

Final Report

Bibb & Jones Cross County Connector Needs Analysis



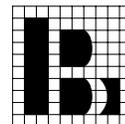
Georgia Department of Transportation

Prepared by

DWA

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In association with



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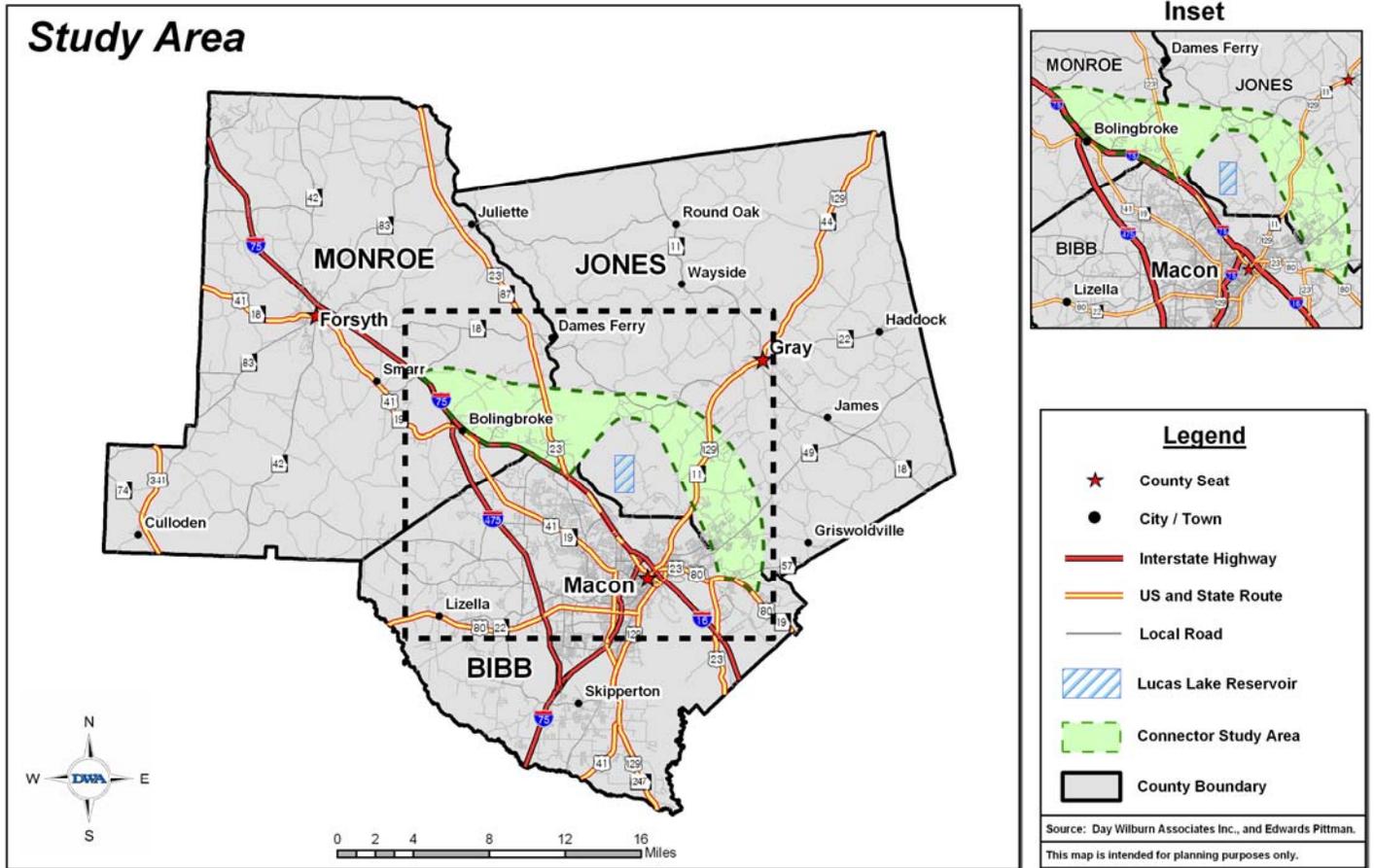
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Bibb and Jones Cross County Connector Study Executive Summary



Project Background

Project Background and Summary

The Georgia Department of Transportation (GDOT) contracted with Day Wilburn Associates, Inc. (DWA) to study the need, purpose, and potential and preferred planning corridors for a connector between I-75 north of Macon and US 80 east of Macon.

The study had two phases. The first phase determined the need and purpose for the connector. Once the need and purpose was established, the study proceeded to a second phase, identifying a recommended corridor alignment. Input from the public and from an Advisory Committee composed of local representatives guided the study process and recommendations.

Table 1 - Study Goals and Objectives

Study Goals	Study Objectives
Determine the need for a cross county connector between I-75 north of Macon and US 80 east of Macon.	<ul style="list-style-type: none"> To gather information about transportation needs from the public, staff, and elected officials To identify deficiencies in the transportation system To determine if a connector could address the following needs: congestion; safety concerns; cost feasibility; traffic operations improvements; economic development; community benefits; mobility enhancement; connectivity to other modes; accessibility; regional and statewide impacts; environmental concerns; preservation of existing transportation system; and other factors
If connector is needed, evaluate alternative feasible corridors and recommend an alignment for further study.	<ul style="list-style-type: none"> To scan the environment for potential impacts To prepare analysis tools and evaluate potential corridors To present results of alternatives evaluations to the public, staff and elected officials and gather input To identify potential corridor (s)

Project Background

The initial study area for the project, which began in October 2003, is shown on page ES-1. Upon completion of Phase 1, the study area was revised to reflect the water reservoir clear zone. The revised study area is depicted in Figure 2, a map showing the recommended planning corridors, on page ES-4.

County officials, economic development staff, regional planning professionals, and other local representatives were interviewed to obtain a more comprehensive local understanding about travel characteristics and the development needs of Bibb, Jones, and Monroe County residents and businesses.

Public and Advisory Panel meetings were conducted to acquire more detailed information from regional property owners and the local traveling public. The results of these efforts showed a need for additional cross county connectivity as long as it is provided in a manner sensitive to the nature of the variety of communities within the 63 square mile study area.

Advisory Panel

- ☆ ***Representatives from Bibb, Jones, and Monroe County, Middle GA RDC, MBPZ, City of Macon, and GDOT***
- ☆ ***Meetings-October 28, 2003; June 7, 2004; and October 6, 2004***
- ☆ ***Advised GDOT and consultant team on design criteria, evaluation factors, alignment constraints, selection methodology, and recommended planning corridor***

A key part of the study effort included a comprehensive environmental inventory of historic, ecological, community and archaeological resources in the study area. Sensitive environmental areas were identified and factored into study analysis and into the identification of potential corridor alignments. Included in the consideration of corridor alternatives were:

- Bowden Golf Course
- Lakeside Park
- Lucas Lake Reservoir and its buffer requirements
- River North Subdivision

The study area was adapted to avoid sensitive environmental resources. The revised boundaries are shown in green on the map on page ES-6.

The revised study area limits encompassed a sufficient area (63.3 square miles) to adequately accommodate a number of potential alternative corridors. Ultimately, eleven planning corridors for the connector were mapped and evaluated.

Table 2 – Public Involvement Results

Meeting Date	Location	Attendance	Information Provided	Summary of Comments
December 4, 2003	Tri-County EMC US 129 Gray, GA	59	Study area displays included: •Overview of study •Existing traffic conditions •Environmental, historic and cultural resources •Planned transportation projects •Study area demographics	<ul style="list-style-type: none"> •General support for project •Need project for safety reasons •Expand study area south to I-16 •Add access to Robins Air Force Base to the study •Use Bass or Rumble Road interchange with I-75 as western terminus •Relieve US 129
July 19, 2004	Jones County Fire Station US 129 Gray, GA	135	Study area displays included: •Overview of study •Potential alternative corridors •Potential impacts •Environmental, historic and cultural resources •Planned transportation projects •Study area demographics	<ul style="list-style-type: none"> •Support for project including favoring the following: <ul style="list-style-type: none"> –most northern corridor –Bass Road interchange-western terminus –I-16 as eastern terminus •Avoid Plentitude Church •Minimize impact on persons and businesses •Advance Gray Bypass •Will improve development opportunities
November 16, 2004	Jones County High School 339 Cumslow Rd. Gray, GA	280	Study area displays included: •Overview of study •Map of Planning Corridor 11 •Diagram of typical section	<ul style="list-style-type: none"> •Concern with preserving the rural character of Jones County •Lack of support for Planning Corridor 11 •Support for consideration of other alternatives to relieve congestion

Phase One Findings

Transportation deficiencies were identified using an updated Macon Area Transportation Study (MATS) travel demand model, which was expanded to include portions of Jones and Monroe Counties in the study area. Input from interviews, Advisory Panel and public meetings was also used for needs identification. Phase One results identified the following transportation needs:

- Limited Ocmulgee River crossings
- Gray Highway congestion
- Congestion in downtown Macon
- Congestion on bridges
- Relieve congestion
- Increase safety
- Environmental sensitivity

Initially, over 25 potential corridors were evaluated through the use of technical analysis tools such as travel demand modeling. Public involvement techniques including information meetings and interviews with stakeholders were also used to gauge community response. Using the evaluation factors and design criteria described in the above corridor selection process, developed in conjunction with the Advisory Panel, potential alternative corridors were screened for how well each met the needs identified in Phase One. The screening process resulted in eleven (11) corridors for further analysis.

A matrix comparing potential corridors evaluated is included in the final report as Table 3-3. The methodology used to screen planning corridors down to eleven alternatives follows:

- Planning corridors that created environmental and community impacts were eliminated. Planning corridors that significantly relieved congestion while minimizing community impacts were studied further.
- Corridors were further screened by weighing congestion relief and cost.

Recommended Corridor

After completing the evaluation methodology, Planning Corridor 11 produced the most congestion relief with moderate impacts on the community and environment. It is recommended that Planning Corridor 11 be considered for further study and preliminary design as MATS updates its 2030 Plan. Table 3 below shows a matrix comparing alternative planning corridors against evaluation factors. Figures 2-6 detail each alternative planning corridor.

