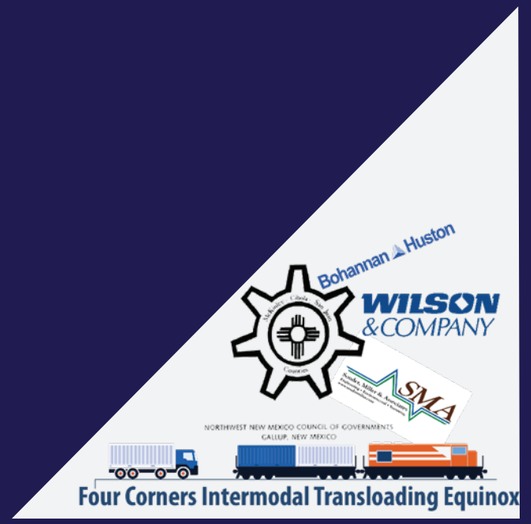
FOUR CORNERS INTERMODAL TRANSLOADING EQUINOX

4CITE

Final

November 2016



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I. PROJECT OVERVIEW

The Four Corners Intermodal Transloading Equinox (4CITE) Master Plan (Plan) is being led by the Northwest New Mexico Council of Governments (NWNMCOG). The Study Area lies within the McKinley County portion of the NWNMCOG boundary (Figure 1). This Document follows a comprehensive planning approach to coordinate the transportation planning and delivery of projects that would improve multi-modal access to the future Energy Logistics Park (ELP), the future Navajo Inland Port(s), as well as regional connections to the existing and future transportation infrastructure. Funding for the Plan is provided by the New Mexico Department of Transportation (NMDOT). In addition, the plan was made possible by matching funds provided by the City of Gallup and McKinley County, and the fact that the COG staff leveraged their RTPO contract to be able to provide staffing.

The existing and future transportation network within and adjacent to the study area was analyzed in relation to potential development scenarios for both the ELP and Navajo Inland Port. The scenarios are detailed further in following report chapters which includes a phasing approach to future growth within the study area. The projected traffic associated with each of the proposed scenarios was combined with traffic currently traveling on the adjacent roadway network to determine the cumulative effects on the roadway system. Recommendations were created to align with the needs of each scenario, resulting in a flexible and phased approach for transportation improvement implementation based on development patterns and not a specific timeframe.

A. OBJECTIVES

A set of objectives for the Plan was developed by the project team and then further vetted during the outreach process with the key stakeholder groups. They were also used as benchmarks throughout the planning process to keep the project activities on task and initiatives focused. The following are the objectives established:

- Evaluate transportation planning issues
- Gather existing data on land use, economics, and environmental conditions
- Consider future transportation conditions
- Evaluate impacts of growth as a result of proposed development scenarios
- Develop prioritized recommendations for transportation needs
- Build consensus and support for the Plan

The Plan is:

- Collection of existing conditions / planned projects
- General evaluations of future growth scenarios
- Quantitative and qualitative view of regional transportation as it relates to the Plan
- Collection of recommendations for further evaluations

The Plan is not:

- A regional transportation plan for Gallup or the NWNMCOG area
- A traffic demand model
- Quantitative analysis of all roadways
- An engineering document with costs / design

B. STUDY AREA

The Plan study area is along the western edge of the greater NWNMCOG, within McKinley County. The study area includes the evaluation of the transportation system (automobile, freight, and rail) as well as existing and proposed developments (industrial, commercial, residential). Figure 2 depicts the southern boundary of the study area which follows the east / west route of Interstate 40 (I-40), extending between the eastern termini at US 491 and the western termini near Hunters Point Road. The northern boundary of the study area includes NM 264, with the same general east / west termini as the southern boundary. The western boundary is located near Hunters Point Road. The City of Gallup is adjacent to the southwest boundary of the study area, while the Navajo Nation Chapters of Rock Springs and Tsayatoh are within the study area, and the Manuelito Chapter is near the southwest corner.

The study area boundary was established to provide enough land area and transportation network to fully evaluate the traffic impacts and potential recommendations of ingress and egress as they relate to the future development of both the ELP and Inland Port sites. The roadways represented in Figure 2 were included in the analysis. Figure 2 also defines ownership as well as whether the roads are paved or unpaved.

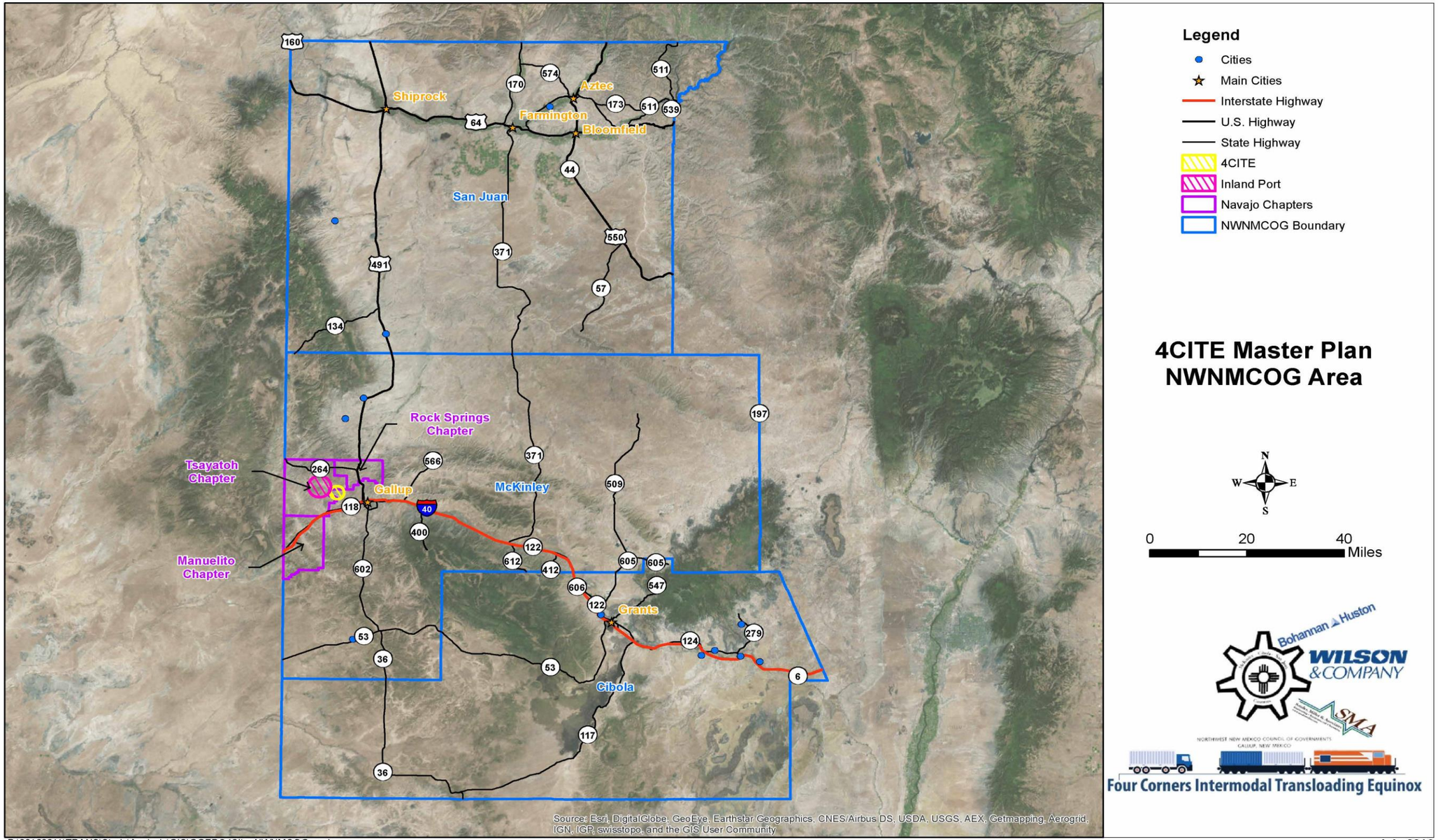


Figure 1 – Regional Study Area

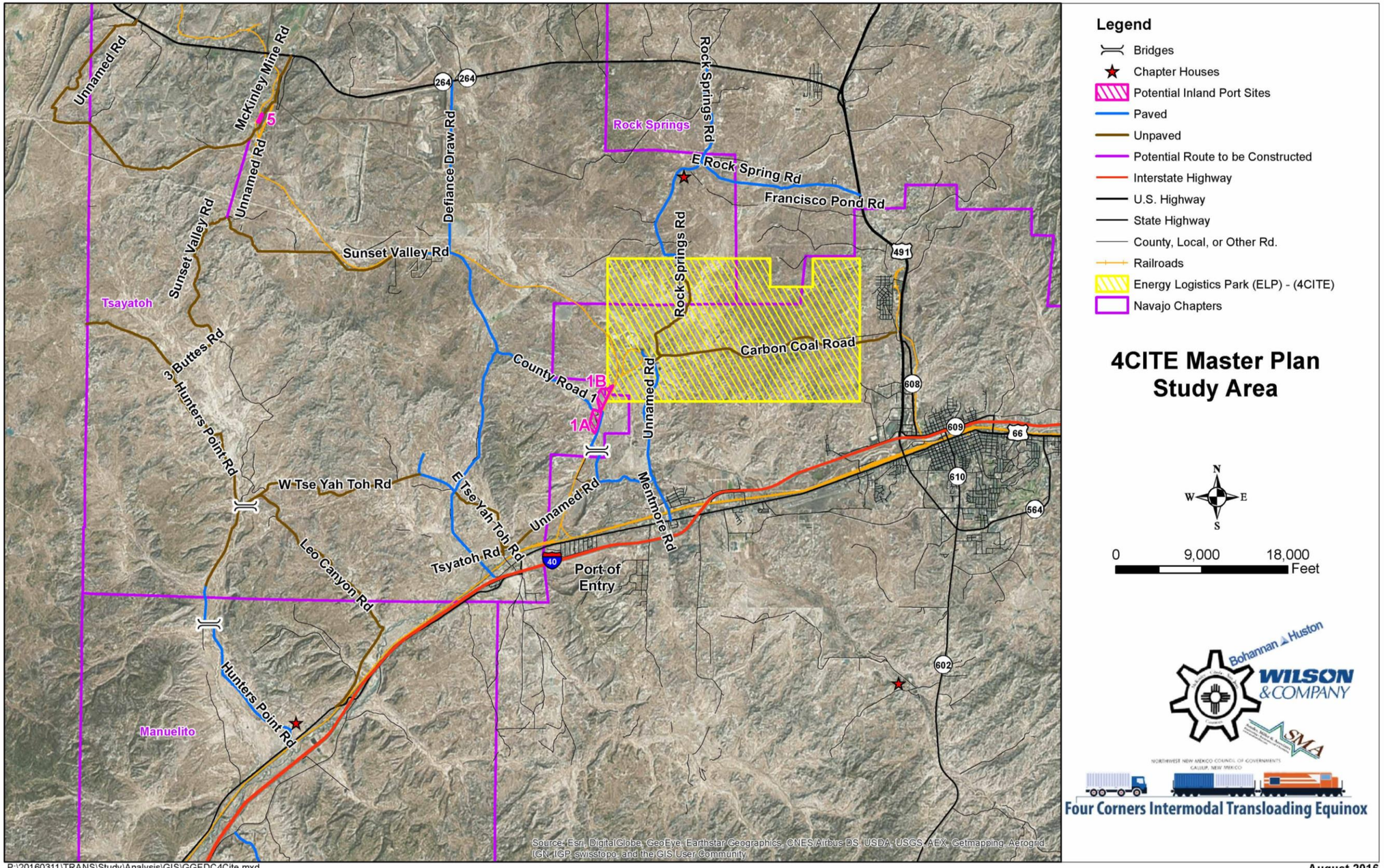


Figure 2 – Study Area

II. STAKEHOLDER AND PUBLIC OUTREACH

A. STAKEHOLDER OUTREACH PLAN (SOP)

The Stakeholder Outreach Plan (SOP) was created to summarize all project outreach activities and provide guidelines for the preparation, facilitation, and documentation of these activities. The SOP includes expectations for the Project Team as well as the Policy Advisory Committee (PAC) and Technical Working Group (TWG) members. The SOP was completed under separate cover (Appendix A) but includes a summary of the following outreach initiatives.

- TWG/ PAC meetings
- Focus Group/ Individual outreach
- Public Meetings
- Website

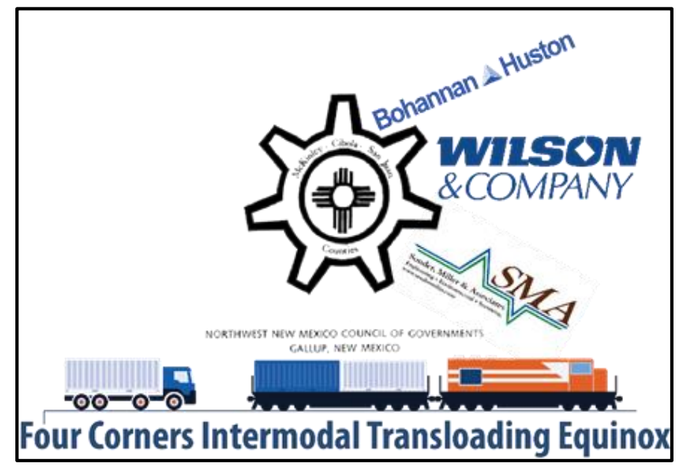
B. STAKEHOLDER INVOLVEMENT

Three joint PAC and TWG meetings were held throughout the planning process to allow for a more comprehensive approach encouraging a shared discussion. At the beginning of the first PAC/ TWG meeting, and reinforced throughout, the primary rolls of the PAC and TWG groups were identified as follows:

- Share info on plans/ projects in the region
- Support data collection
- Help build alternatives
- Evaluate alternatives
- Refine recommendations
- Serve as project champions

The PAC consisted of executive level managers from each of the participating stakeholder agencies. The TWG was composed of senior technical staff from the same agencies. The stakeholders were responsible for providing direction, approving the project parameters, establishing criteria for future project evaluations, and reviewing recommendations.

Early Planning and Coordination between the PAC/ TWG and the State Land Office will be necessary as the project comes into fruition. A large segment of Carbon Coal Rd. crosses State Land (Section 02, Township 15N, Range 09W). Additionally, some of the proposed buildout for the Energy Logistics Park may the same section of State Land. Rights-of-Ways and/or long term commercial leases may be necessary in the future.



PAC and TWG members include individuals from the following agencies:

- Navajo DOT
- City of Gallup
- State Land Office
- McKinley County
- Rock Springs Navajo Chapter
- BNSF
- NMDOT Transportation District 6 Commissioner
- New Mexico Economic Development
- Manuelito Navajo Chapter
- Tsayatoh Navajo Chapter
- Federal Highway Administration
- Navajo Economic Development
- NMDOT
- NMDOT District 6
- Federal Highway Administration
- Greater Gallup EDC
- Navajo Land Department
- Gallup Land Partners
- Bureau of Indian Affairs
- Gallup McKinley County Schools
- Eastern Navajo Land Commission

For all meetings there were invitations sent via email. Upon request, there was also an option available to participants who could not make the meetings to use Conference Calling and GoToMeeting services. Following each meeting, summary materials were provided to all PAC/ TWG members via email and phone blasts to stakeholders.

PAC AND TWG MEETINGS

PAC AND TWG KICKOFF MEETING: MARCH 15, 2016

The 4CITE kickoff meeting for PAC and TWG members took place on March 15, 2016. A presentation was given and discussed the project goals, objectives, and study area. The team also discussed the existing plans that the team reviewed as part of the study. The five potential scenarios were also presented. Attendees broke into discussion groups to evaluate the scenarios and discuss potential issues. In addition to overall project support, the Project Team gained insight into potential economic development opportunities, freight components, traffic issues, and tribal coordination.

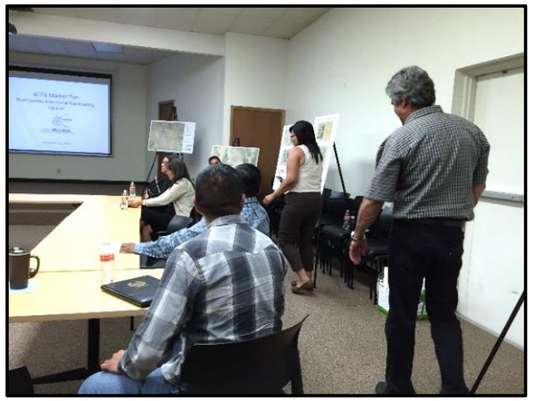
PAC AND TWG MEETING: AUGUST 8, 2016

This PAC/TWG meeting began with a presentation, which included a brief project overview, description of the proposed ELP scenarios, preliminary traffic analysis results associated with the ELP scenarios, and recommendations on potential roadway improvements based on traffic analysis results. Following a presentation by the Project Team, the meeting was opened up a discussion between the PAC/TWG and Project Team. There were discussions regarding the locations of facilities, such as bus stop locations and housing in specific scenarios. There were also discussions of the activities in the area including, travelers, nearby towns and the presence of trucks.

As a result of this meeting, the project team was asked to further consider the following:

- Navajo Chapters
- Land ownership
- School buses
- New roads/interchanges
- Bridge conditions
- Expanded Inland Port growth
- Road restrictions/ designations

PAC AND TWG MEETING: SEPTEMBER 13, 2016



The Project Team held the third PAC/ TWG meeting to discuss the current status of the project. The meeting began with a presentation, which included a brief project overview and description of the proposed ELP scenarios with a focus on the traffic analysis results associated with the ELP scenarios, and recommendations on potential roadway improvements based on traffic analysis results. Study area boards were displayed and boards showing the ELP land use scenarios were available. Following the presentation by the Project Team, primary discussion points were on the volume of traffic considered, cost of recommendations, and next steps for implementation.

PUBLIC OPEN HOUSES

There were two public meetings held throughout the project timeline. The public meetings took place in Gallup in the late afternoon to early evening to allow the greatest participation from both the community and working professionals. The format and content included recommendations from the PAC and TWG. There was a focus on maintaining cultural sensitivity to the Navajo Nation participants.
Public meetings were advertised on the NWNMCOG website, other participant's websites, the local newspaper, and via email blasts to stakeholders, project team members, and interested public.

AUGUST 8, 2016

The public meeting was held following the PAC/ TWG meeting and brought some additional perspective from County Commissioners, local land owners, and the Navajo Nation. It was a casual, interactive atmosphere and transportation issues and thoughts were shared. Meeting attendees had an opportunity to listen to a brief project overview, speak with Project Team members and PAC/ TWG members, and provide comments on maps and comment sheets. General comments collected from the public were regarding a concern about the development's potential impact on roads status and residential areas. Meeting attendees were in overall support of roadway improvements and were in agreeance that Carbon Coal Road should be updated first and ready for development.
Lastly, comments were collected concerning the costly and difficult nature of acquiring right-of-way on Tribal land. There was overall support for the project with a strong interest in seeing the final roadway improvement recommendations.

SEPTEMBER 13, 2016

The second public meeting was held immediately following the PAC/TWG meeting. There was one member of the public, one representative from the Manuelito Chapter, and one Councilor for the City of Gallup in attendance. The participants were given an overview of the study as well as details on the traffic analysis and recommendations. Following the presentation, a discussion on the overall impacts to the area, additional roadway options, and future steps for implementation occurred amongst attendees.

WEBSITE

Throughout the planning process, and as needed for distribution and availability, project-related information was posted on the NWNMCOG website.

CULTURAL SENSITIVITY

All outreach efforts maintained cultural sensitivity, appropriate communication patterns, and trust-building contact with the Navajo Nation. Since the Navajo language is not a formally written language, the Project Team aimed to be careful not to assume that written material developed in Navajo is accurate. Therefore, public outreach material was written in English for presentations, in the material for dissemination, and the website. The Bi-Lingual component was primarily verbal communication, when appropriate.

