives were evaluated to identify those that are most suitable as an alignment for a possible rail/heavy freight corridor in the Yuma region. A high-level technical analysis was combined with the stakeholder and public input to identify fatal flaws with Conceptual Alignments that should be screened out before selecting Candidate Alternatives. This analysis included:



#### Land Use

- Land use compatibility
- Acres of public land impacted
- Acres of private land impacted
- Right-of-way availability



#### Roadway System Impacts

- Number of classified road crossings
- Number of local road crossings/closures



#### Environmental

- Historic property impacts
- Floodplain/waterway impacts
- Flat-Tailed Horned Lizard impact



#### Constructability

- Circuitry
- UPRR connection geometrics



#### Political Feasibility

- TAC and stakeholder input
- Public input

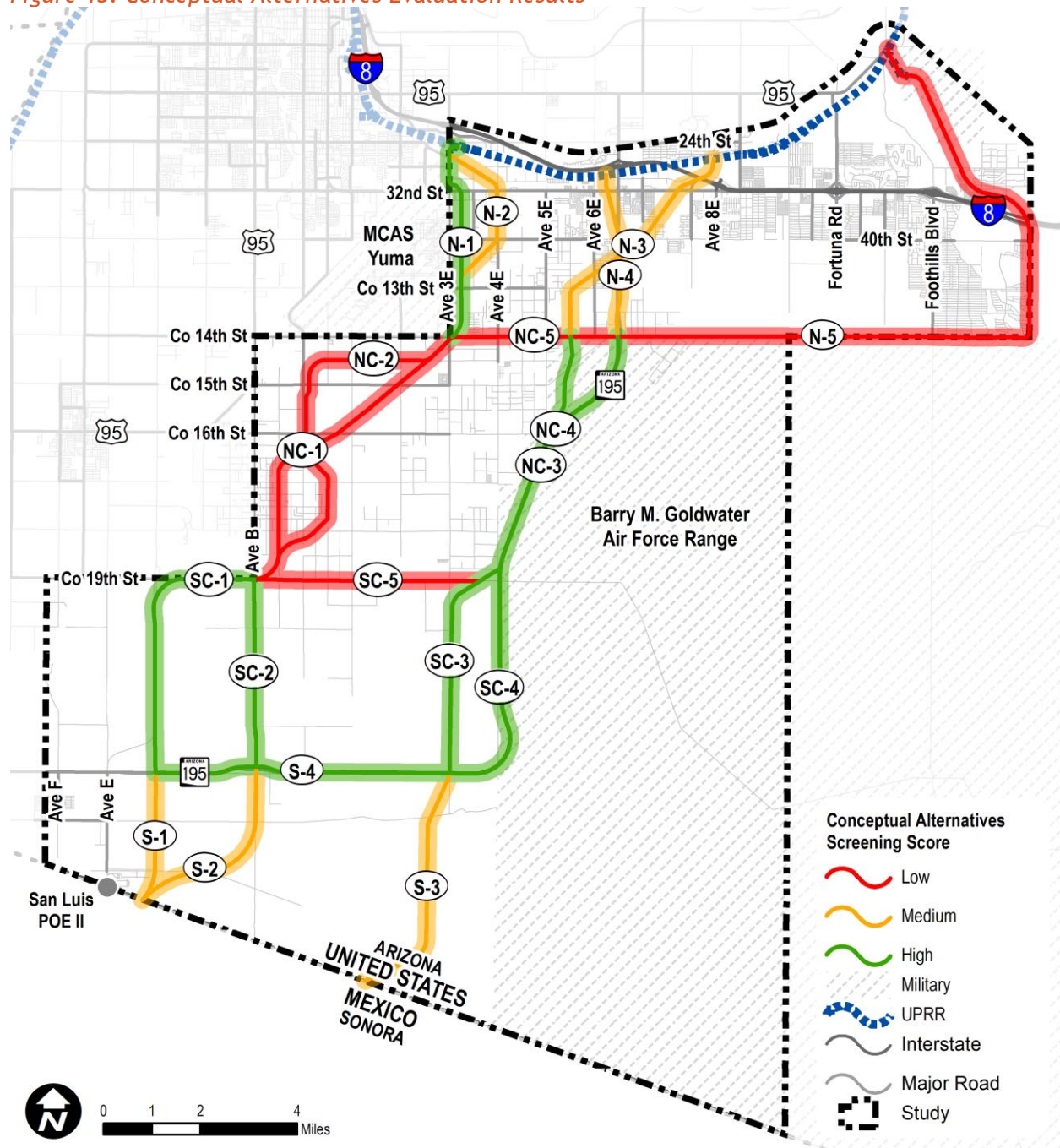
### SCREENING MATRIX RESULTS

The assessment of Conceptual Alternatives was evaluated using the criteria categories of Land Use, Roadway System, Environmental, and Constructability. The evaluation rated alternatives based on impact to the applicable category criteria with a score of poor (1), fair (2), or good (3). The scoring breakdown for each alternative is shown in **Table 2** and the results are shown graphically in **Figure 13**. Using these results, Candidate Alternatives were selected which went through a more vigorous technical analysis.

**Table 2: Conceptual Alternatives Evaluation Matrix**

Conceptual Alternative	Land Use				Political		Environmental			Roadway		Constructability		Total
	Compatibility	Public Land Impact	Private Land Impact	Right-of-way Impact	TAC/Stakeholder	Public Input	Historic Property Impact	Floodplain/Waterway Impact	Flat-Tail Horned Lizard Impact	Classified Road Crossings	Local Road Crossings	Circuitry	UPRR Connection	
N1	2	1	1	2	1	3	3	3	3	3	2	3	3	30
N2	2	1	1	1	1	2	3	3	3	3	3	2	3	28
N3	3	2	1	3	1	1	3	3	3	1	2	3	1	27
N4	3	1	1	2	1	1	3	3	3	1	3	2	2	26
N5	1	3	1	1	3	3	3	1	1	2	1	1	3	24
NC1	2	2	1	1	1	3	3	3	3	1	1	3	-	24
NC2	2	2	1	1	1	2	3	3	3	1	1	1	-	21
NC3	3	1	3	2	2	2	3	3	2	3	3	3	-	30
NC4	3	1	3	3	2	2	3	3	2	3	3	3	-	31
NC5	1	2	1	1	2	1	3	3	3	2	2	1	-	22
SC1	3	3	3	2	1	2	3	3	3	1	3	3	-	30
SC2	3	3	3	1	1	2	3	3	3	2	3	3	-	30
SC3	3	3	3	1	2	1	3	3	3	2	2	3	-	29
SC4	3	3	3	3	2	3	3	3	2	3	2	3	-	33
SC5	1	2	1	1	2	2	3	3	3	3	1	1	-	23
S1	3	2	1	1	2	2	3	3	3	1	2	3	-	26
S2	3	3	3	2	2	1	3	3	2	1	2	3	-	28
S3	3	1	3	1	3	3	3	3	1	1	3	3	-	28
S4	3	3	3	3	2	2	3	3	2	3	1	1	-	29

Figure 13: Conceptual Alternatives Evaluation Results

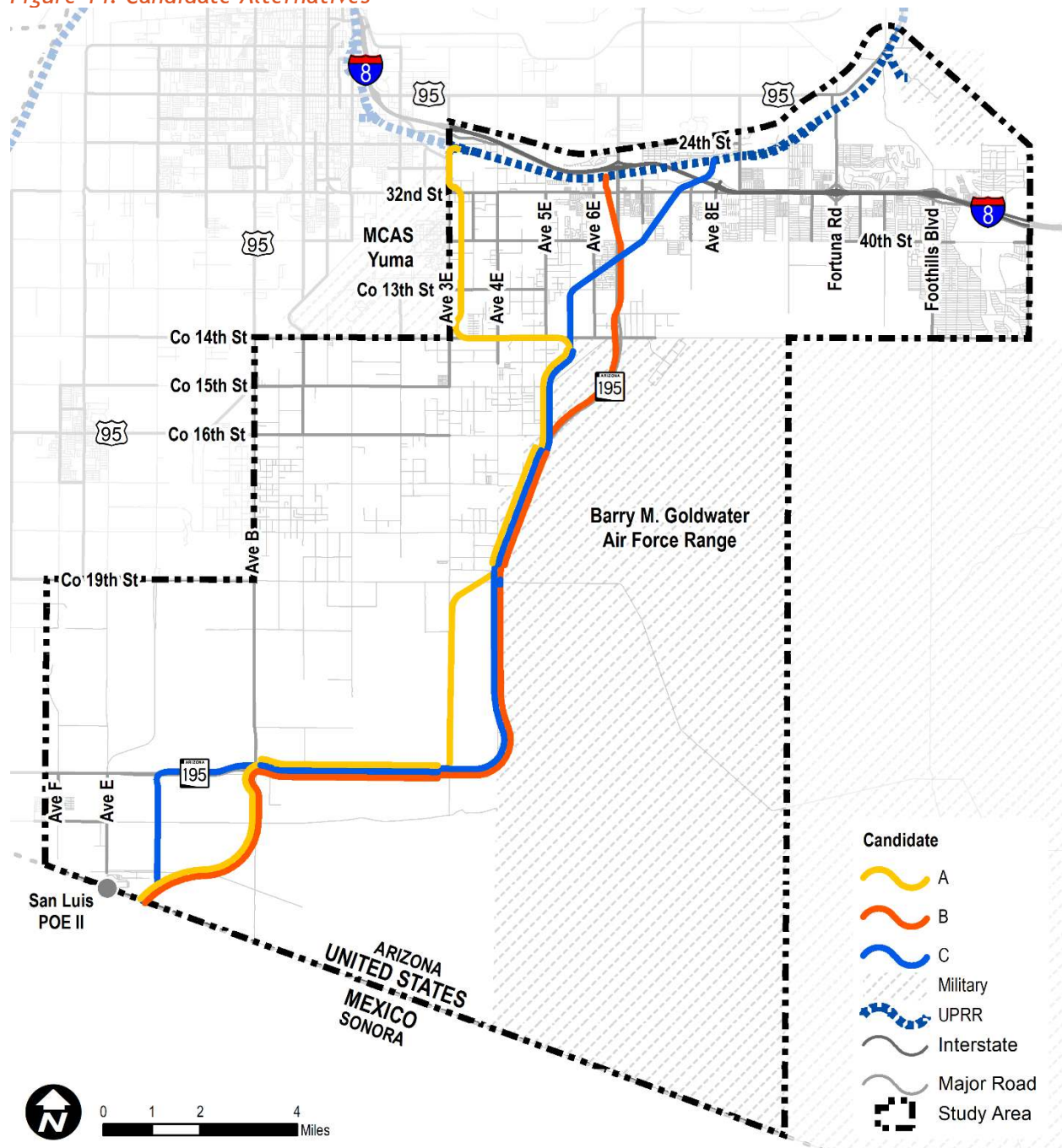




## CANDIDATE ALIGNMENT ALTERNATIVES

Based on the results of the Conceptual Alternatives evaluation, high-performing alignments were combined into three continuous Candidate Alternatives (A, B, and C) that run the entire length of the study area from the U.S. /Mexico border to the UPRR Sunset Route. These Candidate Alternatives are shown in Figure 14.

Figure 14: Candidate Alternatives



## CANDIDATE ALTERNATIVES SCREENING

### SCREENING METHODOLOGY

A comparative analysis process was developed to quantify potential impacts of each of the three Candidate Alternatives. The evaluation criteria are listed in **Table 3**. Each of these criteria was quantified for the Candidate Alternatives and then given a ranking of '1', '2', or '3' based on their relative impact (with '3' being the most preferable score and '1' being the least preferable score).

*Table 3: Candidate Alignment Evaluation Criteria*

Land Use	
Land Use Compatibility	<ul style="list-style-type: none"> <li>Number of residential units within ¼ mile of the alignment</li> <li>Acreage of protected open space and prime or unique farmland within 1,000' of alignment</li> <li>Percentage of alignment frontage that is currently vacant land</li> </ul>
Compatibility with Planning Policies	<ul style="list-style-type: none"> <li>Percentage of alignment within a compatible zoning district</li> <li>Percentage of alignment within a compatible future land use</li> </ul>
Land Acquisitions and Displacement	
Acquisitions Required	<ul style="list-style-type: none"> <li>Acreage of the parcels that would need to be acquired</li> <li>Number of structures that would need to be acquired</li> </ul>
Transportation	
Traffic and Safety Impacts	<ul style="list-style-type: none"> <li>Number of assumed roadway closures</li> <li>Number of assumed at-grade railroad crossings (safety focus)</li> <li>Vehicles impacted from at-grade railroad crossings</li> <li>Number of anticipated grade-separated crossings</li> </ul>
Rail Operations	<ul style="list-style-type: none"> <li>Ease of connection to UPRR</li> <li>Number of opportunities for sidings</li> <li>Land availability for an inspection facility</li> <li>Track alignment geometry constraints</li> </ul>
Environmental Impacts	
Natural Environment	<ul style="list-style-type: none"> <li>Acreage of wetland impacted</li> <li>Number of historic sites impacted</li> <li>Acreage of FTHL habitat impacted</li> </ul>
Environmental Justice	<ul style="list-style-type: none"> <li>Impact to Title VI populations</li> </ul>
Hazardous Materials	<ul style="list-style-type: none"> <li>Number of contaminated/hazardous materials sites with ¼ mile of alignment</li> </ul>
Noise and Vibration	<ul style="list-style-type: none"> <li>Number of residential units, hotel beds, and hospital beds within 1,600' of alignment</li> <li>Number of residential units within 500' of alignment</li> </ul>
Cost	
Cost	<ul style="list-style-type: none"> <li>Planning-level construction cost (cost per mile and grade seps).</li> <li>Planning-level right-of-way cost</li> </ul>

### SCREENING RESULTS

A comparative evaluation of the candidate alternatives was conducted using the evaluation criteria outlined in **Table 3**. The three Candidate Alternatives were compared to each other across criteria and given a rating of 1, 2, or 3 to indicate better performing or more supportive candidates measured against one another. The outcomes for each alternative were summarized and used to rank the alternatives. A summary of the results is shown in **Table 4** and more detailed descriptions are provided on the subsequent pages.