Table 3 – Preferred Alternative Comparison Matrix

Corridor	Length	Estimated Cost (millions)	Traffic Impact on US 129 (percent reduction)	Community Impact	US129 Congestion Relief
3	24.4 miles	\$103.68	20.7%	Minimum	Minimum
4	24.3 miles	\$103.41	9.8%	Minimum	Minimum
5	24.2 miles	\$103.13	22.5%	Moderate	Moderate
10	18.3 miles	\$69.36	18.3%	Moderate	Minimum
11	19.1 miles	\$70.4	29.4%	Moderate	Maximum

Alternative Corridor Selection Process

Alternative corridors were analyzed against the following set of evaluation factors and design criteria developed in cooperation with the Advisory Panel:

- Evaluation factors
 - Capacity needs /congestion relief
 - Safety concerns
 - Cost considerations
 - Economic development
 - Community impacts
 - Environmental impacts
 - System preservation

- Design criteria
 - 45-60 mph design speed
 - Raised median
 - Shoulder
 - Controlled/limited access
 - 100 foot clear zone
 - Maximum grades
 - 12 foot minimum lane width
 - Maximum super elevation
 - Maximum curvatures

Figure 2 – Planning Corridor 3

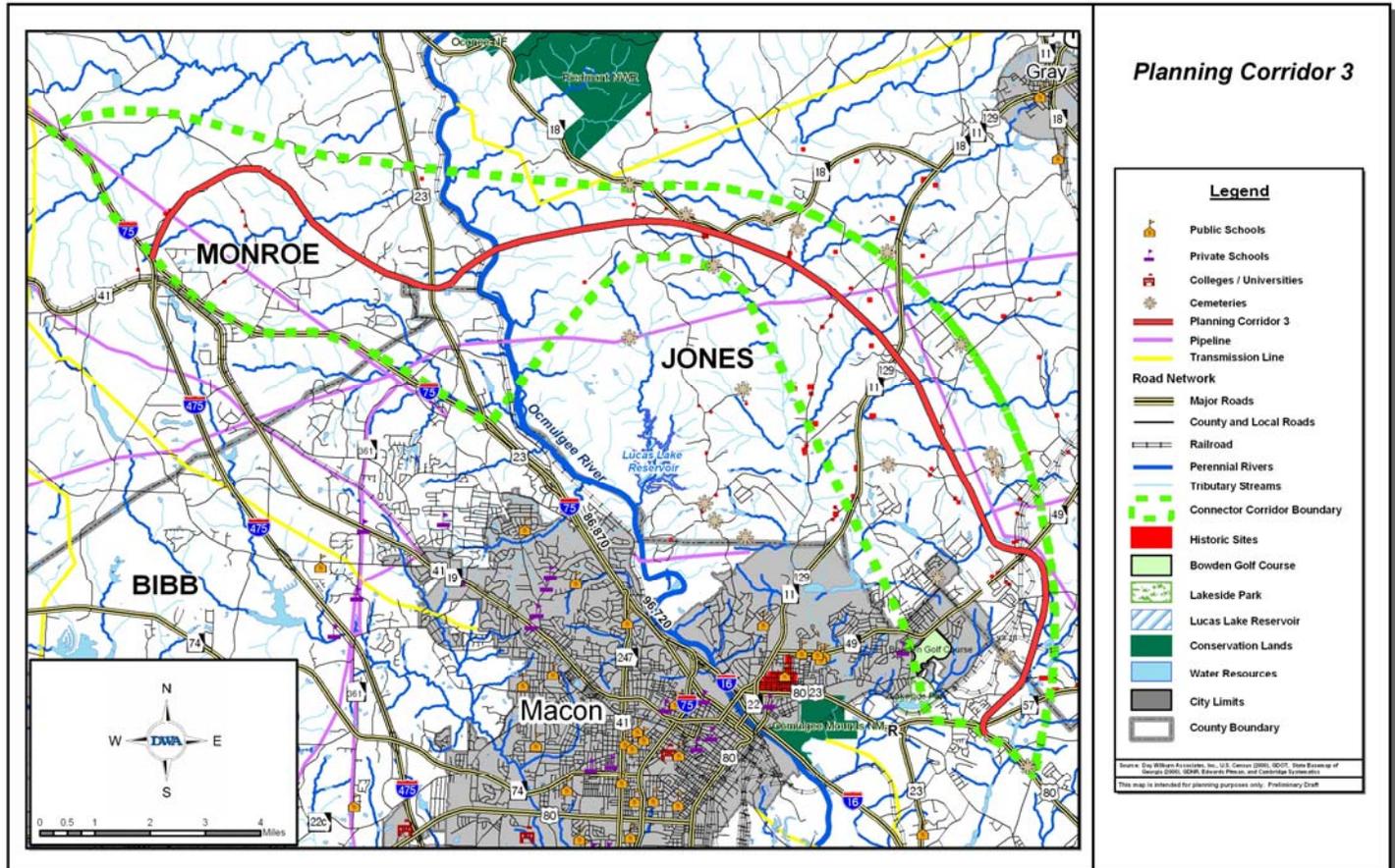


Figure 3 – Planning Corridor 4

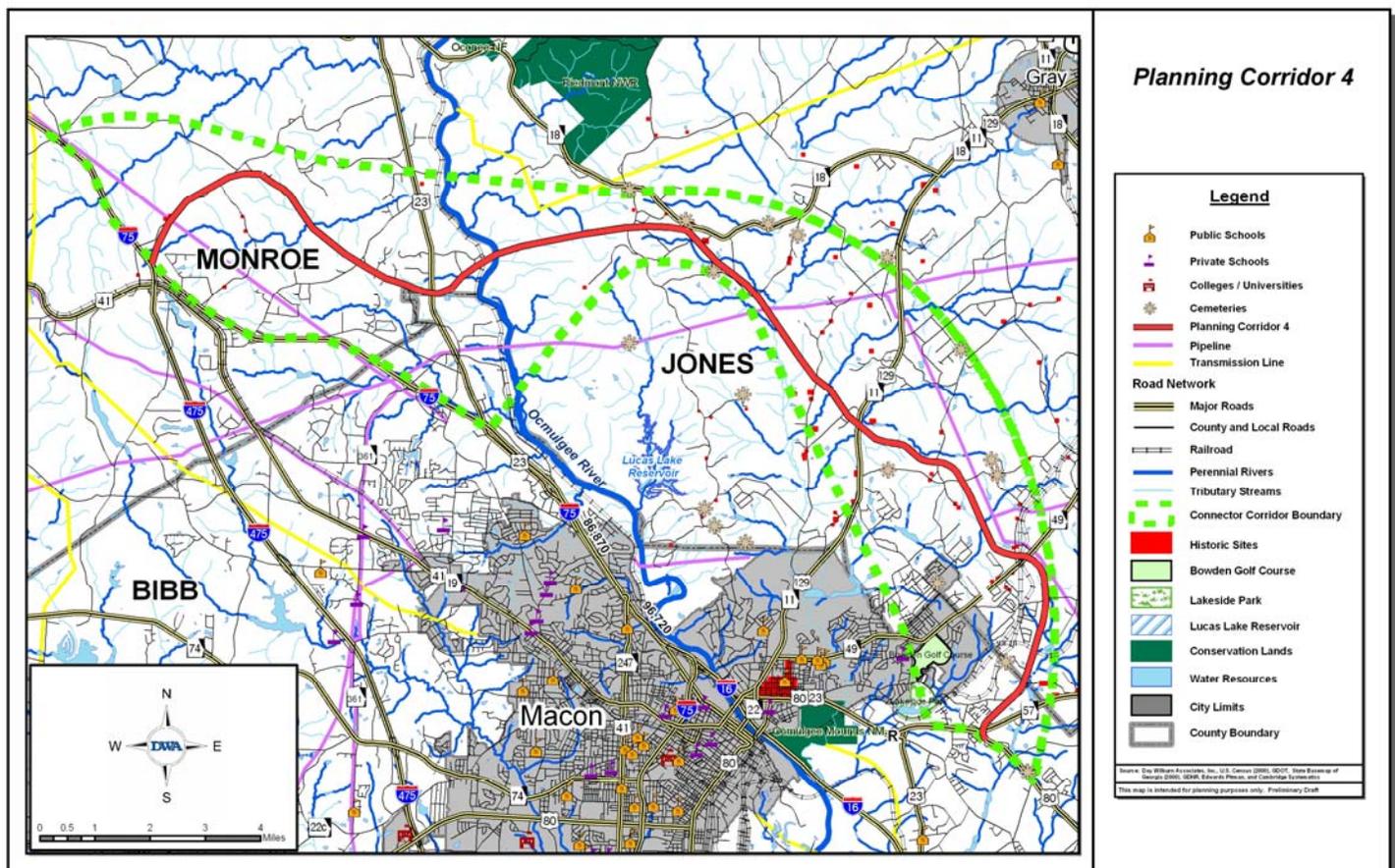


Figure 4 – Planning Corridor 5

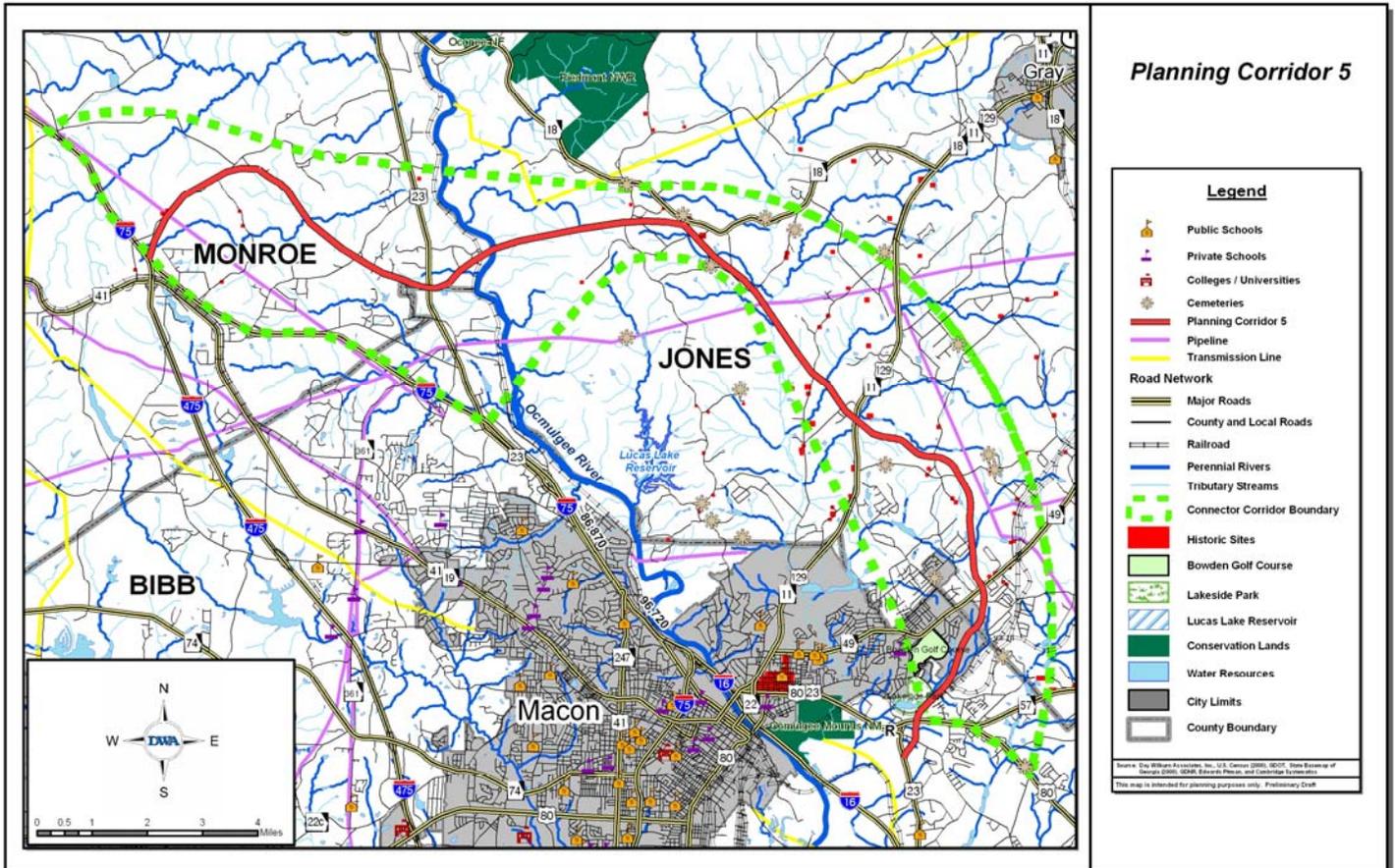


Figure 5 – Planning Corridor 10

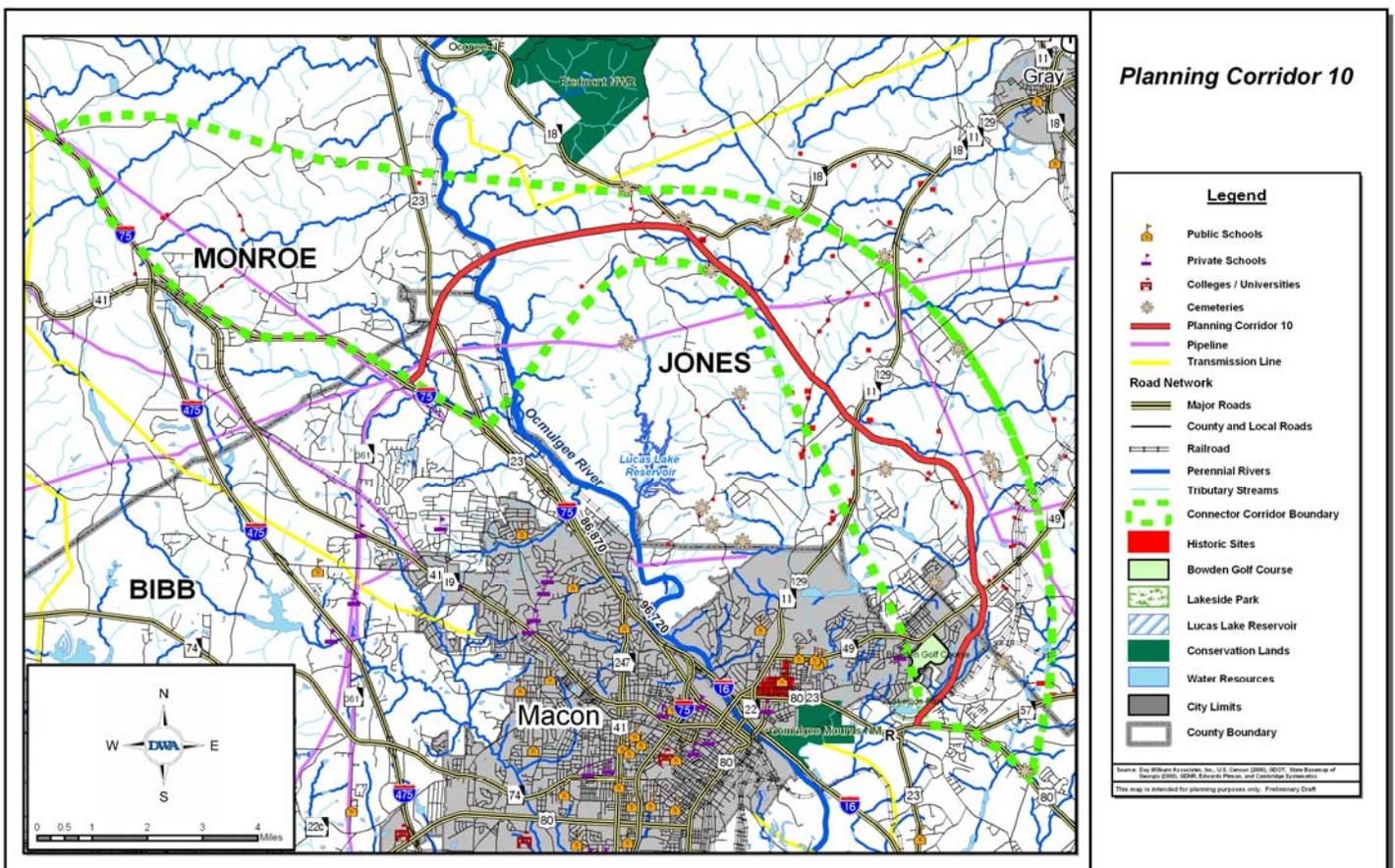
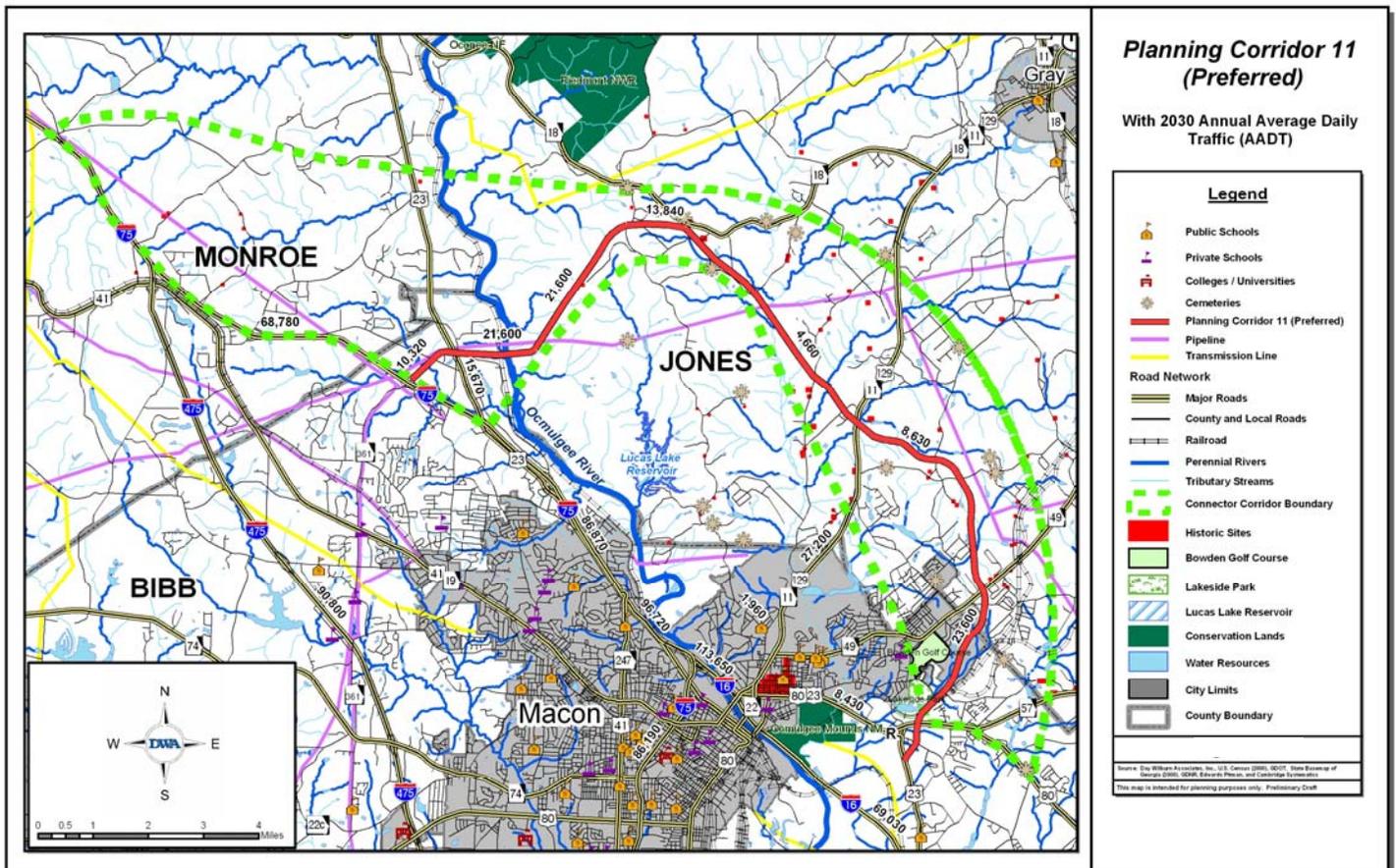


Figure 6 – Recommended Planning Corridor



This map is intended for planning purposes only.

Figure 6 shows a map of the recommended planning corridor (Planning Corridor 11), an alignment with an eastern terminus on US 23 just south of its intersection with US 80 and a western terminus at the Bass Road interchange with I-75.

Traffic Impact

The updated and expanded travel demand model forecasts that the Planning Corridor 11 alignment will attract 21,600 vehicles per day on links west of US 129 and 23,600 vehicles per day on links east of US 129 in 2030. Planning Corridor 11 relieves US 129 by reducing traffic on US 129 congestion in 2030 by 29.4 % from 37,080 vehicles per day to 26,180 vehicles per day. In addition, Planning Corridor 11 reduces traffic at other selected network links and reduces regional vehicle hours traveled by 4,342 hours.