Separate coordination with the Navajo representatives was completed to ensure their participation in the project planning. In general, they included phone calls with representatives from the Tsayatoh Chapter and the Manuelito Chapter. There were also face-to-face meetings with the Rock Springs Chapter, in preparation for the PAC/ TWG meeting planned for March 15, 2016.

- *March 2016* – Following the PAC/TWG meeting there were follow-up calls to all three Chapters regarding the meeting to ensure that communication was received and understood.
- *August 2016* – There were meetings with all three Chapters separately in Gallup to provide notice of the meeting scheduled for August 8, 2016 at the Gallup Chamber of Commerce.
- *August 2016* – There was follow-up with Chapters since Tsayatoh and Rock Springs were not present at the August 8, 2016 meeting. A representative from the Manuelito Chapter was present.

ADDITIONAL STAKEHOLDERS

The following additional stakeholders were integrated into the planning process, and invited to the public meetings.

- City of Farmington
- City of Aztec
- City of Bloomfield
- City of Grants
- Village of Milan
- Village of Thoreau
- San Juan County
- Cibola County
- Farmington MPO
- Navajo Legislative Dept. – District 6
- Pueblo of Acoma
- Pueblo of Laguna
- Sheep Springs Navajo Chapter
- Baahalii Navajo Chapter
- Shiprock Navajo Agency RBDO
- Eastern Navajo Agency RBDO
- Navajo Community Land-Use Planning Committees (CLUPCs)
- Navajo Grazing Board Officials
- BLM – Farmington District

III. CONDITIONS ANALYZED

The 4CITE Master Plan is a comprehensive approach to coordinate the planning and delivery of several projects that would improve multi-modal access to future industrial development in the area. Therefore, at the onset of the planning process, the team gathered all existing data on land use, economics, transportation, and environmental conditions in the area. This collection of data helped to understand the expected growth from current and proposed development within and adjacent to the study area. This section summarizes the traffic data considered, and provides details on the initiatives which have provided the most influence on the planning process.

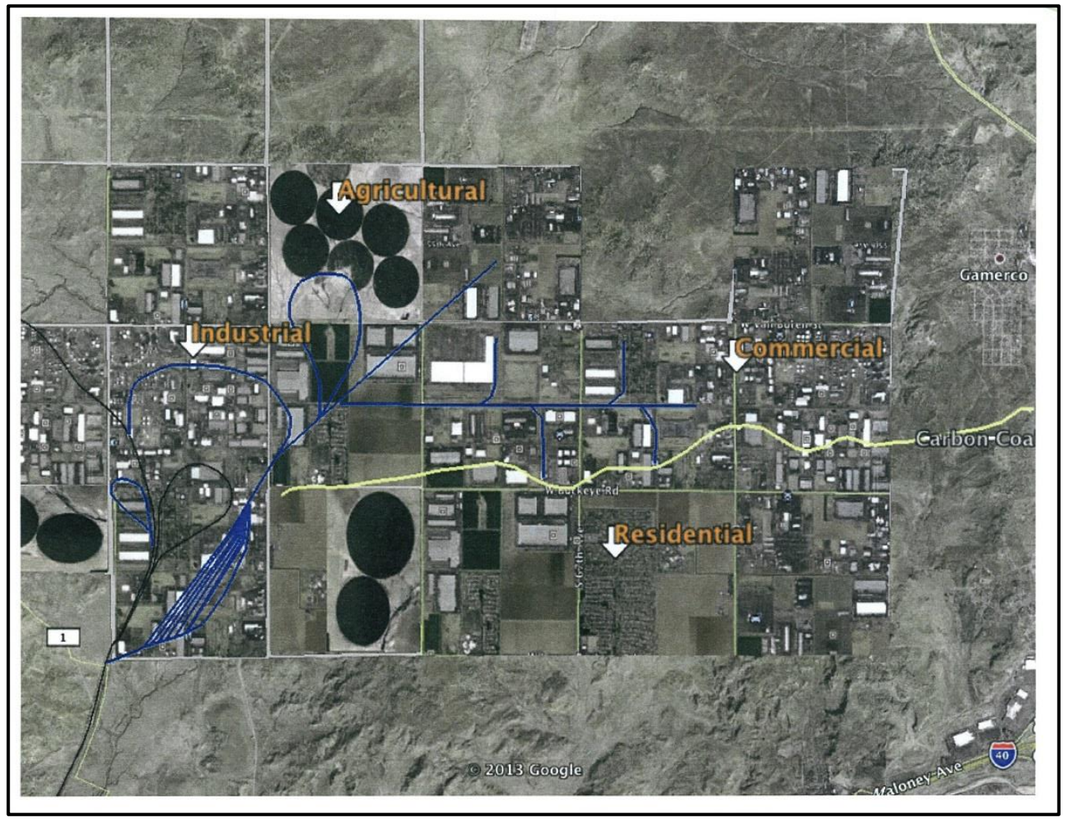


Figure 3 – Energy Logistics Park Proposed Land Use

A. PRIMARY DEVELOPMENTS WITHIN THE STUDY AREA

ENERGY LOGISTICS PARK (ELP)

The ELP is a critical component of the 4CITE Master Plan. It is approximately 5.2 miles from the intersection of US 491 and 9th Street. The area can currently be accessed from Carbon Coal Road and County Road 1. The development will accommodate numerous activities and will have commercial, industrial, and manufacturing on site. Full build-out of the ELP includes 100 acres of industrial land, 20 acres of warehousing, and 40 acres for an office park. Ultimately, it may also include residential units primarily for workforce housing. The ELP is being proposed, designed, and developed by Gallup Land Partners LLC. The Plan will not include any evaluations of the land use planning for the ELP, analysis will be based on the data results provided in the Traffic Impact Study prepared by McKinley County and Greater Gallup Economic Development Corporation (GGEDC). Figure 3 depicts an example of the mix of development types that will be part of the project (according to the Traffic Impact Analysis from Sakura Engineering and Surveying). The outline of the proposed ELP footprint is also shown in Figure 2.

NAVAJO NATION INLAND PORT SITES

As part of the Navajo Nation Inland Port Feasibility Study (NMEDD, 2015), there were five different Inland port sites analyzed. These five sites are all potential locations for inland port facilities which will primarily benefit the nearby Navajo Chapter communities of Manuelito, Rock Springs, and Tsayatoh. The potential inland port is also expected to create opportunities for economic development and make the region more competitive for jobs, capital investment, and to create a new tax-base. The sites were reviewed and ranked from poor to excellent. The five potential sites are displayed in Figure 4 below.

As a conclusion in the Navajo Nation Inland Port Feasibility Study, Inland Port Site 1 was identified as the most promising with Inland Port Site 5 presenting the next most probable option. Both of these site locations were examined by the Project Team and the PAC/ TWG, and based on input from the PAC/ TWG, both Inland Port Sites 1 and 5 are included in the scenarios created to evaluate transportation recommendations for future development.

Both sites were analyzed under the assumption that there would be 50,000 square feet of industrial development and 35,000 square feet of office development at either site for the initial phase.

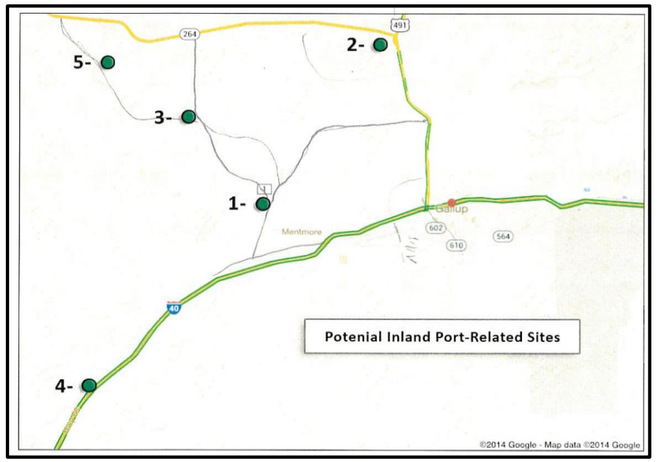


Figure 4 – Inland Port Sites

INLAND PORT SITE #5

Inland Port Site 5 has all facilities on-site including sewer, septic, gas, electric, and a cell tower. Its location provides existing access to NM 264 to the north and is only 21 miles from I-40. The zoning is also compatible. This site could eventually accommodate a larger footprint and build-out. Site 5 received a score of "above average – good." The site is shown in Figure 5.

Figure 5 – Navajo Nation Inland Port Site #5

INLAND PORT SITE #1

Inland Port Site 1 contains two separate sites – 1A and 1B. Both sites are similar and receive the same score based on the same criteria. It has an excellent location in proximity to existing rail lines, and is adjacent to the ELP, which might offer an opportunity for coordination. The topography and zoning are also compatible at this site. The overall score was "excellent." The two components of Site 1 are shown below in Figure 6 and Figure 7.

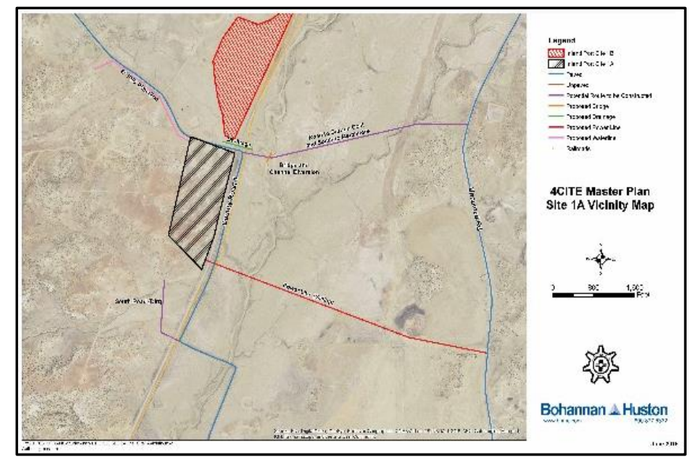


Figure 6 – Navajo Nation Inland Port Site #1A

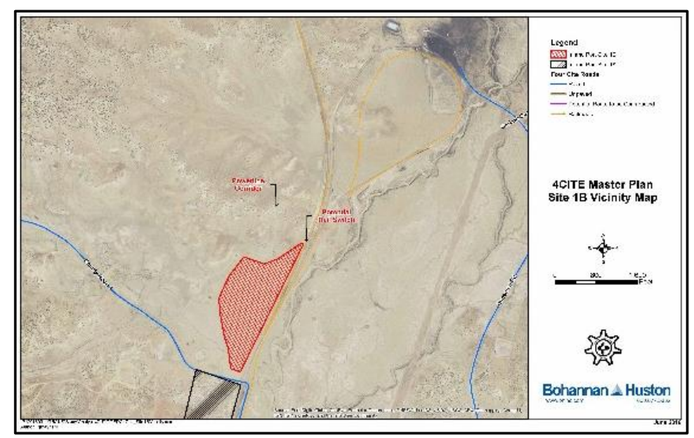


Figure 7 – Navajo Nation Inland Port Site #1B

B. ADDITIONAL DEVELOPMENTS CONSIDERED

The primary developments integrated into the transportation analysis are the proposed ELP and Navajo Nation Inland Port; however, in addition to these two initiatives, the planning process evaluated a variety of development and transportation projects in the area to coordinate efforts. The following is a list of previous or ongoing projects reviewed and utilized in the analysis. Some of the following plans provided background data, others just a level of context, and some were just considered so as not to recommend any projects in conflict with ongoing efforts.

- US 491 highway improvements
- Navajo-Gallup Water Supply Project
- Carbon Coal Road Preliminary Engineering Report/ Traffic Impact Analysis
- Allison Road Corridor Study
- Previous improvements to NM 264
- Previous improvements to County Road 1
- BNSF Transcon Development
- NGL Transload Facility in Milan
- Navajo Thoreau Industrial Park

A reference table with further details on the most significant documents is included in Appendix B and access to the documents can be provided, upon request.

OTHER PLANNING INITIATIVES CONSIDERED

ALLISON ROAD CORRIDOR STUDY

The Allison Road Corridor Study (NMDOT, 2010) was commissioned by NMDOT to look at traffic patterns and improve traffic conditions in the area. The study looks at the planned development built-out and the impact on the roadway, including the need for an additional I-40 interchange and connectivity to US 491/ Carbon Coal Road. Several of the roads considered in the Allison Road Corridor Study are part of the study area identified for the Plan and associated traffic studies were considered in this planning process. However, the need for the improvements identified in the Allison Road Corridor Study were established prior to this planning initiative and continue to have independent utility separate from the 4CITE development.

Any improvements made under the Allison Road Corridor Study would bring value added for the transportation system serving the 4CITE study area. This current planning initiative is to determine the differential in transportation needs resulting from the 4CITE development in isolation. Figure 8 is an image from the Allison Road Corridor Study, identifying proposed improvement areas.

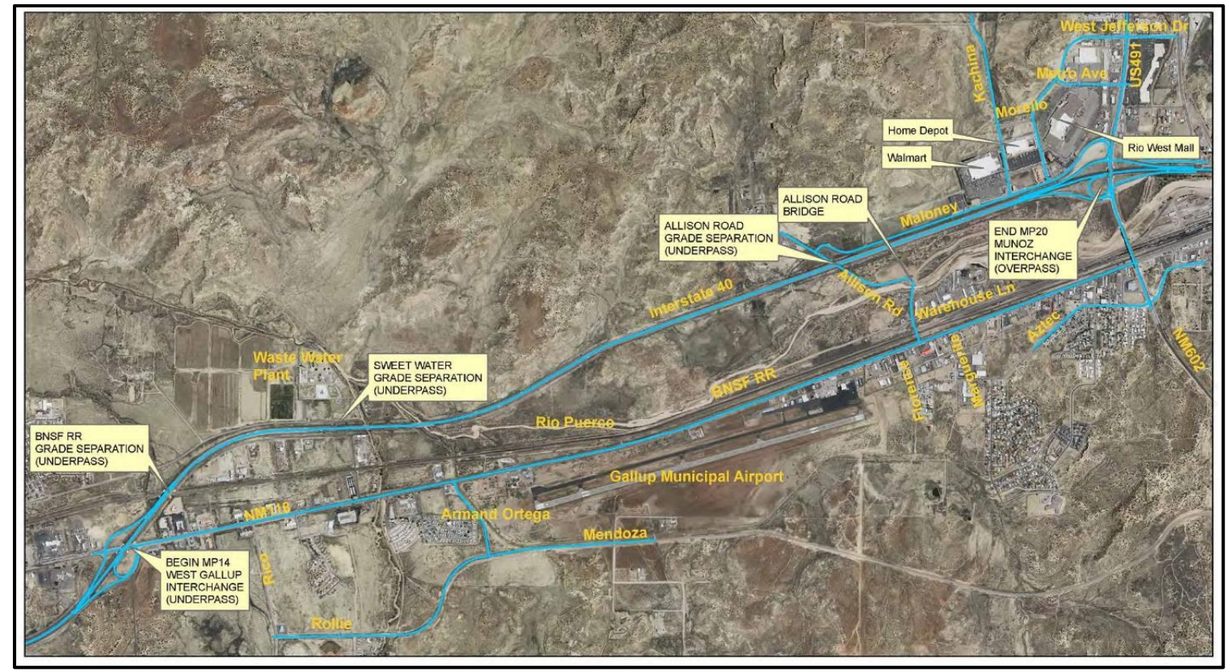


Figure 8 – Allison Road Corridor Study (NMDOT, 2016)

NMDOT FREIGHT-RELATED ECONOMIC DEVELOPMENT OPPORTUNITY STUDY

The federal surface transportation law, Fixing America's Surface Transportation (FAST) Act, issues requirements for freight truck drivers. The FAST Act indicates that truck drivers are required to stop for ten hours after driving for eleven consecutive hours. These provisions were recognized by the New Mexico House of Representatives, who passed House Memorial 96 (HM-96) to study emerging opportunities for statewide trucking accommodations. HM-96 aims to capitalize on the presence of three major truck freight routes that cross New Mexico: I-10, I-25, and I-40 to develop multi-service locations for truck drivers reaching their eleven-hour limit. The expected outcome could provide enhanced economic and employment opportunities for New Mexico. The NMDOT is currently completing a study, Freight-Related Economic Development Opportunity Study, which will result in 4-6 potential locations for new or expanded trucking accommodations (NMDOT, 2016). One of the potential locations being studied is the area along I-40 which is within or near the study area.

The potential for expanded truck services is not expected to increase truck volumes; however, opportunities to capitalize on the connection with the proposed industrial development and existing rail facilities will be considered as part of the Freight-Related Economic Development Opportunity Study (NMDOT, 2016).

EXISTING TRANSPORTATION SYSTEM

The roadways currently within the study area are in varying conditions. There have been recent improvements to County Road 1 but the roadway may still require further analysis regarding adequate infrastructure for a large volume of trucks. US 491 has also undergone numerous improvement projects over the past decade. It is a major transportation corridor for the region. Other existing roads include NM 264, which is a major commercial traffic and passenger route connecting Window Rock to US 491, and Mentmore Road which was constructed to connect the Mentmore neighborhoods to Gallup, but is currently being used by commercial vehicles.

EXISTING TRAFFIC DATA

Traffic counts contextualize the amount of use a roadway is experiencing. Counts can show the number of cars passing at different times of the day; however, this analysis focused on peak hour traffic in most conditions. For this analysis there were three traffic counts sourced: NMDOT Transportation Information Management System (TIMS) for the year 2014 (NMDOT, 2014), the Traffic Impact Analysis completed for the ELP (McKinley County, GGEDC, 2015), and the Allison Road Corridor Study (NMDOT, 2010). This data was collected and then mapped using Geographic Information Systems (GIS) technology.

Having the data geo-located helped to visualize and understand traffic patterns.

The roadways considered for analysis are listed below:

- NM 118
- Allison Road
- Munoz Drive
- Arnold Street
- Marguerite Street
- Carbon Coal Road
- Mentmore Road
- County Road
- Defiance Draw Road
- Tsayatoh Road
- Sunset Valley Road
- 3 Buttes Road
- Hunters Point Road
- Leo Canyon Road
- Rock Springs Road
- Francisco Pond Road
- NM 264
- NM 564
- NM 566
- NM 602
- NM 608
- NM 609
- NM 610
- US 491

This data was mapped and summarized for use in further traffic analysis. The data was integrated into an analysis of the five scenarios being studied and described further in subsequent chapters. As part of the study, there were also assumptions made regarding the data. Smaller County roads were assigned 500 vehicles per day (vpd) for unpaved roads and 1,500 vpd for paved roads.

IV. PLAN DEVELOPMENT PROCESS

The Plan development process included the creation of five scenarios: Scenarios A through E as shown in Figure 9. These scenarios were used to represent potential phasing of the proposed developments. They are cumulative as additional development opportunities are added to each scenario. As previously discussed, the PAC/ TWG requested that both Inland Port Site 1 and Inland Port Site 5 be evaluated so scenarios were built to include consideration of development for both of these sites. The addition of workforce housing was added to Scenario E but could occur earlier under any scenario.

