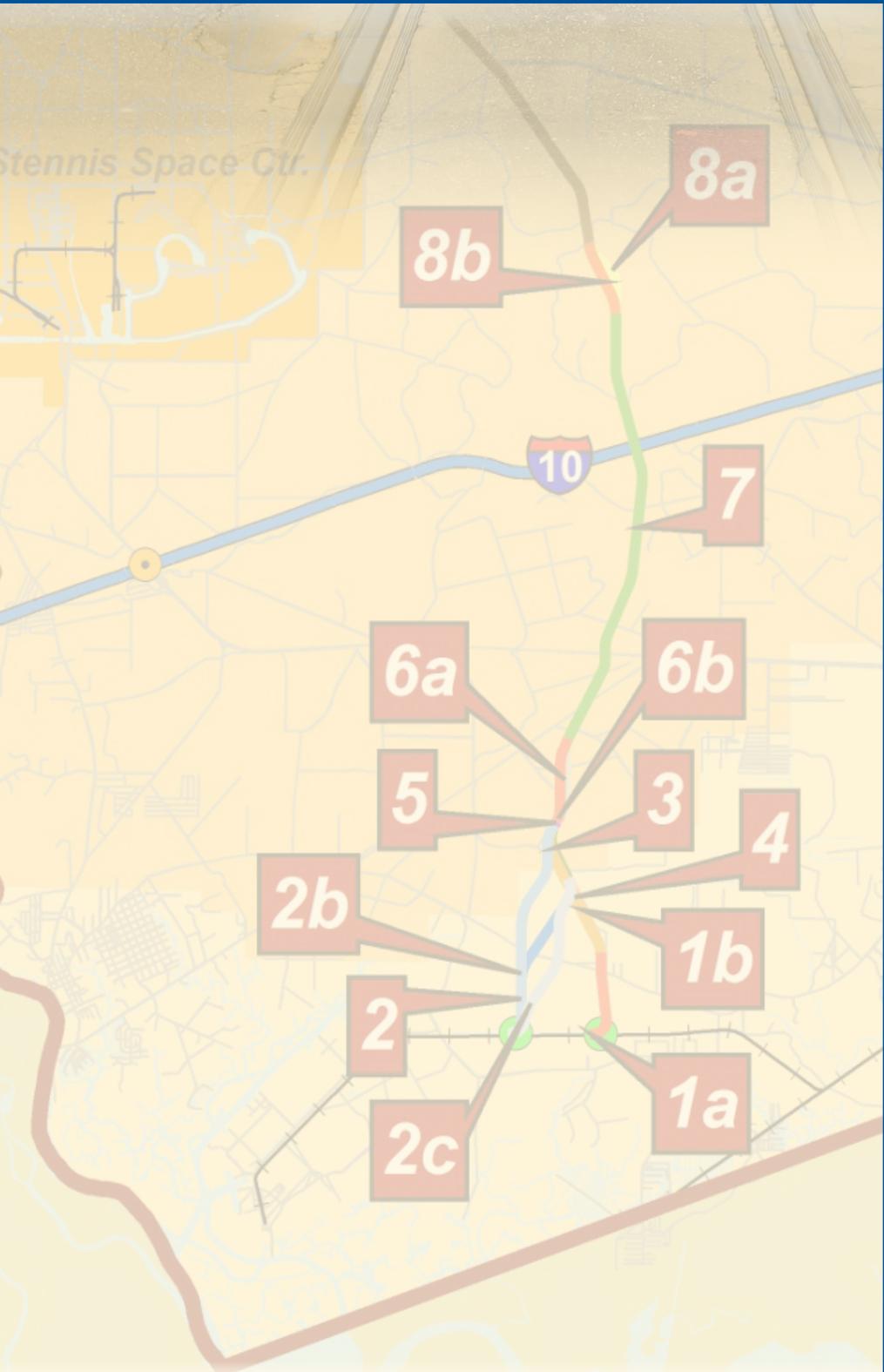




PORT BIENVILLE

Rail Feasibility Study



Presented to:

Mississippi Department of Transportation

In collaboration with:

Federal Railroad Administration

Hancock County Port and Harbor Commission

September 19, 2013



in association with HDR

Table of Contents

Executive Summary and Next Steps.....	1
Introduction.....	2
Study Area.....	2
Purpose.....	3
Regional Needs, Goals and Visions	3
Data Collection.....	4
Economics.....	5
The Business Case for Dual Class 1 Rail Service in Hancock County.....	7
Business Competitiveness and Dual Rail Infrastructure	8
The Business Case for Hancock County Businesses.....	8
Existing and Emerging Industries and Rail Transportation Dependence in Hancock County	10
Emerging Growth Industries in Hancock County.....	10
Transportation Dependence and Hancock County’s Economy.....	12
Industrial and Business Site Evaluation Factors	13
Alternative Analysis	15
Methodology.....	15
Generation of Conceptual Alternatives.....	16
Engineered Alignments	17
Reasonable Alternatives.....	17
Agency Coordination and Public Involvement.....	21

Figures

Figure 1 – Port Bienville Study Area	2
Figure 2 - Gulf Coast Multimodal Corridor	11
Figure 3 - Employment by Sector in Hancock County	13
Figure 4 - Base Scenario showing rankings and avoids	16
Figure 5 - Other potential corridors for run S5 to N1.....	17
Figure 6 – Engineered alignments and section numbers	19

Tables

Table 1 - Projected Rail Car Volumes with Dual Class 1 Rail Services	6
Table 2 - Transportation Dependence Rating of Hancock County’s Top Industries	13
Table 3 – Segment Matrix for the Reasonable Alternatives	20

Executive Summary and Next Steps

The Port Bienville Railroad (PBVR), a short line railroad, provides rail services to the businesses in the Port Bienville Industrial Park and connects these rail users to CSX's east-west line along the Gulf Coast. The proposed rail line evaluated in this feasibility study would provide a connection between the PBVR and the Norfolk Southern (NS) rail line near I-59, north of Stennis Space Center. The connection would provide existing businesses access to dual Class I rail service, improving transit times and reliability of deliveries to customers. Dual Class I rail access would enable Hancock and Pearl River Counties to attract new industries to this region that require this level of rail services, creating new quality jobs and investment to help this area to continue to recover from recent disasters that have significantly affected their economies.

With the availability of dual Class I rail services, the businesses served by the proposed rail line are projected to generate 41,951 rail cars annually. The largest rail car user is currently trucking fracking sands mined in Hancock County to a drying facility in Pearl River County. The proposed rail line would allow this company to move a significant volume of their materials by rail rather than by truck, and could facilitate an expansion at this facility, creating additional jobs and investment in Hancock and Pearl River Counties.

During the alternative analyses several corridors centrally located within the study area emerged as the least costly and least impacting. These corridors were evaluated by impacts to both the human and natural environments. All of the Reasonable Alternatives shared a common central corridor. However, two distinct corridors on the north end of the project and several corridors on the southern end were identified. To further define the Reasonable Alternatives, the study team divided the advanced corridors into 17 segments and engineered rail alignments centrally within each corridor. These segments represent a possible combination of 40 potential corridors. Cost estimates were developed for each segment. At this stage in the project, the alignments are considered conceptual and the estimates are preliminary. The total construction cost for the new PBVR was estimated between \$86.8 million and \$104.5 million (in 2013 dollars) depending on the combination of segments chosen.