Community Impact

By routing Planning Corridor 11 on the east side to avoid neighborhoods and the publicly owned park and golf course, the impact to the environmental justice community is minimized in comparison to other potential corridors. Additionally, the proposed segment connecting south to US 23 adds connectivity and increases the corridor's attractiveness.

Subalternatives

During public and Advisory Panel meetings, subalternatives were discussed. Potentially popular subalternatives for Planning Corridor 11 are different western termini such as Rumble Road to the north or Riverside Road to the south. Either or both subalternatives can be further explored at the preliminary design stage during the project development process.



1 Introduction

The Final Report for the Bibb and Jones Cross County Connector Study (Connector) addresses the need and purpose, as well as potential and preferred alignments, for a connector corridor between I-75 north of Macon and US 80 east of Macon. This document summarizes the study process followed and presents the results of the technical analysis and public input included in Phase One and Phase Two study evaluations. Phase One (needs assessment) and Phase Two (planning corridor selection) reports are available from the Georgia Department of Transportation (GDOT) or on the web at www.dot.state.ga.us.

Background

Growth in the north central and eastern part of Bibb County and central and southern Jones County has been very aggressive (modeled traffic volumes increase by over 200% by 2030). Accommodating current and expected future growth in population and traffic has stimulated discussion of the need for a cross county connector. Previous studies examined the feasibility of a new highway to improve east-west access through Bibb and Jones Counties. The new facility was expected to relieve traffic congestion along the Gray Highway corridor, add a crossing of the Ocmulgee River in northern Bibb County or southeastern Monroe County, and improve intra and inter-county accessibility.