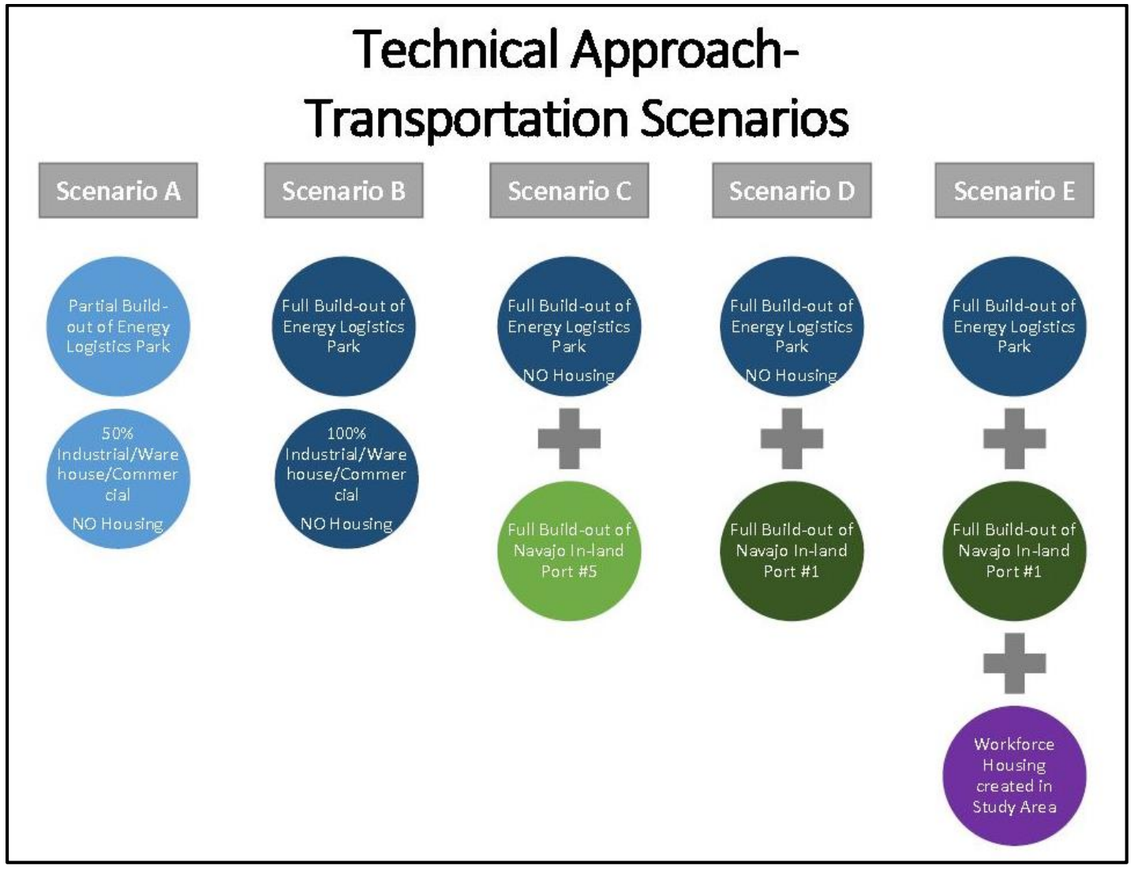


Figure 9 – Transportation Scenarios

SCENARIOS

The five scenarios analyzed are represented visually below. Each scenario was created based on the data available for the ELP and Navajo Inland Ports, respectively. Traffic associated with each of these five Scenarios was established for analysis of potential impacts to the transportation system, and is further discussed in the next chapter.

Figure 10 – Scenario A

Scenario A (Figure 10) is a partial build-out of the ELP only – no Navajo Inland Port development or housing. This includes 50% of industrial, warehousing, and commercial land uses on ELP land.

Figure 11 – Scenario B

Scenario B (Figure 11) is a full build-out of the ELP only – no Navajo Inland Port development or housing. This includes 100% of industrial, warehousing, and commercial land use on ELP land.

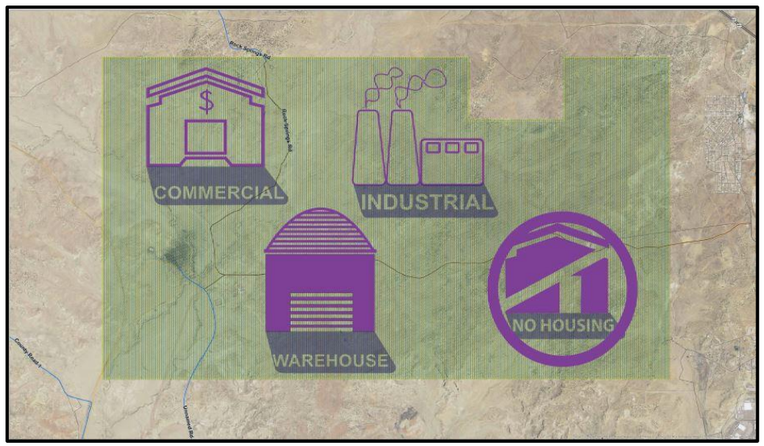


Figure 12 – Scenario C

Scenario C (Figure 12) is a full build-out of the ELP and a full build-out of the Inland Port Site 5. This includes 100% of ELP (minus housing) and 100% of Inland Port Site 5 land use.

Figure 13 – Scenario D

Scenario D (Figure 13) is a full build-out of the ELP, as well as a full build-out of Inland Port Site 1. This includes 100% of ELP (minus housing) and 100% of Inland Port Site 1 land use.

Figure 14 – Scenario E

Scenario E, (Figure 14) is a full build-out of ELP and a full build-out of Inland Port Site 1. This includes housing associated with the ELP.

V. TRANSPORTATION ANALYSIS

An analysis was conducted to determine the potential impacts of the additional traffic generated by each of the five scenarios described previously. The process began by estimating the potential number of additional trips that could be generated by the proposed land uses. These trips were then allocated to the surrounding transportation network, and resulting volumes were analyzed to identify anticipated roadway and intersection deficiencies and develop recommended improvement strategies. The following details key assumptions and subsequent results of this analysis.

A. SCENARIO TRIP GENERATION

Trip generation rates for each of the five scenarios were based on the Institute of Transportation Engineers (ITE) Trip Generation manual, 8th Edition. The trip generation for the ELP was obtained from the Traffic Impact Analysis for McKinley County and Greater Gallup Economic Development Corporation (TIA) ((McKinley County, GGEDC, 2015).

SCENARIO A - PARTIAL ELP / NO RESIDENTIAL

Scenario A comprises a 50% build-out of the ELP and no residential land use. No Navajo Nation Inland Port Development. Partial build-out includes “Industrial Park” (ITE LUC 130), “Warehousing” (ITE LUC 150), and “Office Park” (ITE LUC 750); the trips generated from the ELP at a partial build-out are presented in Table 1.

Table 1: Scenario A Trip Generation

Land Use	Quantity	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Industrial Park	50 acres	2,700	270	55	325	67	251	318
Warehousing	10 acres	585	72	28	100	33	60	93
Office Park	20 acres	3,491	380	33	413	75	425	500
Totals		6,776	722	116	838	175	736	911

SCENARIO B - FULL ELP / NO RESIDENTIAL

Scenario B includes the full build-out of the ELP, minus the residential land use. No Navajo Nation Inland Port Development. The trips generated from the ELP at full build-out, not including the residential land use, are presented in Table 2.

Table 2: Scenario B Trip Generation

Land Use	Quantity	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Industrial Park	100 acres	5,400	540	110	650	134	502	636
Warehousing	20 acres	1,170	144	56	200	65	120	185
Office Park	40 acres	6,981	760	66	826	150	850	1,000
Totals		13,551	1,444	232	1,676	349	1,472	1,821

SCENARIO C - FULL ELP AND INLAND PORT 5 / NO RESIDENTIAL

Scenario C includes the full build-out of the ELP, minus residential, as well as build-out of Inland Port Site 5. Trip generation rates for the Inland Port were based on 50,000 square feet of “Industrial Park” (ITE LUC 130) and 35,000 square feet of “General Office” (ITE LUC 710) development.

These rates were used to calculate the number of trips generated on a daily basis during the AM and PM peak hours of the adjacent street traffic. These trip generation rates are presented in Table , and the calculated trips, as well as those of the ELP.

Table 3: Inland Port Trip Generation Rates

Land Use	ITE LUC	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Industrial Park	130	6.96	82%	18%	0.84	21%	79%	0.86
General Office Building	710	11.01	88%	12%	1.55	17%	83%	1.49

Table 4: Scenario C Trip Generation

Land Use	Quantity	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Industrial Park	100 acres	5400	540	110	650	134	502	636
Warehousing	20 acres	1170	144	56	200	65	120	185
Office Park	40 acres	6981	760	66	826	150	850	1,000
Industrial Park	50,000 SF	348	34	8	42	9	34	43
General Office Building	35,000 SF	385	48	7	55	9	43	52
Totals		14,284	1,526	247	1,773	367	1,549	1,916

SCENARIO D - FULL ELP AND INLAND PORT 1 / NO RESIDENTIAL

Scenario D consists of the same trips generated as Scenario C; however, at the Inland Port Site 1.

SCENARIO E - FULL ELP AND INLAND PORT 1 + RESIDENTIAL

Scenario E comprises the full build-out of the ELP with the inclusion of the “Single Family” residential land use, as well as the Inland Port Site 1. The trips generated from the ELP at full build-out, with residential, and Inland Port Site 1 are presented in Table 3.

Table 3: Scenario E Trip Generation								
Land Use	Quantity	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Industrial Park	100 acres	5,400	540	110	650	134	502	636
Warehousing	20 acres	1,170	144	56	200	65	120	185
Office Park	40 acres	6,981	760	66	826	150	850	1,000
Industrial	50,000 SF	348	68	9	77	13	62	75
General Office Building	35,000 SF	385	7	20	27	22	13	35
Single Family	300 units	2,856	55	165	220	178	104	282
Totals		17,140	1,574	426	2,000	562	1,651	2,213

A summary of the daily, AM peak, and PM peak trips generated by each scenario is presented below in Table 4. These are the basis for the traffic analysis completed for the proposed developments.

Table 4: Scenario Trip Generation Summary							
Scenario	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Scenario A	6,776	722	116	838	175	736	911
Scenario B	13,551	1,444	232	1,676	349	1,472	1,821
Scenario C	14,284	1,526	247	1,773	367	1,549	1,916
Scenario D	14,284	1,526	247	1,773	367	1,549	1,916
Scenario E	17,140	1,574	426	2,000	562	1,651	2,213

B. SCENARIO TRIP DISTRIBUTION & ASSIGNMENT

The trips generated by each scenario were then assigned to the adjacent roadway network. For purposes of this analysis assumptions were made so that trips were assigned based on the shortest path and that all roadways depicted are traversable by vehicular traffic with the expectation that necessary roadway improvements would be made to accommodate these routes, as needed. Recommendations provided in Section VI indicate what level of effort is required to actually make these roads adequate for travel by vehicles and trucks. The following provides a discussion of key assumptions related to the distribution of these trips.

SCENARIO A

Trip distribution and assignment for Scenario A was determined by the Traffic Impact Analysis (TIA) conducted for the ELP:

- 60% of traffic generated by the ELP is distributed to the intersection of US 491 and 9th Street/ Chino Road and assigned along Carbon Coal Road;
- 25% of traffic generated is distributed north – to NM 264 westbound and assigned northbound through County Road 9 (Rock Springs Road); and
- 15% of traffic generated is distributed south – to I-40 and assigned southbound through the Mentmore Road alignment.

The distribution and assignment for the ELP is depicted in Figure 15. The scribed percentages regard the entering and exiting movements for the AM and (PM) peak hours.

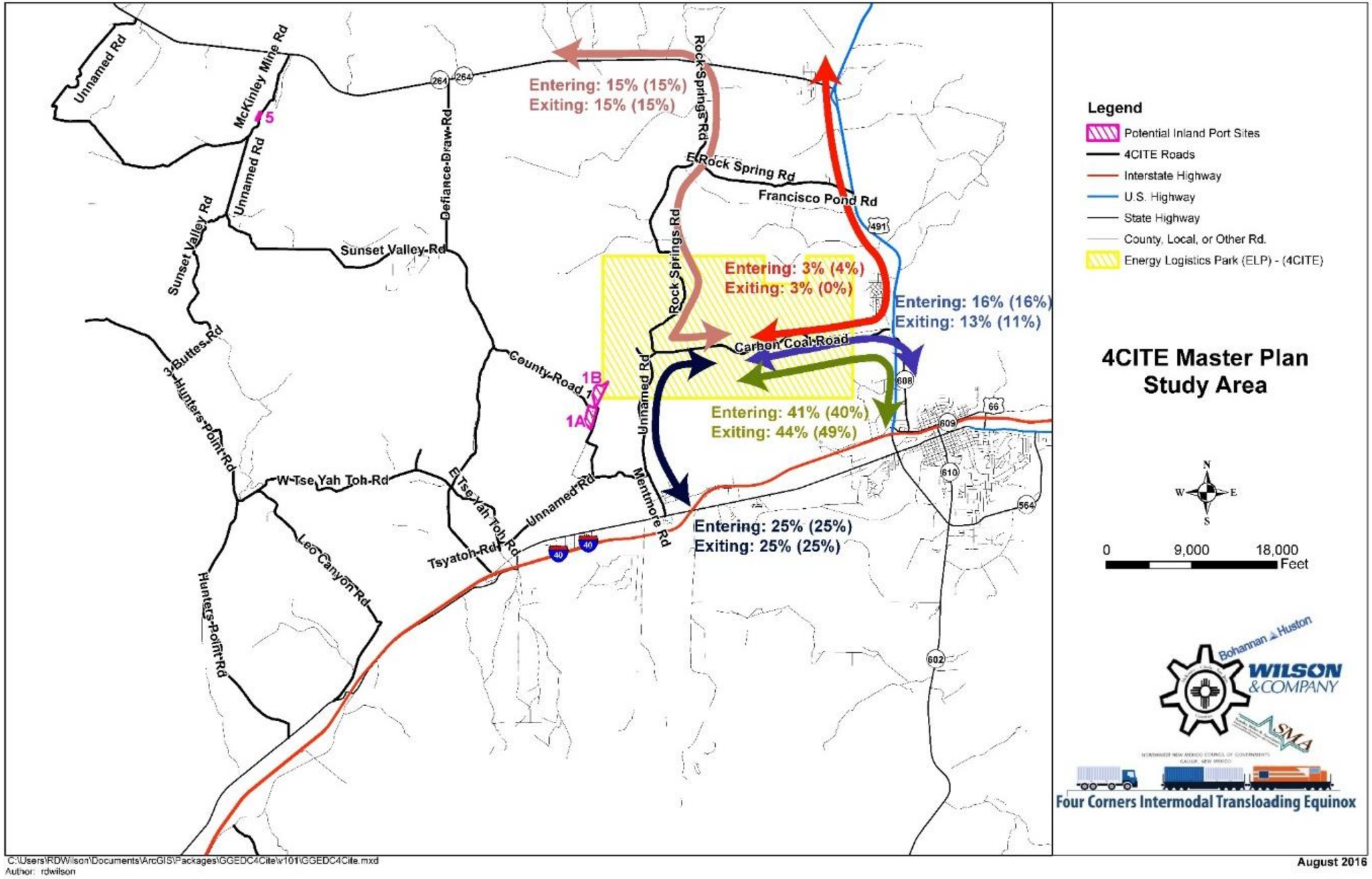


Figure 15 – ELP Trip Assignment

SCENARIO B

Trip distribution and assignment for Scenario B parallels the distribution and assignment in Scenario A, however refers to full build-out, without the single-family residential land use (refer to Figure 15).

SCENARIO C

Trip distribution and assignment for Scenario C builds off of the distribution and assignment of Scenarios A and B, in addition to the Inland Port Site 5. Inland Port Site 5 is located in the northwestern locale of the study area, approximately 1.3 miles south of NM 264 along the McKinley Mine Road alignment. Trips were distributed and assigned based on current traffic bidirectional volume splits among NM 264, US 491, NM 602, and I-40. Trips were assigned to the shortest path, thus traffic exiting the study area via US 491 northbound was assigned through NM 264 eastbound and traffic exiting via NM 602 was assigned through I-40 eastbound. Quantitatively, trips were distributed and assigned as follows:

- Approximately 86% of traffic generated by the Inland Port Site 5 is distributed south – to I-40 and assigned southbound through County Road 4 (Sunset Valley Road to 3 Buttes Road to Hunters Point Road).
- Approximately 14% of traffic generated is distributed north – to NM 264 with an almost even split between east- and westbound directions (with a marginally greater percentage entering/ exiting from/ to the east). The northbound trips were assigned through McKinley Mine Road.

The distribution and assignment for the Inland Port Site 5 is depicted in Figure 16. The scribed percentages regard the entering and exiting movements for the AM and (PM) peak hours.

SCENARIO D

Trip distribution and assignment for Scenario D also builds off of the distribution and assignment of Scenarios A and B, as well as the Inland Port Site 1. Site 1 is located just southwest of the ELP, near the Mentmore Road alignment. Consistent with Scenario C, trips were distributed and assigned based on the same bidirectional traffic splits between NM 264, US 491, NM 602, and I-40. Trips were distributed and assigned as follows:

- Approximately 86% of traffic generated by the Inland Port Site 1 is distributed south – to I-40 and assigned southbound through the Mentmore Road alignment.
- Approximately 14% of traffic generated is distributed north – to NM 264 with an almost even split between east- and westbound directions (with a marginally greater percentage entering/ exiting from/ to the east). The northbound trips were assigned through County Road 1 and Defiance Draw Road.

The distribution and assignment for the Inland Port Site 1 is depicted in Figure 17. The scribed percentages regard the entering and exiting movements for the AM and (PM) peak hours.

SCENARIO E

Trip distribution and assignment for Scenario E further builds off of Scenario D, encompassing traffic generated from Inland Port Site 1 and the full build-out of the ELP; however, also includes the single family residential land use development. The distribution and assignment for all trips remains the same as in Scenario D, refer to Figure 15 for the ELP and Figure 16 for Inland Port Site 1.

C. SCENARIO NETWORK PERFORMANCE

These trips were then combined with average weekday traffic currently traveling on the adjacent roadway network to determine the cumulative effects of the combined traffic volumes associated with each development scenario. Roadway and intersection deficiencies were identified for each scenario, and recommended infrastructure improvements were defined. The following section documents key assumptions and resulting conclusions associated with this analysis.

ANALYSIS ASSUMPTIONS

Level of Service (LOS) was analyzed in Synchro Trafficware Studio 9 for 24 intersections in each of the five scenarios for both AM and PM peak hours. Developing the baseline network was the first step in the analysis, which encompassed existing traffic and movements within the site. Since existing traffic counts were largely unavailable for roadways throughout the study area, baseline traffic was established using an average daily traffic volume of 500 vpd for unpaved roadway segments and 1,500 vpd for paved roadway segments. Traffic volumes on NM 264 and US 491 were based on the corresponding Average Annual Daily Traffic (AADT) published by NMDOT TIMS for the year 2014. At the intersection of US 491 and Chino Road/ 9th Street, traffic volumes were derived from the traffic impact analysis of the ELP. Given the nature of land uses, the traffic volume in each scenario incorporates a heavy vehicle presence of 16% across the network. For each of the five scenarios, trips were added to the network according to the trip generation, distribution, and assignment presented in the previous sections for both AM and PM peak hours. In addition to intersection LOS, road segments were also evaluated using a volume to capacity ratio to identify deficiencies and possible bottlenecking. The capacity threshold for paved roads was defined as 7,500 vehicles per lane per day, while for unpaved roads the threshold was determined as 750 vehicles total.