Given the business case for dual Class I rail services, the demands of the existing and emerging business clusters in Hancock and Pearl River Counties, the future benefits to Stennis Space Center, the existing industrial land inventory, and the workforce and transportation assets supporting this region, the construction of this new rail line is strongly supported. Based on the feasibility of the project documented herein and in the supporting technical documents, it is recommended that the project proceed to Phase II of this study. Completion of Phase II will better position the project for access to federal construction funds. The scope of services previously developed for Phase II includes environmental studies and documentation, as well as preliminary design and other supporting efforts for development of the proposed railroad. The level of detail for the environmental studies to be undertaken should be determined at this time through consultation with Federal Railroad Administration (FRA), Mississippi Department of Transportation (MDOT) and the Hancock County Port and Harbor Commission (HCPHC).

Introduction

The Mississippi Department of Transportation (MDOT), in conjunction with Federal Rail Administration (FRA) and the Hancock County Port and Harbor Commission (HCPHC), has prepared this Feasibility Study for the location of a new railroad line to connect the Port Bienville Short Line Railroad, located at the Port Bienville Industrial Park, Hancock County, with the Norfolk Southern Railroad (NS) in the vicinity of Nicholson in Pearl River County. Connections to the John C. Stennis Space Center (SSC) and the Stennis International Airport were also evaluated. The Port Bienville Railroad (PBVR) would link to both CSX and NS main lines in Hancock County providing access to dual Class 1 rail service.

Study Area

The study area encompasses a portion of Hancock and Pearl River Counties. The study area is generally bounded by (the communities of) Nicholson and Kiln to the north, Port Bienville to the south, the Pearl River to the west and Stennis International Airport and SR 603/43 to the east, representing a study area of approximately 180 square miles (see Figure 1).

The study area is bisected by Interstate 10, while Interstate 59 passes through a small portion of the study area in the north. Other significant features within the study area include wetlands, wetland mitigation banks, forests, mines, SSC, and a 125,000-acre acoustical buffer zone surrounding the SSC. This acoustical buffer makes up the majority of the study area. The two major facilities and key economic factors within the study area are Port Bienville Industrial Park and NASA's SSC.

Port Bienville Industrial Park - Port Bienville is a shallow draft (12 ft.) barge port in southwest Mississippi, located off the Intracoastal Waterway near mile marker 24 on Mulletto Bayou in Hancock County. The Port Bienville property encompasses approximately 3,600 acres, including an industrial park and the port facility. In 2008, the market area had a total population of 219,000 residents, with approximately 140,000 employees, and a gross regional product (GRP) of \$9.7 billion.¹

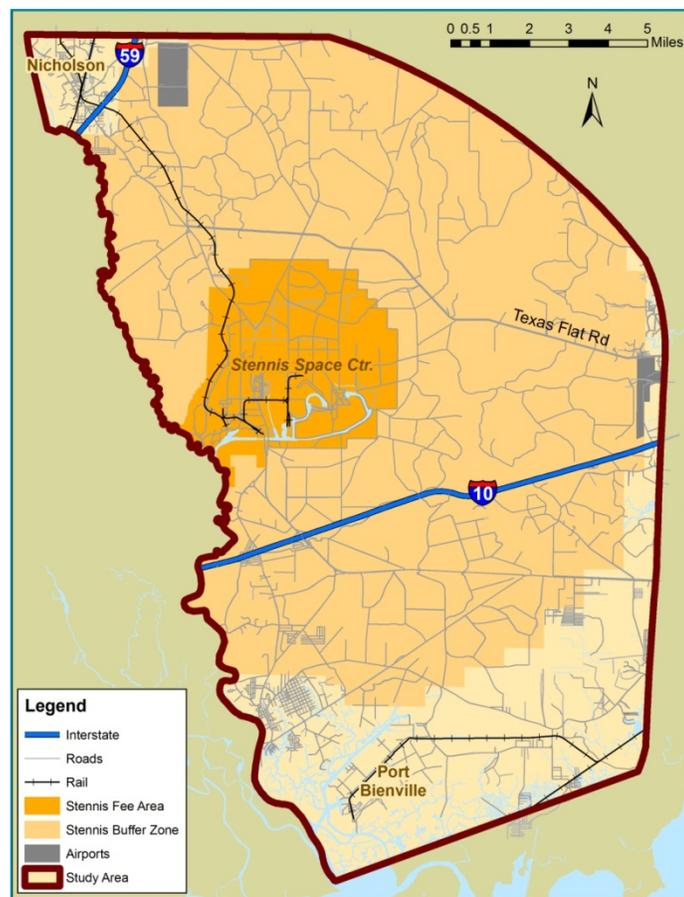


Figure 1 – Port Bienville Study Area.

¹ Mississippi's Unified Long-Range Transportation Infrastructure Plan, pg 7

John C. Stennis Space Center - For more than four decades, the John C. Stennis Space Center (SSC) in Hancock County has served as NASA's primary rocket propulsion testing ground. Today, the center provides propulsion test services for NASA and the Department of Defense and the private sector. Stennis is home to NASA's Rocket Propulsion Test Program, which manages all of the agency's propulsion test facilities. State-of-the-art facilities, a seven-and-one-half-mile canal waterway system, and the 125,000-acre acoustical buffer zone that surrounds SSC enables delivery and testing of large-scale rocket engines and components.² Development within the acoustical buffer zone is governed by development restrictions purchased by the Federal Government. Some of the land within the buffer zone was purchased by the government but the majority of this property remains in private ownership subject to the development restrictions that do not allow any inhabitable buildings within the buffer area.

Approximately 5,000 employees work at the Stennis Space Center. Over the years, the SSC has evolved into a multidisciplinary facility that includes NASA research facilities and other resident agencies engaged in space and environmental programs and national defense, including the U.S. Navy's world-class oceanographic research community.³

Purpose

The purpose of the study is to determine the feasibility of constructing and operating a new rail line to connect the Port Bienville Short Line Railroad with the NS mainline in Nichols. This phase of the study includes the development of reasonable alternative corridors; identification of the economic benefits and opportunities associated with the proposed project; and the recommendation as to the feasibility of the project and the next steps taken, if appropriate.

There are three guiding principles (goals) for this project:

- First, any plan to locate the railroad must provide benefits for the Port Bienville Industrial Park, the Railroads, and the counties involved.
- Secondly, the railroad's location corridor must be compatible with the natural and human environment in Hancock and Pearl River Counties.
- Finally, MDOT anticipates a high degree of community and stakeholder involvement and participation throughout the process. The MDOT and the CDM Smith Team will be proactively engaged to ensure effective stakeholder involvement during the course of this study.

This study outlines the processes and criteria used in developing and evaluating the alternative corridors for the PBVR; provides a recommendation of the reasonable alternative corridors to be taken into Phase II of the project; identifies the economic benefits and opportunities; and recommends the next steps.

Regional Needs, Goals and Visions

Hancock and Pearl River Counties in Mississippi have been transformed by the impacts of Hurricane Katrina and the BP oil spill in the Gulf. Over the past few years, these counties have worked to recover from the economic consequences of these disasters. As identified in the various statewide planning documents, numerous infrastructure deficiencies exist within the study area. Some of the deficiencies identified are part of MDOT's long-range plan, 2035 MULTIPLAN, and are discussed below.