*Table 4: Candidate Alternative Evaluation Matrix*

Evaluation Criteria		Metric Description	Candidate A (24.4 miles)		Candidate B (24.2 miles)		Candidate C (22.5 miles)	
			Metric	Score	Metric	Score	Metric	Score
Land Use	Land Use Compatibility	Residential units within 1/4 mile	283	3	939	1	827	2
		Acreage of protected open space and prime or unique farmland within 1,000'	1,365	1	682	2	514	3
	Compatibility with Planning Policies	% of alignment in a compatible zoning district	65%	3	57%	2	55%	1
		% of alignment in a compatible future land use	40%	3	23%	1	29%	2
	Land Acquisitions and Displacements	Estimated acreage of the right-of-way to be acquired	355	1	323	3	341	2
		Estimated number of structures to be acquired	15	1	0	3	0	3
	Land Use Subtotal			12		12		13
Transportation	Traffic and Safety Impacts	Number of assumed roadway closures	6	1	3	3	4	2
		Number of assumed at-grade railroad crossings	12	1	7	2	3	3
		Daily vehicles impacted at at-grade crossings	56,700	1	34,800	2	15,900	3
		Anticipated grade-separated crossings	4	3	8	2	9	1
	Rail Operations	Ease of connections to UPRR	Uses existing spur	3	Proximity to mainline curve & development	1	Proximity to water treatment facility	2
		Opportunities for sidings (by milepost [MP])	MP9 to 11 MP13 to 15	2	MP7 to MP9	1	MP8 to 10 MP11 to 13 MP22 to 23	3
		Land availability for an inspection facility	MP17 to 19	2	MP15 to 17	2	MP16 to 19	3



Evaluation Criteria		Metric Description	Candidate A (24.4 miles)		Candidate B (24.2 miles)		Candidate C (22.5 miles)	
			Metric	Score	Metric	Score	Metric	Score
		Alignment geometry constraints (top: # of sharp curves, bottom: # of reverse curves)	6 5	1	2 6	2	2 5	3
Transportation Subtotal				14		15		20
Environmental Impacts	Natural Environment	Acreage of wetland impacted	0.2 ac	2	1.5 ac	1	0.0 ac	3
		Historic sites impacted	0	3	0	3	0	3
		Acreage of FTHL habitat impacted	152	2	71	3	317	1
	Environmental Justice	Impact to Title VI populations	Low	3	Low	3	Low	3
	Hazardous Materials	Contaminated/ hazardous materials sites within 1/4 mile	None	3	None	3	One LUST	1
	Noise and Vibration	Residential units, hotel beds, and hospital beds within 1,600’	283	3	939	1	827	2
		Residential units within 500’	125	2	438	1	52	3
Environmental Subtotal				18		15		16
Cost	Cost	Planning-level construction cost	\$213M	3	\$297M	2	\$321M	1
		Planning-level right-of-way cost	\$71M	1	\$55M	3	\$57M	2
Cost Subtotal				4		5		3
Total				48		47		52

### Land Use

- **Land Use Compatibility.** Candidate A scored the best in this category as the land uses adjacent are more industrial and therefore more compatible, but the candidate's overall score was reduced due to its impact to prime or unique farmland. Candidates B and C both scored lower in this category for their potential impact to residential land uses.
- **Compatibility with Planning Policies.** All candidates align well with compatibility of existing zoning districts with Candidate A scoring slightly higher. Candidate A also scored the highest in alignment with future land use.
- **Land Acquisitions and Displacements.** All three require a similar amount of acreage to be constructed, so they scored similarly for the land acquisition criterion. Candidate A is the only alignment that requires the acquisitions of any structures, so it performed the lowest on the displacement criterion.

### ■ Transportation

- **Traffic and Safety Impacts.** Criteria for traffic and safety impacts include the number of assumed roadway closures, number of assumed at-grade railroad crossings, potential daily vehicles impacted, and anticipated number grade-separated crossings. Candidate A was the lowest performing alternative and Candidate C scored the best. Candidate C scored well due to the lower number of daily vehicles impacted, fewer at-grade crossings, and assumed closures.
- **Rail Operations.** Candidate C scored the highest in these criteria with the most opportunities for sidings as well as the most optimal availability of land for a future inspection facility. It also has the fewest geometric constraints. Candidate A did score higher for its connectivity to the existing UPRR, but there are fewer opportunities for sidings and land availability for the inspection facility, as well as poor track geometry. Candidate B has a less optimal connection to the existing UPRR and opportunity for sidings and scored the lowest overall.

### ■ Environmental Impacts

- **Natural Environment.** Candidate A and C scored similarly due to the low acreage of wetland impacted. None of the Candidate Alternatives impact any historic sites, causing them to all score evenly for the historic impact criterion. Candidate B impacts the least acreage of FTHL habitat, resulting in it scoring the highest for that criterion with Candidate A and C scoring lower.
- **Environmental Justice.** Vulnerable population data was aggregated on the census tract level and observed within a quarter mile of the potential alignment. All three candidates scored similarly for the vulnerable population criterion due to the low percentage of vulnerable populations near the Candidate Alternatives.
- **Hazardous Materials.** No contaminated or hazardous material sites are within a quarter mile of Candidates A and B. This resulted in both candidate alignments scoring well with Candidate C scoring lower due to an identified LUST located within a quarter mile of the candidate alignment.
- **Noise and Vibration.** Candidate C has the least number of residential units, hotel beds, and hospital beds within 1,600'. Candidate B and C both scored similarly poorly for this criterion. Candidate C has the fewest residential units within 500' of the alignment, scoring the highest for this criterion.

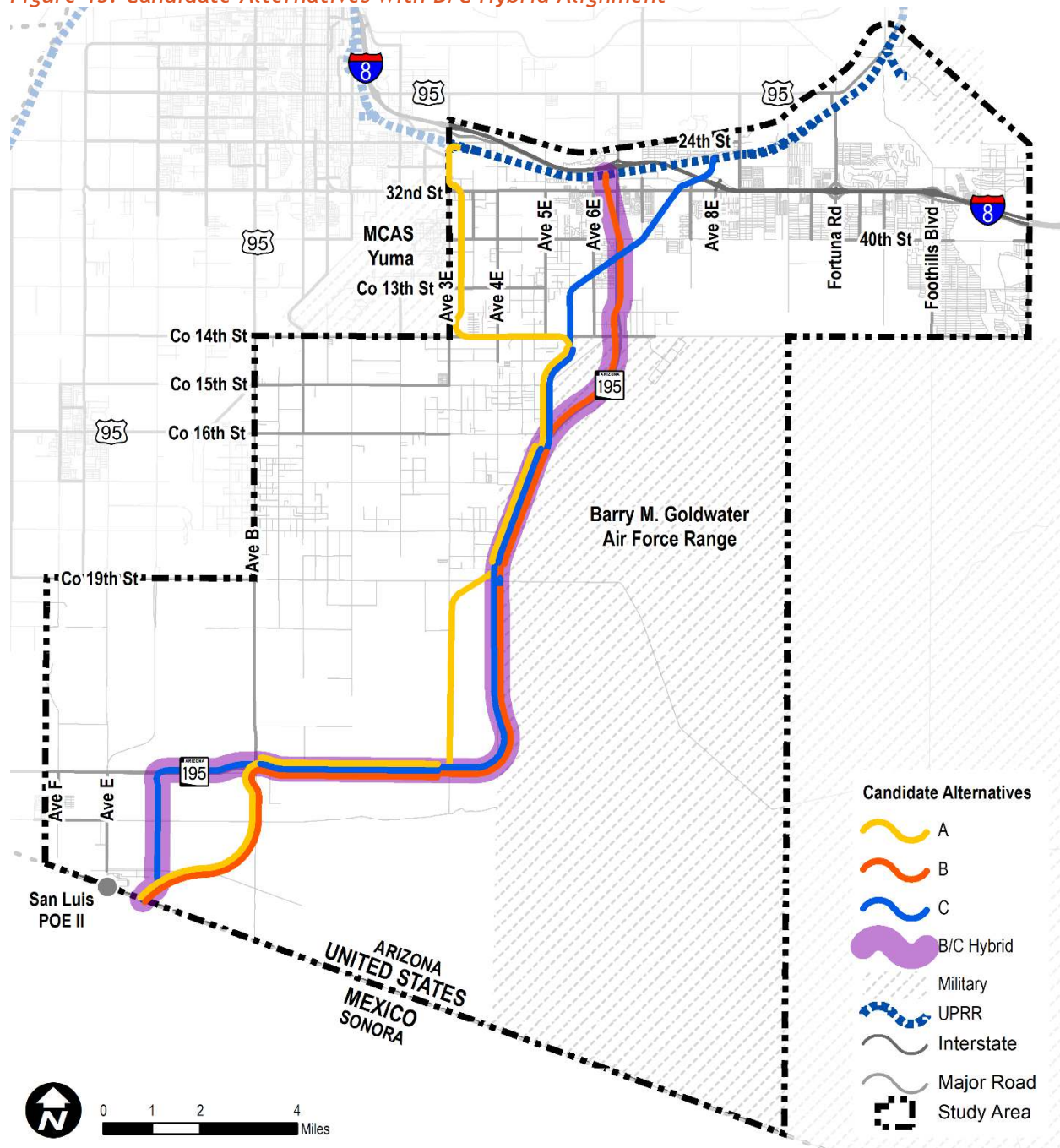
### ■ Cost

- **Planning-Level Cost.** Candidate A has the lowest planning-level construction cost at approximately \$213M where Candidate C has the highest at over \$320M. Candidates B and C have similar planning-level right-of-way costs at just under \$60M, while Candidate A has a higher right-of-way cost of over \$70M.

## CONCLUSIONS

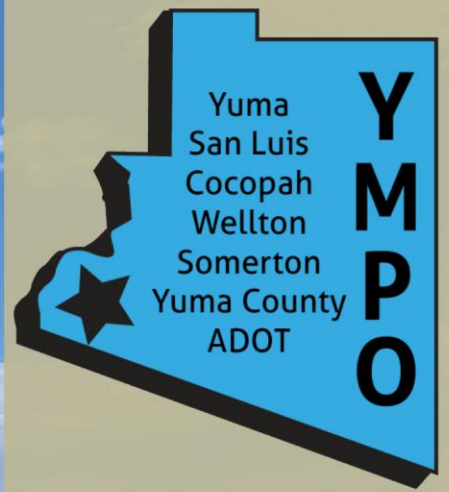
Based on the findings from the Candidate Alternatives screening, a hybrid alignment including portions of Alternatives B and C would minimize the negative impacts of the rail line as shown in **Figure 15**. South of County 16<sup>th</sup> Street, this hybrid alternative would follow the Alternative C alignment, and north of County 16<sup>th</sup> Street, it would follow the Alternative B alignment. By taking the northern segment of Alternative B, impacts to residential land uses are substantially reduced.

Figure 15. Candidate Alternatives with B/C Hybrid Alignment



A 500' corridor has been identified for the B/C hybrid alignment; however, the actual right-of-way requirement would only be 100' for the majority of the alignment. The 500' corridor would need to be studied in further detail in future phases of the project to determine the ideal location for the 100' right-of-way within the 500' corridor. A detailed series of maps showing the 500' corridor is provided in the **Appendix**.





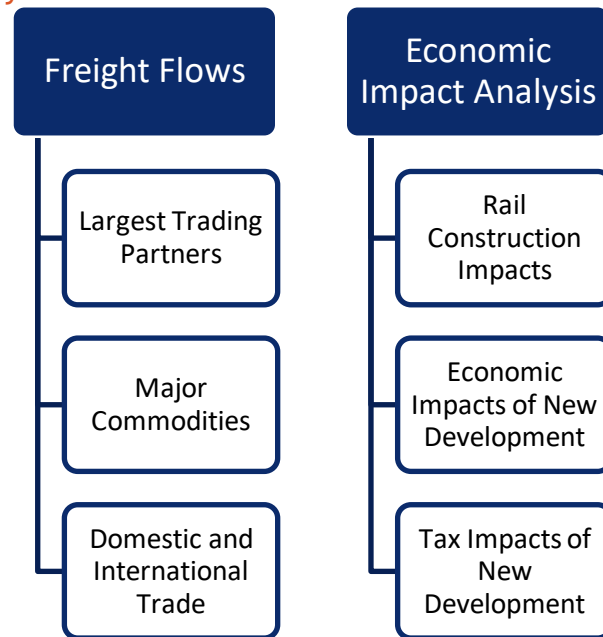
# ECONOMIC ANALYSIS



## 4. ECONOMIC ANALYSIS

As important as finding a feasible alignment for a north-south rail line is determining if there is a strong economic case for investors to construct the line. To understand the anticipated change in freight movements through the Yuma region and what potential economic benefits from constructing the rail line could be, the economic analysis was broken into distinct categories as shown in **Figure 16**.

*Figure 16. Economic Analysis Elements*



### FREIGHT FLOWS

An understanding of existing and projected freight flows into and out of Yuma County aids in determining if there is sufficient economic demand to justify an investment in additional rail infrastructure. Freight flows were obtained from the Transearch database, developed by IHS Markit and purchased by YMPO for use in the Rail/Heavy Freight Alignment Study. The latest freight estimates available are for the year 2019 and forecasted freight flows are available through 2045.

### LARGEST TRADING PARTNERS

**Table 5** shows the largest trading partners with Yuma County. The overall amount of freight generated and consumed by Yuma County is anticipated to increase by over 38% between 2019 and 2045. The Los Angeles, CA Business Economic Area (BEA<sup>2</sup>) is the region's largest trading partner and is anticipated to continue to be the largest trading partner through 2045. Currently, the San Diego, CA BEA is Yuma County's second largest trading partner, but is anticipated to be surpassed by Maricopa County, AZ and trade internally within Yuma County by 2045.

<sup>2</sup> A Business Economic Area (BEA) is a collection of counties as designated by the U.S. Bureau of Economic Analysis, centered around a metropolitan area, along with surrounding counties that are economically tied to that area.

**Table 5: Forecasted Growth in Freight by Trading Partner**

Trading Partner	2019				2045			
	Trucks	% Total	Tons	% Total	Trucks	% Total	Tons	% Total
Los Angeles, CA BEA	175,738	37.7%	2,112,533	36.4%	226,681	35.1%	2,655,870	33.3%
San Diego, CA BEA	72,711	15.6%	840,127	14.5%	76,112	11.8%	787,617	9.9%
Yuma County, AZ	70,140	15.0%	595,106	10.3%	92,522	14.3%	683,414	8.6%
Maricopa County, AZ	60,571	13.0%	734,414	12.7%	104,531	16.2%	1,331,192	16.7%
Pima County, AZ	12,094	2.6%	147,268	2.5%	20,339	3.1%	256,715	3.2%
Pinal County, AZ	8,357	1.8%	103,354	1.8%	13,180	2.0%	151,037	1.9%
San Francisco, CA BEA	6,783	1.5%	135,404	2.3%	14,863	2.3%	298,611	3.7%
Mexico Other	5,147	1.1%	99,986	1.7%	11,326	1.8%	217,340	2.7%
La Paz County, AZ	4,982	1.1%	41,845	0.7%	9,572	1.5%	79,613	1.0%
All Other	49,907	10.7%	987,401	17.0%	76,875	11.9%	1,518,716	19.1%
<b>Total</b>	<b>466,429</b>	<b>-</b>	<b>5,797,499</b>	<b>-</b>	<b>645,997</b>	<b>-</b>	<b>7,980,125</b>	<b>-</b>

## MAJOR COMMODITIES

**Table 6** shows the top commodities imported to and exported from Yuma County. Gravel or Sand, Miscellaneous Waste or Scrap, and Warehouse/Distribution Center products are the top three commodities imported to and exported from Yuma County. Warehouse/Distribution Center products are anticipated to grow substantially to become the top commodity in Yuma County by 2045.