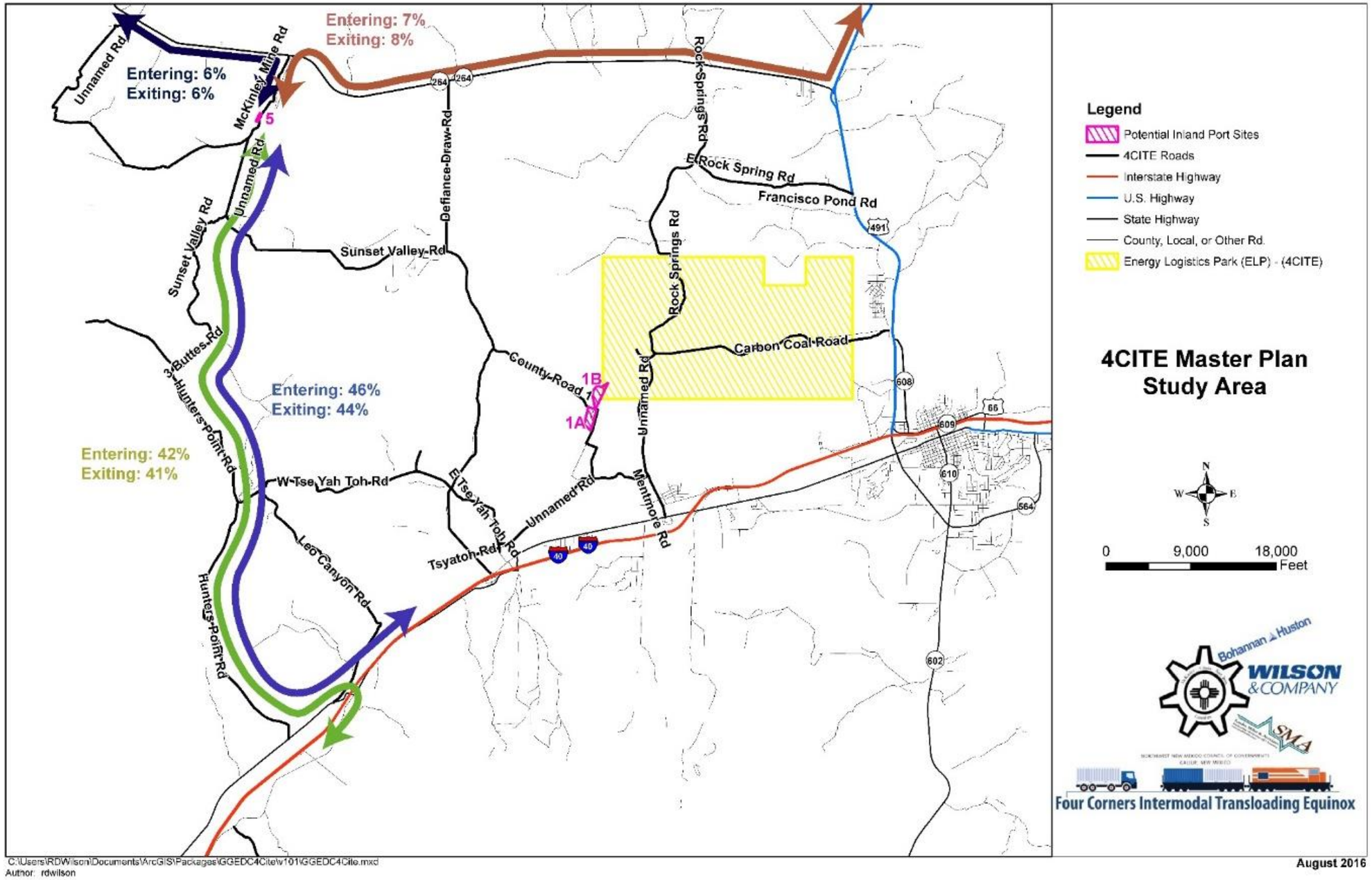


Figure 16 – Inland Port Site 5 Trip Assignment

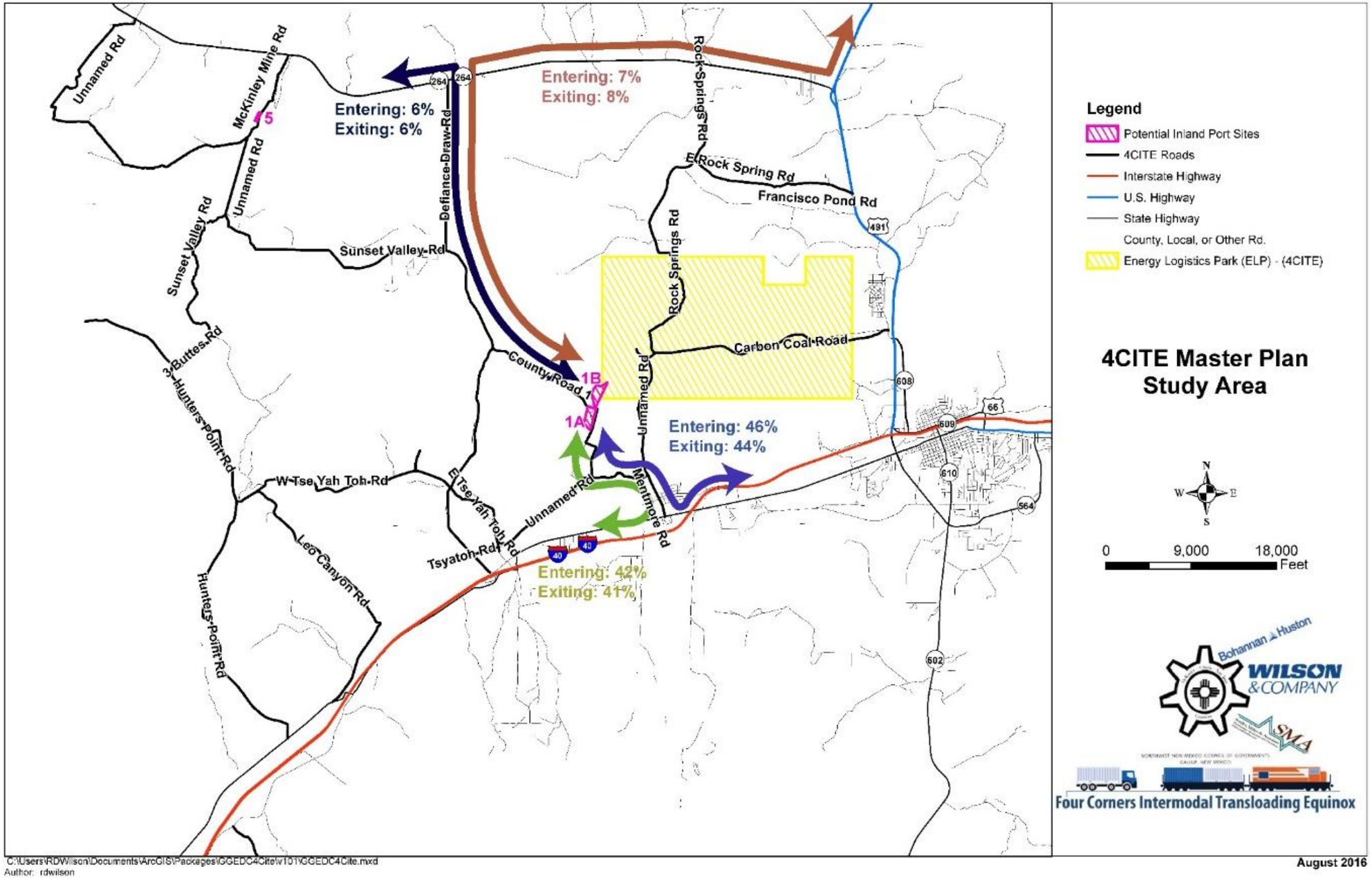


Figure 17 – Inland Port Site 1 Trip Assignment

LEVEL OF SERVICE METHODOLOGY

As defined in the Highway Capacity Manual 2010 (TRB 2000), LOS is a qualitative measure describing operating conditions associated with a traffic stream. The manual defines a range of LOS parameters representing varying operating conditions at interchanges/intersections and the driver's perception of these conditions. Operating conditions are defined in terms of the average vehicle delay of all movements through an intersection, usually in seconds per vehicle. According to the Highway Capacity Manual (TRB 2000), "vehicle delay is a method of quantifying several intangible factors, including driver discomfort, frustration, and lost travel time. Specifically, LOS criteria are stated in terms of average control delay per vehicle during a specified time period (for example, the PM peak hour)." Control delay is the portion of the total delay attributed to signal operations and includes initial deceleration, queue move-up time, stopped delay, and acceleration delay.

SIGNALIZED INTERSECTIONS

LOS associated with signalized intersections is derived through an operations analysis that measures many variables, including signal phasing (i.e., progression of movements through the intersection), signal cycle length, lane geometry, and traffic volumes. The progression of movements is translated into specific vehicle operating characteristics including, initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The table below details the LOS criteria for signalized intersections.

Table 5: Level of Service for Signalized Intersections

Level of Service	Average Control Delay (sec/veh)	General Description
A	≤ 10.0	Free Flow
B	> 10.0 and ≤ 20.0	Stable Flow (slight delays)
C	> 20.0 and ≤ 35.0	Stable flow (acceptable delays)
D	> 35.0 and ≤ 55.0	Approaching unstable flow (tolerable delay, occasionally
E	> 55.0 and ≤ 80.0	Unstable flow (intolerable delay)
F	> 80.0	Forced flow (jammed)

Source: Special Report 209: Highway Capacity Manual, 3rd Edition, Transportation Research Board (TRB), 2000.

UNSIGNALIZED INTERSECTIONS

For all-way stop-controlled and side-street stop-controlled intersections, control delay incorporates delay associated with deceleration, acceleration, stopping, and moving-up in the queue. Only those critical movements that will experience delay are analyzed. For side-street stop-controlled intersections, the delay reported in this study represents the worst-case minor approach. For all-way stop-controlled intersections, the average control delay represents the whole intersection. Two-way, stop-controlled intersection LOS is defined in terms of the average vehicle delay of an individual movement(s), because performance is more closely reflected by individual movements, rather all approaches as a whole. The table below summarizes the relationship between delay and LOS for unsignalized intersections.

Table 6: Level of Service for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	≤ 10.0
B	> 10.0 and ≤ 15.0
C	> 15.0 and ≤ 25.0
D	> 25.0 and ≤ 35.0
E	> 35.0 and ≤ 50.0
F	> 50.0

Source: Special Report 209: Highway Capacity Manual, 3rd Edition, Transportation Research Board (TRB), 2000.

LEVEL OF SERVICE ANALYSIS RESULTS

From the analyses performed in Synchro, four intersections were identified for having an underperforming LOS in at least one of the five scenarios: NM 264 and County Road 9/ Rock Springs Road, Carbon Coal Road and County Road 9/ Rock Springs Road, Frontage Road/ Historic Highway 66 and Mentmore Road, and US 491 and 9th Street/ Chino Road. Furthermore, from the analyses, several roadway segments with deficiencies were also identified in each of the five scenarios. The following provides a summary of the network performance and deficiencies associated with each analyzed scenario.

SCENARIO A

Intersections with a LOS of D or worse for the AM and PM peak hours in Scenario A are as follows:

- US 491 and9thStreet/ Chino Road (Intersection 24): D

Deficient road segments identified for the AM and PM peak hours in Scenario A are as follows as:

- Rock Springs Road: Volume Exceeds Capacity
- Carbon Coal Road: Volume Exceeds Capacity
- Unnamed Road (aligned with Mentmore Road north): Volume Exceeds Capacity

The LOS for all intersections is depicted in Figure 19. Intersections highlighted in green have acceptable LOS, while intersections highlighted in yellow are approaching unstable flow, and intersections highlighted in red have an unacceptable LOS. Furthermore, roadway segments with identified deficiencies are highlighted in pink, as well.

SCENARIO B

Intersections with a LOS of D or worse for the AM and PM peak hours in Scenario B are as follows:

- NM 264 and County Road 9/ Rock Springs Road (Intersection 14): F
- US 491 and 9th Street/ Chino Road (Intersection 24): F

Deficient road segments identified for the AM and PM peak hours in Scenario B are as follows as:

- Rock Springs Road: Volume Exceeds Capacity
- Carbon Coal Road: Volume Exceeds Capacity
- Unnamed Road (aligned with Mentmore Road north): Volume Exceeds Capacity
- US 491 (2-lane directional segments): Volume Exceeds Capacity

The LOS for all intersections is depicted in Figure 20 below. Intersections highlighted in green have acceptable LOS, while intersections highlighted in yellow are approaching unstable flow, and intersections highlighted in red have an unacceptable LOS. Furthermore, roadway segments with identified deficiencies are highlighted in pink, as well.

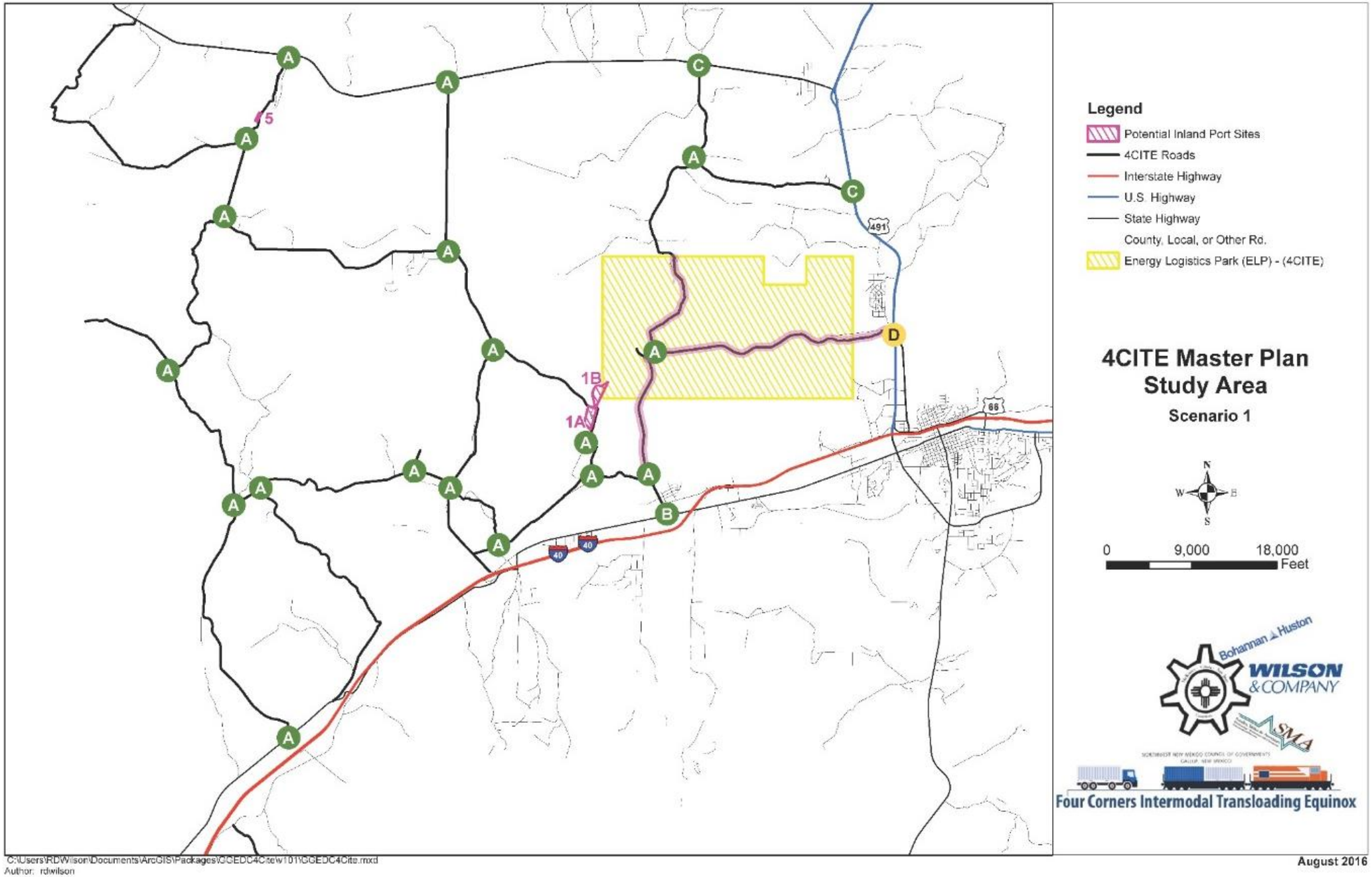


Figure 18 – Level of Service – Scenario A

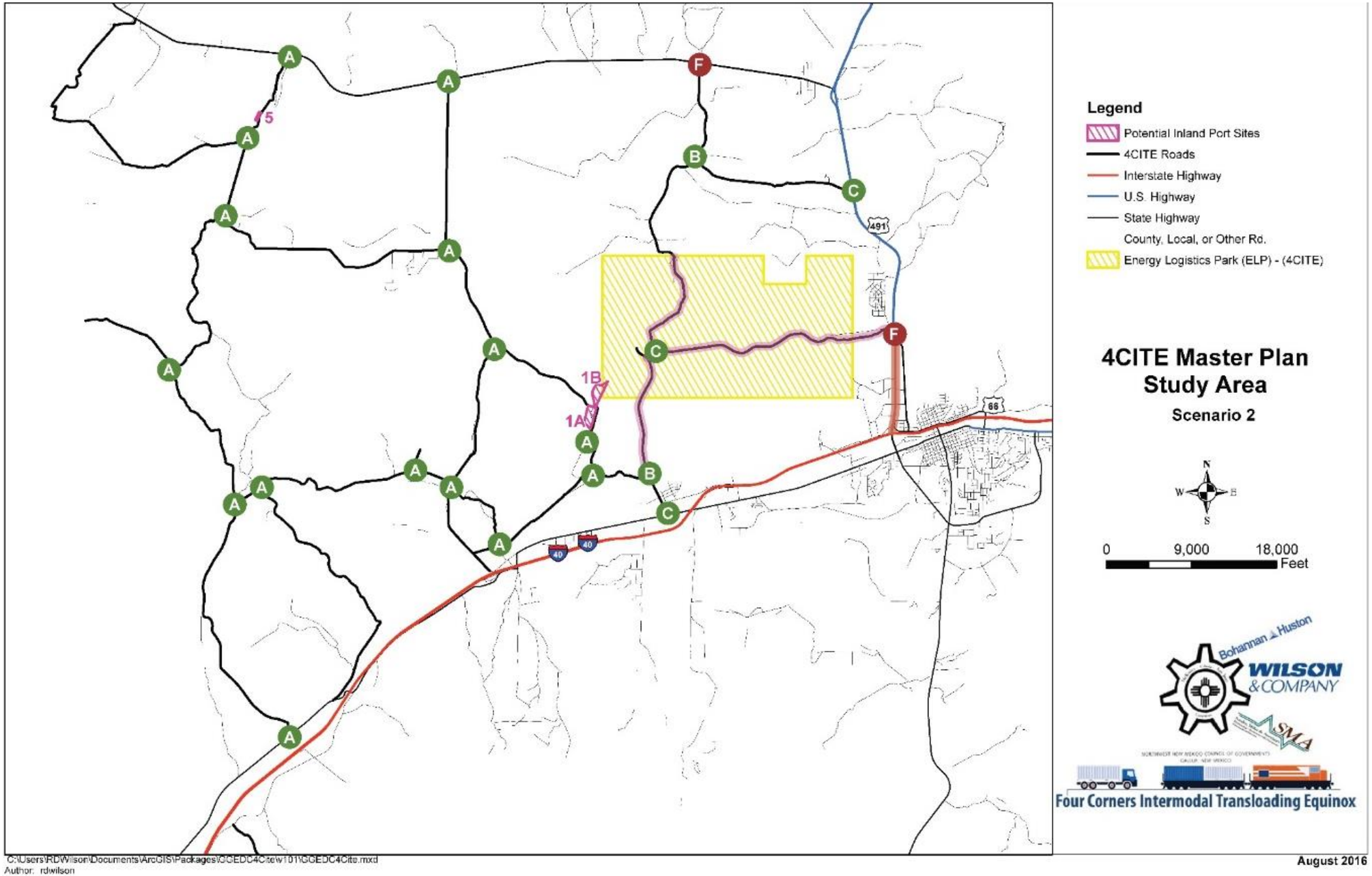


Figure 19 – Level of Service – Scenario B

SCENARIO C

Intersections with a LOS of D or worse for the AM and PM peak hours in Scenario C are as follows:

- NM 264 and County Road 9/ Rock Springs Road (Intersection 14): F
- US 491 and 9th Street/ Chino Road (Intersection 24): F

Deficient road segments identified for the AM and PM peak hours in Scenario C are as follows as:

- Rock Springs Road: Volume Exceeds Capacity
- Carbon Coal Road: Volume Exceeds Capacity
- Unnamed Road (aligned with Mentmore Road north): Volume Exceeds Capacity
- US 491 (2-lane directional segments): Volume Exceeds Capacity
- Unnamed Road (aligned with McKinley Mine Road south): Volume Exceeds Capacity
- Sunset Valley Road: Volume Exceeds Capacity
- 3 Buttes Road: Volume Exceeds Capacity
- Hunters Point Road: Volume Exceeds Capacity

The LOS for all intersections is depicted in Figure 19. Intersections highlighted in green have acceptable LOS, while intersections highlighted in yellow are approaching unstable flow, and intersections highlighted in red have an unacceptable LOS. Furthermore, roadway segments with identified deficiencies are highlighted in pink, as well.