² NASA's John C Stennis Space Center Mission Brochure

³ <http://www.nasa.gov/centers/stennis/about/history/history.html>, accessed 1/18/13

Mississippi's waterborne transportation is a critical component to the state's economy. Mississippi ports are located along the Gulf of Mexico, the Mississippi River, and the Tennessee-Tombigbee Waterway (Tem-Tom).⁴ These ports connect the State to the nation's marine network and international trading lanes. By doing so, waterborne transportation is a critical component to Mississippi industries that ship and receive goods in today's global economy.⁵

The 2035 MULTIPLAN identifies planned improvements outlined in Port Bienville's 2010 Master Plan Update. Improvements included the development of a new rail connector from Port Bienville Railroad and NS near Picayune, Mississippi, provide a connection to Palmer Crossing and CN.⁶

Port Bienville is a shallow draft barge port and is one of four ports serving Mississippi's Gulf Coast. The port is located with the Port Bienville Industrial Park, a 3,600 acre site also served by the Port Bienville Railroad (PBRR) with multimodal connections to support the movement of goods nationally and internationally. PBRR currently provides shippers a connection to CSX, but there is not an existing connection to NS. Access to Norfolk Southern would provide dual Class I rail services improving the timeliness and reliability of deliveries to customers enable businesses served by these facilities to be more competitive in a broader market area. This additional rail connection would also be invaluable in the event of other natural disasters, enabling businesses and CSX to move equipment away from an impending disaster area, allowing for more rapid recovery if a disaster did occur. The Port of Gulfport is a deep-water port that serves container ships and barges. This Port has access to one Class I railroad and is planning improvements to rail to allow for increased container shipments. With the expansion of the Panama Canal in 2014, it is anticipated that the capacity of the Canal will more than double, impacting the amount of cargo and related logistics for shipments to Mississippi along the Gulf Coast.⁷ If barges could be utilized to move some goods from Gulfport to Port Bienville this may allow Gulfport to accommodate additional cargo and deliveries.

Data Collection

In order to create a complete picture of the project area, it was necessary to compile a geographic information system (GIS) data for the study area in the following categories: environmental, cultural, historical, and infrastructure. The majority of data was downloaded from the Mississippi Automated Resource Information System (MARIS) website (<http://www.maris.state.ms.us/>).

Historical data was obtained from the Mississippi Department of Archives and History (MDAH) through the Department's website. Because the study area contains the SCC, it was necessary to submit a Freedom of Information Act (FOIA) request to obtain GIS data for areas inside the SCC complex boundaries. Current aerial photography for the study area was provided by MDOT.

The source water protection areas (SWPAs) data was obtained through a direct request from the Mississippi Department of Environmental Quality (MDEQ). This data is more accurate and current than the source water data available from the MARIS website.

⁴ Mississippi's Unified Long-Range Transportation Infrastructure Plan, Final Report May 2011, MDOT, page 9

⁵ Mississippi's Unified Long-Range Transportation Infrastructure Plan, Final Report May 2011, MDOT, page 11

⁶ Mississippi's Unified Long-Range Transportation Infrastructure Plan, Final Report May 2011, MDOT, Appendix H, page 10

⁷ Mississippi's Unified Long-Range Transportation Infrastructure Plan, Final Report May 2011, MDOT, Appendix H, page 10

Data for the existing wetland mitigation banks was compiled from three sources: the U.S. Army Corps of Engineers (USACE), MARIS, and Wetlands Solutions LLC. The USACE also provided data for proposed wetland mitigation banks.

With the exception of the mines layer, all of the GIS data were preexisting. Although there are a significant number of mines in the study area, there was no readily available GIS data layer showing their locations. The only available mine information was a list of mine locations containing township and range information obtained from the MDEQ. By using the list of mines, a township and range layer, a parcel layer and aerial photography, a new mines layer was created.

In addition to the GIS data and mapping, interviews were conducted with the owners or plant managers of 18 businesses in Hancock County, as well as several business leaders and business support organizations in Hancock and Pearl River Counties in Mississippi. These interviews were conducted to understand the region's economic development assets and opportunities, clarify local economic conditions from the business' perspective, and gain insight into transportation and supply chain issues, especially as they relate to the rail improvements proposed for Port Bienville.

Economics

Port Bienville Industrial Park and Stennis Space Center (SSC) have played a pivotal role in the recovery of this region, sustaining employment and attracting new investments and jobs that have helped to rebuild and enhance the area's economy. The proposed project would provide PBVR access to two Class 1 railroads. **Providing dual Class 1 rail access would generate immediate economic and transportation benefits for businesses in the Port Bienville Industrial Park and provide rail access to the Shale Support Services facilities in Hancock and Pearl River Counties trucks 84,000 tons of fracking sands each month from Hancock County to a rail spur in Picayune.** The proposed rail connector would repair and upgrade a portion of an inactive rail line and re-establish rail access to a transload facility previously developed for SSC, providing rail services to other companies in the region. Improvements and repairs to the NS line that previously served SSC could facilitate access to rail transportation for existing research and development businesses within SSC and provide an additional transportation mode that may be important to attract future operations and development.

The economic development benefits and opportunities identified in this study make a compelling argument for pursuing this project. Consider the following:

- Industrial parks providing dual Class 1 rail services are a scarce resource in the U.S. There are significant industrial projects that require access to dual rail service to meet the transportation demands of these operations. This study identified only seven industrial parks or logistics centers in the U.S. that currently provide dual Class I rail services. Access to two Class 1 railroads would position Hancock County and the Port Bienville Industrial Park to be included in this group of "crown jewel" industrial parks.
- Currently there are two industrial prospects evaluating sites in Hancock County. Both prospects require access to dual Class 1 rail service and the decision to proceed with this rail connector project would keep Hancock County in the running for both of these facilities. Based on information from the Mississippi Development Authority, these prospects indicate they would invest slightly over \$650 million in plant and equipment and employ 450 people.
- Existing businesses in the Port Bienville Industrial Park currently utilize 6,261 rail cars annually. Based on interviews with existing companies and information from the Mississippi

Development Authority (MDA), the rail car usage on the Port Bienville Short Line Railroad could increase significantly given access to dual Class 1 railroads (see Table 1 below). The largest projected rail car user, Shale Support Services, is currently trucking fracking sands from Hancock County to its drying facility in Picayune. Additional product lines are planned for this facility in the near future if dual rail access are available, and the Phase II expansion planned for 2014 would move 168,000 tons (1,680 rail cars) of material monthly from the Hancock County facility.

Table 1 - Projected Rail Car Volumes with Dual Class 1 Rail Services

Current Annual Rail Car Volume for Existing Port Bienville Industrial Park Tenants	6,261 rail cars
Future Additional Annual Rail Car Volume for Existing Port Bienville Industrial Park Tenants	3,530 rail cars
Projected Annual Rail Car Volume for MDA Industrial Prospect	12,000 rail cars
Projected Annual Rail Car Volume for Phase II (2014) Shale Support Services facility in Hancock County	20,160 rail cars
Total Projected Annual Rail Car Volumes for Existing Industries and MDA Industrial Prospect	41,951 rail cars

Access to dual Class 1 rail services would result in a significant increase in rail volumes for the PBVR. This increased rail car usage may generate additional revenues that could be utilized to support a portion of the debt service for construction of this rail line. For more information on additional funding resources, please see the Economic Development Benefits and Opportunities Analysis (appended as a reference).

The potential economic benefits and opportunities generated from the construction of the proposed rail line providing dual Class I rail services for Port Bienville include:

- Studies document that facilities with access to more than one rail provider often realize 30 to 45 percent lower rail rates than those paid by captive production facilities. The proposed rail connector could produce transportation savings for businesses in the Port Bienville Industrial Park, SSC, Pearl River Industrial Park, and other businesses with access to this rail line, enabling these companies to be more competitive and increase sales and production, creating additional employment and investment in Hancock County.⁸
- Currently 1,200 people are employed in the Port Bienville Industrial Park. Based on information from the industries in the park, companies anticipate hiring up to 450 new employees over the five-year period following the completion of the proposed PBVR to meet increased customer demand.
- The most significant long-term economic development benefits and opportunities from this rail connector will result from additional employment and new investment in plant and equipment from existing businesses and the location of new companies that require or would benefit from access to dual Class 1 rail services. Hancock County has over 6,640 acres of industrial land available for lease or sale, including 3,600 acres available for lease within the SSC complex. The Hancock County Port and Harbor Commission (HCPHC) has also identified a 1,500-acre site near the existing industrial park for future expansion. Pearl River County has 505 acres of industrial land. With this substantial industrial land inventory, access to dual Class 1 rail services, the highway, airport, and port transportation infrastructure serving this area, Hancock County could

⁸ “Analysis of Freight Rail Rates for Chemical Shippers,” American Chemistry Council

meet the site location requirements of a significant number of the mega-projects and major industrial facilities that have located in the U.S. over the past 10 years.