**Table 6: Forecasted Growth in Freight by Commodity**

Commodity	2019				2045			
	Trucks	% Total	Tons	% Total	Trucks	% Total	Tons	% Total
Semi-trailers (Empty)	210,719	45.2%	0	0.0%	285,124	44.1%	0	0.0%
Gravel or Sand	76,701	16.4%	1,864,631	32.2%	69,695	10.8%	1,694,316	21.2%
Misc. Waste or Scrap	36,078	7.7%	969,049	16.7%	42,498	6.6%	1,141,490	14.3%
Warehouse/Distr. Ctr.	26,029	5.6%	535,115	9.2%	86,982	13.5%	1,788,199	22.4%
Misc. Field Crops	22,323	4.8%	461,716	8.0%	21,418	3.3%	443,037	5.5%
Petrol. Refining Prod.	9,077	1.9%	221,594	3.8%	8,850	1.4%	216,065	2.7%
Broken Stone or Riprap	8,916	1.9%	216,751	3.7%	11,090	1.7%	269,608	3.4%
Grain	8,596	1.8%	132,879	2.3%	7,970	1.2%	123,511	1.5%
Asphalt Paving Blocks/Mix	5,601	1.2%	130,169	2.2%	8,757	1.4%	203,526	2.5%
Misc. Fresh Vegetables	5,236	1.1%	111,593	1.9%	6,811	1.1%	145,166	1.8%
Misc. Food Preparations	4,740	1.0%	108,919	1.9%	9,418	1.5%	216,433	2.7%
All Other	52,458	11.3%	1,046,164	18.2%	87,480	13.6%	1,741,379	21.8%
<b>Total</b>	<b>466,474</b>	<b>-</b>	<b>5,798,581</b>	<b>-</b>	<b>646,093</b>	<b>-</b>	<b>7,982,728</b>	<b>-</b>



## INTERNATIONAL IMPORTS AND EXPORTS

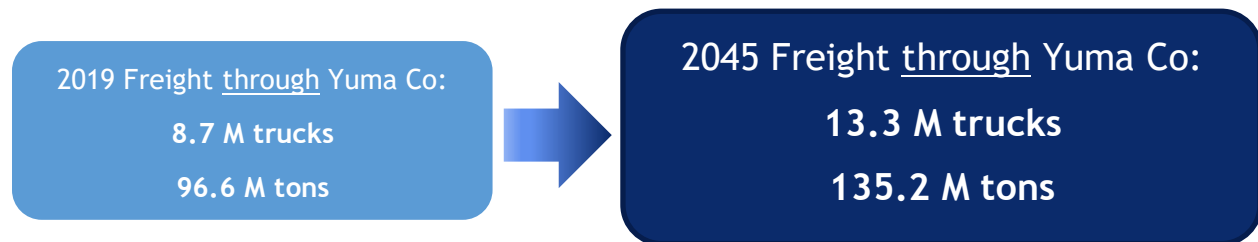
Freight flows between Yuma County and Mexico are particularly important in building a case for constructing a new north-south rail line across the U.S./Mexico border. **Table 7** shows the top imports and exports between Yuma County and Mexico. The top exports are containers or boxes, yarn, and horticultural specialties. The top imports are miscellaneous fresh vegetables, farm products, and tropical fruits.

*Table 7: Imports and Exports between Yuma County and Mexico*

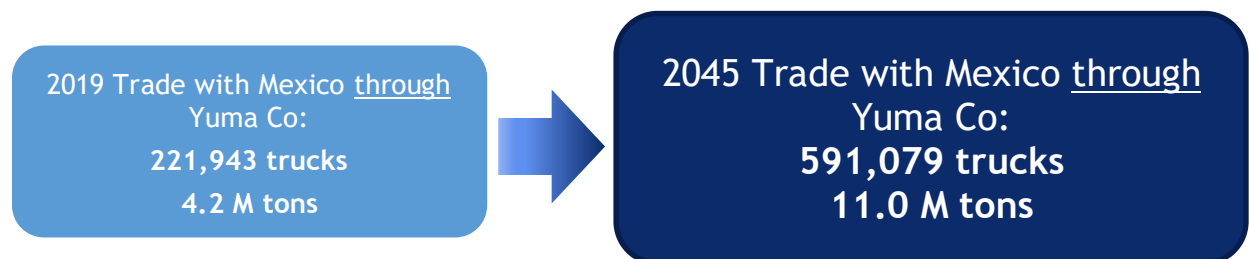
Exports to Mexico					Imports from Mexico				
Year	2019		2045		Year	2019		2045	
Commodity	Trucks	Tons	Trucks	Tons	Commodity	Trucks	Tons	Trucks	Tons
Containers or Boxes	414	10,065	562	13,673	Misc. Fresh Vegetables	2,467	52,578	4,322	92,108
Yarn	167	3,556	423	9,029	Farm Products	1,483	22,868	3,679	56,742
Horticultural Specialties	110	1,701	292	4,497	Tropical Fruits	381	7,937	946	19,693
Leafy Fresh Vegetables	55	1,187	85	1,821	Bulbs, roots, or Tubers	275	5,732	717	14,973
Meat, Fresh or Chilled	48	1,112	164	3,756	Leafy Fresh Vegetables	268	5,743	744	15,927
Radio or TV Rcvg. Sets	48	814	49	827	Misc. Indus Inorganic Chemicals	203	17,925	322	28,353
Animal By-prod,	28	1,342	43	2,083	Citrus Fruits	149	3,169	384	8,182
Vehicle Parts or	23	436	58	1,109	Misc. Fresh Fruits or Tree Nuts	132	2,783	446	9,383
Misc. Field Crops	12	273	35	767	Horticultural Specialties	85	1,314	223	3,433
Pulp or Pulp Mill Prod.	11	1,036	16	1,457	Electrical Equipment	83	1,386	265	4,407
Misc. Food Prep.	11	309	23	652	Radio or Tv Receiving Sets	83	1,416	5	92
Misc. Printed Matter	11	192	15	263	Elec Eq For Intern Comb Engine	79	1,253	250	3,983
Rubber or Plastic Scrap	11	128	29	343	Malt Liquors	65	2,157	187	6,191
Games or Toys	9	183	18	341	Misc. Plastic Products	47	593	132	1,655
Lumber or Dimension Stock	9	809	22	1,947	Grain	47	907	83	1,599
Misc. Plastic Products	9	107	18	210	Misc. Manufacturing Products	44	856	101	1,975
Dehydr or Dried Fruit/Veg	8	180	0	9	Asphalt Coatings or Felt	38	930	100	2,443
Electronic Data Proc Equipment	7	98	11	152	Sugar, Refined, Cane or Beet	35	820	92	2,119
Misc. Indus Inorganic Chemicals	7	576	19	1,708	Field Seeds	34	517	72	1,105
All Other	93	2,371	195	4,870	All Other	502	11,929	1,299	30,358
<b>TOTAL</b>	<b>1,092</b>	<b>26,477</b>	<b>2,075</b>	<b>49,513</b>	<b>TOTAL</b>	<b>6,500</b>	<b>142,811</b>	<b>14,367</b>	<b>304,721</b>

## TRADE THROUGH YUMA COUNTY

The imports and exports generated by Yuma County account for only a small percentage of the total freight flows that go through Yuma County. The County's location on I-8 and along the border with Mexico makes it a key location for long-distance and international freight movement. This through travel could also be a target for converting trips from trucks to rail. The total amount of freight traveling through Yuma County (not originating or ending in the county), is anticipated to increase from 8.7 million trucks annually to 13.3 million trucks, an increase of 56% between 2019 and 2045.



International trade with Mexico that passes through Yuma County is of particular importance in determining if there is an economic case for constructing a new north-south rail alignment that crosses the U.S./Mexico border. As of 2019, over 220,000 trucks pass through Yuma County either from or bound for Mexico. That number is projected to more than double, to nearly 600,000 annual trucks by 2045.



Based on discussions with IHS Markit, the creators of the Transearch database, all goods traveling over 500 miles could be a candidate for converting from truck to rail travel. Goods traveling between 250 and 500 miles could potentially switch modes depending on the commodity or locations. Goods traveling under 250 miles would likely not convert to rail unless it is a particularly high volume between one destination and another.

## ECONOMIC IMPACT ANALYSIS

U.S. and global economies rely on rail as a vital link in the global supply chain. Rail service enables businesses to reach a wide range of markets domestically and internationally. A broad range of shippers in nearly all U.S. industries utilize rail service as an important component to the success of their businesses. Rail activity contributes substantially to the economy, including:

- Creating high-paying rail industry jobs
- Additional industry-supported jobs through its ripple effects and proximity to rail infrastructure
- Industry and consumer connection to the global market
- Local community growth for both employment and tax revenue
- Providing needed capacity for continued economic growth and productivity

This section summarizes an analysis of economic and fiscal impacts that could occur if a new north-south rail line was established in the Yuma region. Economic impact analysis examines the regional implications of an activity in terms of three basic measures: **output**, **earnings**, and **employment**. Fiscal impact analysis evaluates the public revenues created by a particular activity. This economic and fiscal impact analysis focuses on the impacts derived from: (a) construction and (b) ongoing operations of the three Candidate Alternatives as well as an incremental analysis of new development that could be induced with rail infrastructure based on input from regional economic development experts.

## RAIL CONSTRUCTION

Construction of the rail line itself will have substantial economic and fiscal impacts on the region. Preliminary, planning-level estimates of construction cost for the three alignment candidates range from \$213.2M up to \$321.5M. At this level of construction investment, an estimated range of 1,251 to 1,887 construction employees would be supported during the development of the rail line. After accounting for ripple effects, a total of between 1,685 and 2,541 person-years of employment would be created. This equates to between \$89.2M and \$134.6M in wages and between \$286.8 and \$432.5M in total economic output in the region as shown in **Table 8**.

**Table 8: Economic Impact of Rail Construction**

Economic Impact of Rail Construction – Yuma County (2022 Dollars)			
	Candidate A	Candidate B	Candidate C
Projected Cost ( \$ Mil )	\$213.2	\$297.2	\$321.5
Direct person years of employment	1,251	1,744	1,887
Total person years of employment	1,685	2,349	2,541
Total Wages ( \$ Mil )	\$89.2	\$124.4	\$134.6
Total Output ( \$ Mil )	\$286.8	\$399.8	\$432.5

**Table 9** provides fiscal impacts by scenario for the State of Arizona and Yuma County. Additional impacts could also accrue to local municipalities depending on the alignment and percentage located within municipal boundaries. At the low end, with Candidate A, the State of Arizona and Yuma County are projected to receive over \$12.7M. Candidate B would generate \$17.8M. Candidate C would generate \$19.2M in total.

**Table 9: Fiscal Impact of Rail Construction**

Fiscal Impact of Rail Construction – Yuma County (2022 Dollars)			
	Candidate A	Candidate B	Candidate C
<b>State of Arizona</b>			
Primary direct taxes	\$6,851,500	\$9,551,300	\$10,332,200
Secondary impacts from employees	\$3,209,100	\$4,473,600	\$4,839,400
<b>Total for the State</b>	<b>\$10,060,600</b>	<b>\$14,024,900</b>	<b>\$15,171,600</b>
<b>Yuma County</b>			
Primary direct taxes	\$1,540,800	\$2,147,900	\$2,323,500
Secondary impacts from employees	\$1,131,400	\$1,577,300	\$1,706,300
<b>Total for the County</b>	<b>\$2,672,200</b>	<b>\$3,725,200</b>	<b>\$4,029,800</b>
<b>Total construction tax revenues</b>	<b>\$12,732,800</b>	<b>\$17,750,100</b>	<b>\$19,201,400</b>



## NEW DEVELOPMENT OPPORTUNITIES

To understand the development opportunities that could result from the region's investment in a north-south rail line, the Project Team conducted interviews with local economic development groups. These groups included the Greater Yuma Economic Development Corporation, the Yuma County Chamber of Commerce, 4FrontED, the Greater Yuma Port Authority, and economic development staff from the cities of Yuma and San Luis as well as Yuma County.

In terms of future opportunities with a new rail line, feedback from local economic development groups included the fact that agriculture goods are consistently one of the largest import/export users of the San Luis II POE, the majority of which are only transported by truck. Industries such as automotive suppliers, steel manufacturers, furniture manufacturers, and others are currently all using the POE.

The consensus in terms of missed opportunities due to the lack of rail infrastructure includes:

- **Light manufacturing** facilities that take in pre-prepared materials or parts and assemble them into final products that would be sold to customers
- **Warehouse and logistics** facilities that would take finished products and re-sort them to be delivered to their final destinations
- **Heavy industrial** manufacturing that would include production of labor- and materials-intensive products that may need bulk items that currently must cross in Mexicali

These three major development classifications were utilized in the analysis. The underlying assumptions used to estimate the impacts of construction and operations can be found in **Table 10**. For operations, each land use type was considered separately in terms of its ability to support employment and generate revenues. Construction costs for induced development range from \$90 per square foot for warehousing and logistics to \$150 per square foot heavy manufacturing space. Additional furniture, fixtures, and equipment purchases are also assumed.

**Table 10: Project Site Plan Assumptions**

Project Site Plan Assumptions/Rail-Induced Development Potential – Yuma County (2022 Dollars)				
Land Use	Sq. ft	Cost/ Sq. ft	Construction Cost	FF&E
Light Manufacturing	100,000	\$120	\$12,000,000	\$1,500,000
Warehouse & Logistics	100,000	\$90	\$9,000,000	\$1,200,000
Heavy Manufacturing	100,000	\$150	\$15,000,000	\$2,500,000

Estimates of employment per square foot for each commercial type range from 750 square feet per employee for heavy manufacturing up to 1,500 square feet per employee for warehousing and logistics. Estimated rent, occupancy and utility usage is provided in **Table 11**.

**Table 11: Operating Assumptions**

Operating Assumptions/Rail-Induced Development Potential – Yuma County (2022 Dollars)				
Land Use	Sq. ft per employee	Rent / Sq. ft	Stabilized Occupancy	Utilities per Sq. ft
Light Manufacturing	1,000	\$10.20	\$92%	\$5.00
Warehouse & Logistics	1,500	\$9.36	\$92%	\$3.00
Heavy Manufacturing	750	\$12.40	\$92%	\$7.00

## ECONOMIC IMPACT

Based on the assumptions outlined previously, the direct construction costs per 100,000 square feet of construction would range from \$9.0M to \$15.0M. This equates to total jobs ranging from 88 jobs to 146 jobs during construction and total economic output ranging from \$12.7M to \$21.1M.

Once construction is completed, operations would begin to produce jobs on an ongoing annual basis. **Table 12** provides the jobs and output by land use per 100,000 square feet of development. Warehousing and logistics would create 84 jobs per 100,000 square feet of development and \$9.9M in annual economic output. Light Manufacturing would create 125 jobs per 100,000 square feet and \$22.0M in annual economic output. Heavy manufacturing would create 177 jobs per 100,000 square feet and \$42.4M in annual economic output.

**Table 12: Economic Impact Development Potential**

Economic Impact Summary/ Rail-Induced Development Potential – Yuma County (2022 Dollars)			
	Light Manufacturing	Warehousing & Logistics	Heavy Manufacturing
<b>Construction Impact</b>			
Person Years of Employment	117	88	146
Wages (\$ Mil)	\$5.9	\$4.5	\$7.4
Output (\$ Mil)	\$16.9	\$12.7	\$21.1
<b>Operations Impact</b>			
Jobs	125	84	177
Wages (\$ Mil)	\$5.2	\$4.6	\$9.9
Output (\$ Mil)	\$22.0	\$9.9	\$42.4

## FISCAL IMPACT

This section details the fiscal impacts by scenario for the State of Arizona, Yuma County, two local municipalities (the cities of Yuma and San Luis who would have the most direct access to the north-south rail alignment). The fiscal impact of each scenario for construction varies based on land use assumptions. Based on the assumptions outlined above, the direct construction costs per 100,000 square feet of construction would range from \$9.0M to \$15.0M.