SCENARIO D

Intersections with a LOS of D or worse for the AM and PM peak hours in Scenario D are as follows:

- NM 264 and County Road 9/ Rock Springs Road (Intersection 14): F
- US 491 and 9th Street/ Chino Road (Intersection 24): F

Deficient road segments identified for the AM and PM peak hours in Scenario D are as follows as:

- Rock Springs Road: Volume Exceeds Capacity
- Carbon Coal Road: Volume Exceeds Capacity
- Unnamed Road (aligned with Mentmore Road north): Volume Exceeds Capacity
- US 491 (2-lane directional segments): Volume Exceeds Capacity

The LOS for all intersections is depicted in Figure 20 below. Intersections highlighted in green have acceptable LOS, while intersections highlighted in yellow are approaching unstable flow, and intersections highlighted in red have an unacceptable LOS. Furthermore, roadway segments with identified deficiencies are highlighted in pink, as well.

SCENARIO E

Intersections with a LOS of D or worse for the AM and PM peak hours in Scenario E are as follows:

- NM 264 and County Road 9/ Rock Springs Road (Intersection 14): F
- Carbon Coal Road and County Road 9/ Rock Springs Road (Intersection 16): D
- Frontage Road/ Historic Highway 66 and Mentmore Road (Intersection 22): D
- US 491 and 9th Street/ Chino Road (Intersection 24): F

Deficient road segments identified for the AM and PM peak hours in Scenario E are as follows as:

- Rock Springs Road: Volume Exceeds Capacity
- Carbon Coal Road: Volume Exceeds Capacity
- Unnamed Road (aligned with Mentmore Road north): Volume Exceeds Capacity
- US 491 (2-lane directional segments): Volume Exceeds Capacity

The LOS for all intersections is depicted in Figure 21. Intersections highlighted in green have acceptable LOS, while intersections highlighted in yellow are approaching unstable flow, and intersections highlighted in red have an unacceptable LOS. Furthermore, roadway segments with identified deficiencies are highlighted in pink, as well.

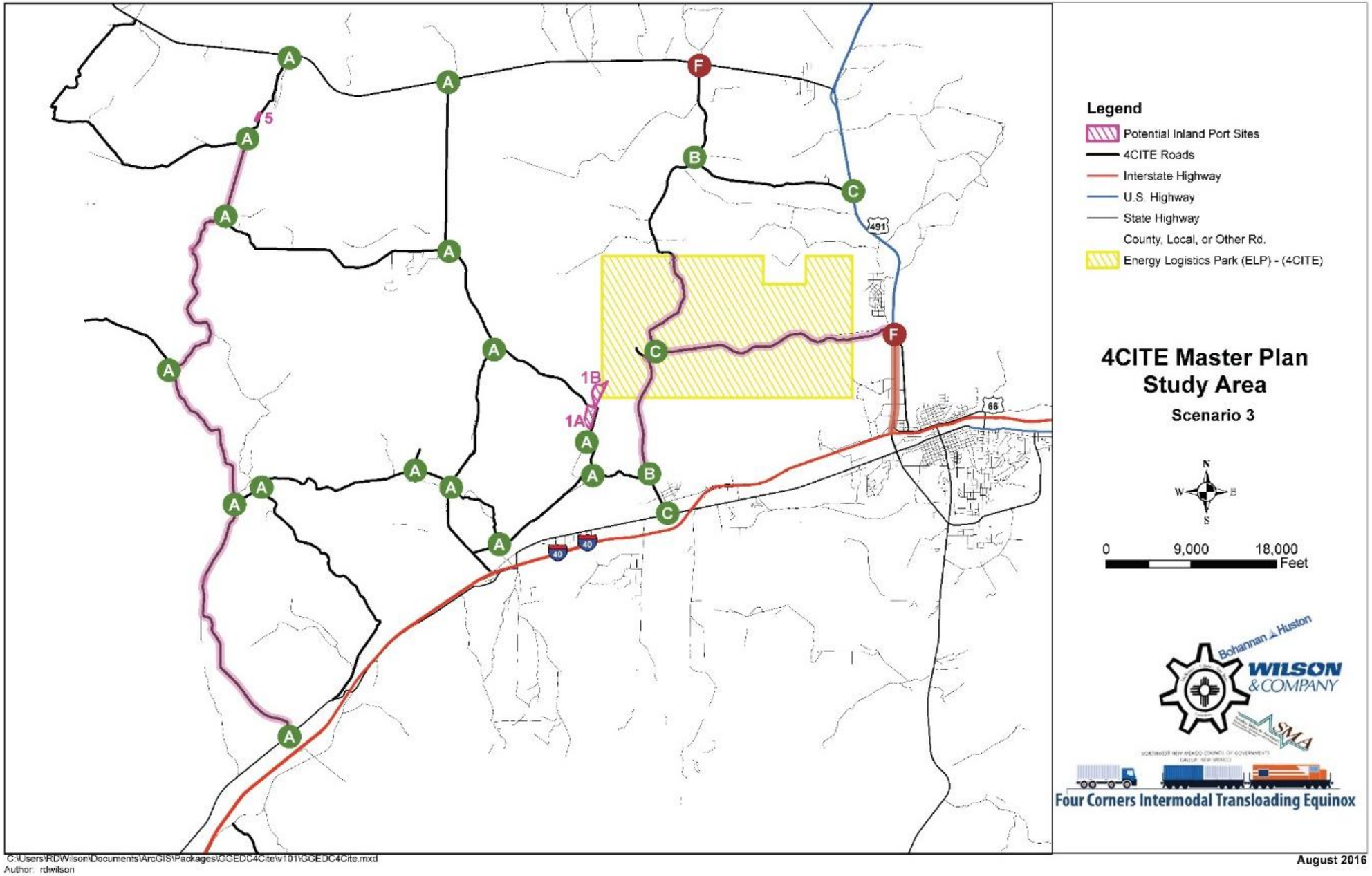


Figure 20 – Level of Service – Scenario C

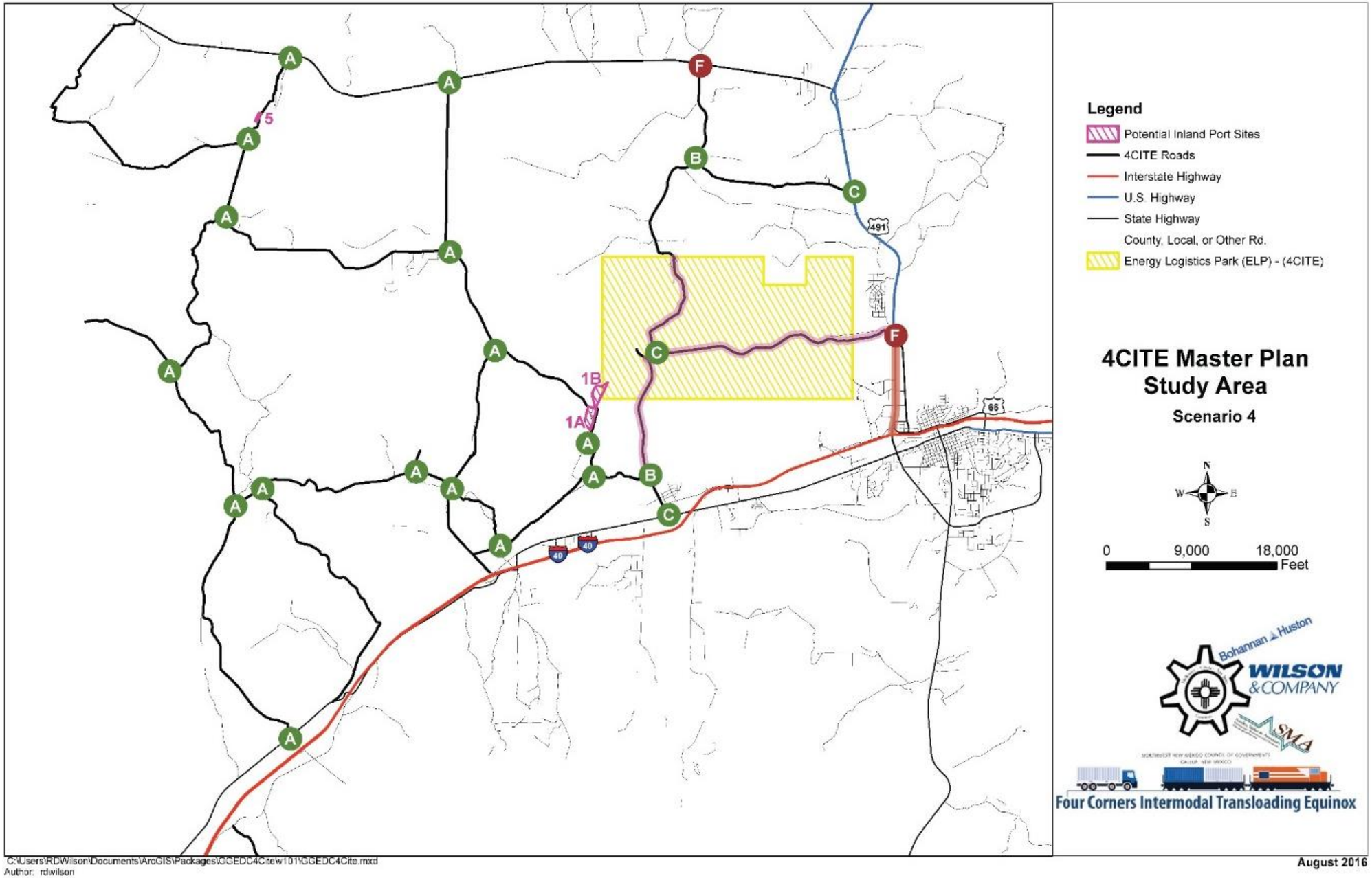


Figure 21 – Level of Service – Scenario D

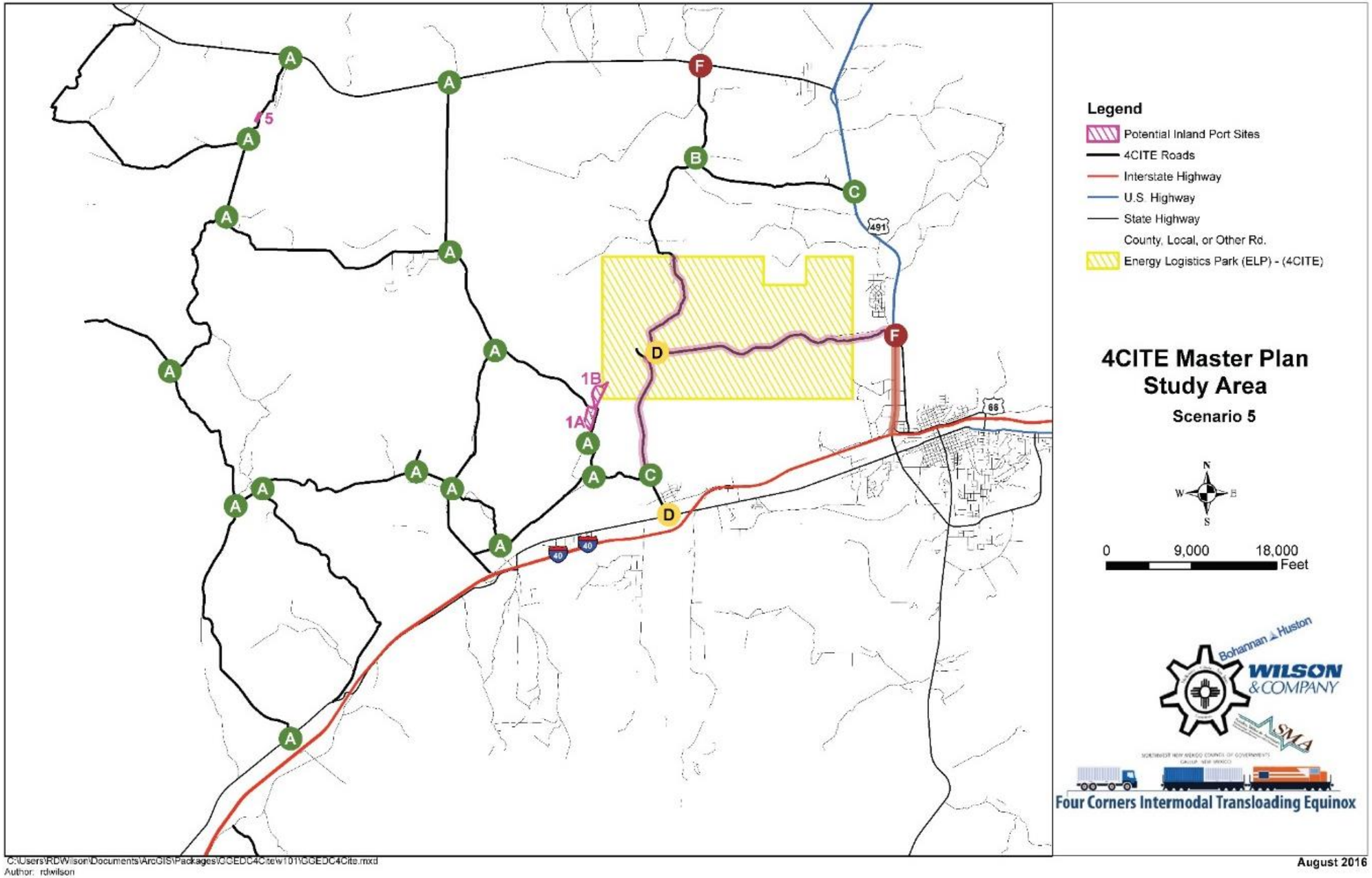


Figure 22 – Level of Service – Scenario E

VI. TRANSPORTATION RECOMMENDATIONS

A. LEVEL OF SERVICE IMPROVEMENTS

Based on the LOS analysis and network results for each peak period from the five different scenarios, improvements to reduce traffic congestion, decrease delay times, and increase overall circulation and efficiency are compiled in the table and figures below. The recommendations presented are based on improving the LOS for underperforming intersections and roadway segments. The recommended improvements in Table 7 have the following results on the network:

- NM 264 and County Road 9/ Rock Springs Road (Intersection 14):
  - Increased LOS from F to A (delay time from 98.5 to 11.4)
- Carbon Coal Road and County Road 9/ Rock Springs Road (Intersection 16):
  - Increased LOS from D to B (delay time from 33.5 to 13.6)
- Frontage Road/ Historic Highway 66 and Mentmore Road (Intersection 22):
  - Increased LOS from D to B (delay time from 30.6 to 14.4)
- US 491 and 9th Street/ Chino Road (Intersection 24):
  - PM: Increased LOS from F to C (delay time from 70 to 25.1)
  - AM: Increased LOS from D to C with a (delay time of 32.8)
- All roadway paving improvements result in an acceptable volume/capacity ratio.

The recommendations are visually represented in the series of figures which follow (Figures 23-26).

B. POLICIES

In addition to the location specific improvements noted above, some policy recommendations have developed in conjunction with some study efforts

RESIDENTIAL INTERFACE

When developing the specific land use plan and siting each of the anticipated land uses at the ELP, it will be important to consider the location of the proposed residential uses relative to the industrial uses. For example, locating the residential on the west end of the ELP site would assist in separating truck traffic from US 491 and residential traffic on Mentmore Road.

ACCESS MANAGEMENT

Additionally, access management will be a critical component in the design of Carbon Coal Road to minimize potential crash points.

RELATED INFRASTRUCTURE

When detailing specific characteristics of the residential component of the ELP, it will be necessary coordinate with other infrastructure needs (such as power, cable, water, and sewer) as well of the school district, since the additional population will surely impact each of the service areas.

COMMERCIAL VEHICLE IMPACTS

Due to the anticipated high percentage of commercial vehicles associated with the forecast development, it is recommended that the facilities be designed in such a manner to accommodate these types of vehicles. This could require wider shoulders and more durable pavement subsurface and surface treatments to accommodate the larger and heavier vehicles.

The level of train activity with these development projects is not known at this time; therefore, future traffic volumes should continue to be monitored to determined when and if grade-separation may be necessary at some future date. Furthermore, future planning efforts may wish to investigate the feasibility of designating certain routes, such as Carbon Coal Road, as truck routes and possibly placing truck restrictions on certain routes, such as Mentmore Road.