- Exports to Latin America are increasingly important for businesses, particularly as Central and South America's economic performance "remains the world's second best performing region after Asia."⁹ Businesses in the Port Bienville Industrial Park already export products to a number of Latin American countries and most anticipate greater opportunities for exports to this region within the next two years.

The Business Case for Dual Class 1 Rail Service in Hancock County

For businesses that ship or receive heavy or oversized materials or large quantities of materials, freight rail can be significantly more cost-effective than other transportation modes. While cost factors are important, businesses today increasingly utilize transportation strategies to achieve competitive advantages that enable them to meet delivery requirements because customers want the product when, where, and how they choose. Goods movement is, therefore, an increasingly crucial part of a company's competitiveness strategy. Reliable transportation services and speeds to market have become significant differentiators for many businesses. While cost is always important, other critical factors such as on-time deliveries and reliability, also influence a customer's purchasing choices.

The critical importance and benefits of dual Class 1 rail services in the U.S. can be readily demonstrated by the companies who have made and continue to make investment choices to locate or expand significant industrial facilities, and consider access to dual Class 1 railroads an essential "go/no-go" criteria in their site selection evaluation. Major manufacturing facilities normally require access to two Class 1 railroads in their site location criteria, and the locations these companies ultimately selected met that requirement. Additionally, these types of facilities would employ over a thousand people at higher than average manufacturing wages, and because of the substantial investment in plant and equipment they provide significant contributions to local and state tax revenues.

In addition, rail-served industrial parks are a relatively scarce resource, and industrial land with dual rail services is considered the "crown jewel" in the industrial development profession. An intensive search of available industrial parks or logistics centers found only seven industrial parks or mega-sites in the U.S. that currently provide dual Class 1 rail services. Sites like Port Bienville that can meet the requirements outlined below are extremely scarce:

- Availability of utilities;
- Accessibility to transportation services (at least one four-lane highway);
- Dual Class 1 rail services on site or within reasonable proximity of the site; and
- Property currently zoned for industrial uses and available "for sale" with an established pricing structure.

The Port Bienville Industrial Park provides access to a single Class 1 railroad; sufficient utility infrastructure for water, wastewater, electrical service, natural gas, and broadband; a workforce catchment area with a growing population and skilled labor; and excellent industrial training and educational facilities. The transportation network serving this area provides access to I-10 and I-59; proximity to

⁹ "Latin American Outlook 2012: Recovering the Potential," Moody's Analytics, and "Growth in Latin America Moderating but Resilient," International Monetary Fund: Regional Economic Outlook, October, 2012

Stennis International Airport with an 8,500 foot runway and terminal and air cargo facilities; a barge port with access to the Gulf of Mexico via a navigable channel to the Pearl River; and 8,645 acres of land available for development.¹⁰ As one former MDA official stated, “Port Bienville Industrial Park is the best deal for the dollar of any location around; you’ve got rail, barge, and highway access plus available land.”

Business Competitiveness and Dual Rail Infrastructure

New transportation infrastructure enables businesses to take advantage of additional capacity and modify their logistics and supply chains, improving delivery services to their customers. The proposed PBVR will allow companies in the park to modify supplier networks, which may reduce their costs or enhance the quality of inputs. Access to dual Class 1 rail service can improve transit times, provide alternative response options in the event of natural disasters, increase transportation service levels, and provide access to broader markets and more customers – all of which are critical to a company’s ability to successfully compete in an international marketplace. It is not easy to quantify the benefits that can result from the addition of another Class 1 railroad; however, the information below can provide some insight into the impact of some of these benefits.

A number of Port Bienville businesses are engaged in the polymers and plastics industry, which is considered part of the chemical sector. Chemical producers reported that 73 percent of their facilities with inbound rail transportation are captive to a single railroad. “When these companies compared their captive and non-captive facilities (those facilities with access to more than one railroad provider) and considered comparable volumes, distances, and services, they estimated that on average rail rates for their captive production facilities are 30 percent higher.”¹¹

Higher transportation costs have caused a number of these companies to source raw materials to off-shore locations and to site new production facilities in areas “based on access to competitive rail services”.¹² Transportation costs and service conditions have caused some companies to decide to forego expanding their U.S. facilities, to shut down a line of production, or to close a facility and increase production in another country. The American Chemistry Council estimates that if the premium on chemical shipments was reduced, then the chemical sector could create up to 25,000 additional American jobs with \$1.5 billion in new wages and \$6.8 billion in new economic output.

The Business Case for Hancock County Businesses

In September and October of 2012, interviews were conducted with owners or plant managers of 18 businesses in Hancock County as well as several business leaders and business support organizations in Hancock and Pearl River Counties in Mississippi. These interviews provided an understanding of the region’s economic development assets and opportunities; clarity of local economic conditions from the business’ perspective; and insight into the transportation and supply chain issues, specifically as they relate to the rail improvements proposed for the Port Bienville Industrial Park.

¹⁰ Includes total undeveloped acres owned by HCPHC, existing industrial park tenants, property within the secure fee area at Stennis Space Center, remaining acreage at the Airport Industrial Park, industrial sites in Pearl River County, and a future industrial site adjacent to Port Bienville Industrial Park.

¹¹ “Analysis of Freight Rail Rates for Chemical Shippers,” American Chemistry Council, conducted by Veris Consulting, Inc. 2012

¹² Ibid

Eleven of the businesses surveyed are located at Port Bienville Industrial Park in western Hancock County. The companies at Port Bienville Industrial Park employ over 1,200 people, providing significant job opportunities for the county and the region. Of these eleven, seven are engaged in manufacturing and research and development involving plastics, chemicals, and metals. Several of these companies are owned by major global firms. Three businesses provide logistics services including shipping and warehousing, and one is part of a large nationwide firm that leases and repairs rail cars.

The remaining seven companies or agencies interviewed are located at SSC in Hancock County. SSC is home to a number of federal and state agencies and aerospace and defense contractors. The firms interviewed are involved in research and development, manufacturing, and testing of equipment and devices used in scientific research, defense, aerospace, geospatial technology, and space systems. The companies employ federal and military staff as well as a number of civilian workers from Hancock and surrounding counties. Over 5,500 people work at SSC, and it is a major contributor to the economy of the County and the region.

The businesses interviewed generally viewed Hancock and Pearl River Counties as a desirable location for business. Owners and managers mentioned the area's reasonable taxes, quality community, supportive business environment, and strong workforce as assets. The companies interviewed at the industrial park expect their business employment to remain stable or to increase over the next few years despite recent economic constraints, and a few are considering significantly expanding capacity or adding new product lines if more competitive transportation services become available. All of the manufacturing firms surveyed cited access to multiple modes of transportation as a significant factor in their decision to locate in Hancock County and an ongoing benefit to their existing operations and future expansion plans.

The industrial park is located near Interstate 10 and Interstate 59, with excellent highway access. It is positioned between major seaports in Mobile, AL and New Orleans, LA. Additionally, Port Bienville Industrial Park is accessible by barge via the Pearl River. The airport at Gulfport, MS is within a 45-minute drive and New Orleans International Airport is also within a reasonable distance. The Stennis International Airport provides general aviation services as well as air cargo facilities, and is also utilized by the military for training operations.