### CITY OF YUMA

As shown in **Table 13**, if a north-south rail alignment were to be built, construction impacts for the City of Yuma would equate to approximately \$937,600 in state and local revenues for light manufacturing, an estimated \$824,900 in state and local revenues for warehousing and logistics, and over \$1.1M in state and local revenues for heavy manufacturing.

Once construction is completed, operations would begin to produce jobs on an ongoing annual basis as shown in **Table 14**. Warehousing and logistics would create \$410,700 in state and local taxes per 100,000 square feet of development each year. Light Manufacturing would create \$551,600 in state and local taxes per 100,000 square feet of development each year. Heavy manufacturing would create \$788,000 in state and local taxes per 100,000 square feet of development on an annual basis.

**Table 13: Fiscal Construction Impacts - City of Yuma**

Fiscal Construction Impacts / Rail-Induced Development Potential – City of Yuma (2022\$)			
Construction Impacts	Light Manufacturing	Warehousing & Logistics	Heavy Manufacturing
<b>State of Arizona</b>			
Primary direct taxes	\$385,700	\$356,500	\$482,100
Secondary impacts from employees	\$217,300	\$163,000	\$271,700
<b>Yuma County</b>			
Primary direct taxes	\$86,700	\$65,100	\$108,400
Secondary impacts from employees	\$78,000	\$58,900	\$96,700
<b>City of Yuma</b>			
Primary direct taxes	\$132,600	\$153,000	\$132,600
Secondary impacts from employees	\$37,300	\$28,400	\$46,200
<b>Total construction tax revenues</b>	<b>\$937,600</b>	<b>\$824,900</b>	<b>\$1,137,700</b>

**Table 14: Fiscal Operations Impacts - City of Yuma**

Fiscal Operations Impacts / Rail-Induced Development Potential – City of Yuma (2022\$)			
Operations Impacts	Light Manufacturing	Warehousing & Logistics	Heavy Manufacturing
<b>State of Arizona</b>			
Primary direct taxes	\$0	\$12,900	\$0
Secondary impacts from employees	\$163,700	\$117,900	\$259,600
<b>Yuma County</b>			
Primary direct taxes	\$34,800	\$29,400	\$43,500
Secondary impacts from employees	\$117,300	\$77,900	\$173,600
<b>City of Yuma</b>			
Primary direct taxes	\$54,900	\$42,500	\$69,300
Secondary impacts from employees	\$67,300	\$44,900	\$100,000
<b>Other</b>			
School districts	\$61,500	\$46,100	\$76,900
Special districts	\$52,100	\$39,100	\$65,100
<b>Total operations tax revenues</b>	<b>\$551,600</b>	<b>\$410,700</b>	<b>\$788,000</b>

## CITY OF SAN LUIS

As shown in **Table 15**, if a north-south rail alignment were to be built, construction impacts for the City of San Luis would equate to approximately \$1.1M in state and local revenues for light manufacturing, an estimated \$1.0M in state and local revenues for warehousing and logistics, and over \$1.3M in state and local revenues for heavy manufacturing per 100,000 square feet of development.

Once construction is completed, operations would begin to produce jobs on an ongoing annual basis as shown in **Table 16**. Warehousing and logistics would create \$426,400 in state and local taxes per 100,000 square feet of development each year. Light Manufacturing would create \$563,800 in state and local taxes per 100,000 square feet of development each year. Heavy manufacturing would create \$802,100 in state and local taxes per 100,000 square feet of development on an annual basis.



**Table 15: Fiscal Construction Impacts - City of San Luis**

Fiscal Construction Impacts/Rail-Induced Development Potential – City of San Luis (2022\$)			
Construction Impacts	Light Manufacturing	Warehousing & Logistics	Heavy Manufacturing
<b>State of Arizona</b>			
Primary direct taxes	\$385,700	\$356,500	\$482,100
Secondary impacts from employees	\$217,300	\$163,000	\$271,700
<b>Yuma County</b>			
Primary direct taxes	\$86,700	\$65,100	\$108,400
Secondary impacts from employees	\$78,000	\$58,900	\$96,700
<b>City of San Luis</b>			
Primary direct taxes	\$312,000	\$360,000	\$312,000
Secondary impacts from employees	\$25,800	\$19,500	\$32,100
<b>Total construction tax revenues</b>	<b>\$1,105,500</b>	<b>\$1,023,000</b>	<b>\$1,303,000</b>

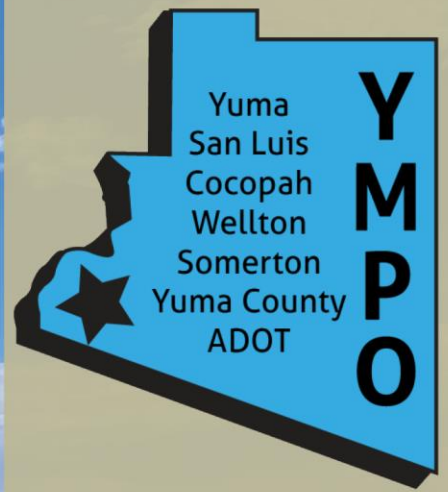
**Table 16: Fiscal Operations Impacts - City of San Luis**

Fiscal Operations Impacts/Rail-Induced Development Potential – City of San Luis (2022\$)			
Operations Impacts	Light Manufacturing	Warehousing & Logistics	Heavy Manufacturing
<b>State of Arizona</b>			
Primary direct taxes	\$0	\$12,900	\$0
Secondary impacts from employees	\$163,700	\$117,900	\$259,600
<b>Yuma County</b>			
Primary direct taxes	\$34,800	\$29,400	\$43,500
Secondary impacts from employees	\$117,300	\$77,900	\$173,600
<b>City of San Luis</b>			
Primary direct taxes	\$57,500	\$46,400	\$73,600
Secondary impacts from employees	\$36,700	\$26,500	\$59,600
<b>Other</b>			
School districts	\$101,700	\$76,300	\$127,100
Special districts	\$52,100	\$39,100	\$65,100
<b>Total operations tax revenues</b>	<b>\$563,800</b>	<b>\$426,400</b>	<b>\$802,100</b>

## ECONOMIC IMPACT ANALYSIS SUMMARY

The construction of a north-south rail alignment in the project study area could have substantial positive economic impacts in the greater Yuma region. The construction of the rail line itself would result in between \$12.7M and \$19.2M in taxes along with between 1,685 and 2,541 person-years of good-paying employment. After completion, new manufacturing and industrial employment attracted by the region's north-south rail access would bring in between \$410,000 and \$802,000 of new tax revenue per year for every 100,000 square feet of development attracted, depending on the type and location of that development.





# PUBLIC AND STAKEHOLDER ENGAGEMENT

## 5. PUBLIC & STAKEHOLDER ENGAGEMENT

Throughout the study process, the public and specific stakeholders were proactively engaged through presentations, surveys, and discussions at hosted meetings. Local media interaction and other digital engagement efforts were also made to ensure feedback from the public was present and formative to the project throughout the study process. This chapter provides details on these public and stakeholder engagement efforts.

### PUBLIC ENGAGEMENT

#### *JULY 2022 PUBLIC ENGAGEMENT*

Two in-person open house meetings were held, one in Yuma and one in San Luis, to allow the public to provide input on the conceptual alternatives. The San Luis public meeting was held on July 13, 2022, at San Luis City Hall and the Yuma Open House was located at the Yuma County Public Works Facility on July 14, 2022.

In addition to the in-person open houses, a public survey was available virtually through the YMPO website and in person at the open houses. The survey was available in both English and Spanish. The survey was available from July 6 to July 24, 2022. A total of 262 surveys were received, 70 of which were paper surveys collected at the public open house and the remainder were submitted virtually through SurveyMonkey. The public survey results are summarized below and on the following page.

How supportive are you of a future freight rail corridor in the Yuma Region?

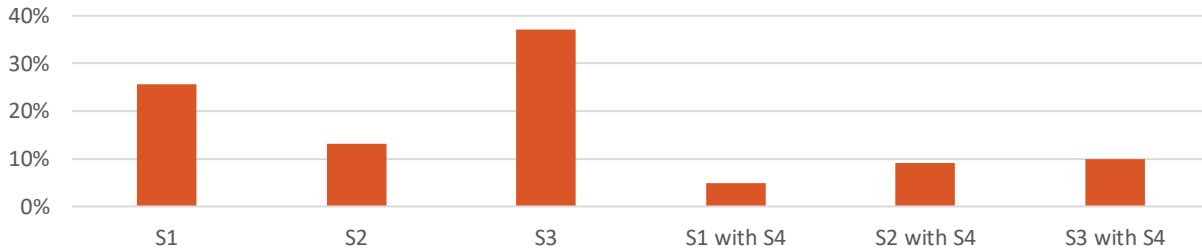


Not Supportive

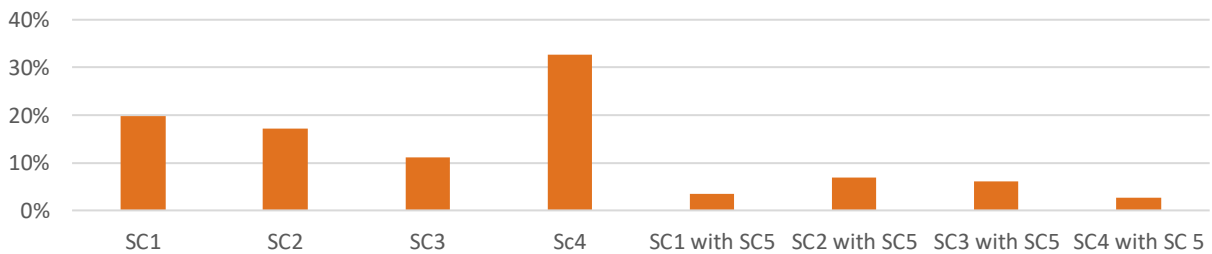
Very Supportive



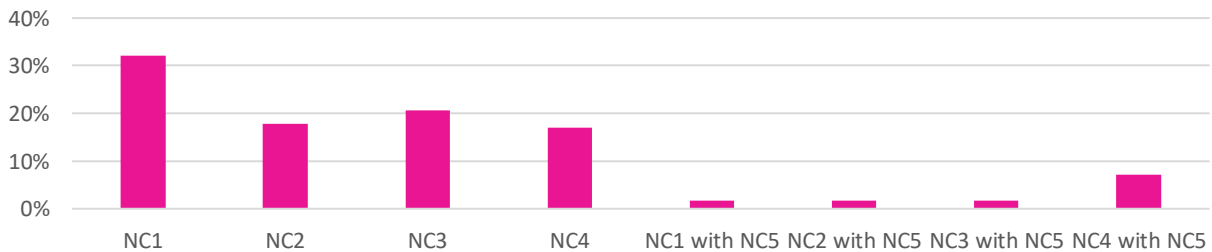
Which Southern Alternative do you feel would be best for a future rail corridor?



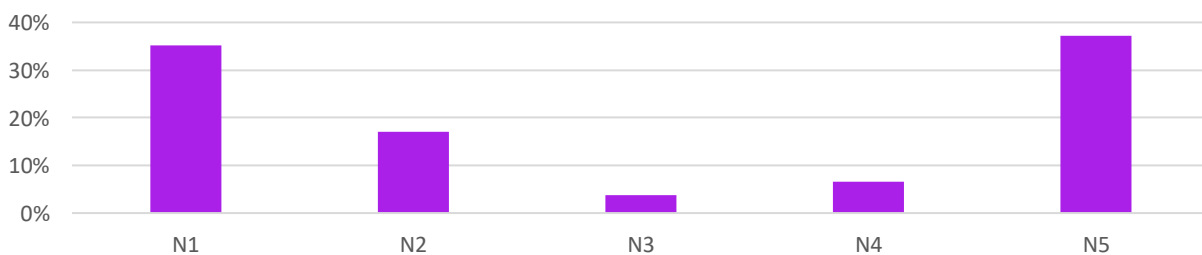
Which South-Central Alternative do you feel would be best for a future rail corridor?



Which North-Central Alternative do you feel would be best for a future rail corridor?



Which North Alternative do you feel would be best for a future rail corridor?



## AUGUST 2022 PUBLIC ENGAGEMENT

At the request of the YMPO Executive Board, the Project Team held an extra in-person public meeting to engage the farming community within the study area who had expressed concerns about a north-south rail alignment's impact on Yuma County's valuable farmland. The meeting was held at the Yuma Civic Center on August 11, 2022.

A formal presentation was given to the attendees that covered:

- **What is a Planning Study?** An explanation of planning studies in general, including that they look to evaluate alternatives and identify potential impacts of transportation investments. This section also reinforced that the study does not look to persuade, but documents facts and analyses to inform future considerations.
- **What Prompted this Study?** A history of evaluating a north-south rail alignment in Yuma County and what has changed since the 2013 Yuma County Rail Study.
- **How Far Along is the Study?** Progress on the project to-date, the conclusions drawn from the Conceptual Alternatives screening, and the Candidate Alternative alignments.
- **What are the Next Steps?** The final remaining steps in the study to produce a final recommendation.
- **Potential Future Project Steps.** Future steps that would need to be taken to advance a north-south rail alignment, including design, approvals, construction, and ongoing maintenance after construction.

After the presentation, a question-and-answer session was held to respond to any remaining concerns the attendees had. Key takeaways from the question-and-answer session include:

- Stakeholders expressed skepticism for the potential benefits of a freight rail project given the current land use and economic producers in the county, mainly agricultural production. The public was informed of potential economic development benefits coming from attracting industrial and logistics-based employers to the region, which would both benefit the employees and local agencies through increased tax receipts.
- The use of eminent domain was expressed as a concern for landowners. The attendees were informed that the project currently has no funding source identified, and in the future, it is most likely that the project will be funded privately, given the nature of the project. It is rare that privately funded projects would be granted the power to use eminent domain.
- Attendees inquired why areas to the east or west of the study area had not been researched as potential corridors for the freight alignments. The public was informed that east of the study area the Goldwater AFR extends for a very long way, and the FTHL habitat is also more prevalent, which make that area highly infeasible. West of the study area the soil quality is too poor to support freight rail and the cost to reinforce the soil would make the project infeasible. Additionally, there would be even more farming, residential, and transportation system conflicts as it is more heavily developed along the US 95 corridor.
- Some attendees inquired why areas outside of Yuma County were not considered. The Project Team responded that the primary task of the study is to evaluate the feasibility of a north-south rail alignment serving YMPO member agencies. Extending the study area outside of Yuma County would lessen any potential benefits to the region and would not be worth exploring for YMPO or its member agencies.
- Stakeholders inquired if investment interest in Mexico exists to support the freight rail connection south of the U.S./Mexico border. The public was informed that Mexican stakeholders had been engaged at multiple points during the study process and that representatives from San Luis Rio Colorado and the State of Sonora have been very interested

in pursuing further investigation of a rail alignment between the U.S./Mexico border and a Ferromex line (that runs east-west) south of San Luis Rio Colorado.

## FINAL INFORMATION VIDEO

To effectively convey the 2022 Rail/Heavy Freight Alignment Study findings and recommendations, a short, narrated video presentation was created. This video includes:

- The justification for conducting the study, the study process, and study area
- Current and Future Conditions results
- Conceptual and Candidate Alternative processes, screening methodologies, and results
- Recommendations and future project phases

This video was produced in both English and Spanish and is posted on the YMPO website, along with this document and the three Working Papers developed earlier in the study process to provide the public varying levels of project detail to suit their level of interest and available time.