The current study effort was initiated to revisit the need for a cross county connector. The goals of the study were to evaluate current and future transportation needs and identify potential and preferred alignments for a new facility stretching from I-75 in north Bibb County or southeast Monroe County to a terminus at US 80 in south Bibb County. The study took into account the numerous environmental resources that span the study area, as well as land use development patterns. A number of planning corridor alignments were considered in developing final recommendations.

The study area forms an arc consisting of 63.3 square miles primarily located within Jones County. It is bounded in the west by I-75 in southeast Monroe County, in the east by the Bibb/Twiggs County line, and in the south by US 80/SR 19. The northern boundary is just south of the City of Gray. The study area is graphically portrayed on the map figures included within the study documentation. Southeast Monroe County was included in the study area to ensure that I-75 north of Bibb County could be evaluated as the western terminus. Expansion of the travel demand model was necessary to evaluate the lack of connectivity across the Ocmulgee River, which is exacerbated by growth in south Jones and Bibb Counties.

Study Process

The study was organized into two phases. Phase One addressed and documented the need for a connector between I-75 in Monroe County and US 80 in the East Macon area. This phase consisted of five tasks, including data collection, public involvement, existing conditions evaluation, future year (2030) conditions evaluation, and technical report development. Phase One determined that the cross county connector met the need and purpose criteria such as congestion relief, safety, community impact, cost, accessibility, and economic development. The need exists to provide local and through traffic with an improved east-west connector to reduce traffic on US 129, I-16, and other collectors and local streets in the south Jones County/Macon



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area. Every state route in the study area, including SR 49, US 129, US 29, US 23, and SR 11, is forecast to have an unacceptable level of service by 2030. The current level of service of these state routes within the study area is acceptable with the exception of a short segment of SR 49. Without the proposed new location connector, area roadways likely will continue to experience accident rates in excess of the statewide average (307 per 100 million vehicle miles traveled).

The purposes of the proposed connector are to reduce traffic on US 129 and other area state routes, provide local and through traffic with a facility that adequately serves current and future travel demand, and provide the traveling public a safer driving environment. The proposed Connector would accomplish these purposes by providing an effective transportation corridor from I-75 north of Macon to US 80 east of Macon, circumventing the congested I-75/I-16 interchange and downtown Macon area facilities. Construction of the Connector will enhance the safety of the system, facilitate the movement of freight, and improve traffic safety and operations in Macon and south Jones County.

The study process analyzed base year (2000) and future year (2030) travel demand. The Macon Area Transportation Study (MATS) TP+ travel demand model was modified to capture the study area, updated to reflect the latest data available, and applied to measure existing and future congestion.

Phase Two of the study focused on identification and evaluation of potential corridors and recommendation of alternative planning corridors based on engineering design criteria and established planning factors. Like Phase One, Phase Two also consisted of five tasks: review and evaluation of study results from Phase One, development of alternative corridors, public involvement, final recommendations, and development of the final report.

Public Involvement and Stakeholder Outreach

Public involvement and outreach has been a vital and ongoing element of this study. Study stakeholders, including local governments, businesses, and the general public, provided input and feedback throughout the study through meetings and workshops.

Public involvement and stakeholder participation opportunities were formally integrated at key milestones in the study. Stakeholder and public feedback has been fully considered in determining the need for a cross county connector and potential alignments in the study area. The public involvement strategy developed at the outset of the study served as the framework for informing and involving stakeholders and the general public during the study.

The strategy provided for early and ongoing opportunities to share information, bring together varied points of view, and obtain input from diverse stakeholders. The overall goal for stakeholder and public involvement was to achieve mutual understanding of transportation needs in the study area among stakeholders, determine if those needs could be satisfied by a cross county connector, and provide information on a recommended alternative.



The approach to public involvement for the study was community-based and focused on providing information to two levels throughout the study process: the organized stakeholder group and the general public. Major stakeholder groups in the study area were invited to actively participate. Opportunities for general public input were also provided to ensure local residents were informed about the study and given opportunities to provide input at key study milestones.

Structure for Stakeholder Involvement

An organized structure for the public participation program is important for ensuring that the efforts to provide information on the study and obtain involvement from various stakeholders are cost effective and also reach the broad array of interests that are affected by the study. The structure for stakeholder involvement was organized around an Advisory Panel made up of local government officials and planning agencies.

The Advisory Panel provided guidance and general oversight. The Panel met with the consultant team on a regular basis throughout the study to discuss progress, provide direction and review deliverables at key phases. A list of Advisory Panel members is provided in Appendix A.

Stakeholder and Public Involvement Activities

The project team conducted three meetings with the Advisory Panel and three general public meetings throughout the study. A summary of the public outreach activities is shown in Table 1.1.

**Table 1.1
Advisory Panel and Public Outreach Meetings Summary**

	Meeting Date	No. of Attendees	Purpose
Advisory Panel	October 28, 2003	15	Present study and identify issues, needs and data sources
	June 7, 2004	14	Present potential alignment alternatives
	October 6, 2004	12	Present preferred planning corridor
Public Open House Meetings	December 4, 2003	59	Present study and identify issues and needs
	July 19, 2004	135	Present potential alignment alternatives
	November 16, 2004	Over 280	Present preferred planning corridor

A key element of any successful public involvement strategy is the development of a comprehensive mailing list. Working with GDOT staff and the Advisory Panel, a mailing list of over 80 local stakeholders was developed early in the study and was updated regularly. Study partners and the consultant team identified stakeholders and citizens representing all interests in the study area, including community leaders; businesses; local elected officials; local government officials; civic, environmental groups; citizens advisory committees; and organizations and associations for low-income and minority, elderly and disabled citizens. The mailing list was updated throughout the process using sign-in sheets and comment forms and



included information to aid in contacting stakeholders in a variety of ways. The mailing list was used to reach stakeholders with announcements of upcoming events and meeting invitations.

A media outreach effort was implemented to increase both attendance and participant diversity at public information meetings. Media outreach efforts were supported by developing information materials for distribution to encourage attendance at meetings. Publicity for public involvement activities was generated through the use of press materials, such as press releases, fact sheets, and flyers. The study budget included paid advertisements, which were placed in local newspapers including the *Macon Telegraph*, *The Jones County News* and *The Monroe Reporter*. Media/community outreach included a few outlets with low-income and minority audiences such as *Mundo Hispanico*, and *The Macon Courier*. A complete list of media contacts is included in Appendix A.

Environmental Justice

Identification of Populations and Outreach Efforts

The project team identified environmental justice (EJ) stakeholders and notified them of study activities to ensure that the concerns and needs of low-income and minority populations in the study area were considered. Because of the study's funding source, the study had to meet the requirements of *Title VI, Executive Order 12898* and *Section 450 of the Transportation Equity Act for the 21st Century*. These federal regulations and guidelines require that transportation plans and programs provide a fully inclusive public outreach program. They require that recommendations do not disproportionately impact minority and low-income communities while also allowing these groups to fully share in the benefits of transportation infrastructure investments.

Because the EJ communities in the study counties are very small and dispersed, the consultant team implemented an outreach program primarily focused on outreach to churches and local social service organizations in the study area to encourage participation and input. A database of over 130 churches and service organizations was developed and is included in Appendix A. The database was used for mailing information such as fact sheets, flyers, and comment forms and maintaining an ongoing record of communication with these groups. As such, outreach efforts built a network through which project information could continuously be disseminated and interest stimulated. Fact sheets and comment forms were sent to each contact for personal use or distribution to the public.

Evaluation of Potential Impacts

The identification and mapping of minority and low-income communities in the study area assisted in targeting outreach efforts and identifying the potential impacts, both positive and negative, of proposed transportation improvement strategies (map in Appendix 3). Impacts of potential alignment alternatives (benefits and burdens) were considered during alignment identification and screening.



Study Goals and Objectives

The goals and objectives for the Bibb and Jones Cross County Connector Study are detailed in Table 1-2. Performance measures were assigned to each goal.

Table 1-2
Goals and Objectives

Goals	Objectives	Performance Measures
Determine the need for a cross county connector between I-75 north of Macon and US 80 east of Macon	<ul style="list-style-type: none"> • To collect and present transportation needs as provided by the public, staff, and elected officials • To determine if the connector meets: <ul style="list-style-type: none"> - Capacity needs - Safety concerns - Cost, including efficient management and operation - Economic development - Community benefits and burdens - Mobility enhancement - Connectivity to other modes - Accessibility - Regional and statewide impacts - Environmental concerns - Preservation of existing transportation system - Other factors • To identify deficiencies in the transportation system 	<ul style="list-style-type: none"> • Traffic volumes • Level of service • Accident rates • Compatibility with existing plans • Modeled volume to capacity (v/c) ratios
If connector is needed, provide feasible planning corridors	<ul style="list-style-type: none"> • To scan environment for potential conflicts • To collect and present transportation needs as provided by the public, staff and elected officials • To prepare and evaluate alignment corridors 	<ul style="list-style-type: none"> • Terrain compatibility • Vacant property • Environmental constraints • Modeled v/c ratios



2 Phase One – Determination of Need and Purpose

The initial phase of the study identified the appropriate study area and collected data for conducting a needs analysis to determine whether the project had a need and purpose and further study was warranted. Phase One analyzed data reflecting existing and forecast transportation conditions in the study area and concluded that a planning corridor was needed to relieve congestion in 2030.

Inventory of Existing and Forecast Conditions

A review of existing conditions sets the stage for evaluating the transportation system, determining deficiencies, and proposing solutions. The 2000 MATS travel demand model provided performance factors for evaluation, including vehicle miles of travel, vehicle hours of travel and crash data. Those same factors were used for the current analysis and assessment.

Existing Traffic Conditions

The analysis of existing traffic conditions included computation of daily vehicle miles traveled (VMT) and daily vehicle hours traveled (VHT) for roads in Bibb and Jones Counties. The total VMT for these counties is almost 4.7 million vehicle miles traveled. Total VHT for Bibb and Jones Counties is almost 91,000 VHT.

Volume to capacity (v/c) ratios were also considered as part of the existing conditions analysis. Roadways with v/c ratios over 0.90 in an urban area or 0.75 in a rural area are considered to be deficient. Based on this analysis, the US 129 at I-16 interchange area was identified as congested. The model assigned approaches to the interchange v/c ratios of 0.90 and over (in many cases over 1.00). Other areas of deficiency are found along the I-75 and US 41 corridors, as well as locations throughout central and western Macon and spot locations on SR 49 in southeast Jones County. As growth and development continues in the north Macon and south Jones County region, the congested locations will require a significant level of additional transportation infrastructure to regain an acceptable level of service. Figure 2.1 shows v/c ratios for 2000. The Phase One Report (Appendix B) includes detailed tables and figures pertaining to existing traffic conditions.