A number of companies in the Port Bienville Industrial Park currently export finished goods to international customers in Mexico, Brazil, Peru, Panama, and Canada. Most of the businesses interviewed were aggressively working to expand their customer base and were actively engaged in efforts to export their products to new markets in the coming year. Rail access to ocean ports was critical to these efforts.

SSC does not have rail service at present, although rail was available in the past. The proposed alignment for the proposed PBVR would run east of the SSC facility and access to the proposed PBVR could be extended near the north gate. Three SSC businesses interviewed for this study identified that they are interested in shipping by rail, particularly if transportation rates are competitive for oversized loads.

The PBVR, a short line railroad serving the Port Bienville Industrial Park, offers rail access connecting the industrial park to CSX's east-west line. The PBVR received high marks from the businesses that utilize rail services for their customer focused operation, competitive rates, and dedication to working with companies to facilitate shipments and deliveries including working nights, weekends, and holidays to help businesses meet major customer needs. Port Bienville companies who currently use rail anticipate definite benefits from the proposed rail connector linking the industrial park to the NS rail line. For businesses located at Port Bienville, transit time and reliability of deliveries are critical. Rail shipments bound for Port Bienville now travel to Gentilly Yard in New Orleans via CSX and are then backhauled to Port Bienville. The

additional time and distance adds to the cost of rail transport. The Gentilly Yard can be congested and it is not unusual for cars to take at least seven days to move from the yard in New Orleans back to Port Bienville. Transit times of 28 days have been documented by several businesses in the park.

Severe storms are also a threat all along the Gulf Coast. Companies with facilities at Port Bienville Industrial Park prior to Hurricane Katrina described how the storm impacted their operations. Though damage to buildings was extensive (requiring a complete rebuild in one case), damage to the CSX rail line, which caused the rail line to be out of operation for six months, was a more serious problem. Access to two rail lines could facilitate the movement of critical production equipment away from a pending disaster area, allowing these businesses to get back into production and put people back to work more quickly after a natural disaster.

Existing and Emerging Industries and Rail Transportation Dependence in Hancock County

Innovation is the linchpin for Hancock County's targeted growth sectors and continues to drive a significant number of existing industries as well. The HCPHC identified four major growth sectors for the community: aerospace and aviation, cargo-oriented development, polymers and advanced composite materials, and geospatial technology. In addition to these four target industries, manufacturing and exports continue to represent a significant opportunity for future growth.

Emerging Growth Industries in Hancock County

Aerospace and Aviation

A number of major aerospace and aviation companies are located in Hancock County, including: Rolls Royce, Pratt and Whitney, Raytheon Technical Services, and Lockheed Martin. SSC is also a world leader in rocket and jet engine testing; aerospace research, and satellite propulsion cores. The rockets that powered the Apollo Space Mission were developed and tested at SSC.

Cargo-Oriented Development

The State of Mississippi has identified six strategic freight corridors providing a range of freight infrastructure that best serve the freight needs of the state's existing and emerging industries.¹³ The multimodal freight system that serves the state include the Gulf Coast and river ports, interstates and highways, Class 1 and short line railroads, airports, intermodal facilities, and pipelines. The Gulf Coast Multimodal Corridor shown in Figure 2 below has been designated as one of these six strategic freight corridors. Freight infrastructure in this corridor includes Port Bienville and the Ports of Pascagoula, Biloxi, and Gulfport. Rail and highway infrastructure includes CSX, NS, and KCS rail, as well as several short line railroads, Interstate 10, and U.S. Highways 90 and 49.

¹³ *Mississippi Goods Movement and Trade Study*, prepared for Mississippi Dept. of Transportation, 2010

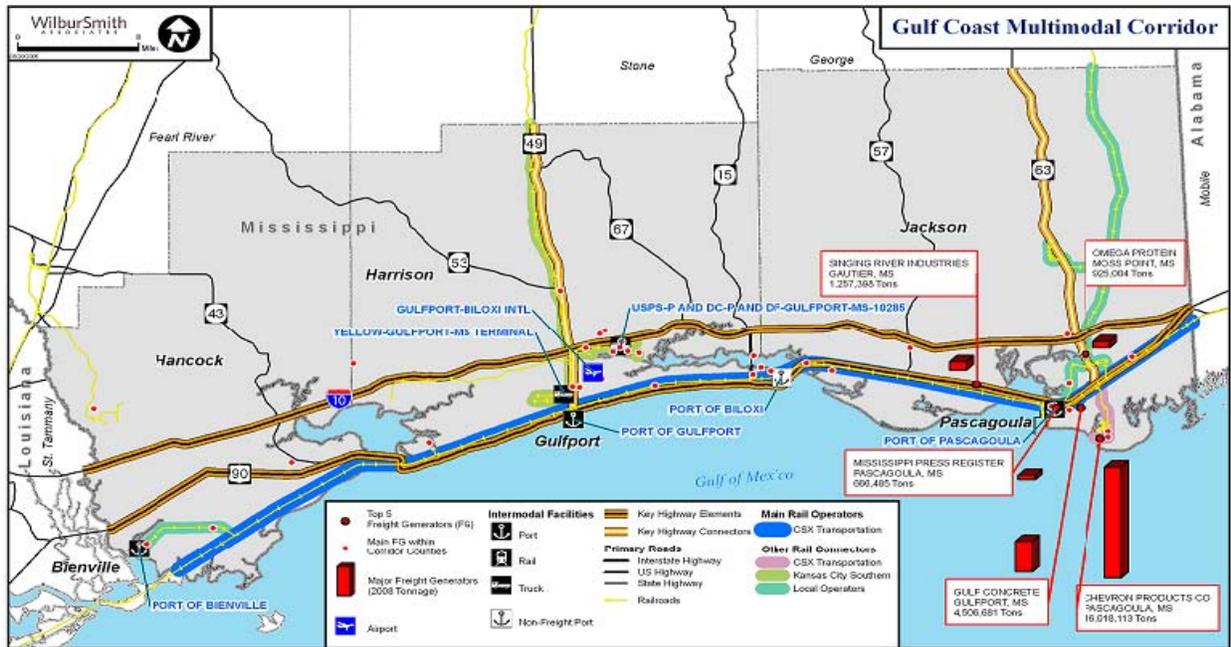


Figure 2 - Gulf Coast Multimodal Corridor

There are several specialized freight and logistics companies located in the Port Bienville Industrial Park and include Andersons, Inc., Anderson Rail Group, SSA/Gulf, and A & R Distribution. The existing transportation infrastructure within the Gulf Coast Multimodal Corridor and, more specifically, the unique transportation assets in the Port Bienville Industrial Park will continue to support the expansion of these companies in Hancock County. Access to an additional Class 1 rail provider would enhance this sector.

Polymers and Advanced Composite Materials

More than 400 plastics and polymer companies are located in Mississippi and over 100 of them are engaged in manufacturing chemicals. DAK Americas, Sabic Innovative Plastics, SNF/Polychemie, Calgon Carbon, and MAC LLC, all located in the Port Bienville Industrial Park, are engaged in polymer, plastics, and chemical manufacturing.

Geospatial Technology

Geospatial technology was essentially developed at SSC, building on geospatial research conducted by NASA, the Department of Defense, Department of Commerce, and the private sector. Geospatial products allow consumers, businesses, and governments to utilize geographic data in a variety of equipment and services, research facilities at SSC continue to provide new innovations in this industry. The U.S. geospatial industry generated approximately \$73 billion in revenues and at least 500,000 well-paid jobs in 2011.¹⁴

Manufacturing and Exports

The 2013 Global Manufacturing Competitiveness Index recently identified ten key drivers of global competitiveness. Six of those drivers relate directly to the proposed PBVR:

¹⁴ "Putting the U.S. Geospatial Services Industry on the Map," The Boston Consulting Group, December 2012

- Cost and availability of labor and materials
- Supplier networks
- Talent-driven innovation
- Physical infrastructure
- Economic, trade, financial and tax systems
- Government investments in manufacturing and innovation

In addition, manufactured goods account for 93.2 percent of Mississippi’s exports and support over 317,900 trade-related jobs in the state.¹⁵ Businesses in Mississippi exported \$12.2 billion in goods and services in 2012.¹⁶ The state’s largest export market is Panama, followed by Canada, Mexico, China, Honduras, Colombia, and Brazil. Primary exports include petroleum, coal, chemicals, computer and electronic products, transportation equipment, and paper.