## STAKEHOLDER ENGAGEMENT

### STAKEHOLDER INTERVIEWS - ROUND 1

The Project Team engaged regional and industrial stakeholders to obtain stakeholder input on opportunities and constraints for a rail corridor within the study area. Brief virtual interviews were held to discuss:

- The purpose and need for a new north-south rail corridor
- Land use opportunities and constraints
- Active or ongoing projects or activities that may impact a rail corridor alignment
- Possibility for rail alignment to follow existing utility or roadway facilities

Interview groups and dates are shown in **Table 17**.

**Table 17: Stakeholder Round 1 Meeting Groups**

Group	Agencies/Positions	Interview Date
Yuma County	Public Works, Economic Development, Development Services, Department of Engineering	December 1, 2021
ADOT	Multimodal Planning Division	December 3, 2021
City of Yuma	Economic Development, Utilities, Planning and Neighborhood Services	December 9, 2021
ADOT	Southwest District, Railroad Liaison	December 13, 2021
City of San Luis	Public Works, Economic Development	December 14, 2021
ADOT	Regional Planning	December 14, 2021
State of Sonora and San Luis Rio Colorado	Sonora Ministry of Economy, San Luis Rio Colorado Economic Development	December 15, 2021
APS	Division Mgmt., Construction/Maintenance, Right-of-Way	December 15, 2021
City of Yuma	Economic Development	December 16, 2021
Economic Development	Greater Yuma Port Authority, Yuma Chamber of Commerce	December 20, 2021
MCAS Yuma	Public Works, Community Liaison, Wildlife, Range Management, Range Training, Conservation	February 9, 2022
Other Mexican Stakeholders		November and December 2021



The stakeholder interviews identified a series of opportunities and constraints associated with a north-south rail corridor in the study area:

## ■ Opportunities

- The extension of Avenue D/E, as well as 40<sup>th</sup> Street/County 12<sup>th</sup> Street and County 14<sup>th</sup> Street from Fortuna Road to Avenue 8E, may provide an opportunity to reduce costs by obtaining right-of-way for both the roadway and rail project together.
- The SR 195 alignment has right-of-way that was not used during construction. This remaining right-of-way may be practical for a rail alignment; however, utility or rail uses are currently prohibited by MCAS Yuma through the easement that was granted for the highway.
- BLM and State Trust Land may be target areas for a rail alignment.
- Land near the intersection of Araby Road/SR 195 and County 14<sup>th</sup> Street is planned for industrial development, which is generally supportive of rail development.
- A large, currently vacant site at the northwest corner of the I-8 Frontage Road and Avenue 9E could serve as a location for an intermodal facility.
- APS is currently constructing a new powerline in the northeastern portion of the study area that may provide an opportunity for a rail alignment as right-of-way has already been secured. Additionally, the alignment of the TransCanyon line between the new APS line and the Mexico border could provide an opportunity to co-locate rail and power infrastructure.
- There has been an increase in international truck traffic originating at the Port of Ensenada to avoid California ports and trucking regulations, which could strengthen the economic case for constructing a new rail alignment through the Yuma region.
- The State of Sonora and the City of San Luis Rio Colorado are interested in exploring the potential for increased regional rail access and are willing to partner with their counterparts in Yuma County.

## ■ Constraints

- Development along I-8 has severely limited opportunities for connecting through the northern portion of the study area.
- The land north of the San Luis II POE is planned for residential development on both sides of Avenue E, which is incompatible with freight rail implementation.
- There have been plans to develop a spaceport near the intersection of SR 195 and Avenue B, which could limit potential rail alignments in the area.
- The Estancia area is likely to remain low-density residential and agricultural land, which is likely prohibitive for developing rail through this area.
- Impacting FTHL habitat requires a 6:1 compensation ratio for any disturbed area on the east side of SR 195.
- There are two World War II training ranges within the study area that cannot be impacted per the State Historic Preservation Office.
- Grade separation between the rail line at County 14<sup>th</sup> and 19<sup>th</sup> Streets to mitigate any impact on military operations in the area.
- There is a concern that a rail line would impact Border Patrol operations and could invite vandalism to rail cars and trespassing.
- The San Luis II POE is well below capacity for commercial trucks and has ample space to expand, if necessary. SR 195 is also well below capacity. This excess capacity diminishes the need for developing a new rail connection.

## STAKEHOLDER INTERVIEWS - ROUND 2

The Project Team engaged regional stakeholders for a second time to obtain specific input on the Conceptual Alternative alignments. Interview groups and dates are shown in **Table 18**.

*Table 18: Stakeholder Round 2 Meeting Groups*

Group	Agencies/Positions	Interview Date
Arizona Farm Board	Director	June 6, 2022
Yuma County	Development Services, Multimodal Planning, County Engineering	June 8, 2022
City of San Luis	Public Works, Economic Development	June 8, 2022
City of Yuma	Multimodal Planning, Utilities, Economic Development	June 8, 14, 2022
Economic Development	Greater Economic Development Corp., YMPO	June 8, 2022
MCAS Yuma	Community Planning Liaison, Air Station Command	June 9, 2022 and July 13, 2022
ADOT	Planning	June 1, 2022
Other Mexican Stakeholders	Agency for the Promotion of Economic Development	June 15, 2022

Key takeaways from each of the stakeholder interviews include:

- **ADOT**
  - This study will need to be aware of the environmental conditions/constraints that ADOT addressed during the design concept phase of the SR 195 corridor EA process
  - The study will also need to be aware of all existing and proposed major utility corridors within the area under review for a new heavy rail facility
  - Heavy rail connectivity to a new deep-water port along the west coast of Mexico had been considered in the past; however this linkage has not been resurrected by the current administration in Mexico
  - Southern alignments are less problematic, but the “North Central” and “North” routes would have issues as they segment the denser residential areas.
  - Pushback should be expected from MCAS Yuma due to encroachment from eastern running Conceptual Alternatives.
  - ADOT felt eastern running alignment is more feasible, but discussion for potential on the west of SR 195 should be considered.
- **Arizona Farm Board**
  - Standards for construction and train operations near produce crops, need to be researched and applied.
  - An alignment along the eastern edge of the study area is preferred to avoid farms.
  - Supportive of Conceptual Alternatives S3, SC4, NC3, NC4, and N5 as an alignment.
- **Yuma County**
  - Based on previous experience, a corridor along Avenue E is unlikely to receive environmental clearance or joint right-of-way acquisition.
  - The S3 corridor runs through South County Landfill parcels that are planned to be developed for industrial use.

- **City of San Luis**
  - A major priority for the City of San Luis for this project is to identify the Mexico connection point.
  - The S3 corridor is currently being considered for an electric powerline project (Sonora Crossing). There could be potential for right-of-way or permit partnering.
- **Economic Development**
  - Avenue E has residential development coming in the near future which will be a hindrance to rail construction.
  - Recommend alternatives along SR 195 away from residential and farmland.
- **MCAS Yuma**
  - Representatives of MCAS have made it clear that eastern alignments that use bombing range right-of-way are objectionable to them.
  - There are concerns for types of materials being transported via train near the bombing range and how incidents involving hazmat or derailment will be exasperated due to the proximity of the bombing range.
  - MCAS owns both the right-of-way near the Conceptual Alternatives and the air rights.
  - Orphan parcels near Alternatives NC4 and NC3 have ordinances buried within them and would require extensive precaution measures and studies to allow any construction.
  - Would prefer alignments most west running from the bombing range.
- **City of Yuma**
  - The N5 Alternative negatively impacts state lands and the residents near that alignment are very vocal when in opposition of proposals.
  - Gowan Milling and Yuma County Cotton Gin are concerned about Conceptual Alternative corridors disturbing operations.
  - Utilizing 4E Street or 4 ½ E could have less impact on developed areas.
  - There is expected pushback from landowners for corridors that impact farmland.
  - MCAS has concerns for impacts and potential development.
- **Mexican Stakeholders**
  - Interest from Mexican stakeholders has been very positive, and development near the American border garners interest in future freight possibilities as well as more southern connections in Mexico.
  - The Agency for the Promotion of Economic Development (OPRODE) in Mexico is a very interested stakeholder for this study; however, turnover in the administration has made input meetings difficult to schedule and maintain. Once the administration personnel are solidified in their positions, more detailed input on the project will be feasible.



## YMPO TECHNICAL ADVISORY COMMITTEE

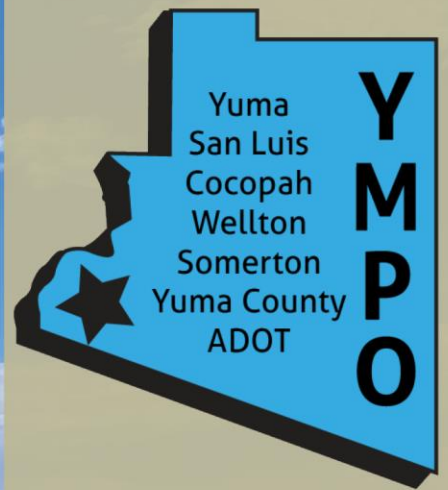
The YMPO TAC, made up of technical staff from all YMPO member agencies along with ADOT, was updated on project progress at their monthly meetings. The TAC provided input at key decision points in the study process, including:

- Determining stakeholders to be interviewed during the stakeholder interview process
- Informing which public engagement strategies would work best
- Guiding information that would be beneficial from the Economic Impact Analysis
- Reviewing and refining alternative alignments

In the September 2022 TAC meeting, the TAC expressed their concern for the obstacles faced with the implementation of the Candidate Alternatives given the existing land use conditions and public input. The TAC recommended that conditional stipulation language be added to the recommendations stating the implementation limitations. The TAC wanted to make clear that no alternative can be considered feasible at the time of the study completion and specific conditions would have to be mitigated and or addressed to satisfy major stakeholder concerns before moving forward in the project implementation process.







# RECOMMENDATIONS AND FUTURE PROJECT PHASES



## 6. RECOMMENDATIONS AND FUTURE PROJECT PHASES

### RAIL IMPLEMENTATION FATAL FLAWS

While a north-south rail line could feasibly be built from a constructability standpoint, there are several limiting factors what make selecting a Recommended Alternative impossible at this time. For a Recommended Alternative to be selected and advance through the project development process in the future, there are several fatal flaws that would need to be addressed:

- **Goldwater AFR Easement.** A future Recommended Alternative would need to obtain an easement through the Goldwater AFR for much of the alignment along SR 195. MCAS representatives are currently not supportive of implementing rail on the Goldwater AFR property, so additional engagement and detailed mitigation strategies for their concerns would need to be developed for a Recommended Alternative to be selected.
- **Public Opposition.** The concept of a north-south rail line in Yuma County received largely negative feedback from the public through the multi-step public engagement process conducted during this study. For the project to move forward, efforts to mitigate negative impacts of rail, such as noise, vibration, or access issues, will need to be mitigated to the satisfaction of nearby property owners for selecting a Recommended Alternative to be politically feasible.
- **Continuation of the Rail Line in Mexico.** Additional coordination with stakeholders in Mexico will be needed to determine a final crossing point of the U.S./Mexico border to select a Recommended Alternative. Additionally, assurances that the rail would be continued in Mexico to reach either the Ferromex line in Sonora and, ultimately, a new or expanded seaport on the Pacific Ocean to provide a viable alternative for freight bypassing California.

### INSPECTION FACILITY EVALUATION

In addition to the infrastructure and right-of-way requirements for a future Recommended Alternative, additional infrastructure and land will be required for a border-related inspection facility. Rail cars from Mexico are required to be inspected within 35 miles of the US/Mexico border; however, most rail inspection and intermodal facilities are located within 10 miles of the border.

The specific size parcel typically needed for this international inspection facility is dependent on the number of rail cars, trucks, and lifts. Generally, these facilities tend to be approximately 230 acres in size—approximately 10,000' long by 1,000' wide running parallel to the mainline track. Parcels along the Candidate Alternative alignments were reviewed to determine if any appear to be suitable for development into the international inspection facility.

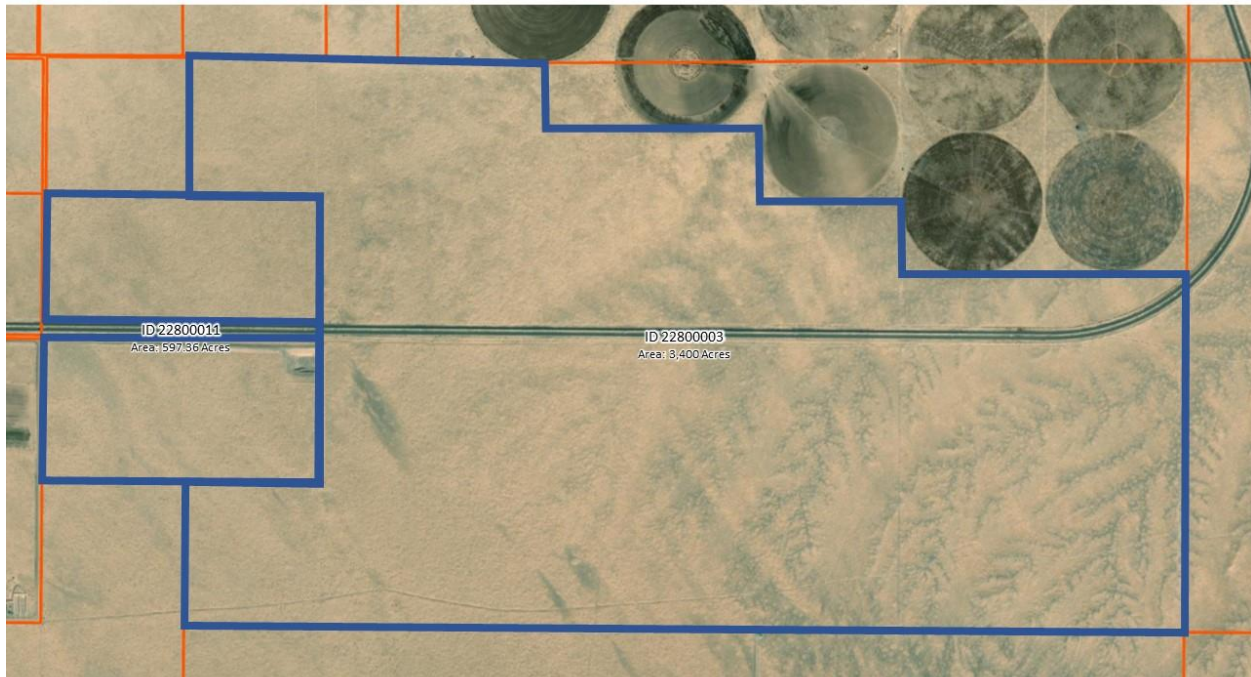
A location along the east-west portion SR 195 was identified as the most suitable location for an inspection facility. Two parcels appear to be able to easily accommodate the inspection facility as shown in **Table 19** and **Figure 17**, one owned by the City of Yuma and one by the BOR. A portion of either of these parcels could be acquired for the inspection facility; in general, obtaining land from the City of Yuma would be more feasible than acquiring land from the BOR.