Table 7: Recommended Improvements					
Recommended Improvement	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E
Pave Carbon Coal Road	x	x	x	x	x
Pave Rock Springs Road	x	x	x	x	x
Pave Unnamed Road (aligned with Rock Springs Road - south)	x	x	x	x	x
Widen US 491 - south of 9th Street/ Chino Road - to six lanes		x	x	x	x
Pave Sunset Valley Road			x		
Pave 3 Buttes Road			x		
Pave Hunters Point Road			x		
Signal Warrant Analysis/ Signalize (NM 264 and County Road 9/ Rock Springs Road)		x	x	x	x
Add a westbound right turn lane (Carbon Coal Road and County Road 9/ Rock Springs Road)					x
Signal Warrant Analysis/ Signalize (Frontage Road/ Historic Highway 66 and Mentmore Road)					x
Add a westbound dual left turn at US 491 and 9th Street/ Chino Road	x	x	x	x	x
Add a northbound dual left turn at US 491 and 9th Street/ Chino Road		x	x	x	x

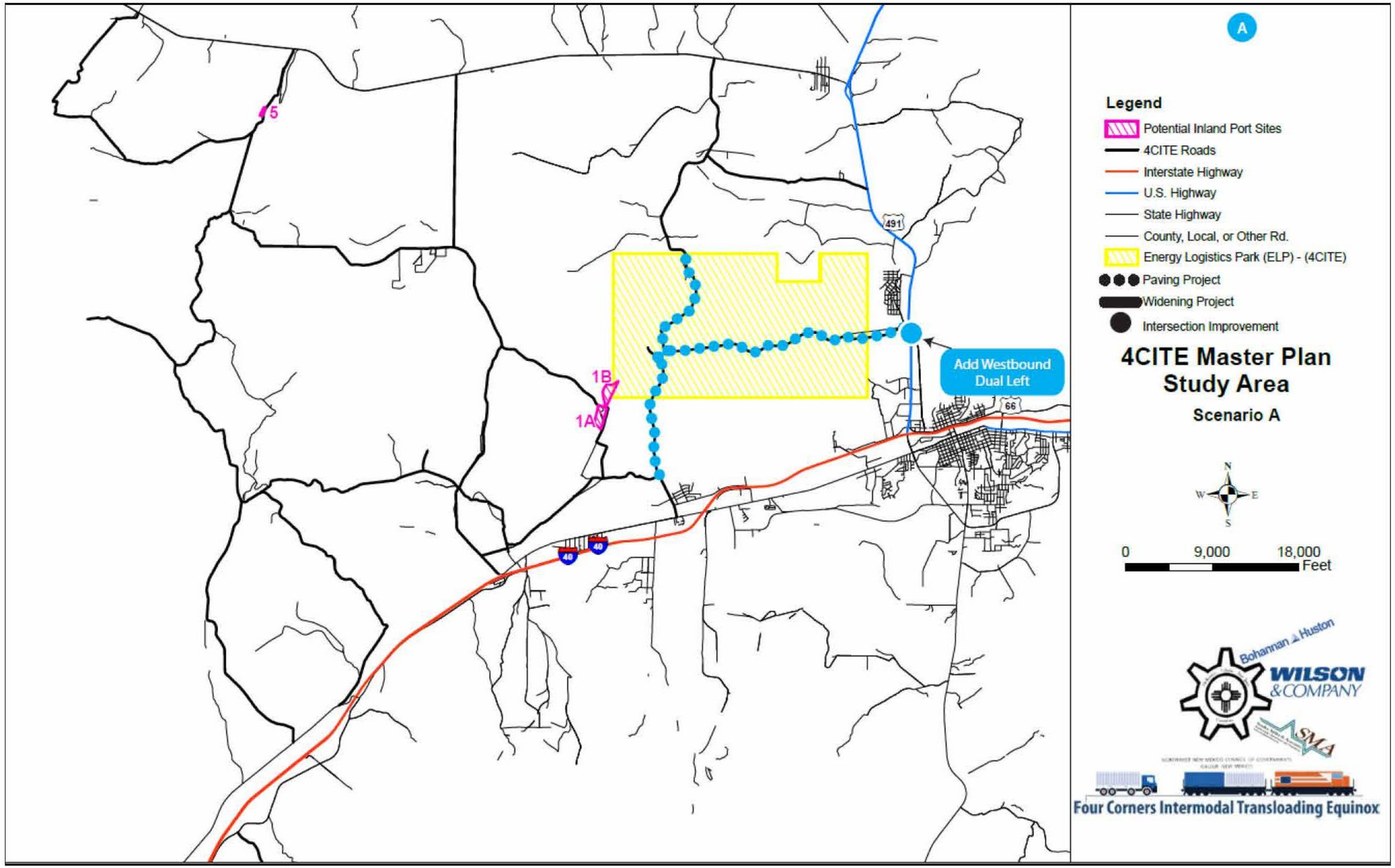


Figure 23 – Recommended Roadway Improvements – Scenario A

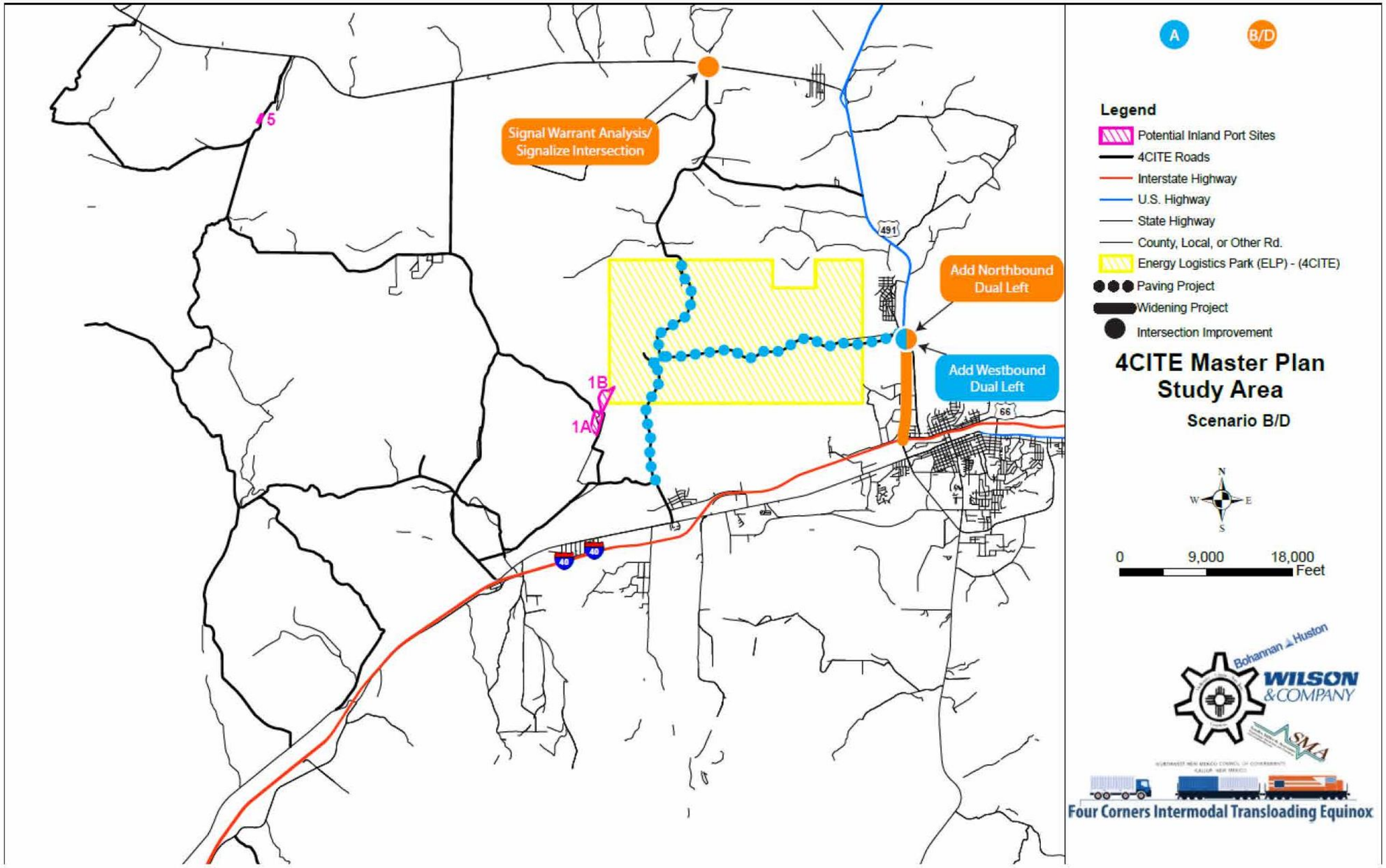


Figure 24 – Recommended Roadway Improvements – Scenario B & D

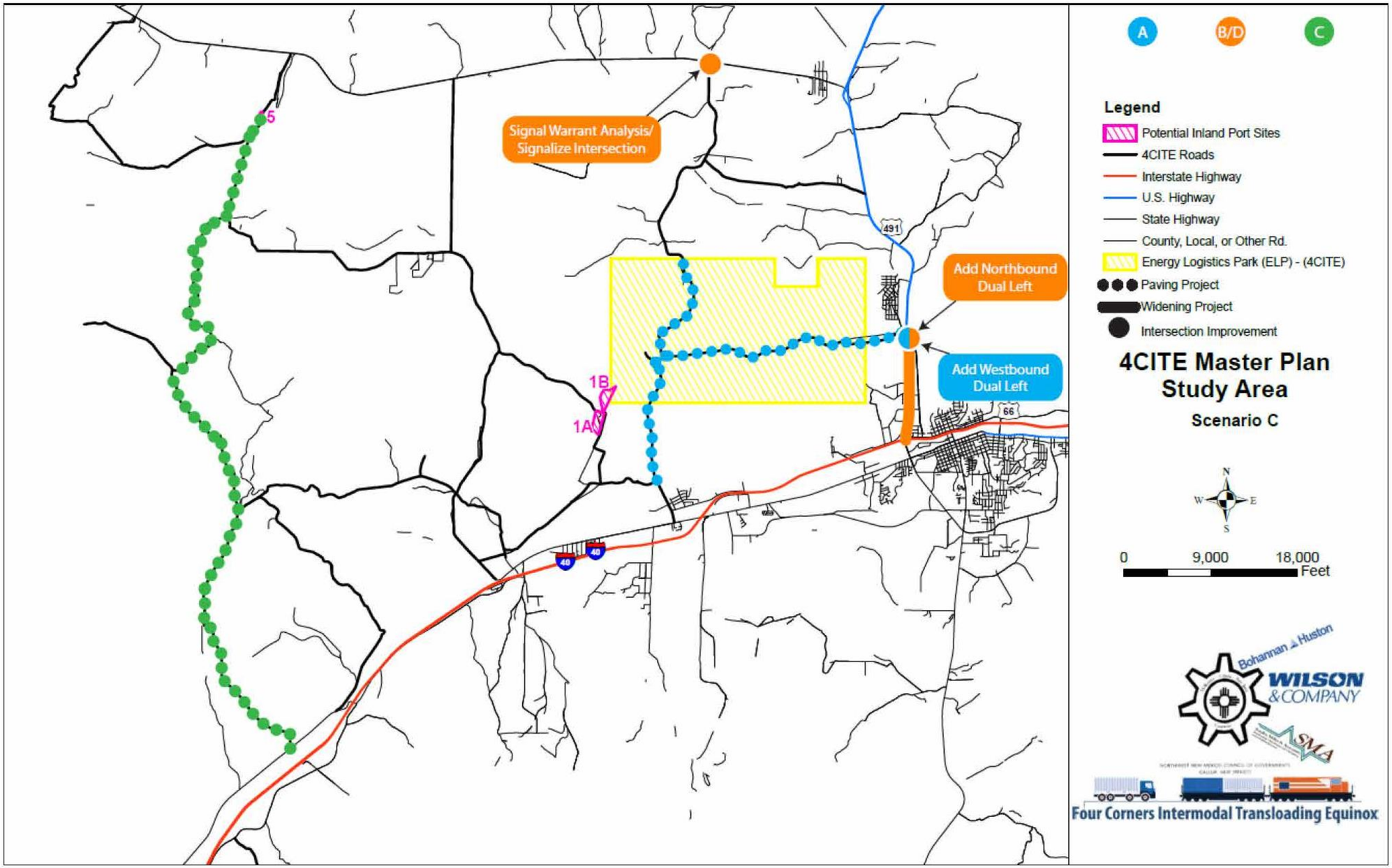


Figure 25 – Recommended Roadway Improvements – Scenario C

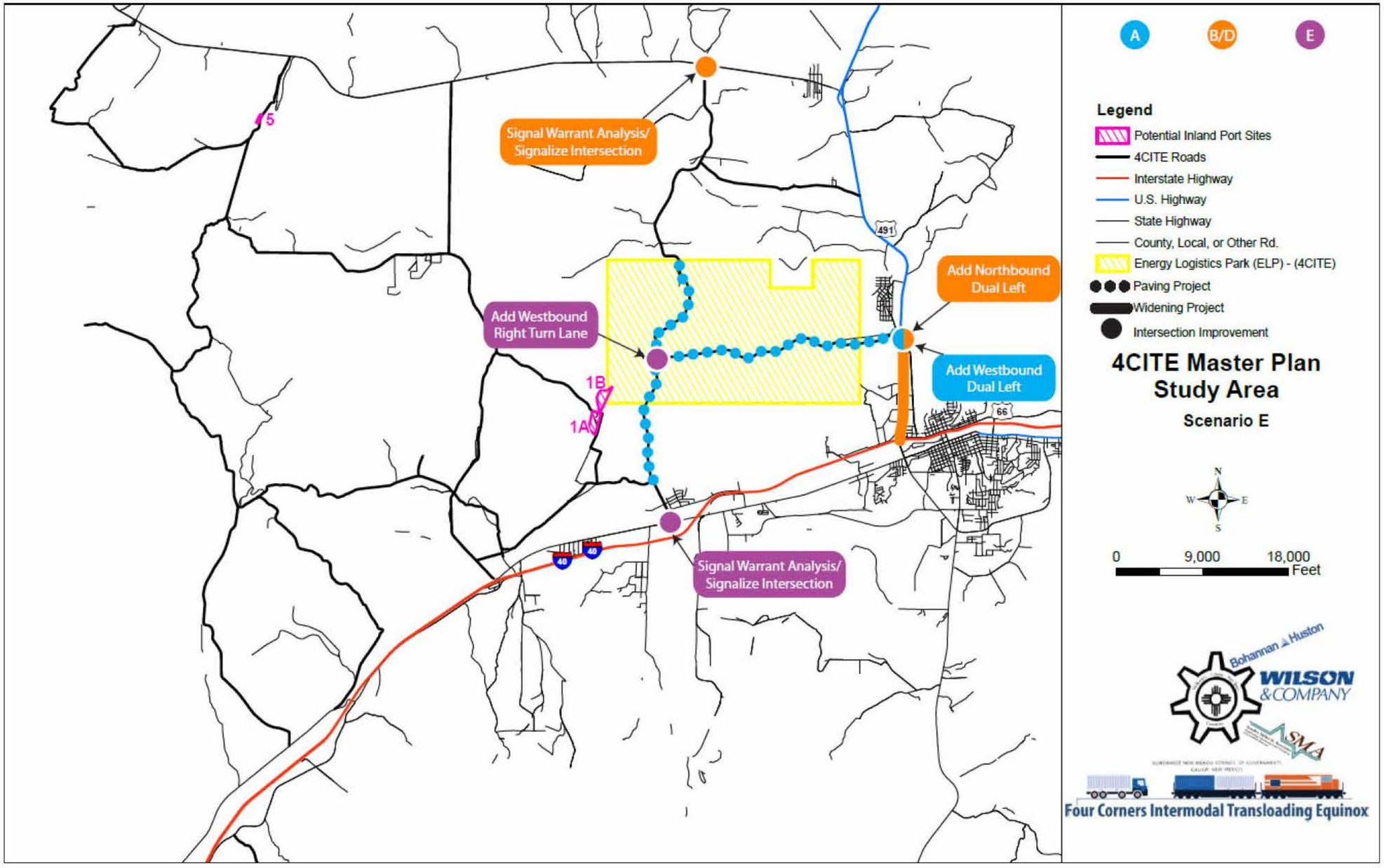


Figure 26 – Recommended Roadway Improvements – Scenario E

A. SENSITIVITY ANALYSIS

A sensitivity analysis was completed in order to evaluate the potential of additional expansion of the Inland Ports Site 1 and Site 5. The results of this analysis are not nearly as detailed but they provide an order of magnitude on when infrastructure may need to be improved and estimates on how much growth the transportation system can tolerate beyond the results provided for the base-line level of growth included in the detailed traffic analysis. With full understanding that the development patterns and pace will be in flux in both the near and long term, this section provides some guidance for decision making, more of a relative approach to which roads should be addressed first and general criteria as to why. As master plans and site plans are finalized on the land associated with both the inland ports as well as the ELP, the sensitivity analysis completed here can provide a foundation for the needed transportation infrastructure.

The nine additional scenarios expand on the complete build-out of Scenarios C and E – evaluating additional build-out potential at Inland Port Sites 1 and 5. Three initial scenarios assess the maximum build-out of different land use developments that can occur at Site 1 in Scenario E, before the increase in traffic exceeds the threshold capacity of adjacent roadways such that additional widening would be required. The three subsequent scenarios further analyze the network performance if a roadway was established from County Road 1 connecting Inland Port Site 1 to Carbon Coal Road for each of the three aforementioned scenarios. The remaining three scenarios evaluate the maximum build-out of the different land use developments that can occur at Inland Port Site 5 in Scenario C, in the case that all trips are assigned through NM 264 instead of a newly paved connection to I-40, south of the Inland Port Site 5 location.

The potential build-out for each additional scenario was determined by the maximum number of trips that could be added to the network before exceeding a threshold LOS D capacity of 80%, or 12,000 vehicles per day on a two lane collector roadway with a total capacity of 15,000 vehicles per day (7,500 vehicles per lane per day). The Scenario E development trip generation/distribution assumptions indicate that Mentmore Road will be assigned 4,761 trips per day. Given the threshold capacity of 12,000 vehicles per day, another 7,239 trips can be added to this roadway before reaching LOS D and requiring widening. With approximately 86% of total trips from Inland Port Site 1 being assigned to Mentmore Road, this equates to a total of 8,369 additional trips that can be generated by increased development at the Inland Port. The acceptable increases in development were determined for three different development scenarios:

- 100% Industrial land use;
- 100% General Office land use; and
- 60% Industrial and 40% General Office land use.

The potential increase in development for each scenario is presented in the Table 8.

Table 8: Additional Inland Port Development Scenarios 1-3

Scenario	Land Use	Potential Increase	Units	Trip Generation						
				Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
1	Industrial	1,202,400	SF	8,369	828	182	1,010	217	817	1,034
2	General Office Bldg.	760,100	SF	8,369	1,037	141	1,178	193	940	1,133
3	Industrial	572,772	SF	3,986	395	87	482	103	389	492
	General Office Bldg.	398,028	SF	4,382	543	74	617	101	492	593

Similar to the analysis of Mentmore Road, three more scenarios were analyzed to determine the potential build-out under the circumstance that a new paved road will provide access from the Inland Port directly to Carbon Coal Road. From the Scenario E development trip generation/distribution assumptions, Carbon Coal Road will be assigned 9,844 trips per day. Carbon Coal Road is a planned two lane collector roadway with a total capacity of 15,000 vehicles per day (7,500 vehicles per lane per day). Using the LOS D threshold capacity of 80%, or 12,000 vehicles per day, an additional 2,156 trips can be assigned to this roadway before widening is required.

Approximately 45% of trips generated by the Inland Port are distributed to I-40 eastbound and assigned to Carbon Coal Road, contingent on its direct access to the Inland Port. This equates to a total of 4,791 additional trips that can be generated by increased development at the Inland Port before widening of Carbon Coal Road is required. The potential increase in development for each scenario is presented in the Table 9.

Table 9: Additional Inland Port Development Scenarios 4-6										
Scenario	Land Use	Potential Increase	Units	Trip Generation						
				Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
4	Industrial	688,378	SF	4,791	474	104	578	124	468	592
5	General Office Building	435,160	SF	4,791	594	81	675	110	538	648
6	Industrial	327,910	SF	2,282	226	50	276	59	223	282
	General Office Building	227,870	SF	2,509	311	42	353	58	282	340

The final three scenarios evaluate the potential additional build-out of Inland Port Site 5 in Scenario C. The additional analyses of this scenario not only consider development increase potentials but also constrains all trip assignments through NM 264 in lieu of a connection between the Inland Port and I-40. These analyses were performed using the same methods as in Scenarios 1 – 6. From the Scenario C development trip generation/distribution assumptions, US 491 experiences the lowest reserve capacity of 1,602 trips per day before exceeding the threshold LOS D capacity of 80%, or 24,000 vehicles per day on a four lane arterial roadway with a total capacity of 30,000 vehicles per day (7,500 vehicles per lane per day). In scenarios 7-9, reassigning all I-40 bound trips through NM 264 adds 630 trips daily to US 491, then resulting in a reserve capacity of 972 trips per day. From Inland Port Site 5, approximately 86% of trips generated are distributed to I-40 and assigned through US 491. This equates to a total of 1,130 additional trips that can be generated by increased development at the Inland Port before widening of US 491 is required. The potential increase in development for each scenario is presented in Table 10.

The potential increase in land use correlates to the approximate amount of additional development that could be included at Inland Port Site 5 before additional widening of US 491 would be required – to six lanes north of Carbon Coal Road. Until such levels of development are reached, the Inland Port Site 5 traffic can be accommodated within existing corridors, if it is decided that the roadway paving south of the Inland Port will not be completed.

Table 10: Additional Inland Port Development Scenarios 7-9										
Scenario	Land Use	Potential Increase	Units	Trip Generation						
				Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
7	Industrial	162,390	SF	1,130	112	25	137	29	110	139
8	General Office Building	102,655	SF	1,130	140	19	159	26	127	153
9	Industrial	77,355	SF	538	53	12	65	14	53	67
	General Office Building	53,755	SF	592	73	10	83	14	66	80

In summary, Table 13 was created to provide overarching guidance on what development criteria may trigger the need for a significant roadway improvement. It includes consideration of both Inland Port Site 1 and Inland Port Site 5.