Sixty-four percent of the businesses in the Port Bienville Industrial Park are engaged in manufacturing and a number of agencies and contractors at the SSC are also involved in ongoing manufacturing, re-fabrication, or research and development activities that involve moving heavy, over-sized equipment and engines.

Transportation Dependence and Hancock County’s Economy

An industry sector’s dependence on transportation can be measured by examining the amount a business sector spends on transportation as a share of the total output of the sector.¹⁷

Key industrial sectors were evaluated to better understand the role freight and goods movement play in Hancock County and how multimodal transportation contributes to the economic vitality for this area. The evaluation was based on the non-governmental employment concentrations in the county that make up these key industrial sectors. Sixty-three percent of the non-governmental employment is concentrated in five industrial sectors: construction, manufacturing, wholesale and retail trade, and professional and technical services.¹⁸ Figure 3 shows the breakdown of these employment sectors in Hancock County.

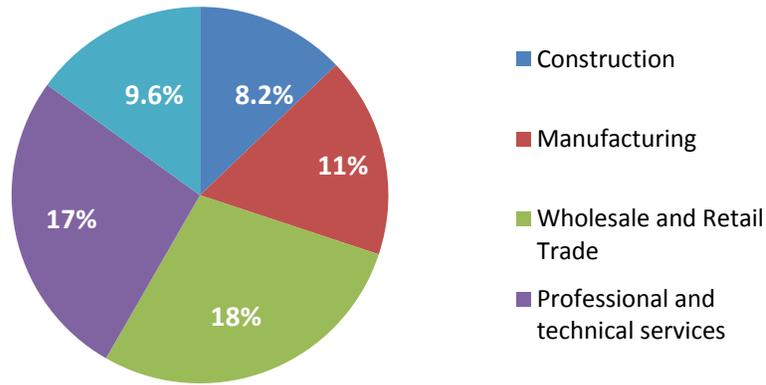
¹⁵ Data from Bureau of Economic Analysis, Bureau of Labor Statistics, and USITC

¹⁶ U.S. Department of Commerce, International Trade Administration, Office of Trade and Industry Information, February 2013 Report, and Mississippi Business Roundtable

¹⁷ “Transportation Satellite Accounts: A Look at Transportation’s Role in the Economy,” U.S. DOT Research and Innovative Technology Administration

¹⁸ Bureau of Labor Statistics

Figure 3 - Employment by Sector in Hancock County



Source: U.S. Census, Bureau of Labor Statistics

It was determined that Hancock County industries are most dependent on freight rail services including aerospace and aviation businesses; polymers, chemicals, and plastics; manufacturing; geospatial technology; cargo-oriented development; and retail and wholesale trade, as shown in Table 2.

Table 2 - Transportation Dependence Rating of Hancock County’s Top Industries

Industry Sector:	Highways	Freight Rail	Waterways/Ports	Air	Transportation cost per dollar of output
Aerospace & Aviation	High	High	High	High	9%
Cargo-Oriented Development	High	High	High	Medium	9%
Polymers & Composite Materials	High	High	Medium	Low	9%
Geospatial Technology	High	Medium	Low	High	6.5%
Manufacturing	High	High	High	Medium	9%
Retail and Wholesale Trade	High	High	Medium	Low	6.5%

Industrial and Business Site Evaluation Factors

Economic development is a very competitive business. Understanding the critical factors that influence a company’s decision to locate a new facility, or expand or retain an existing operation is a quintessential economic development activity. The economic prosperity of Hancock County and south Mississippi depends upon the businesses and industries within the region, and the ability to meet their unique requirements for workforce, land, transportation, utilities, and other services.

Over the past 26 years, a corporate site location study has been conducted to identify the most important factors affecting the location decisions of businesses, and to track these factors over time to assess evolving trends and conditions driving business location decisions.¹⁹ Eleven of the 26 site selection factors identified related to the movement and accessibility of goods and people.

¹⁹ Area Development Site and Facility Journal, “Annual Corporate Site Consultant Survey, 2012”

The eleven transportation and freight factors considered most important in the 2012 study include:

- Highway accessibility
- Availability (accessibility) of skilled labor
- Proximity (accessibility) to major markets
- Inbound/outbound shipping costs
- Proximity (accessibility) to suppliers
- Availability (accessibility) of unskilled labor
- Accessibility to major airports
- Raw material availability (accessibility)
- Proximity (accessibility) to technical college/training
- Railroad services
- Waterway or ocean port accessibility

These transportation factors, along with other competitive conditions, influence the site decisions that businesses make when locating, expanding, or consolidating operations. While freight rail transportation alone will not foster economic growth, improved freight services and connectivity, multi-modal transportation services, and competitive costs can significantly differentiate the region's economic environment, providing opportunities to attract and retain businesses and jobs for Hancock County and the region in the future. For some major industrial projects, access to two Class 1 railroads is essential.

The most significant benefits and opportunities generated from the proposal rail connectors would be derived from new employment and additional investment in plant and equipment by existing businesses and from the location of new companies that require or would benefit from access to dual Class I rail services. Hancock County currently has over 6,640 acres of industrial land available including 3,600 acres of land available within the SSC complex. Pearl River County has an additional 505 acres of industrial land available. This substantial industrial land inventory, coupled with the future access to dual Class I rail services and the existing multimodal transportation network servicing this area, meet the site location requirements of a number of significant industrial and business facilities that could locate in this region.

Alternative Analysis

The alternative selection process for any transportation facility begins with the identification and quantification of a “universe” of preliminary alternatives and selection of reasonable alternatives that address the project objectives. To evaluate preliminary alternatives, and then identify a selection of reasonable alternatives on this project’s aggressive schedule, a streamlined selection process was developed in regard to the NEPA process. The streamlined screening and selection process incorporated GIS, an automated corridor analysis tool called the Alignment Alternatives Research Tool (AART), limited field reconnaissance and data validation, engineering design criteria, and review and evaluation by the project team that consisted of planners and engineers. The process also took into account and incorporated client input, public and other stakeholder comments and concerns, as well as consideration of previous studies. The process was iterative in nature, providing a continuous quantification and comparison of impacts to an equal level of detail at each stage associated with the various alternatives, as they are modified based on design criteria, cost, and other considerations during project development. The remainder of this report provides a detailed explanation of the process that was utilized to determine reasonable alternatives for the proposed PBVR corridor.

Methodology

As stated above, the selection process of the alternative corridors included the use of an automated tool to assist and accelerate the identification and evaluation of the preliminary alternatives. The AART is a series of GIS-based functions designed to route conceptual alignments among the various natural and human resources within a study area. The program allows users to interactively weight geographic features and attributes collected from public and project-derived databases.

Individual data layers are assigned rankings to provide criteria for the AART to create a path of least impact. Areas that are ranked low, such as less sensitive resources, would be used over a highly sensitive resource. Although the tool attempts to utilize the lower-ranked areas as much as possible, it also tries to minimize the overall length of the path/corridor. In some cases, AART may impact a few acres of highly-ranked areas if the overall impacts of the path are less than if those areas that are avoided.