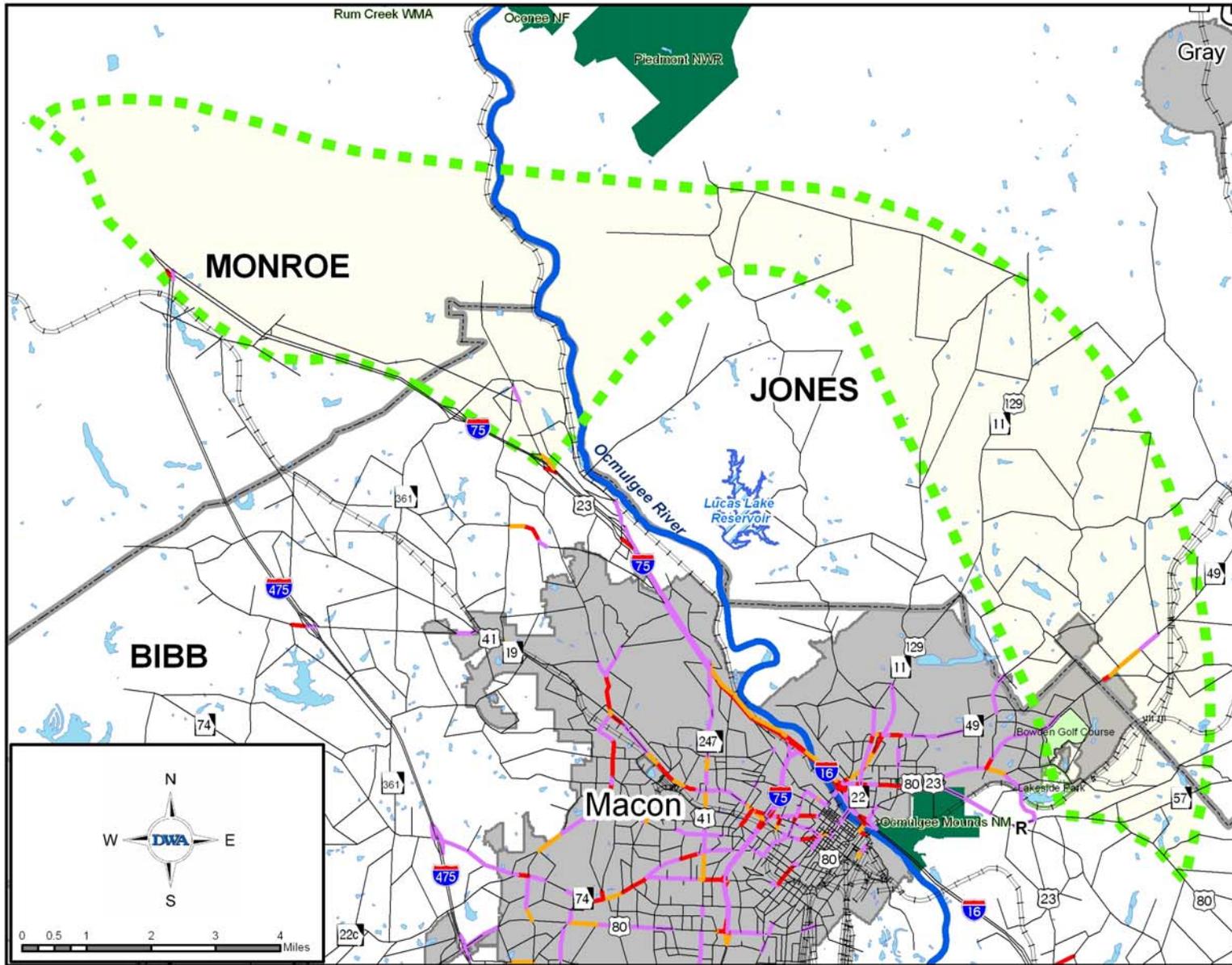
Future Demand Analysis

To analyze future demand, land use expectations and anticipated growth were used to forecast future socioeconomic characteristics of the study area. Planned projects were incorporated, and network travel patterns for both existing plus committed (E+C) and future projects were assessed.

For the purposes of the Phase One technical analysis, two model runs were done for the year 2030. First, the model used an E+C network (provided by GDOT) that included all roadway projects committed to construction within the next five years. The second model run used the 2025 MATS Long-Range Transportation Plan (LRTP) network provided by GDOT staff. The model included an expanded network into Monroe County as well as validation refinements in the study area. Trip productions, trip attractions, and external trips were also extrapolated to the design year of 2030 based on linear growth trends between the base year 2000 and the original MATS horizon year of 2025.



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2000 V/C Ratios

Legend

2000 V/C Ratios

- ≥ 1.00 (LOS E)
- 0.90 - 0.99 (LOS D)
- 0.70 - 0.89 (LOS C)
- < 0.70 (LOS A/B)

- Railroad
- Ocmulgee River
- Connector Corridor Boundary
- Bowden Golf Course
- Lakeside Park
- Lucas Lake Reservoir
- Conservation Lands
- Water Resources
- City Limits
- County Boundary

Figure 2-1

Source: Day Wilburn Associates, Inc., U.S. Census (2000), GDOT, and Cambridge Systematics
This map is intended for planning purposes only. Preliminary Draft



As a summary of general growth in travel patterns, model-generated estimates of vehicle miles traveled (VMT) for the 2000 base year, 2030 E+C, and 2030 LRTP network model runs were reviewed. Table 2-1, which depicts the VMT of the three model runs, shows that the improvements scheduled for 2030 (excluding the Cross County Connector) reduce overall VMT.

Table 2-1
Vehicle Miles Traveled by Functional Class for 2000, E+C and LRTP

Functional Class	2000 VMT	2030 E+C	2030 LRTP
Interstates	2,024,078	4,177,353	4,118,109
Ramps	53,631	123,463	129,547
Principal Arterials	1,176,009	1,857,998	1,845,865
Minor Arterials	927,783	1,703,157	1,707,370
Collectors	420,372	621,775	618,713
Local	88,979	167,413	157,528
Total	4,690,852	8,651,159	8,577,132

Year 2030 No Build (E+C) Model Results

The v/c ratios within the study area increase dramatically between 2000 and 2030. The 2030 E+C network model run provides a worst case scenario since it only assumes projects currently programmed for construction will be open to traffic. Growth in traffic crossing the Ocmulgee River will outstrip the ability of the E+C network, including existing plus committed projects. The lack of mobility and accessibility hindered network operations and will cause even more such transportation problems. This lack of mobility will impact economic development in Jones County and north Bibb County, where there is already a high percent of households in poverty. The result of this analysis definitively indicates a need for additional capacity relief within the study area. Figure 2-2 depicts year 2030 v/c ratios using the expanded area E+C network.

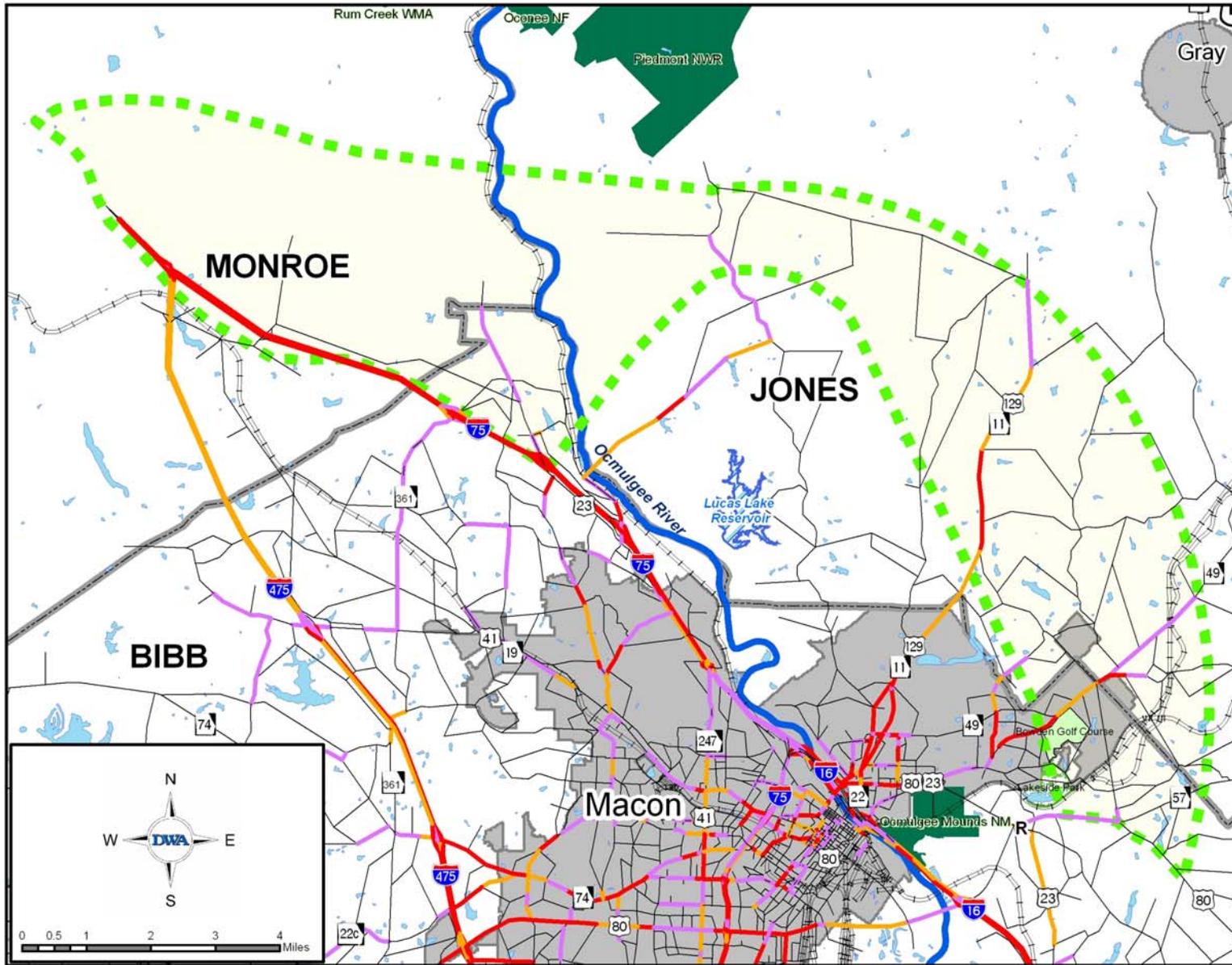
Year 2030 Build (2025 LRTP) Model Results

Because the 2025 MATS Long-Range Transportation Plan (LRTP) network model run includes a significant number of roadway improvements expected to be completed over the next 20 years, v/c ratios for the 2030 LRTP network model run are generally worse than those for 2000 and better than those in the 2030 E+C network model run. In spite of this, the LRTP network was prepared for a 2025 horizon year and is insufficient to handle travel demand in the year 2030. Furthermore, long range transportation plans, consistent with federal planning requirements, generally reflect only those improvements deemed “financially feasible.” Long range transportation plans are also constrained to physical, social, economic, and environmental conditions that preclude the construction of many needed highway projects.