Table 11: Sensitivity Analysis at a Glance		
Location	Roadway Need	Additional Development
Inland Port Site #1 (Scenarios 1-3)	Widening of Mentmore Road	1.2 million SF Industrial OR 760K SF General Office OR 570K SF Industrial + 400K SF Office
Inland Port Site #1 (Scenarios 4-6)	Widening of Carbon Coal Road	690K SF Industrial OR 435K SF General Office OR 330K SF Industrial + 230K SF Office
Inland Port Site #5 (Scenarios 7-9)	Widening of US 491 to 6 lanes north of Carbon Coal or paving of new southern route to I-40	160K SF Industrial OR 100K SF General Office OR 80K SF Industrial + 55K SF Office

B. PROJECT PHASING

Recommendations were provided under each scenario resulting in an organic phasing initiative as development occurs. This also allows some flexibility if some components (such as housing) occur earlier in the project development process. The recommendations relate to the percentage of growth not to a specific year or time frame. In general, Scenario A could represent Phase 1; however, development does not have to be linear as Scenarios A-E are represented.

VII. COST ESTIMATES

Preliminary cost estimates were developed to provide a perspective on magnitude of costs for each of the transportation recommendations presented in the previous chapter. The cost estimates shown in Table 12 include items necessary for construction, including drainage and bridge improvements, as well as 15 percent (%) for planning/engineering /studies and 10% for contingency, when appropriate. More detailed cost estimates can be found in Appendix C.

Table 14 only provides a summary of the improvement details associated with the Total Cost listed; therefore, it is hard to make a direct comparison between transportation recommendations from this table alone. The information included in the appendix will provide a better perspective on what is included under each cost estimate. For example, the Hunters Point Road Improvements do not include the same level of base course or pavement thickness that is included for Carbon Coal Road. This results in a lower cost, and ultimately a roadway which is expected to handle fewer trucks. Cost estimates were based on the assumed operations and capacity need for each of the individual transportation recommendations. In addition, these values are preliminary in nature and result in an order of magnitude for decision-makers, additional detail will be required when and if any of the transportation recommendations are carried forward.

Table 12: Preliminary Cost Estimates

Transportation Recommendation	Scope of Work	Total Cost
Carbon Coal Road Improvement	Concrete Pavement	$20,289,649.48
Rock Springs Road Improvement	Concrete Pavement	$6,268,617.79
Unnamed Road (aligned with Rock Springs Road - south)	Concrete Pavement	$6,525,290.48
Widen US 491 - south of 9th Street/ Chino Road - six lanes	Asphalt Pavement Left-turn lane and Signal Retrofit	$953,034.67
Sunset Valley Road Improvement	Double Penetration Chip Seal Pavement	$2,218,679.13
3 Buttes Road Improvement	Double Penetration Chip Seal Pavement	$587,758.10
Hunters Point Road Improvement	Double Penetration Chip Seal Pavement	$5,842,260.51
Signal Warrant Analysis/ Signalize (NM 264 and County Road 9/ Rock Springs Road)	Intersection Signalization	$268,073.44
Add a westbound right turn lane (Carbon Coal Road and County Road 9/ Rock Springs Road)	Concrete Pavement / Right-turn Lane	$135,900.19
Signal Warrant Analysis/ Signalize (Frontage Road/ Historic Highway 66 and Mentmore Road)	Intersection Signalization	$268,073.44
Add westbound dual left turn at US 491 and 9th Street/ Chino Road	Asphalt Pavement Left-turn lane and Signal Retrofit	$166,800.02
Add a northbound dual left turn at US 491 and 9th Street/ Chino Road	Asphalt Pavement Left-turn lane and Signal Retrofit	$166,800.02

VIII. FUNDING

The State Transportation Improvement Program (STIP) is a statewide capital improvement program, managed by the NMDOT, which identifies multimodal transportation projects that will receive district-level funding. Funding for STIP projects is mainly generated from Federal Highway Administration programs and sources. For roads to be included in the STIP, they must be functionally classified with priority going to national highway system, federal interstates, and state highways, roadways that are regionally significant in terms of safety issues, move the needle on Statewide targets for State and Federal performance measures, and serve the overall transportation network and needs of the region. To obtain funding through the STIP, it is also beneficial to promote the economic value of the roads for the State of New Mexico. Through the 2021 years of the STIP, the only recommendation being prioritized by District 6 is the re-design and reconstruction of US491/9th Street/Chino Loop Road intersection.

There is also a regional-level capital improvement program that recommends projects to the Districts and NMDOT for consideration in the STIP, managed by the regional transportation planning organizations around the state including the Northwest Regional Transportation Planning Organization (NWRTPO). This prioritization planning process is referred to as the Regional Transportation Improvement Program Recommendations (RTIPR). Selection of projects for inclusion in the RTIPR varies depending on the funding source, with some programs subject to competitive processes, while projects for other programs are selected based on NMDOT and District priorities and the discretion of the district engineer. All projects must be first identified on the RTIPR, then for some funding sources they are elevated to identification on the STIP, if applicable.

Currently, four of the roadway recommendations included in Table 12 are supported by the NWRTPO and are being proposed as additions to the RTIPR. These include the proposed improvements to the following roadways:

- Carbon Coal Road
- US491/ Chee Dodge Elementary Intersection
- NM 264/ Rocksprings Road
- US 491/ Chino Loop Intersection

Identification on the RTIPR is the first step in obtaining federal funding. As development occurs, the analysis, design, and construction of the recommendations will require further support and coordination by the NWRTPO, its members, and all associated agencies. The NWRTPO can also assist its members in seeking alternative financing for projects, especially those that are more local in nature through State bonds or loans, capital outlay funding, and other governmental funding.

IX. CONCLUSIONS AND RECOMMENDATIONS

The 4CITE Master Plan initiative was focused on the evaluation of the transportation network in the area of future development for both the ELP and the proposed Navajo Nation Inland Port. The Plan evaluates the incremental impact expected from these proposed developments as the associated traffic volumes are added to the existing traffic conditions. It does not include a regional transportation model evaluation for the entire Gallup Area. However, the results include a list of transportation recommendations for the area network (Table 7). The recommendations identify roadway improvements needed and associated costs (Table 12) as they relate to a percentage of growth for each of the proposed industrial developments within the area. This approach provides guidelines for the regulating agencies to coordinate directly with the proposed developers as well as begin the process of requesting state or federal funds for the roadway improvements.

The scenarios were tiered to represent a reasonable expectation for growth patterns. They also included two isolated options for the Navajo Inland Ports1 and 5. Recommendations are made for both options so that going forward appropriate decisions can be made depending on which site is chosen.

Traffic data used included some conservative estimates to ensure future recommendations would be adequate such as an increase in truck volumes and the exceedance of existing traffic on smaller County roads. It is also assumed that the majority of traffic generated by the proposed industrial development would occur during the weekdays, minimizing conflicts with the current traffic volumes on the weekends in the Gallup area.

X. REFERENCES

McKinley County, Greater Gallup Economic Development Corporation (GGEDC). Traffic Impact Analysis (TIA) for US 491 and 9th Street/ Chino Road. Gallup, New Mexico. 2015.

New Mexico Department of Transportation (NMDOT). Allison Road Corridor and Interstate 40 Interchange Study – Initial Evaluation of Alternatives. Bohannan Huston, Inc. Albuquerque, New Mexico. 2010.

New Mexico Department of Transportation (NMDOT). Freight-Related Economic Opportunity Study. Bohannan Huston, Inc. Albuquerque, New Mexico. 2016.

New Mexico Economic Development Department (NMEDD), Inland Port Advisory Committee. Navajo Nation Inland Port Analysis. JBA & Associates. Gallup, New Mexico. 2015.

New Mexico Economic Development Department (NMEDD). Rail Feasibility Study (Thoreau to Farmington). New Mexico Institute of Mining and Technology. Socorro, New Mexico. 2015.

Northwest New Mexico Council of Governments (NWNMCOG). Northwest New Mexico Comprehensive Economic Development Strategy 5-Year Regional Plan 2009-2014. Northwest New Mexico Council of Governments Factbook 2012. 2009.

Transportation Research Board (TRB). Special Report 209: Highway Capacity Manual, 3rd Edition, 2000.

APPENDICES

APPENDICES

APPENDIX A
STAKEHOLDER OUTREACH PLAN (SOP)

Four Corners Intermodal Transloading Equinox

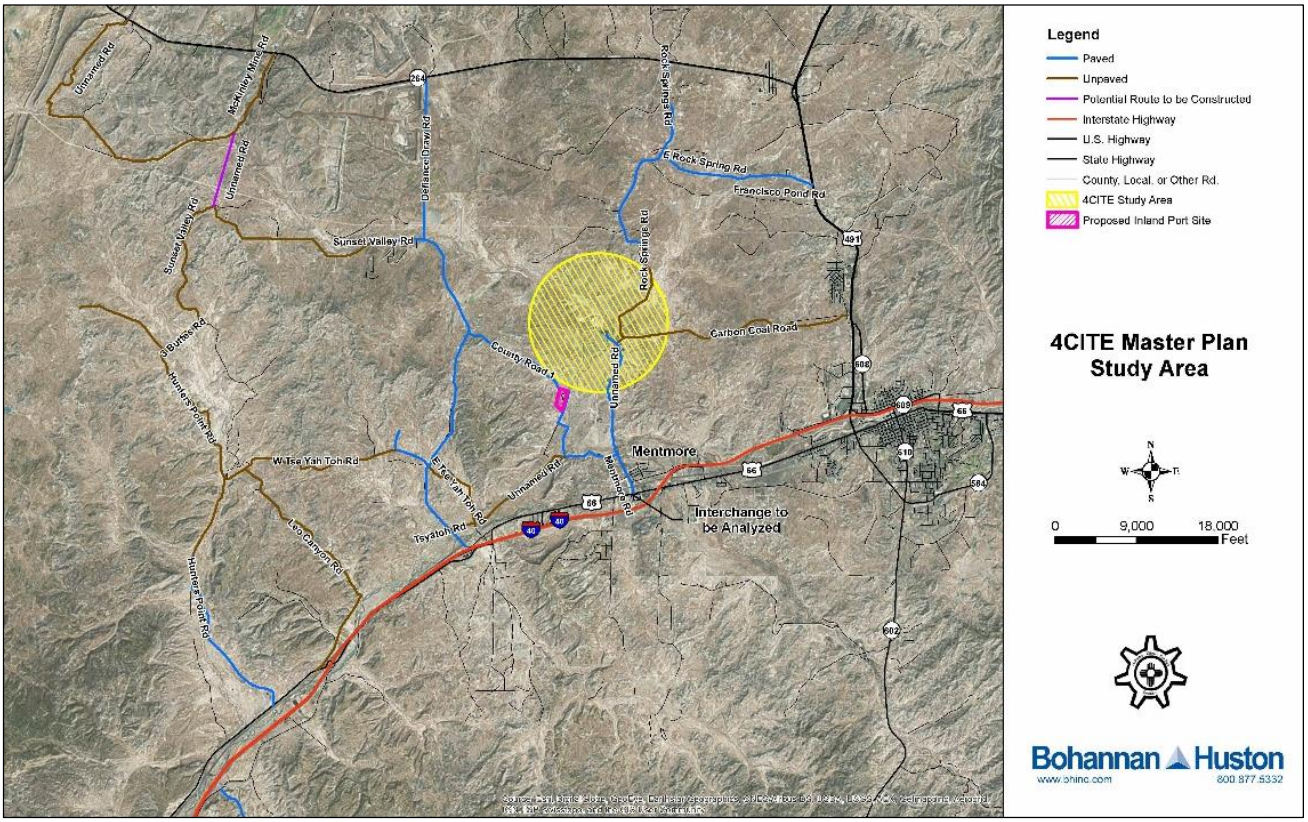
4CITE Public Involvement Plan

January 2016

4CITE Public Involvement Plan

Project Overview

The 4CITE Master Plan is being led by the North West Council of Governments (NWCOG). It is a comprehensive planning approach to coordinate the planning and delivery of projects that would improve multi-modal access to the Gallup Industrial Park, the Navajo Inland Port, as well as regional connections to the existing and future transportation infrastructure. The Plan will coordinate with a number of organizations and communities. This will require diligent outreach and coordination.



Objectives:

The following are the objectives for the 4CITE Master Plan. These objectives were developed by the project team. They will be vetted during the outreach process. They will also be used as guides throughout the process, to keep the project activities on task.

- Evaluate Transportation Planning Issues
- Gather existing data on land use, economics, environmental
- Consider future transportation conditions
- Evaluate impacts of growth
- Develop prioritized recommendations for transportation needs
- **Build consensus and support for 4CITE**

The following **4CITE Public Involvement Plan** provides an outline on how the project will integrate and benefit from input provided by stakeholders and the public.

Stakeholder Outreach Plan (SOP)

The Stakeholder Outreach Plan (SOP) summarizes all project outreach activities and provides guidelines for the preparation, facilitation, and documentation of these activities. The plan will include expectations for the Project Team as well as the Policy Advisory Committee (PAC) and Technical Working Group (TWG) members. The SOP includes a summary of the following outreach initiatives, which are discussed in more detail below:

- TWG/PAC meetings
- Focus Group Meetings
- Public Meetings
- Website

Policy Advisory Committee (PAC):

There will be 3 PAC meetings consisting of executive level managers from each of the participating stakeholder agencies and will be responsible for providing direction, approving the project parameters, and establishing criteria for future project evaluations. The PAC will likely expand to include new members as new agencies and partners are identified.

Current PAC members include:

- Lance Begaye, Navajo DOT
- Stan Henderson, City of Gallup
- Steven Ikeda, State Land Office
- Jeff Irving, McKinley County
- Brenda Jesus, Rock Springs Navajo Chapter
- Larry Joe, Navajo DOT
- Ean Johnson, BNSF
- Jeremy Seaton, Navajo District 6 Council Delegate Assistant
- Fred Shepherd, New Mexico Economic Development
- Zander Shirley, Manuelito Navajo Chapter
- Rita Silago, Tsayahtoh Navajo Chapter
- Milfred Cosen, ERBDO
- Albert Lee, Navajo Nation Economic Development, Eastern Agency Regional Business Development
- John Largo, Navajo Nation Economic Development, Eastern Agency Regional Business Development

Technical Working Group (TWG):

There will be 4 TWG meetings composed of senior technical staff from the agencies participating in the PAC and will serve to provide support to the PAC and the Study Team.

Current TWG members include the following:

- Jan Niclas, ADE Engineering Support, NMDOT District 6
- JoAnn Garcia, T/LPA Coordinator, NMDOT District 6
- Marticia Holiday, Technical Support Engineer, NMDOT District 6
- Jackson Gibson, New Mexico State Transportation Commission, NMDOT
- Elijah Henley, Federal Highway Administration
- Darryl Bradley/Garret Silversmith, Division Director, Navajo DOT
- Garret Silversmith, Division Director, Navajo DOT
- Karen Benally, Department Manager, Navajo DOT
- Jeff Irving, Road Superintendent, McKinley County
- Stan Henderson, Public Works Director, City of Gallup
- Michael Sage, Deputy Director, Greater Gallup EDC
- Juan Torres, Community Representative, New Mexico Economic Development Division
- Brenda Jesus, Chapter Manager, Rock Springs Chapter
- Shirley McCabe, Tribe Outreach, Navajo Land Department
- Zander Shirley, Chapter Manager, Manuelito Chapter
- Rita Silago, Chapter Manager, Tsayatoh Chapter
- Adam Wilkey, Business Development Manager, Gallup Land Partners
- Jake Braken, Gallup Land Partners
- Aaron Kowalski, Business Development Manager, Gallup Land Partners
- Steven Edelson
- Sharon Pinto, Regional Director, Bureau of Indian Affairs
- John Largo, Navajo Economic Development
- Larry Rogers, Director, Eastern Navajo Land Commission
- Jeff Bond, Road Superintendent, McKinley County
- Pauly McCabe, Tribe Outreach, Navajo Land Department

ROLE of PAC/TWG

The first and last PAC/TWG meeting will be combined for both groups to allow for a more comprehensive approach at those points in project development. The other meetings will be held separately to allow for a more interactive workshop for the TWG and more of a decision-making environment for the PAC.

Overall, The PAC/ TWG groups will fulfil the following roles:

- Share info on plans/projects in the region
- Support data collection
- Help build alternatives

- Evaluate alternatives
- Refine recommendations
- PROJECT CHAMPIONS

PAC/TWG meeting Logistics

For all meetings there will be invitations sent via email. There will also be an option available to participants that can't make it to use Conference Calling and Go TO Meeting services. After each meeting there will be a Meeting Summary and meeting materials provided to all PAC/ TWG members.

Focus Groups

Focus Group participation will include reaching out to the business community, trucking associations, rail industry, and more. These events will occur as needed and as they become available. In most cases, only one of the Project Team members will participate but all information will be shared across the team. If appropriate, focus group meetings will be scheduled for the day of a public meeting to provide additional opportunity for more integral input, in a workshop-type environment.

Public Meetings

There are expected to be 2 public meetings held throughout the project timeline. The public meetings will be held in Gallup, most likely in the evening to allow the greatest participation from the community. The format and content will include recommendations from the TWG/PAC, and will be sure to maintain cultural sensitivity to the Navajo Nation participants.

Public meetings will be advertised on the NWCOG website, other participant's websites, the local newspaper, and via email blasts to stakeholders and project team members.

The format for each meeting will be finalized by the project team but each of the public meetings will include sign-in sheets, comments sheets, contact information, and an opportunity to ask questions.

Website

As needed for distribution and availability, project-related information will be put on the NWCOG website.

Bilingual Promotional Plan (BLPP)

The Bi-Lingual Promotional Plan (BLPP) maintains cultural sensitivity, appropriate communication patterns, and trust-building contact with the Navajo Nation. It informs the SOP. Joan Marie Sandy the Tribal Projects Manager with Souder, Miller & Associates will manage the bilingual portion of all meetings. She brings experience with the Navajo Nation and will maintain ongoing and culturally sensitive contact with the appropriate representatives from each of the Navajo Chapters. Key components of the BLPP include the following:

a) A Navajo translator will be available at all meetings including PAC, TWG, and public meetings.
b) An Opportunity to speak Navajo at any time during the meeting will be emphasized.
c) All outreach material used at the meetings and for other information sharing will be vetted to ensure cultural sensitivity to the Navajo Nation.
d) If necessary, separate meetings with the Navajo representatives will be held to ensure their participation in the project planning.

Bi-Lingual Approach

Since Navajo language is not a formally written language, we want to be careful not to assume that whatever written material is developed in Navajo is accurate. Therefore, we should consider utilizing the public outreach material written in English for presentations, in the material for dissemination, and for the website. The Bi-Lingual component will be focused on verbal communication.

The Bi-Lingual Project Website will provide background information, study updates, newsletters, and any information that needs to be shared with the public and other interested parties. Most of the material will be in English but reviewed for cultural sensitivity toward the Navajo Nation. Opportunities to provide audio and/or video components to the website information should be considered. It is expected that the website will be hosted by NWCOG.

Additional Stakeholder List

Additional stakeholders will be integrated into the planning process, as necessary. Below is the initial list.