Additionally, “avoid” areas can be included to effectively block any areas where the potential rail line should not be considered. Areas that have been set as avoids will be automatically avoided while locating a path that would minimize impacts to the remaining resources. The desired corridor width is then applied and the environmental and cultural impacts of the corridor are calculated. The AART will summarize the impacts for each alternative alignment and display a potential alignment for each model run.

Once all of the layers have been ranked or set as an avoid, the AART processes all of the layers and generates a single, composite “suitability” layer comprised of the highest rankings from all input layers. In other words, for each grid cell in the study area, the AART reviews each input layer, selects the highest value for that cell and assigns that value to the corresponding cell in the suitability layer Figure 4.

In summary, the “corridors” are developed through a simple “opportunities and constraints” approach. The tool finds the least-impact path between user-selected endpoints by attempting to stay away from high-ranked areas, while maintaining as short a path as possible between points.

Generation of Conceptual Alternatives

Once the data was compiled, the rankings determined, and the endpoints chosen, the AART was ready to begin generating conceptual corridors. Various combinations of start, end and waypoints were developed in order to generate a number of corridor alternatives to evaluate.

As the conceptual corridors were generated, their locations and impacts were reviewed. In cases where the corridors would veer into unexpected areas, explanations were sought by investigating the data layers and their assigned rankings.

The AART generated an impacts report for each corridor detailing the cultural and environmental impacts for that corridor. The corridor locations and the impacts reports were used by the project team in the corridor evaluation process, along with factors such as future development and other intangibles. Staff experience and expertise in conducting corridor studies played an important part in the corridor review and evaluation process.

Once the initial AART developed alternative corridors were identified the refinement process began. Early on, numerous corridors were eliminated from further study for various reasons, as documented in the Rail Alternatives Development Technical Methodology Report (appended as a reference).

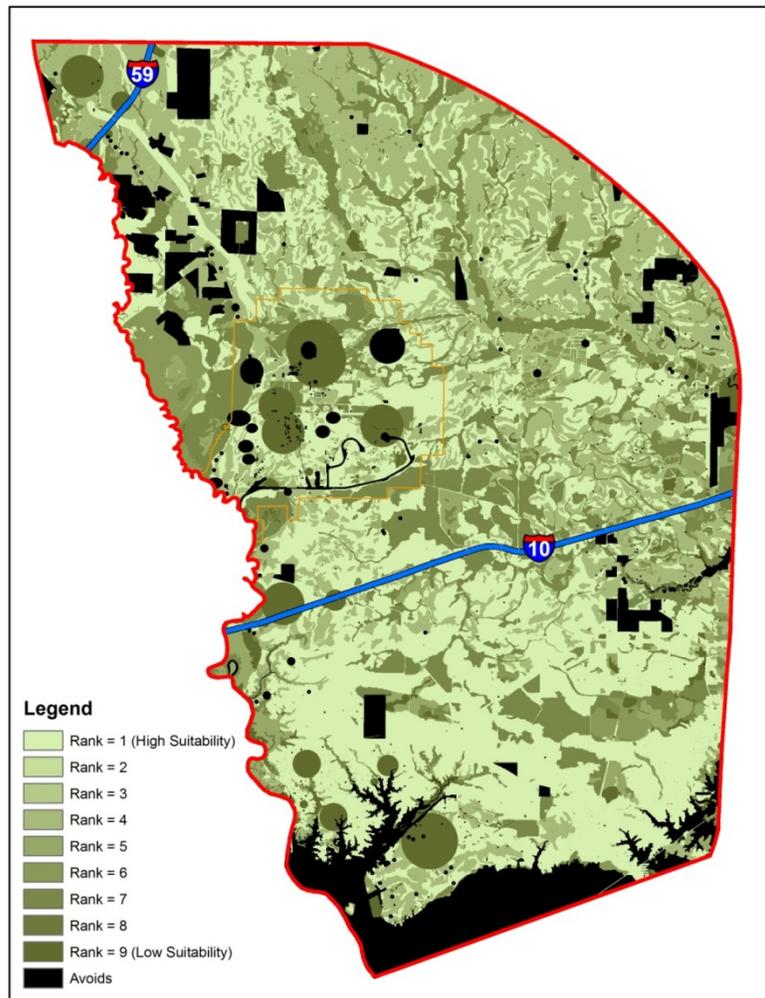


Figure 4 - Base Scenario showing rankings and avoids.

Engineered Alignments

After the initial round of cuts, several alternative corridors were identified from Scenarios 25, 26, USACE01, USACE02, EPA03, EPA04 and EPA05 that were then further refined. By using the standard fixed-width corridors and the irregular corridors generated by AART, the study team was able to make slight adjustments to the alignments in order to meet the engineering design criteria for the proposed PBVR line. To assist the engineers make these adjustments, the AART also generated irregular pathways which identified the next-best areas for potential consideration of the alignment (see figure 5). These areas, while not as good as the least-impact corridor, were also worth considering and provided options for the design engineers.

Additionally, study team engineers also identified several new segments for consideration. These new manually-developed segments were derived by taking into account the irregular corridors as shown in Figure 5. These new alignments were developed with the intent to maintain minimal impacts to the environment where practical, while meeting the design criteria. These engineered alignments were then used to generate new 1,000-foot corridors centered about these alignments. A new set of corridor impact reports was generated, and initial cost estimates for each corridor were prepared and compiled in a matrix format. Impacts were summarized based on the refined 1,000-foot wide corridors. However, the actual impacts for the proposed PBVR would be considerably less, probably 90% less, since the final constructed footprint of the rail bed is expected to be typically less than 100-feet in width. Detailed field investigations have not been performed yet and the 1,000-foot wide corridors will allow flexibility to adjust the alignment in the future to further minimize impacts once the detailed field work has been completed. The impacts within these 1,000-foot wide corridors and the initial cost estimates for the engineered alignments were used for comparing one alternative to another and further refinement.

Reasonable Alternatives

Once the initial corridor matrix was completed and the comparison performed, several corridors centrally located within the study area emerged as the least costly and least impacting. Every one of these Reasonable Alternatives shared a common central corridor. However, two distinct

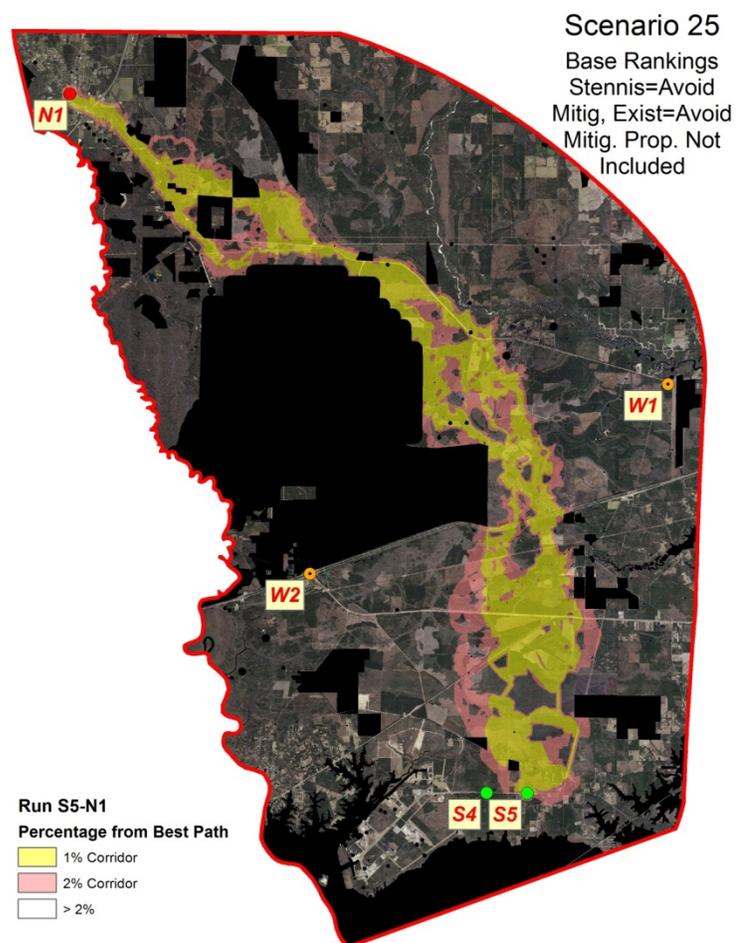


Figure 5 - Other potential corridors for run S5 to N1. These corridors depict “next-best” areas.

corridors on the north end of the project and several corridors on the southern end were identified.