Even though the LRTP projects succeed in mitigating some anticipated high traffic volumes in the study area, high v/c ratios persist along US 129 and in downtown Macon. The results of this scenario also definitively indicate a need for additional capacity relief within the study area. Figure 2-3 depicts year 2030 v/c ratios using the expanded area LRTP network including the Cross County Connector.



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2030 E+C (No Cross County Connector) V/C Ratios

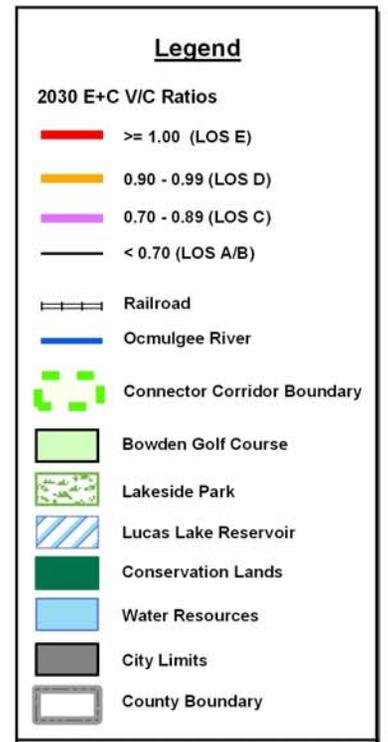
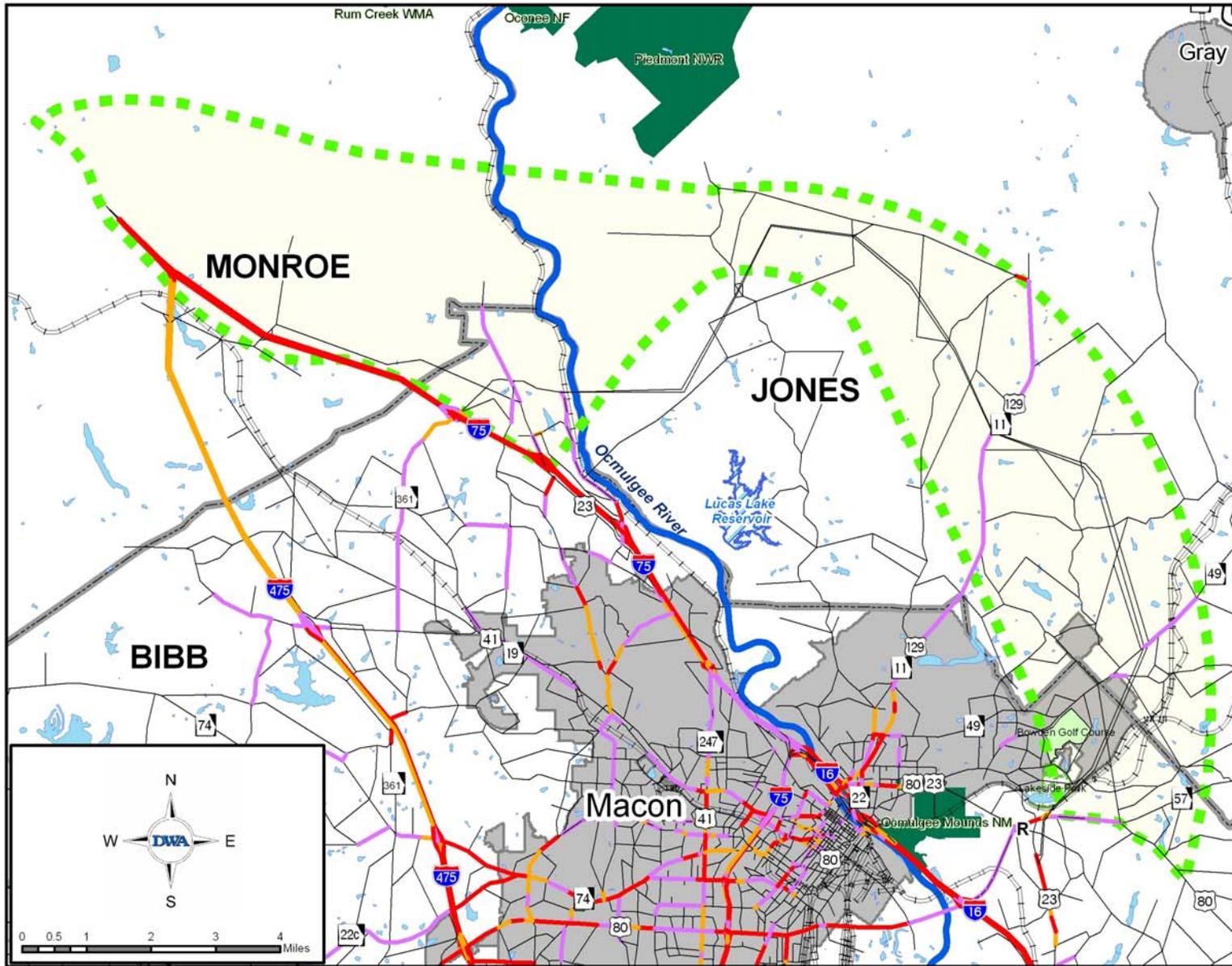


Figure 2-2

Source: Day Wilburn Associates, Inc., U.S. Census (2000), GDOT, and Cambridge Systematics
This map is intended for planning purposes only. Preliminary Draft



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2030 Cross County Connector Build Scenario V/C Ratios

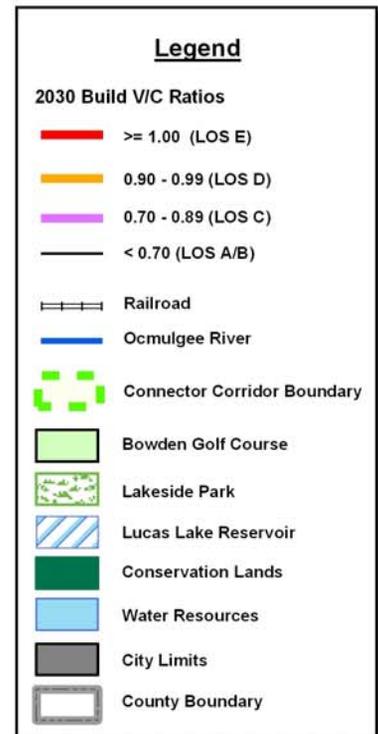


Figure 2-3

Source: Day Wilburn Associates, Inc., U.S. Census (2000), GDOT, and Cambridge Systematics
This map is intended for planning purposes only. Preliminary Draft



Preliminary Analysis of Environmental Issues

Preliminary existing environmental information was collected as part of Phase One in order to identify constraints that affect the consideration of potential planning corridors for the Connector. Existing databases that include information pertaining to environmental resources were checked, including those pertaining to waters of the United States, threatened and endangered species, historic resources, archaeological resources, cemeteries, and public parkland/wildlife management areas, and the data items were compiled in a GIS format. Attempts were made to avoid these resources during development of potential alternatives. Details of the analysis are included in the Phase One Report (Appendix B).

Identification of Study Area Transportation Deficiencies

As a result of public involvement activities, interviews with local officials, and an update of the area's travel demand model, a general description of study area transportation deficiencies was developed. A general listing of identified transportation deficiencies includes the limited number of Ocmulgee River crossings, as well as congestion on Gray Highway, along I-16 between I-75 and east Macon, and within downtown Macon. In addition to being commented on by the public, the deficiencies in capacity and accessibility were also identified in the MATS travel demand model. A detailed study was conducted to document the deficiencies and define the need and purpose for the proposed connector.

Results of Phase One Analysis

Phase One of the study determined that the need exists to provide local and through traffic with an improved east-west connector to reduce traffic on US 129, I-16, and other collectors and local streets in the south Jones/Macon area. Every state route in the study area, including SR 49, US 129, US 29, US 23, and SR 11, is forecast to have an unacceptable level of service by 2030. In addition, without the proposed new location connector, area roadways are likely to continue experiencing accident rates in excess of the statewide average (307 per 100 million vehicle miles traveled).

The purposes of the proposed connector are to reduce traffic on US 129 and other area state routes, provide local and through traffic with a facility that adequately serves current and future travel demand, and provide the traveling public a safer driving environment. The proposed Connector would accomplish these purposes by providing an effective transportation corridor from I-75 north of Macon to US 80 east of Macon, circumventing the congested I-75/I-16 interchange and downtown Macon area facilities. Construction of the Connector will enhance the safety of the system, facilitate the movement of freight, and improve traffic safety and operations in Macon and south Jones County.



3 Phase Two – Analysis and Selection of Preferred Alternative

Phase One determined that a planning corridor was needed to reduce congestion and increase safety in the study area. Phase Two work focused on developing options including a preferred option for providing the planning corridor.

Phase Two Overview

Phase Two of the study consisted of the following five tasks:

Evaluation and Review of Phase One Results

The study team, working with the Advisory Panel, developed evaluation factors to identify and prioritize future improvements. Included in this task was to conduct a cost/benefit analysis.

The following evaluation factors were proposed and discussed with the Advisory Panel at its meeting on June 7, 2004:

- Capacity needs/congestion relief
- Safety concerns
- Cost considerations
- Economic development
- Community impacts
- Environmental impacts
- Maintenance and preservation of the system

Each factor was considered in aligning alternative corridors through the study area.

The following design criteria were proposed and discussed with the Advisory Panel at its meeting on June 7, 2004.

- Design speed
- Median types
- Shoulder types
- Access control
- Clear zone
- Maximum grades
- Minimum lane width
- Maximum super elevation
- Maximum curvatures

Each criterion was considered in aligning alternative corridors through the study area. A detailed description of the design criteria is provided in Table 3-1.



**Table 3-1
Design Criteria**

Design Speeds	45	55	65
Median Types	Raised 20'-24' or Depressed 44'-48'	Depressed 44'-48'	Depressed 44'-48'
Shoulder Types	Urban Curb/Gutter with Sidewalk (16') or Rural-Grass	Rural-Grass	Rural-Grass
Access Control	Controlled Access/Permit or Limited Access	Controlled Access/Permit or Limited Access	Limited Access Recommended
Clear Zone	24'-28'	26'-32'	30'-34'
Maximum Grades	Urban-7% Rural-6%	Urban-6% Rural-5%	Rural 4%
Minimum Lane Width	12'	12'	12'
Maximum Super Elevation	6% or 8%	8%	8%
Maximum Curvature	6% SE-8°-30' 8% SE-9°-30'	5°-45'	3°-45'

Planning Corridor Development

Incorporating input from the public and the Advisory Panel, the study team reviewed study goals/objectives and developed alternative routes. Guidance and input from the public, study partners, and stakeholders was essential to accomplish this task. The team prepared a comparative evaluation of alternatives under consideration.