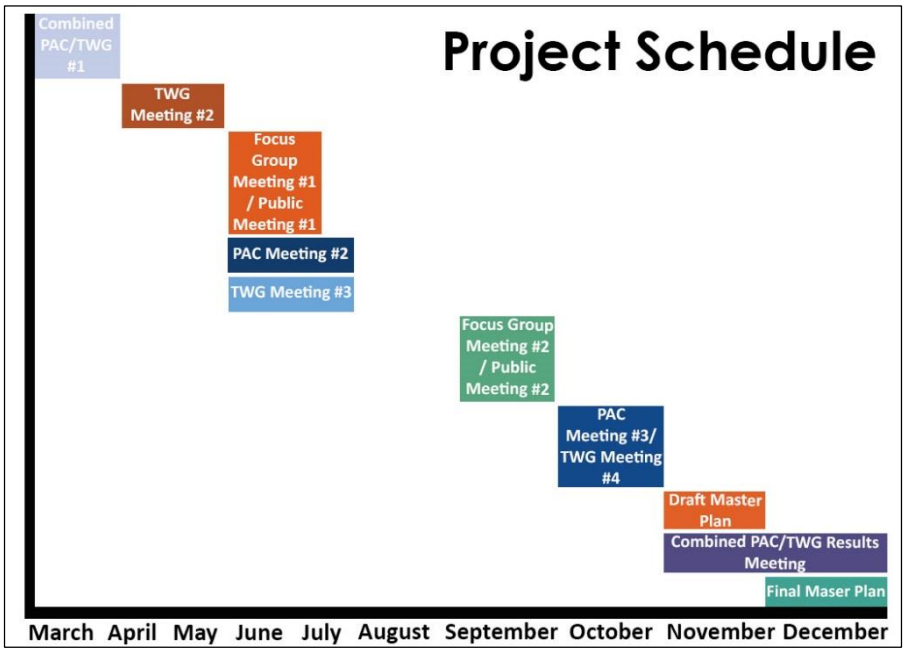
City of Farmington
City of Aztec
City of Bloomfield
City of Grants
Village of Milan
Village of Thorough
San Juan County
Cibola County
Farmington MPO
Native American Economic Development-Investment Strategy
Pueblo of Acoma
Pueblo of Laguna
Sheep Springs Navajo Chapter
Baahalii Navajo Chapter
Shiprock Navajo Agency RBDO
Eastern Navajo Agency RBDOP
Community Land Use Committees (CLUB Cs)
Grazing Board Officials
BLM – Farmington District

Project Team and Contact Information

Last Name	First Name	Email	Agency
Williams	Evan	ewilliams@nwnmcog.org	NWCOG
Howe	Brandon	bhowe@nwnmcog.org	NWCOG
Infante-Juarez	Mario	mario.juarez-infante@wilsonco.com	Wilson & Company
Weston	Denise	dweston@bhinc.com	Bohannan Huston, Inc.
Spartan	Vanessa	vanessa.spartan@wilsonco.com	Wilson & Company
Metro	Steve	steven.metro@wilsonco.com	Wilson & Company
Moran	Amy	amy.moran@wilsonco.com	Wilson & Company
Townsend	Jim		Wilson & Company
Woods	Kristen	kwoods@bhinc.com	Bohannan Huston, Inc.
Sage	Michael	michael@gallupedc.com	GGEDC
Sandy	Joan Marie	joanmarie.sandy@soudermiller.com	Souder Miller

Stakeholder Activity Schedule

Item:	Timeline:
Kickoff Meeting	**October 30, 2015**
Combined PAC/TWG #1	**2nd week of January 2016**
Technical Memo #1 (existing conditions)	
TWG Meeting #2	**Mid-February 2016**
Focus Group Meeting #1/Public Meeting #1	**Late February/Early March 2016**
Technical Memo #2 (issues/recommendations)	
PAC Meeting #2 (summarize input)	**Late April 2016**
TWG Meeting #3 (recommendation)	**Late April 2016**
Focus Group Meeting #2/Public Meeting #2 (present to public)	**Late July 2016**
Technical Memo #3 (recommendations)	
PAC Meeting #3/TWG Meeting #4	**Early September 2016**
Draft Master Plan	**Early October 2016**
Combined PAC/TWG Results Meeting (approval stage)	**Late November 2016**
Final Master Plan	**December 2016**
Close-out	**December 2016**



APPENDIX B
REFERENCE MATRIX

Documents Reviewed				
Name	Prepared for	Prepared by	Description	Date
Traffic Impact Analysis (TIA) for US 491 & Ninth Street/Chino Street. Gallup, New Mexico	McKinley County, Greater Gallup Economic Development Corporation	Sakura Engineering & Surve	The analysis evaluates the intersection at US Hwy 491 and 9th Street for a proposed Energy Logistic Park (ELP) that is projected to increase vehicular and freight movement in the area.	July 17, 2015
Navajo Nation Inland Port Analysis	New Mexico Economic Development Department & the Inland Port Advisory Committee	JBA & Associates	The analysis determines location placement and evaluates environmental conditions for the development of an Inland Port.	June 2015
Initial Evaluation of Alternatives – Alison Road Corridor and Interstate 40 Interchange Study	NMDOT	Bohannan Huston, Inc.	The study evaluates existing conditions of Allison Road and within the study limits to determine if there are other potential corridors to relocate the existing Allison Road	September 2010
Northwest New Mexico Comprehensive Economic Development Strategy 5-Year Regional Plan 2009-2014	NWNMCOG Northwest NM Factbook 2012	Northwest New Mexico Council of Governments	The CEDS is a regional plan that provides strategies to guide the region's future and build upon strengths and opportunities while addressing problems, challenges, and weaknesses that need to be overcome	June 30, 2009
Rail Feasibility Study (Thoreau to Farmington)	New Mexico Institute of Mining and Technology	NMEDD	The feasibility study determines the best placement for a proposed rail line between the four corners region to the BNSF TransCon corridor to I-40 and evaluates the potential economic development impact	2015

APPENDIX C
DETAILED COST ESTIMATES

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Carbon Coal Road***

SCOPE OF WORK: ***PCC Pavement***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	7,500.00	$7,500.00
3	CLEARING & GRUBBING	AC	34.61818	2,800.00	$96,930.91
4	CUT & FILL	CY	167552	5.00	$837,760.00
5	COMPLIANCE TESTING	LS	1	4,500.00	$4,500.00
6	CONSTRUCTION STAKING	LS	1	4,500.00	$4,500.00
7	6" PCC PAVEMENT	SY	167552	55.00	$9,215,360.00
8	8" BASE COURSE	SY	167552	9.00	$1,507,968.00
9	12" SUBGRADE PREP	SY	167552	2.50	$418,880.00
10	2-LANE BRIDGE	EA	2	1,200,000.00	$2,400,000.00
11	36" CMPS CROSSING, INCL. STD. END SECTIONS	EA	12	15,000.00	$180,000.00
12	PERMANENT SIGNING & STRIPING	LS	1	$30,000.00	$30,000.00
13	SWPPP PLAN, BMP IMPLEMENTATION, MANAGEME	LS	1	$25,000.00	$25,000.00
14	SEEDING	AC	18.54545	$3,500.00	$64,909.09
			SUB-TOTAL		$14,808,308.00
	PLANNING, ENG., INVISTIATION STUDIES @ 15%				$2,221,246.20
	CONTINGENCY @ 10%				$1,702,955.42
	NMGRT @ 8.3125%				$1,557,139.86
	PROJECT BUDGET				$20,289,649.48

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Rock Springs Road***

SCOPE OF WORK: ***PCC Pavement***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	7,500.00	$7,500.00
3	CLEARING & GRUBBING	AC	12.26667	2,800.00	$34,346.67
4	CUT & FILL	CY	59370.67	5.00	$296,853.33
5	COMPLIANCE TESTING	LS	1	4,500.00	$4,500.00
6	CONSTRUCTION STAKING	LS	1	4,500.00	$4,500.00
7	6" PCC PAVEMENT	SY	59370.67	55.00	$3,265,386.67
8	8" BASE COURSE	SY	59370.67	9.00	$534,336.00
9	12" SUBGRADE PREP	SY	59370.67	2.50	$148,426.67
10	36" CMPS CROSSING, INCL. STD. END SECTIONS	EA	12	15,000.00	$180,000.00
11	PERMANENT SIGNING & STRIPING	LS	1	$30,000.00	$30,000.00
12	SWPPP PLAN, BMP IMPLEMENTATION, MANAGEMEI	LS	1	$25,000.00	$25,000.00
13	SEEDING	AC	8.363636	$3,500.00	$29,272.73
			SUB-TOTAL		$4,575,122.06
	PLANNING, ENG., INVISTIATION STUDIES @ 15%				$686,268.31
	CONTINGENCY @ 10%				$526,139.04
	NMGRT @ 8.3125%				$481,088.38
	PROJECT BUDGET				$6,268,617.79

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Unnamed Road (aligned with Rock Springs Road - south)***

SCOPE OF WORK: ***PCC Pavement***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	7,500.00	$7,500.00
3	CLEARING & GRUBBING	AC	12.8	2,800.00	$35,840.00
4	CUT & FILL	CY	61952	5.00	$309,760.00
5	COMPLIANCE TESTING	LS	1	4,500.00	$4,500.00
6	CONSTRUCTION STAKING	LS	1	4,500.00	$4,500.00
7	6" PCC PAVEMENT	SY	61952	55.00	$3,407,360.00
8	8" BASE COURSE	SY	61952	9.00	$557,568.00
9	12" SUBGRADE PREP	SY	61952	2.50	$154,880.00
10	36" CMPS CROSSING, INCL. STD. END SECTIONS	EA	12	15,000.00	$180,000.00
11	PERMANENT SIGNING & STRIPING	LS	1	$30,000.00	$30,000.00
12	SWPPP PLAN, BMP IMPLEMENTATION, MANAGEMEI	LS	1	$25,000.00	$25,000.00
13	SEEDING	AC	8.727273	$3,500.00	$30,545.45
			SUB-TOTAL		$4,762,453.45
	PLANNING, ENG., INVISTIATION STUDIES @ 15%				$714,368.02
	CONTINGENCY @ 10%				$547,682.15
	NMGRT @ 8.3125%				$500,786.86
	PROJECT BUDGET				$6,525,290.48

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Add Westbound dual left turn at US Highway 491 & Ninth Street/Chino Street***

SCOPE OF WORK: ***Asphalt Pavement Left-turn Lane and Signal Retrofit***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	15,000.00	$15,000.00
3	CLEARING & GRUBBING	AC	0.061983	2,800.00	$173.55
4	REMOVE, SALVAGE, AND REINSTALL GUARDRAIL	LS	7500	1.00	$7,500.00
5	COMPLIANCE TESTING	LS	1	4,500.00	$4,500.00
6	CONSTRUCTION STAKING	LS	1	4,500.00	$4,500.00
7	4" ASPHALT PAVEMENT	SY	300	30.00	$9,000.00
8	6" BASE COURSE	SY	300	7.00	$2,100.00
9	12" SUBGRADE PREP	SY	300	2.50	$750.00
10	RETROFIT SIGNALIZATION EQUIPMENT	LS	1	35,000.00	$35,000.00
11	EXTEND CATTLE GUARD	LF	12	$300.00	$3,600.00
12	PERMANENT SIGNING & STRIPING	LS	1	$5,000.00	$5,000.00
13	SEEDING	AC	0.154959	$3,500.00	$542.36
			SUB-TOTAL		$102,665.91
	PLANNING, ENG., INVISTIATION STUDIES @ 20%				$20,533.18
	CONTINGENCY @ 25%				$30,799.77
	NMGRT @ 8.3125%				$12,801.16
	PROJECT BUDGET				$166,800.02

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Widen US HWY 491 - south of Ninth Street/Chino Street - to six lanes***

SCOPE OF WORK: ***Asphalt Pavement Left-turn Lane and Signal Retrofit***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	20,000.00	$20,000.00
3	CLEARING & GRUBBING	AC	2.036364	2,800.00	$5,701.82
4	REMOVE, SALVAGE, AND REINSTALL GUARDRAIL	LS	7500	1.00	$7,500.00
5	COMPLIANCE TESTING	LS	1	4,500.00	$4,500.00
6	CONSTRUCTION STAKING	LS	1	4,500.00	$4,500.00
7	6" ASPHALT PAVEMENT	SY	9856	40.00	$394,240.00
8	8" BASE COURSE	SY	9856	9.00	$88,704.00
9	12" SUBGRADE PREP	SY	9856	2.50	$24,640.00
10	RUMBLE STRIPS	LS	1	10,000.00	$10,000.00
11	SWPPP PLAN, BMP IMPLEMENTATION, MANAGEMEI	LS	1	$25,000.00	$25,000.00
12	PERMANENT SIGNING & STRIPING	LS	1	$20,000.00	$20,000.00
13	SEEDING	AC	5.090909	$3,500.00	$17,818.18
			SUB-TOTAL		$637,604.00
	PLANNING, ENG., INVISTIATION STUDIES @ 15%				$95,640.60
	CONTINGENCY @ 20%				$146,648.92
	NMGRT @ 8.3125%				$73,141.15
	PROJECT BUDGET				$953,034.67

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Signal Warrant Analysis/Signalize intersection at SR 264 & County Road 9/Rock Springs Road***

SCOPE OF WORK: ***Intersection Signalization***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	15,000.00	$15,000.00
3	3-WAY SIGNALIZATOIN AND POWER	LS	1	125,000.00	$125,000.00
4	COMPLIANCE TESTING	LS	1	2,500.00	$2,500.00
5	CONSTRUCTION STAKING	LS	1	2,500.00	$2,500.00
6	PERMANENT SIGNING & STRIPING	LS	1	$5,000.00	$5,000.00
			SUB-TOTAL		$165,000.00
	PLANNING, ENG., INVISTIATION STUDIES @ 20%				$33,000.00
	CONTINGENCY @ 25%				$49,500.00
	NMGRT @ 8.3125%				$20,573.44
	PROJECT BUDGET				$268,073.44

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Pave Sunset Valley Road***

SCOPE OF WORK: ***Double Penetration Chip Seal Pavement***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	20,000.00	$20,000.00
3	CLEARING & GRUBBING	AC	15.44242	2,800.00	$43,238.79
4	REMOVE, SALVAGE, AND REINSTALL GUARDRAIL	LS	7500	1.00	$7,500.00
5	COMPLIANCE TESTING	LS	1	7,500.00	$7,500.00
6	CONSTRUCTION STAKING	LS	1	15,000.00	$15,000.00
7	DOUBLE PENETRATION CHIP SEAL	SY	74741.33	6.00	$448,448.00
8	4" BASE COURSE	SY	74741.33	6.00	$448,448.00
9	12" SUBGRADE PREP	SY	74741.33	2.50	$186,853.33
10	36" CMPS CROSSING, INCL. STD. END SECTIONS	EA	12	15,000.00	$180,000.00
11	SWPPP PLAN, BMP IMPLEMENTATION, MANAGEMEI	LS	1	$30,000.00	$30,000.00
12	PERMANENT SIGNING & STRIPING	LS	1	$20,000.00	$20,000.00
13	SEEDING	AC	17.81818	$3,500.00	$62,363.64
			SUB-TOTAL		$1,484,351.76
	PLANNING, ENG., INVISTIATION STUDIES @ 15%				$222,652.76
	CONTINGENCY @ 20%				$341,400.90
	NMGRT @ 8.3125%				$170,273.70
	PROJECT BUDGET				$2,218,679.13

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Pave 3 Buttes Road***

SCOPE OF WORK: ***Double Penetration Chip Seal Pavement***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	20,000.00	$20,000.00
3	CLEARING & GRUBBING	AC	3.151515	2,800.00	$8,824.24
4	REMOVE, SALVAGE, AND REINSTALL GUARDRAIL	LS	7500	1.00	$7,500.00
5	COMPLIANCE TESTING	LS	1	4,500.00	$4,500.00
6	CONSTRUCTION STAKING	LS	1	8,500.00	$8,500.00
7	DOUBLE PENETRATION CHIP SEAL	SY	15253.33	6.00	$91,520.00
8	4" BASE COURSE	SY	15253.33	6.00	$91,520.00
9	12" SUBGRADE PREP	SY	15253.33	2.50	$38,133.33
10	36" CMPS CROSSING, INCL. STD. END SECTIONS	EA	4	15,000.00	$60,000.00
11	SWPPP PLAN, BMP IMPLEMENTATION, MANAGEMEI	LS	1	$20,000.00	$20,000.00
12	PERMANENT SIGNING & STRIPING	LS	1	$15,000.00	$15,000.00
13	SEEDING	AC	3.636364	$3,500.00	$12,727.27
			SUB-TOTAL		$393,224.85
	PLANNING, ENG., INVISTIATION STUDIES @ 15%				$58,983.73
	CONTINGENCY @ 20%				$90,441.72
	NMGRT @ 8.3125%				$45,107.81
	PROJECT BUDGET				$587,758.10

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Pave Hunters Point Road***

SCOPE OF WORK: ***Double Penetration Chip Seal Pavement***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	20,000.00	$20,000.00
3	CLEARING & GRUBBING	AC	15.75758	2,800.00	$44,121.21
4	REMOVE, SALVAGE, AND REINSTALL GUARDRAIL	LS	7500	1.00	$7,500.00
5	COMPLIANCE TESTING	LS	1	7,500.00	$7,500.00
6	CONSTRUCTION STAKING	LS	1	15,000.00	$15,000.00
7	DOUBLE PENETRATION CHIP SEAL	SY	76266.67	6.00	$457,600.00
8	4" BASE COURSE	SY	76266.67	6.00	$457,600.00
9	12" SUBGRADE PREP	SY	76266.67	2.50	$190,666.67
10	2-LANE BRIDGE	EA	2	1,200,000.00	$2,400,000.00
11	36" CMPS CROSSING, INCL. STD. END SECTIONS	EA	12	15,000.00	$180,000.00
12	SWPPP PLAN, BMP IMPLEMENTATION, MANAGEMEI	LS	1	$30,000.00	$30,000.00
13	PERMANENT SIGNING & STRIPING	LS	1	$20,000.00	$20,000.00
14	SEEDING	AC	18.18182	$3,500.00	$63,636.36
			SUB-TOTAL		$3,908,624.24
	PLANNING, ENG., INVISTIATION STUDIES @ 15%				$586,293.64
	CONTINGENCY @ 20%				$898,983.58
	NMGRT @ 8.3125%				$448,368.06
	PROJECT BUDGET				$5,842,269.51

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Add a westbound right turn lane at Carbon Coal Road & County Road 9/Rock Springs Road***

SCOPE OF WORK: ***PCC Pavement Right-turn Lane***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	15,000.00	$15,000.00
3	CLEARING & GRUBBING	AC	0.096419	2,800.00	$269.97
4	REMOVE, SALVAGE, AND REINSTALL GUARDRAIL	LS	7500	1.00	$7,500.00
5	COMPLIANCE TESTING	LS	1	4,500.00	$4,500.00
6	CONSTRUCTION STAKING	LS	1	4,500.00	$4,500.00
7	6" PCC PAVEMENT	SY	466.6667	55.00	$25,666.67
8	8" BASE COURSE	SY	466.6667	9.00	$4,200.00
9	12" SUBGRADE PREP	SY	466.6667	2.50	$1,166.67
10	PERMANENT SIGNING & STRIPING	LS	1	$5,000.00	$5,000.00
11	SEEDING	AC	0.241047	$3,500.00	$843.66
			SUB-TOTAL		$83,646.97
	PLANNING, ENG., INVISTIATION STUDIES @ 20%				$16,729.39
	CONTINGENCY @ 25%				$25,094.09
	NMGRT @ 8.3125%				$10,429.73
	PROJECT BUDGET				$135,900.19

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ESTIMATED SUMMARY OF COSTS AND QUANTITIES

ENTITY: ***4CITE*** D0: _____ CN: _____

PROJECT No.: ***TBD***

TERMINI: ***Signal Warrant Analysis/Signalize Intersection at Frontage Road/Historic Highway 66 & Mentmore Road***

SCOPE OF WORK: ***Intersection Signalization***

ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST
1	MOBILIZATION/DEMOBILIZATION	LS	1	15,000.00	$15,000.00
2	TRAFFIC CONTROL & BARRICADING	LS	1	15,000.00	$15,000.00
3	3-WAY SIGNALIZATOIN AND POWER	LS	1	125,000.00	$125,000.00
4	COMPLIANCE TESTING	LS	1	2,500.00	$2,500.00
5	CONSTRUCTION STAKING	LS	1	2,500.00	$2,500.00
6	PERMANENT SIGNING & STRIPING	LS	1	$5,000.00	$5,000.00
		SUB-TOTAL			$165,000.00
	PLANNING, ENG., INVISTIATION STUDIES @ 20%				$33,000.00
	CONTINGENCY @ 25%				$49,500.00
	NMGRT @ 8.3125%				$20,573.44
	PROJECT BUDGET				$268,073.44