**Table 19: Inspection Facility Opportunities**

Parcel ID	Acreage	Use Code	Primary Use	Ownership
22800011	597.36	9700	Municipal, Vacant Land	City of Yuma
22800003	3,400	9400	Federal, Vacant Land	US Bureau of Reclamation

**Figure 17: Inspection Facility Opportunity Parcels**



## INTERMODAL FACILITY EVALUATION

To transfer cargo between a Recommended Alternative, which will likely be operated by a short line railroad company, and UPRR or trucks that will take cargo to its destination, an intermodal facility will need to be constructed. The specific size needed for an intermodal facility is dependent on the number of rail cars, trucks, and lifts. Generally, 50 to 100 acres would be required to adequately house an intermodal facility. A review of parcels along the UPRR within a reasonable proximity to the connection with the Candidate Alternatives was performed to identify potential sites that could accommodate an intermodal facility. Three alternatives were identified:

- **Area 1.** The area south of UPRR surrounding the connection point between Alternative B and the UPRR
- **Area 2.** The area south of UPRR between I-8 and the Agua Viva Water Treatment Facility, near the connection point between Alternative C and the UPRR
- **Area 3.** A location in Wellton north of I-8 and the UPRR and just west of Avenue 45E

### AREA 1

Six parcels were identified, near the connection point between the Recommended Alignment and the UPRR, which are largely vacant or used to store vehicles. Details on these parcels are provided in **Table 20** and a map of the parcels is shown in **Figure 18**. Combined, the six parcels have a total area of 63.71 acres and provide direct access to both the UPRR and the Recommended Alignment.

These parcels are located adjacent to SR 195 and very near I-8, providing strong connectivity to the regional truck network. Four of the five privately owned parcels have a single owner, theoretically allowing for easier acquisition of the property.

**Table 20: Potential Intermodal Facility Area 1 Parcels**

Parcel ID	Acreage	Primary Use	Ownership
69732002	4.14	Vacant Land, Undetermined Use	Private*
69732004	4.82	Vacant Land, Undetermined Use	Private
19704022	15.71	Agriculture, Field Crops	Private*
19704019	5.28	All, Limited Use Property	UPRR
19704020	10.71	Commercial, Automobile/Truck - Sales Storage Lot	Private*
19704021	23.05	Commercial, Office Building - One Story	Private*
<b>63.71</b>	<b>Total Acreage</b>		

\*Same private owner

**Figure 18: Potential Intermodal Facility Area 1 Parcels**



## AREA 2

Three parcels located south of UPRR between I-8 and the Agua Viva Water Treatment Facility were identified as another possible location for an intermodal facility. Details on these parcels are provided in **Table 21** and a map of the parcels is shown in **Figure 19**. This site was also identified during the first round of stakeholder meetings as a potentially viable location for an intermodal facility. These parcels are currently vacant, are large enough to accommodate an intermodal facility (with a combined total acreage of 103.09 acres) and are located near the I-8/Avenue 8½ E traffic interchange, which can provide direct access to the regional truck network.

Several constraints of the Area 2 site were identified. The largest parcel has a pit in the middle which would need to be filled in, adding to the cost of constructing an intermodal facility. There is no direct roadway access to the site; access would likely also require acquisition of a portion of the parcel on the south side of the canal that forms the southern boundary of the site as well as construction of a bridge over the canal. Additionally, because the site is located separate from the connections between UPRR and two of the three Candidate Alternatives, an agreement between the future short line operator and UPRR would likely be needed to be accepted by both companies to allow the short line operator to use UPRR's track in this area.



**Table 21: Potential Intermodal Facility Area 2 Parcels**

Parcel ID	Acreage	Primary Use	Ownership
69816002	9.7	Vacant Land, Undetermined Use	Private
69824001	10.04	Vacant Land, Undetermined Use	Private
19702001	83.35	Government, Federal Vacant Land	Federal
	<b>103.09</b>	<b>Total Acreage</b>	

**Figure 19: Potential Intermodal Facility Area 2 Parcels**



## AREA 3

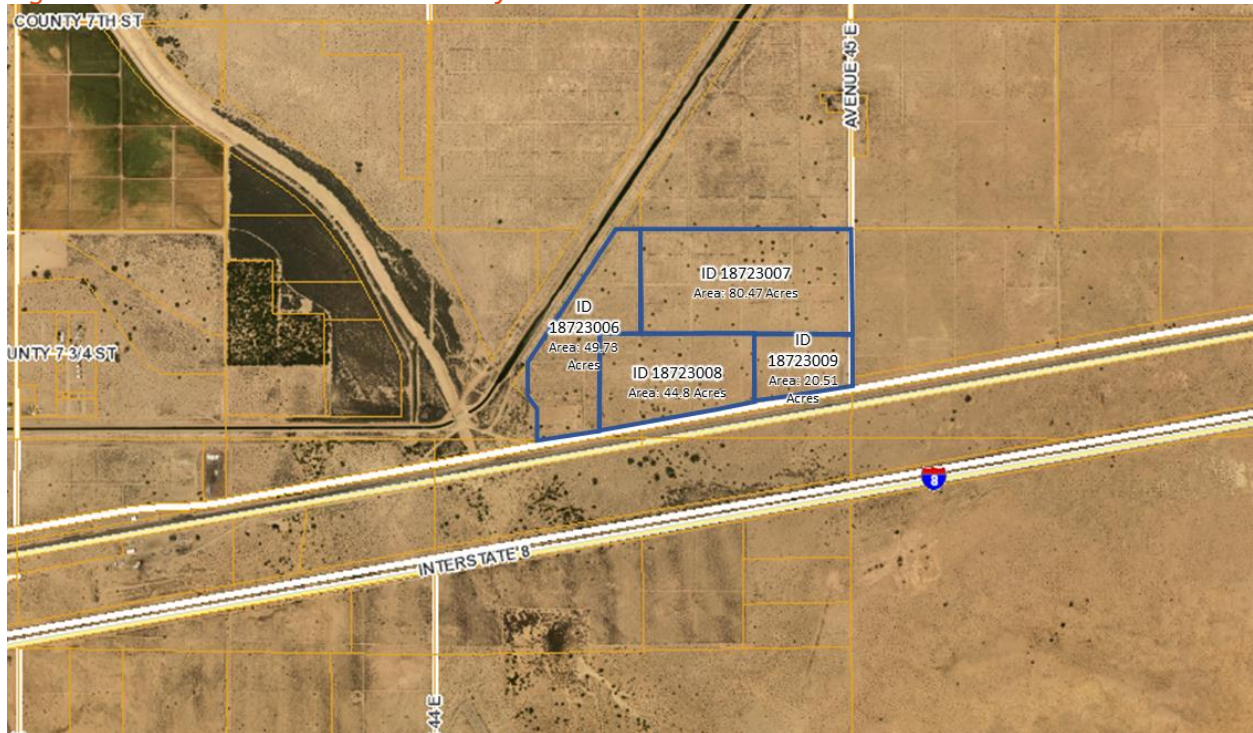
Four parcels were identified in the 2013 Yuma County Rail Plan that designated an area in Wellton for an industrial park. This site is located north of the UPRR and west of Avenue 45E. Details on these parcels are provided in **Table 22** and a map of the parcels is shown in **Figure 20**. In total, these parcels combine to 195.51 acres. A constraint of rail access to the identified parcels is that US 80 runs east-west between the UPRR and the site, meaning additional at-grade railroad crossings will be required. Additionally, this site is located roughly 40+ miles east of the connection points between the Candidate Alternatives and the UPRR, meaning an agreement for the short line operator to run service on UPRR will be required.

**Table 22: Potential Intermodal Facility Area 3 Parcels**

Parcel ID	Acreage	Primary Use	Ownership
18723006	49.73	Vacant Land, Undetermined Use	Private
18723007	80.47	Vacant Land, Undetermined Use	Private
18723008	44.8	Vacant Land, Undetermined Use	Private
18723009	20.51	Vacant Land, Undetermined Use	Private
	<b>195.51</b>	<b>Total Acreage</b>	



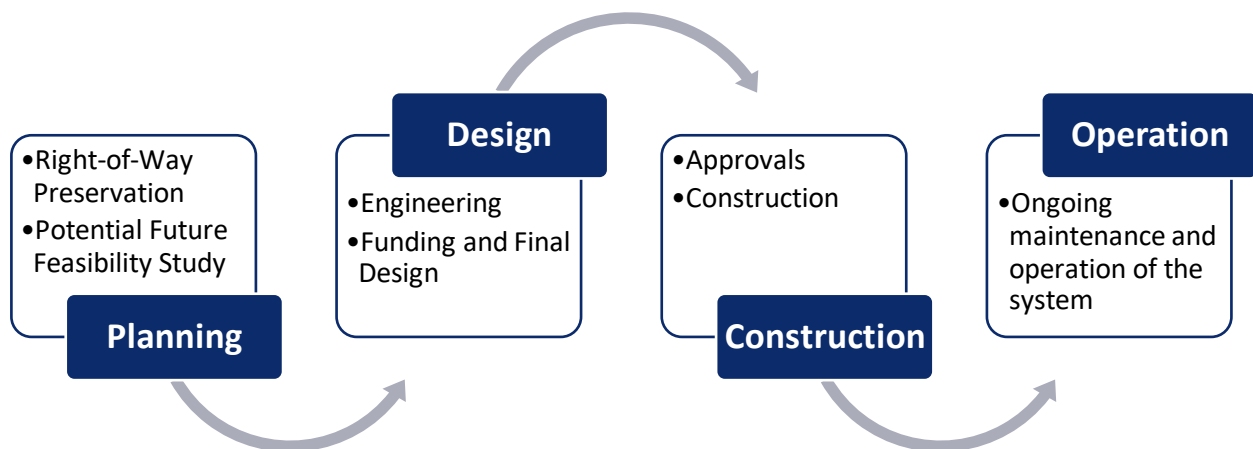
Figure 20: Potential Intermodal Facility Area 3 Parcels



## POTENTIAL FUTURE PROJECT PHASES

Even after addressing the identified fatal flaws selecting a Recommended Alternative, YMPO and its member agencies would have several future project phases to navigate before a north-south rail line could go into operation. A summary of the steps that would need to occur between this feasibility study and construction of a north-south rail alignment is shown in **Figure 21**. Each of these major phases are multi-year processes. If the project development process were to continue, it would likely take upwards of 10 years before construction would take place.

Figure 21: Potential Future Project Phases



### ■ Planning

- **Right-of-Way Preservation.** Once a detailed corridor for a Recommended Alternative is established, YMPO member agencies should ensure that new development that would prevent use of this corridor for a future rail alignment does not receive a permit.
- **Potential Future Feasibility Study.** If right-of-way is not preserved or circumstances in the county change drastically from the existing conditions documented as part of this study, a follow-on feasibility study may be warranted if a Recommended Alternative is ultimately selected and becomes infeasible due to constructability constraints.

### ■ Design

- **Engineering.** If the previously stated issues with public acceptability, MCAS objections, and assurances of stakeholders in Mexico are addressed, preliminary engineering could begin on the Recommended Alignment. The first phase of design would need to identify the specific right-of-way needs within the 500' corridor identified in this study and do more detailed hazard avoidance and impact mitigation investigation.
- **Funding and Final Design.** Identifying investors and a short line rail operator would be a critical step in the implementation after Recommended Alternative is selected as the project construction will likely need to be privately funded. Once investors are committed, final design of the rail alignment can proceed.

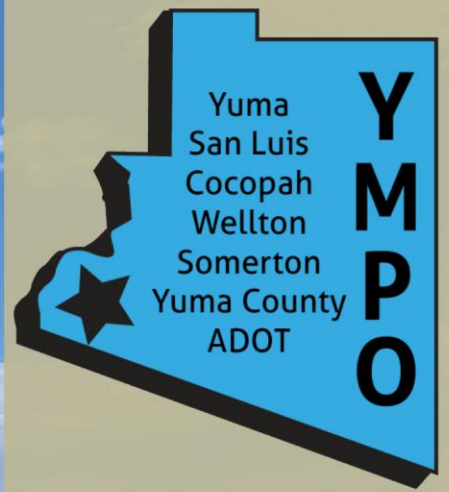
### ■ Construction

- **Approvals.** After final design is complete, approvals from a variety of entities will need to be acquired, including state and federal environmental approvals and local planning and zoning approvals.
- **Construction.** If all the required approvals are obtained, right-of-way would need to be negotiated and purchased. Only after all of the preceding steps can construction of the rail alignment begin.

### ■ Operation

- **Ongoing Maintenance and Operation of the System.** After construction, the short line rail operator will operate the system in conjunction with an operator in Mexico on the portion of the line that continues south of the US/Mexico border. They will also be required to fund and perform routine maintenance and respond to community complaints along with their investors. They will also need to coordinate with UPRR for the transfer of cargo to and from the short line.