The proposed Connector would function as a major arterial accommodating through traffic from I-75 in southeast Monroe County to east Bibb County, as well as collecting and distributing trips within south Jones County and City of Macon areas. The Connector's northeastern terminus could tie into the six-lane section of I-75 in southeast Monroe County, while the southern terminus could intersect with the two-lane section of US 80 in eastern Bibb County, providing a continuous roadway between southeast Monroe and east Bibb Counties.

The purposes of the proposed Connector are to reduce traffic on US 129 and other routes in the area, provide local and through traffic with a facility that adequately serves current and future travel demand, and provide the traveling public a safer driving environment. The proposed Connector would accomplish these purposes by providing an effective transportation corridor from I-75 north of Macon to US 80 east of Macon, circumventing the congested I-75/I-16 interchange and downtown Macon area facilities. Construction of the Connector will enhance the safety of the system, facilitate the movement of freight, and improve traffic safety and operations in Macon and south Jones County.

The selected alternative corridor is a 19-mile-long, four-lane alignment with a 44-foot-wide grass median. Design and construction costs estimated to implement the Connector total



approximately \$62.7 million. Estimated right-of-way costs total \$6.7 million, assuming approximately 670 acres (250 feet of right-of-way) at a cost of \$10,000 per acre. Significant bridges over the Ocmulgee River and Walnut Creek increase the cost estimate by approximately \$1 million. The cost for the entire project is estimated to total \$70.4 million in current dollars. Benefits to implementing the Connector include reduced congestion, increased safety, and greater connectivity for the traveling public.

To complete the study, planning corridor alternatives were selected based on evaluation factors and design criteria. Selection processes were developed after discussion with GDOT staff and Advisory Panel members. Results of the process were provided for public input at public information meetings on July 19 and November 16, 2004, in southern Jones County.

Public Involvement

Opportunities for public involvement were provided through the study process. Outreach activities and results are summarized in the public involvement appendix.

Recommendations Development

The study team documented recommendations for a preferred alternative and other related transportation improvements. The need and purpose statement from Phase One was reviewed as part of Phase Two but no changes were appropriate.

Technical Report

The process, study findings, analysis results, and supporting information were documented in a technical report. The information was formatted in a manner that can be easily used for project development if project development commences.

The result of Phase Two was the analysis of alternatives and selection of a preferred planning corridor. A cost benefit analysis was also conducted.

Capacity Needs/Congestion Relief

As described in previous sections, the MATS model was modified to incorporate the entire study area. The results of modeling future traffic volumes of various alignments show that the corridor provides significant relief for US 129. Minimal relief is also provided to the interchange of I-75 and I-16.

Safety Concerns

The additional capacity and congestion relief offered by the corridor will improve level of service and increase safety.

Cost Considerations

Corridors that have the fewest bridges and require the least right-of-way acquisition costs are identified as preferred.



Economic Development

Jones County has designated its southern half as prime development property. The preferred planning corridor is located in an area being marketed by the County for economic development purposes.

Community Impact

Environmental justice communities are concentrated in the southeastern section of the study area. As a result, the east Macon portion of the preferred planning corridor was specifically selected to limit the impact on the existing community.

Environmental Impact

Building on the Phase One environmental research, the Phase Two environmental scan identified additional constraints that assisted in locating alternative planning corridors. A further discussion of the environmental impact of each potential corridor is included later in this section.

Identification of Potential Planning Corridors

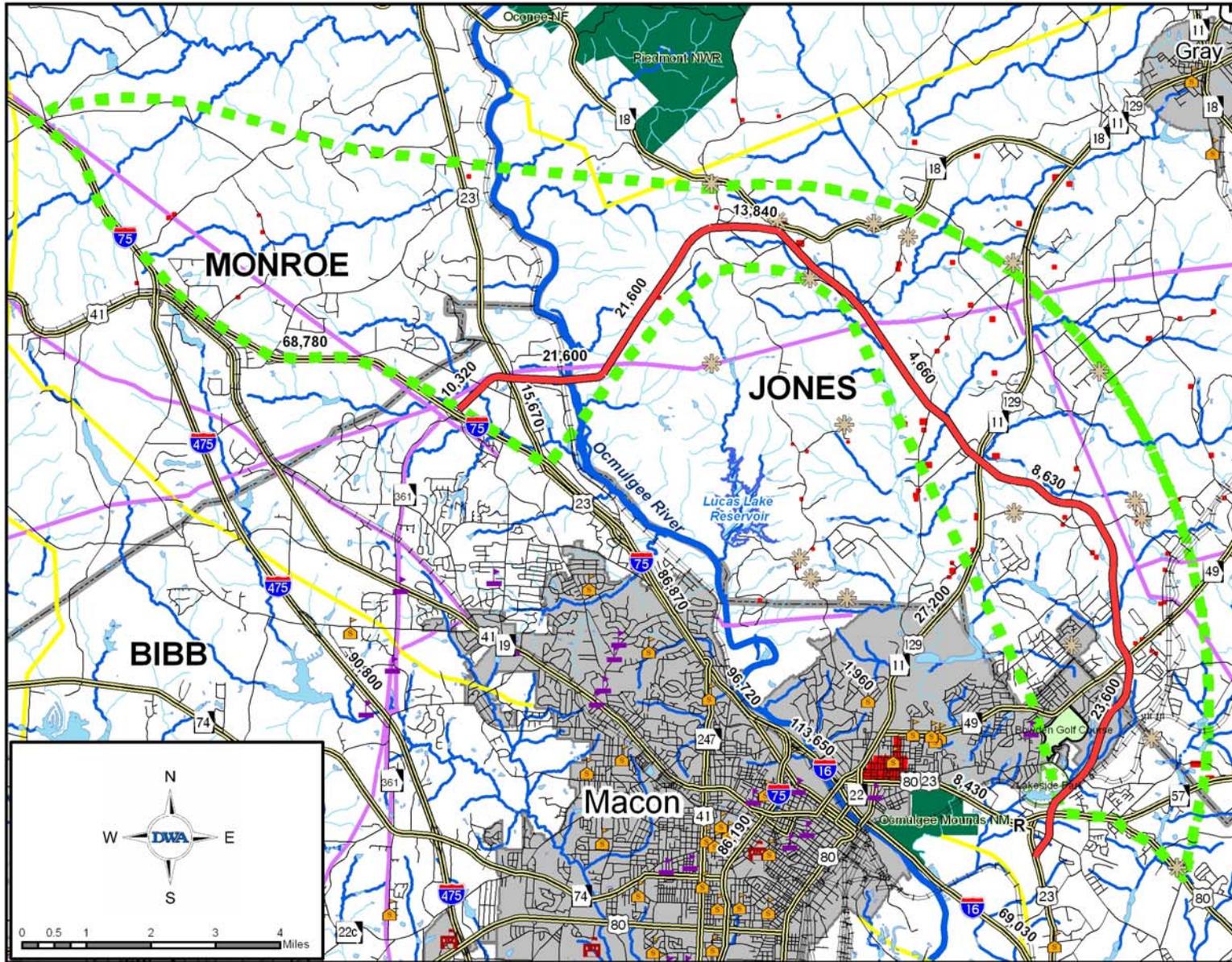
Based on the evaluation factors and design criteria, 18 potential corridor segments were identified (from 25 potential segments) within the study area (Figure 3-1). These segments were assembled to form eleven different connector planning corridor alternatives, illustrated in Appendix C. Maps show the location of each alternative along with community and environmental features.

Environmental Assessment

Preliminary existing environmental information was collected as part of Phase One (Task 1) and the results were summarized in the Phase One report (Appendix B). The Phase Two environmental assessment included a constraint analysis of alternative planning corridors.



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Recommended Planning Corridor

With 2030 Annual Average Daily Traffic (AADT)

Legend

- Public Schools
 - Private Schools
 - Colleges / Universities
 - Cemeteries
 - Planning Corridor 11 (Preferred)
 - Pipeline
 - Transmission Line
- Road Network
- Major Roads
 - County and Local Roads
 - Railroad
 - Perennial Rivers
 - Tributary Streams
 - Connector Corridor Boundary
 - Historic Sites
 - Bowden Golf Course
 - Lakeside Park
 - Lucas Lake Reservoir
 - Conservation Lands
 - Water Resources
 - City Limits
 - County Boundary

Figure 3-1

Source: Day Wilburn Associates, Inc., U.S. Census (2000), GDOT, State Base Map of Georgia (2000), GCRB, Edwards Penan, and Cambridge Systematics
This map is intended for planning purposes only. Preliminary Draft



Evaluation of Alternative Segments

Table 3-2 quantifies the number of sensitive environmental constraints that could potentially be affected by the alternative planning corridors. The matrix identifies environmental constraints located within or in close proximity to the 500-foot wide alternative segments defined within the study area. These various segments can be compared against each other to determine where the potential for environmental impacts are the greatest.

**Table 3-2
Environmental Constraints by Planning Corridor Segment**

Segment	Wetlands	Streams	Historic Sites	Cemeteries	Archeology
A - F	1	1		1	
B - F	0	1	2		
F - G	0	3			
C - G	0	2			
G - I	1	4			
I - H	0	0	1		
D - H	2	1			
E - H	5	2			
I - J	0	0		1	
J - K	1	4		1	
J - L	0	6	4		
L - M	0	0			
K - R	2	2		1	
K - L	0	0			
M - N	2	3			
M - P	2	3			
N - O	0	1			
O - Q	0	0			
R - Q	0	0			

Summary of Findings

All of the alternative segments avoid the most obvious environmental constraints located in the project area, including the Piedmont National Wildlife Refuge to the north of the study area and the Town Creek Reservoir and its surrounding drainage basin to the south of the study area. In addition, Ocmulgee Mounds National Monument and the most densely populated areas of Macon have been avoided.

All project alternatives would require a new bridge crossing of the Ocmulgee River. Alternatives that would begin at I-75 at points A and B would likely have a greater magnitude of environmental impacts simply because these alternatives would be approximately eight miles longer than alternatives that would begin at I-75 at points C or E. Beyond that, the overall length



of each alternative is similar. Additionally, segments K – R and N – O may present more difficulty than segments M – N or M – P because they are closer to the eastern city limits of Macon and appear to traverse more densely populated areas.

Conclusion

This evaluation is based on the data gathered in Phase One of the study, which did not include a field verification of environmental constraints. While an evaluation matrix of this type is useful for helping to identify a preferred alternative, it is limited because the findings have not been verified in the field. It is very likely that additional environmental constraints would be identified within all of the alternative segments. Specific roadway alignments can be shifted within the 500-foot wide corridors to avoid environmental considerations providing some flexibility.