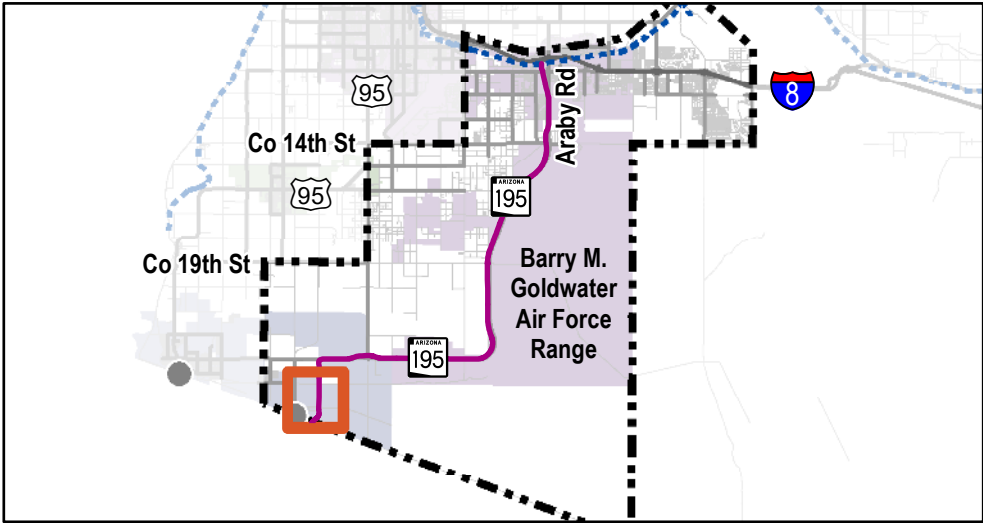


# APPENDIX



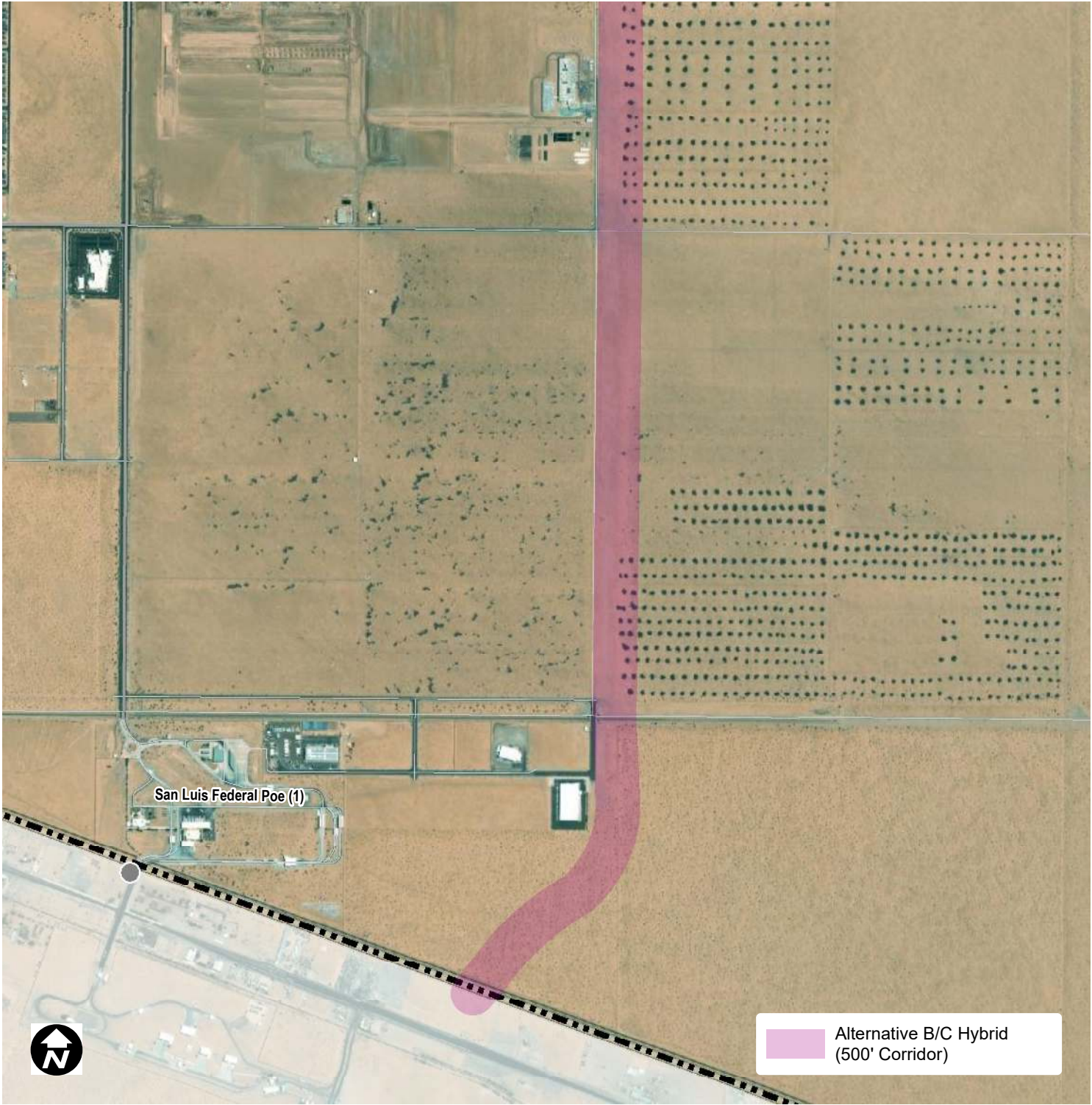


## APPENDIX. CANDIDATE B/C HYBRID CORRIDOR DETAIL

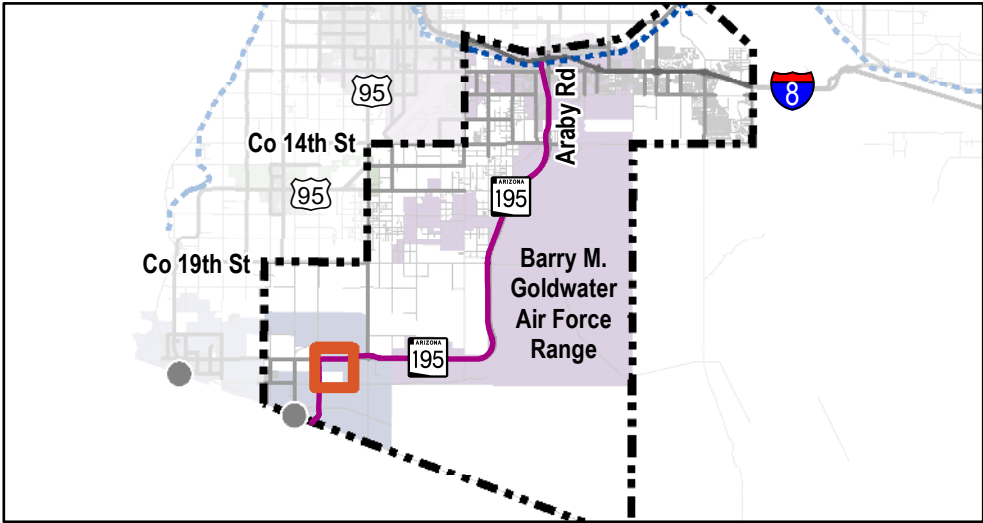


# Candidate Alternative B/C Hybrid

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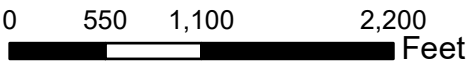






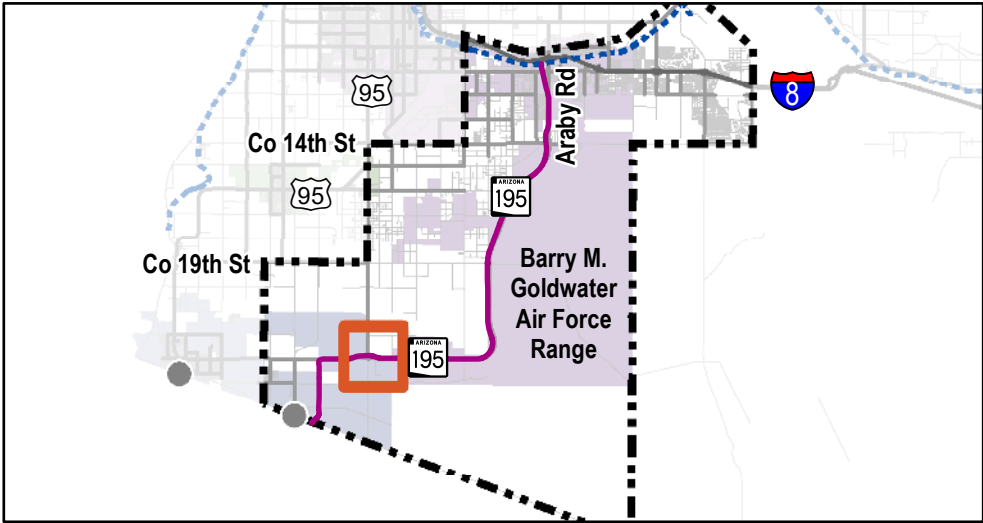
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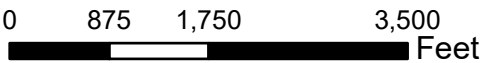
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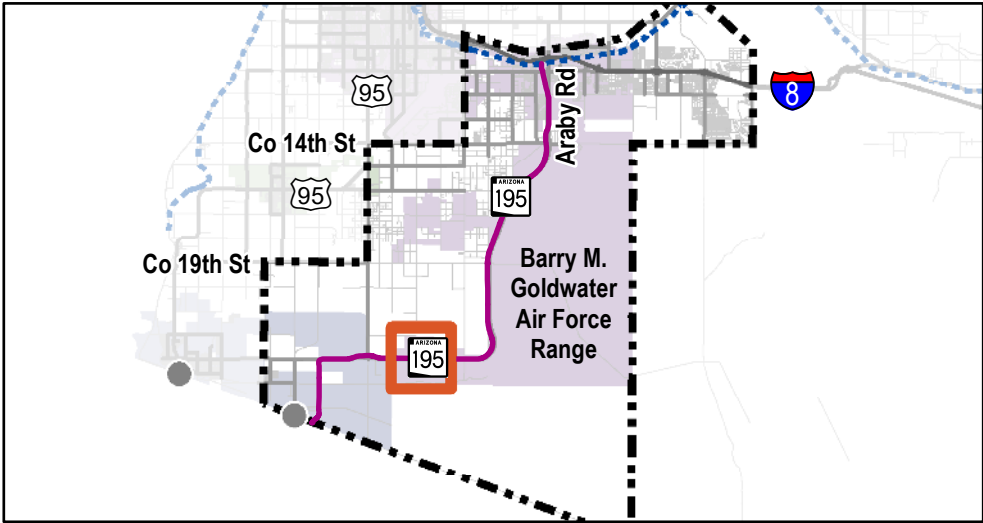


# Candidate Alternative B/C Hybrid

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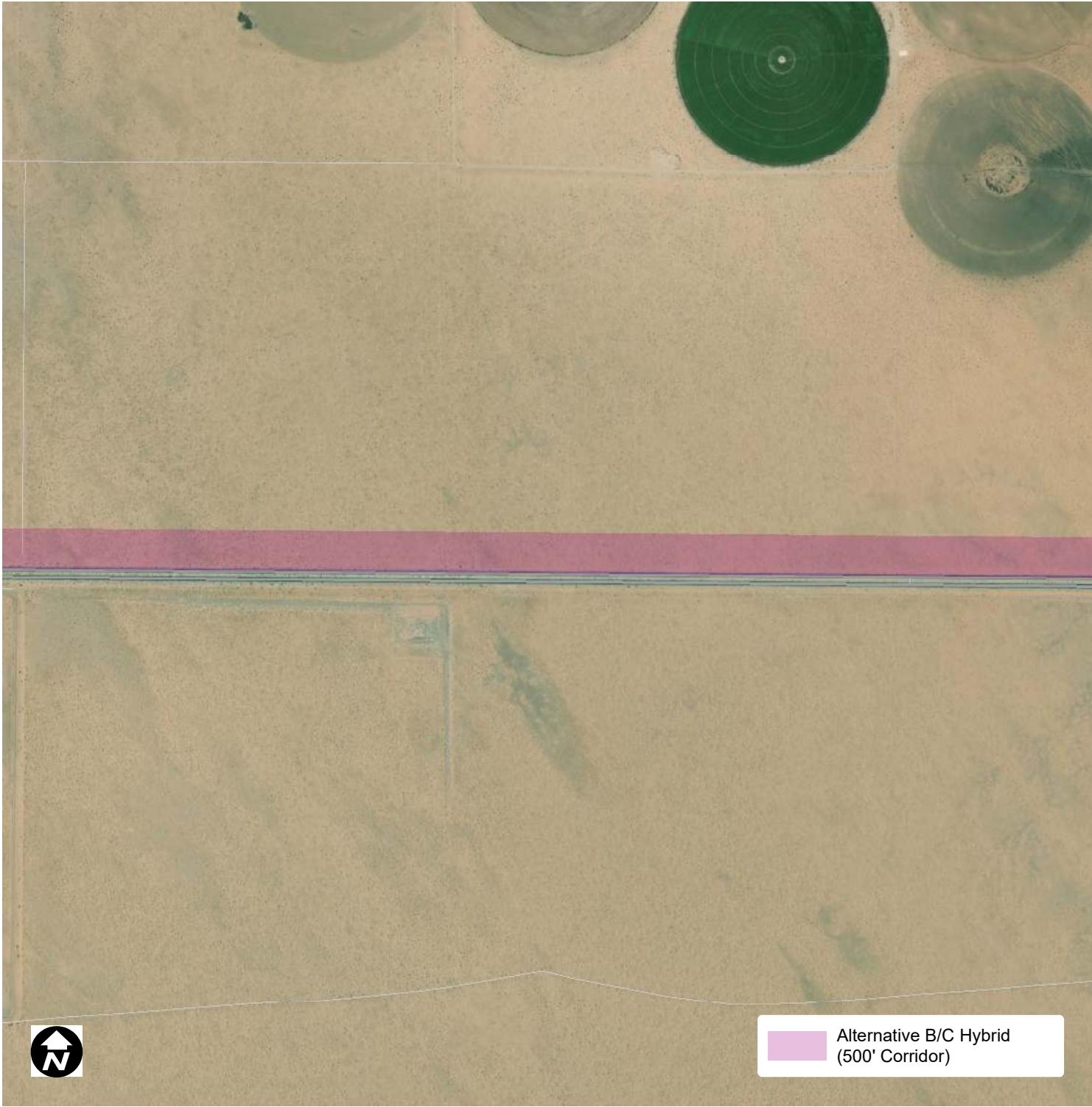
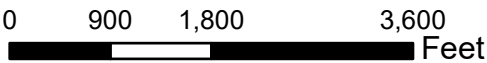


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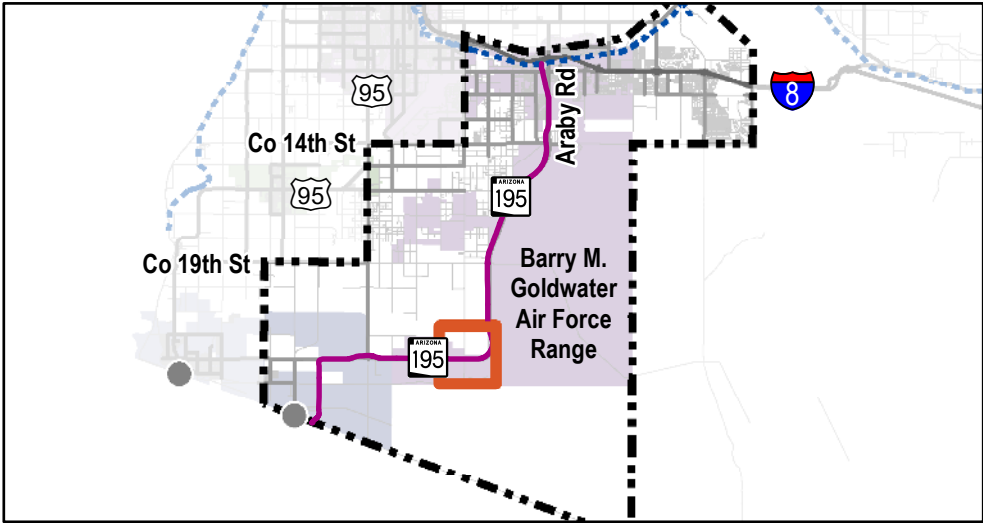
# Candidate Alternative B/C Hybrid

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Alternative B/C Hybrid  
(500' Corridor)



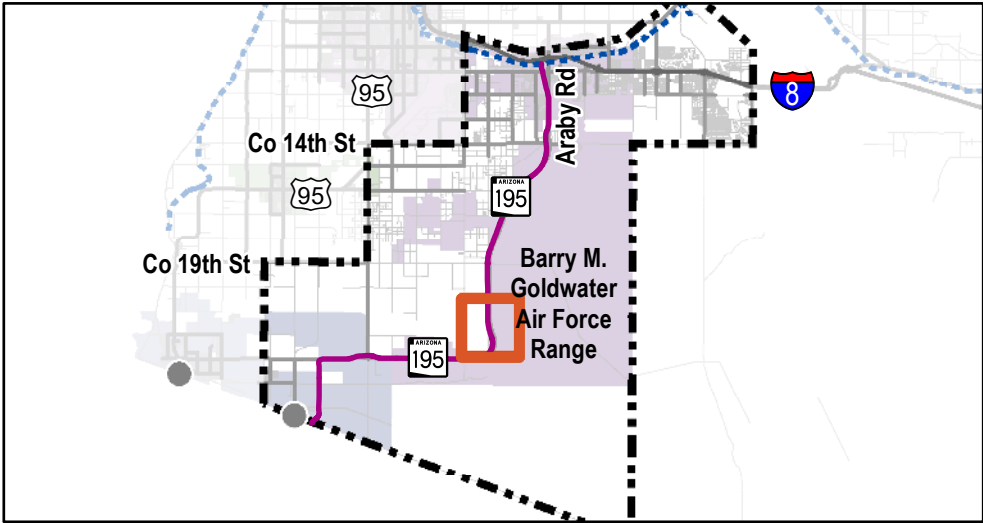


# Candidate Alternative B/C Hybrid

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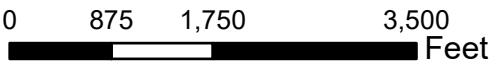






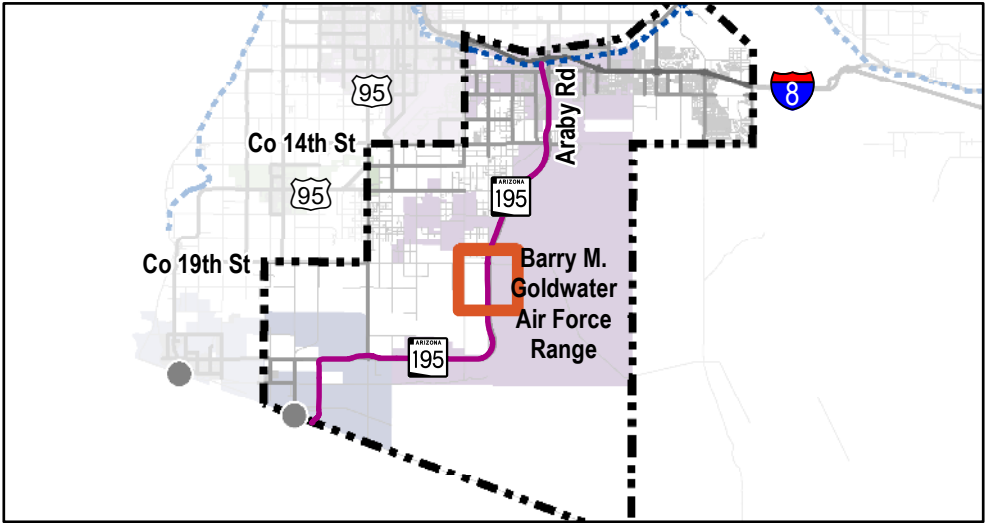
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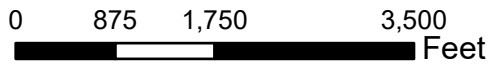
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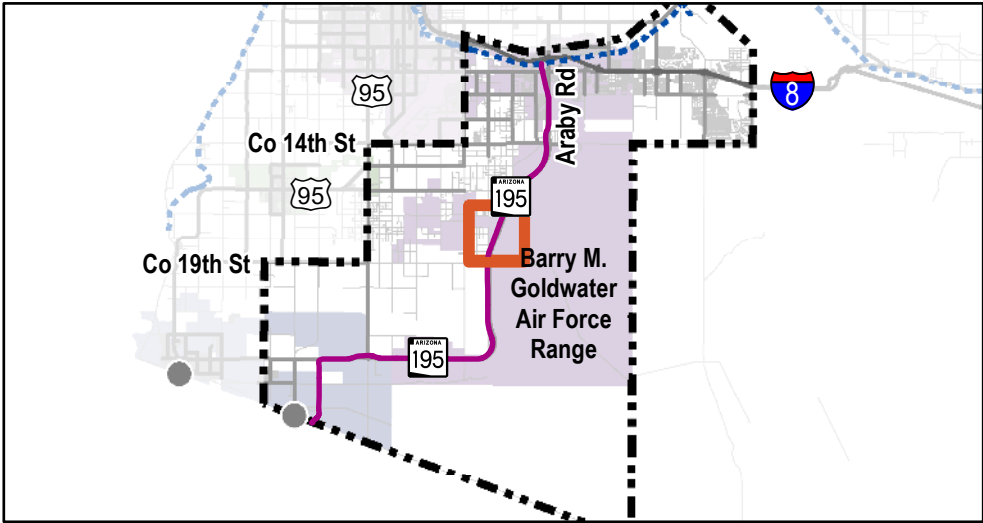


# Candidate Alternative B/C Hybrid

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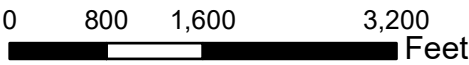






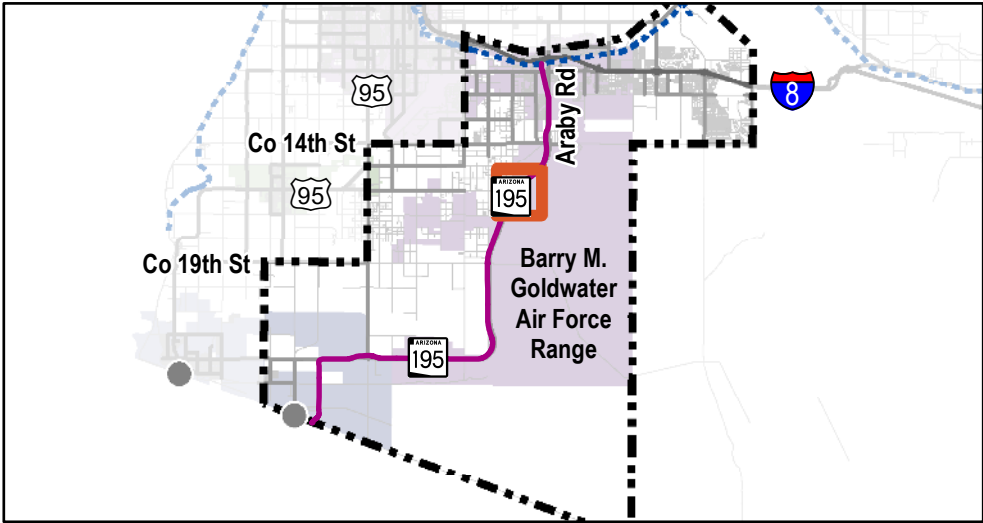
# Candidate Alternative B/C Hybrid

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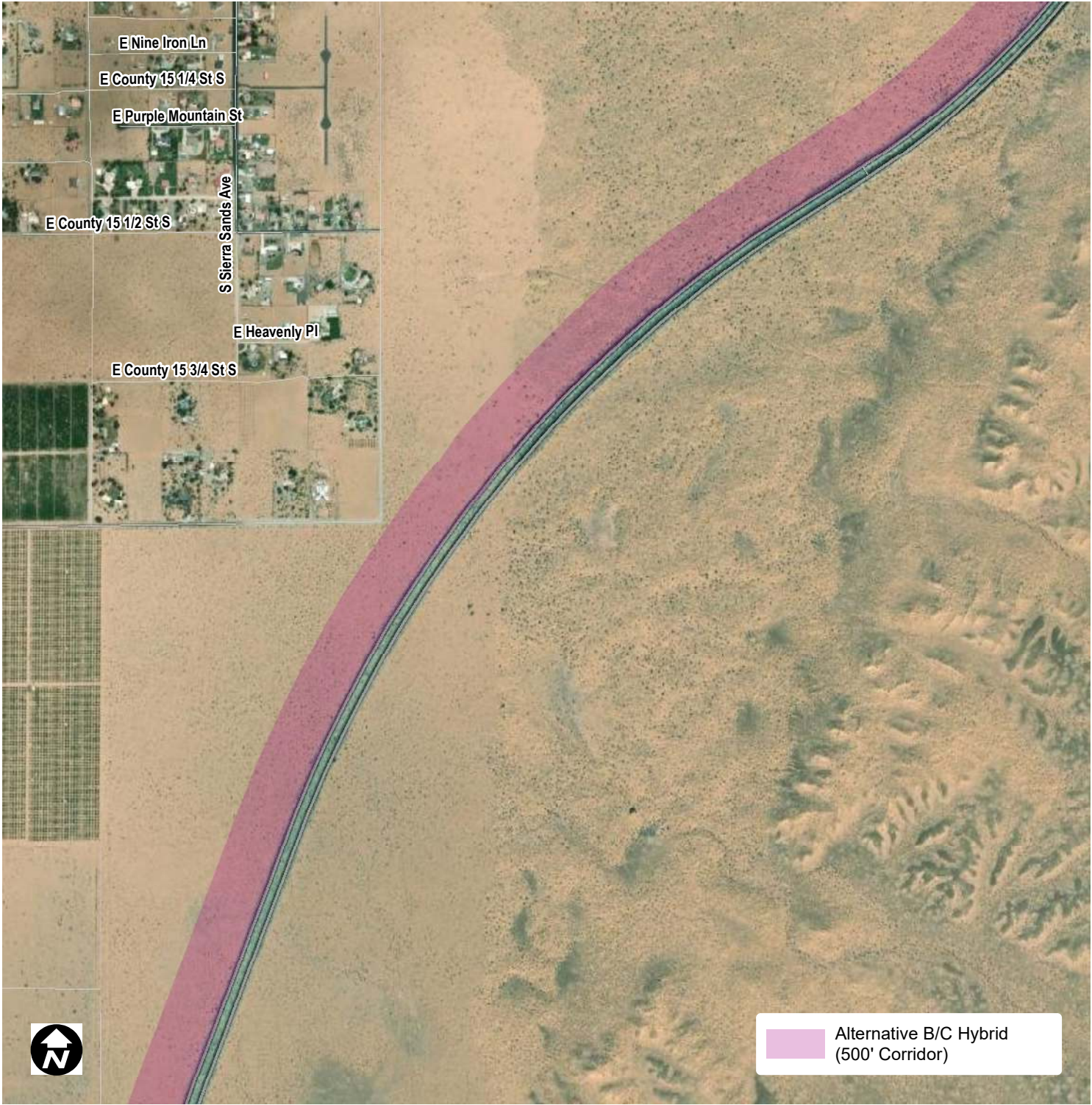
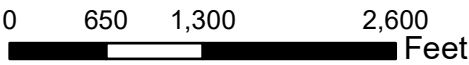
Alternative B/C Hybrid  
(500' Corridor)



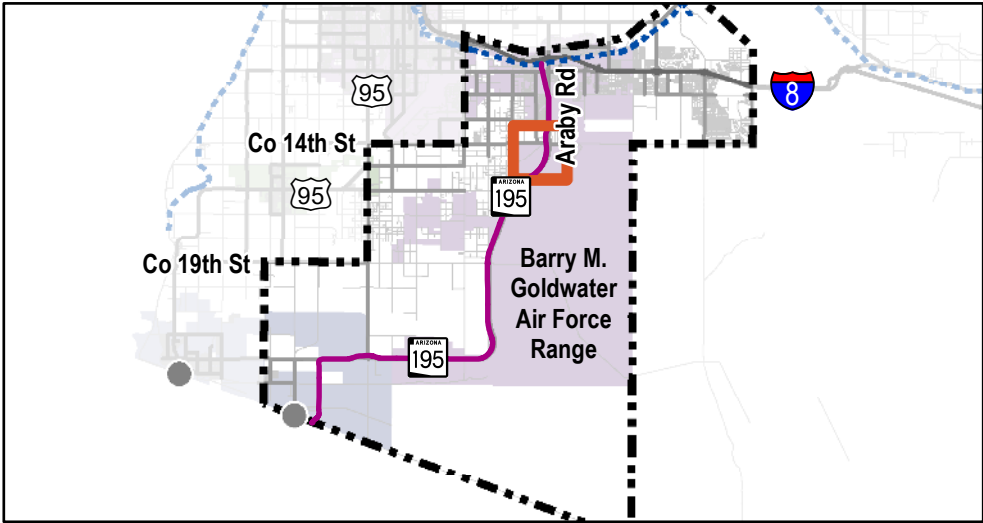


# Candidate Alternative B/C Hybrid

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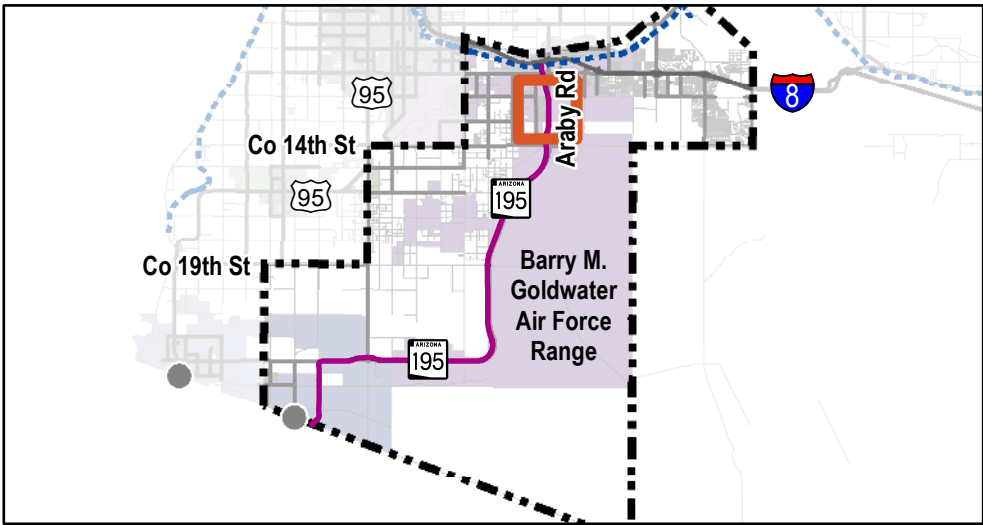


# Candidate Alternative B/C Hybrid

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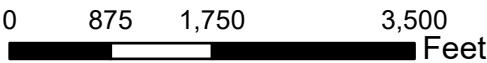




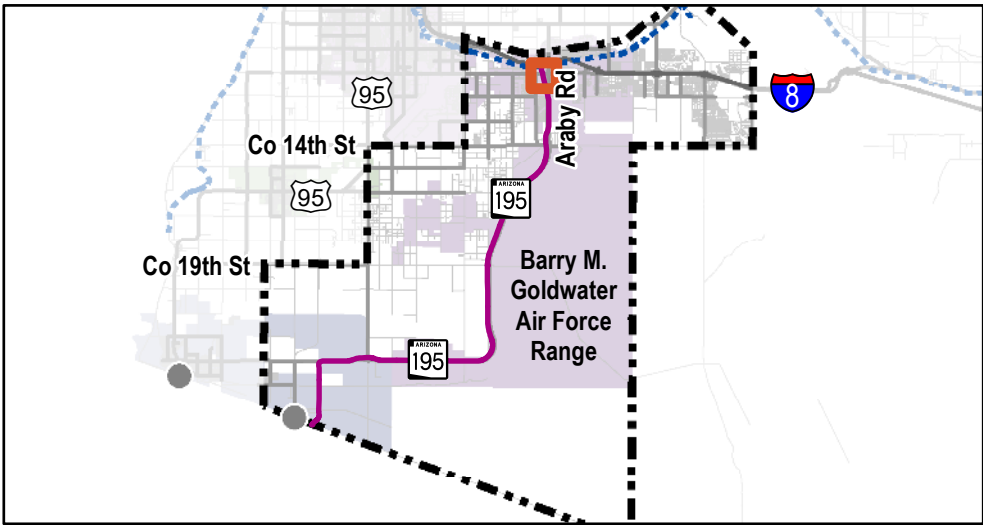


# Candidate Alternative B/C Hybrid

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# Candidate Alternative B/C Hybrid

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