Evaluation of Alternatives

The 11 planning corridor alternatives identified for consideration were evaluated based on both qualitative and quantitative criteria. Table 3-3 illustrates connector data and decision matrices for both qualitative and quantitative criteria. For each alternative being considered, a desirability index was assigned based on performance against each evaluation criterion. Scores ranging from 1 (lowest desirability) to 5 (highest desirability) were computed for qualitative and quantitative measures. Aside from the impact on traffic safety, which was determined to be equivalent for all alternatives, qualitative and quantitative measures were considered.

- **Congestion Relief.** The updated and expanded travel demand model was executed for each potential planning corridor. The runs included all projects in the MATS 2025 LRTP. Table 3-3 displays the forecast 2030 average daily traffic at links west and east of US 129.
- **Potential for Economic Development.** Higher desirability scores were assigned to those alternatives that best coincide with targeted commercial development areas (as specified by county and local leaders).
- **Minimization of Community Impacts.** Higher desirability scores were assigned alternatives which minimize disruption to existing neighborhoods and community facilities, in particular the environmental justice communities concentrated in the southeastern section of the study area.
- **Minimization of Environmental Impacts.** Higher desirability scores were assigned to alternatives which minimized impact to environmental features as determined by the preliminary environmental assessment (see Table 3-2). The types of environmental features considered included wetlands, streams, historic sites, cemeteries, and archaeological sites.
- **Minimization of Cost per Mile.** Estimated costs were computed for each alternative based on several factors, such as right-of-way width, estimated per-acre right-of-way cost, and cost associated with the necessary interchange between the Connector and I-75. These cost estimates were computed on a per-mile basis, and desirability scores were assigned to each alternative based on the cost-per-mile figure.

**Table 3-3.
Planning Corridors Comparison Matrix**

Planning Corridors	Connector Data					Decision Matrix - Qualitative Measures			Decision Matrix - Quantitative Measures			Total Score
	Length (miles)	Cost (millions)	2030 Connector Traffic		2030 US 129 Traffic** and Change from No-Build	Potential for Economic Development	Minimization of Community Impacts	Minimization of Environmental Impacts	Minimization of Cost per Mile	Congestion Relief at Selected Network Links	Reduction of Regional VHT	
			West of US 129	East of US 129								
Planning Corridor 1	21.8	97.68	17,490	26,710	24,400 -34.2%	5	1	1	1	4	3	15
Planning Corridor 2	23	75.34	17,250	26,620	24,730 -33.3%	5	1	3	5	4	4	22
Planning Corridor 3	24.4	103.68	17,920	14,470	29,410 -20.7%	5	5	1	2	2	2	17
Planning Corridor 4	24.3	103.41	17,900	12,360	33,430 -9.8%	5	5	3	2	1	1	17
Planning Corridor 5	24.2	103.13	17,220	26,760	28,720 -22.5%	5	3	3	2	3	3	19
Planning Corridor 6	16.7	65.61	19,080	24,170	24,080 -35.1%	3	1	3	3	5	4	19
Planning Corridor 7	15.7	63.19	21,250	23,950	22,900 -38.2%	3	1	3	4	5	5	21
Planning Corridor 8	15.9	63.77	24,340	23,740	22,260 -40.0%	3	1	1	3	5	5	18
Planning Corridor 9	22	98.73	17,430	25,890	24,200 -34.7%	5	1	1	1	4	3	15
Planning Corridor 10	18.3	69.36	15,420	17,940	30,290 -18.3%	3	3	3	4	2	2	17
Planning Corridor 11	19.1	70.40	21,600	23,600	26,180 -29.4%	3	3	3	4	3	5	21
Explanation of Scoring System*:						5: Highest Potential for Development 1: Lowest Potential	5: Reduced Impact on Community 1: High Impact on Community	5: Reduced Impact on Environment 1: High Impact on Environment	5: Lowest Cost per Mile 1: Highest Cost per Mile	5: High Degree of Congestion Relief 1: Low Degree of Congestion Relief	5: Highest Reduction in VHT 1: Lowest Reduction	

* Desirability scores range from 1 (lowest desirability) to 5 (highest desirability). Maximum total score is 30

** US 129 at R.L. Wheeler Rd. (South of the intersection with the proposed connector)

Note: Each Alternative is mapped in Figure 3-1



- **Congestion Relief at Four Network Links.** Four of the roadway segments and intersections identified in Table 3-3 were determined to be significantly impacted by the construction of the Connector based on comparison between projected 2030 traffic volumes for the various build scenarios and the 2030 volumes for the no-build scenario. These four locations are US 129 south of the Connector, US 23 south of the Connector, the US 80 bridge at the Ocmulgee River, and the US 23 bridge at the Ocmulgee River. Desirability scores were assigned for each alternative based on their performance at these four locations.
- **Reduction of Regional VMT.** In order to gauge the Connector's effect on congestion at a regional level, the reduction in 2030 VMT was considered for each alternative, using the forecast 2030 no-build VMT as the baseline. The Connector was found to reduce VMT with each alternative, with the greatest reduction (2.6 percent) observed for Alternative 10. Desirability scores were assigned to each alternative based on the magnitude of the reduction of regional VMT (Table 3-3).

Quantitative criteria were also considered as part of the evaluation of alternatives. These criteria and methodology were considered in the comparison of planning corridor alternatives.

Selection of Preferred Planning Corridor

Based on technical analysis, input from the Advisory Panel (Appendix A) and community input, Planning Corridor 11 is recommended for further, more detailed analysis and preliminary design, which typically occurs during the Preliminary Engineering phase of project development. In order for preliminary engineering to proceed, this project must be included in the Macon Area Transportation Study (MATS) Long Range Transportation Plan with funding for preliminary engineering set up in the Transportation Improvement Program as priorities and funding allow. Planning Corridor 11 scores high on congestion relief by reducing traffic on US 129 by 26,180 (29.4 percent) by 2030. It also scores high on reduction of regional VHT. Its impact on the community, environment, and economic development are minimal and its estimated cost is one of the lowest based on its recommended length.

To further confirm the value of the project as a whole and the selection of Alternative 11 as the recommended planning corridor, a cost benefit analysis was conducted. The results of the cost benefit analysis are included in Section 4.

Public Involvement

On November 16, 2004, a public information meeting was held at Jones County High School in Gray, Georgia. Over 280 citizens attended (see public outreach summary in Appendix A). The citizens were concerned with preserving the rural character of Jones County and asked that other alternatives to the recommended planning corridor be explored to relieve future congestion.

As a result of the significant public response, the following actions are suggested should the project ultimately progress to the next project development step:

- Re-evaluate upgrading existing facilities to provide needed east-west access.
- Begin the planning corridor at its intersection with SR 18 and end the corridor at its terminus in East Macon. This option would have to be accompanied by appropriate



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improvements to SR 18. The study recommends and supports Alternative 11 in its entirety from the northwest terminus on I-75 to the southeast terminus in East Macon on US 80.

- Consider re-evaluation by local jurisdictions of their land use plans to preserve the rural character of Jones County and alter the current pace of development. Amended growth patterns could reduce the need for the planning corridor.



4 Cost-Benefit Analysis

A need and purpose for the Connector was established in Phase One of the study. To further analyze the Connector, a user benefit analysis (or benefit/cost ratio) was implemented to evaluate alternative planning corridors. This analysis is a tool used to assist in determining project justification.

User benefits are enjoyed by travelers who are directly affected by a transportation improvement. They are determined by a reduction in three different types of costs: travel time, operating, and accident. Simply speaking, this is the difference between the “price” that the driver pays with and without the transportation improvement.

A transportation improvement will also impact people other than the direct users of the facility. These effects are called indirect, or non-user, benefits. Examples include environmental impacts, effects on urban growth, and economic impacts. While each is significant and should be considered in the decision-making process, they are difficult to quantify in terms of benefits and costs and are therefore not considered in the user benefit analysis.

User Benefits

The process for estimating user benefits is relatively simple. Each alternative for a transportation improvement is evaluated against the no-build scenario. The difference in user costs divided by the estimated construction cost for the project will be the benefit/cost ratio. Benefit/cost ratios should typically be higher than 1.00 to justify overall benefit to facility users.

Evaluation of the change in travel times in the existing network as a result of the transportation improvement is one of the primary components of user costs and benefits. In order to minimize the impact of the transportation improvement, the study team chose the road whose volumes were most impacted, US 129. Peak hour traffic volume and peak hour average speed were estimated using the expanded and updated MATS model. Other assumptions included hourly wages, vehicle occupancy and truck percentage.

User Costs

Vehicle operating and ownership costs are also primary components of user costs and benefits. Again, the design team chose to analyze US 129. There are many other roadways within the existing network that will be affected by the transportation improvement, but none as significantly as US 129. The primary variable that changed when analyzing operating/ownership costs is peak hour average speed.

Assumptions

Assumptions were required but kept constant for each alternative to minimize their impact. Assumptions used to provide consistent and relative values included:

- Constant truck percentage on US 129 is 8 percent
- Peak hour traffic volume is 10 percent of the daily volume
- First year of operation for improvement is 2014
- Project lifetime of 30 years
- Default hourly wages



- Finance rate of 10 percent
- Fuel cost of \$1.75/gallon
- Vehicle life for cars and trucks (book default value)
- Vehicle cost for cars and trucks (book default value)
- Salvage value (book default value)
- Miles/year for cars and trucks (book default value)
- Truck cargo value (book default value)
- Insurance costs (book default value)

Roadway improvements typically offer safety components that reduce the rate or severity of crashes. Due to the lack of existing and future data, this analysis did not include any user benefits due to a reduction in accident costs.

Conversion

Once user benefits were determined over a peak hour, the final step is to convert and project the benefit to a dollar value over the life of the project. Assumptions required for the conversion and forecast included first year of operation, project lifetime, and finance rate.

Table 4-1 illustrates the value of the preferred alternative, Alternative 11. Two other alternatives (Alternatives 4 and 7), chosen to demonstrate potential maximum costs and benefits, were subjected to the cost benefit analysis to provide a base of comparison. Not only did it score above the minimum required to justify benefit (1.00), it more than doubled the score of Alternative 4 which was also evaluated. User benefits exceeded costs by almost \$159 million over the 30-year life of the facility.

**Table 4-1
Cost Benefit Analysis**

	Alternative 4	Alternative 7	Alternative 11
User Benefits	\$142,258,203	\$230,309,023	\$229,320,080
Total Project Cost	\$96,710,000	\$64,670,000	\$70,400,000
Benefit/Cost Ratio	1.47	3.56	3.26

A corridor is needed to provide a transportation network that meets future growth with an acceptable level of service. Planning Corridor 11 has a high benefit to cost ratio (3.26) and meets future demand while minimizing impact to the community and environment. The recommended facility on a 19 mile long corridor will have four lanes with a 44 foot wide grass median in rural sections and a 20 foot raised median in urban sections. The number of lanes will be further evaluated during preliminary engineering if the project is considered further. There is potential for as few as two lanes, but no more than four lanes. The total project cost is approximately \$70,400,000 (approximately \$6 million for design; \$6.7 million for right-of-way acquisition; and \$1 million for bridges).