To further define the Reasonable Alternatives, the study team divided the advanced corridors into segments as identified in Figure 6. These 17 segments represent a possible combination of 40 potential corridors. Following the development of the segments, the study team re-quantified impacts and cost by segment, as shown in Table 3. Additionally, the costs estimates were further refined by taking into account the anticipated bridging of high-value wetlands and stream mitigation. These costs estimates are considered all inclusive and represent potential “implementation costs” which include final design, right-of-way acquisition, and construction and inspection services. The estimates are based on the true engineered alignments within each refined corridor and are representative of 2013 unit cost data derived from other rail projects and from cost experience on other similar projects.

At this stage in the project development the alignments are considered conceptual, therefore 20% contingencies have been included in the cost estimates. Table 3 contains the Segment Matrix for the Reasonable Alternatives. Depending on the combination of segments, the cost estimate of the project varies from \$86.6million to \$104.5 million.

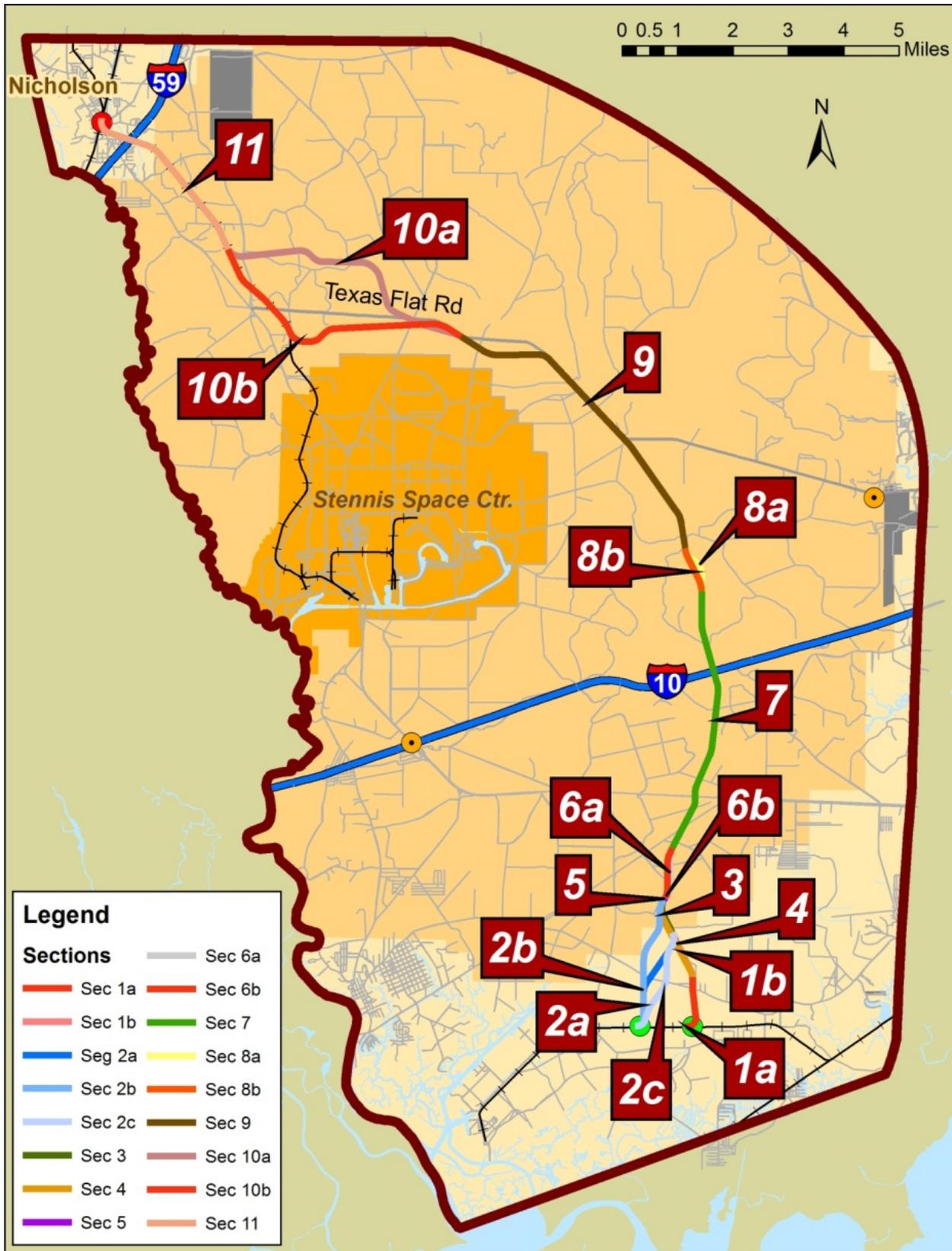


Figure 6 - Engineered alignments and section numbers

**TABLE 3 - SEGMENT MATRIX FOR THE REASONABLE ALTERNATIVES
PORT BIENVILLE FEASIBILITY STUDY - PORT BIENVILLE TO NICHOLSON**

CATEGORY		Unit of Measure	Segment 1a	Segment 1b	Segment 2a	Segment 2b	Segment 2c	Segment 3	Segment 4	Segment 5	Segment 6a	Segment 6b	Segment 7	Segment 8a	Segment 8b	Segment 9	Segment 10a	Segment 10b	Segment 11	
ENGINEERING CRITERIA	Length	Miles	1.02	0.89	1.95	2.47	1.95	0.64	1.54	0.05	0.92	0.92	4.84	0.88	0.83	5.99	4.95	5.18	3.46	
	Total Estimated Implementation Cost	\$ Millions	2.10	1.60	3.80	9.20	3.90	5.50	7.10	2.90	7.90	2.10	20.10	1.60	1.50	26.30	24.60	23.60	5.70	
NATURAL FEATURES	Wetland Impacts	Acreage	5	0	8	39	9	12	13	6	55	57	68	3	8	157	67	98	55	
	Wetland Quality	Value	33	0	56	262	64	82	90	44	387	398	457	18	55	1,057	455	658	357	
	Cost of Impacts to Wetlands	\$60K per acre @ 10%	\$12,600	\$9,600	\$22,800	\$55,200	\$23,400	\$33,000	\$42,600	\$17,400	\$47,400	\$12,600	\$120,600	\$9,600	\$9,000	\$157,800	\$147,600	\$141,600	\$34,200	
	Devil's Swamp Mitigation Bank	Acreage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Proposed Texas Flat Mitigation Bank	Acreage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.52	0.00	0.00	0.00
	Cost of Impacts to Mitigation Banks	\$120K per acre @ 10%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$786,240	\$0	\$0	\$0
	Length of Wetland Bridging	LF	0	0	0	430		430	430	283	587		596	0	0	1174	1469	1482	0	
	Stream Crossings	# of Crossings	3	2	7	5	5	1	3	0	0	0	10	0	0	11	10	6	5	
	HydroLine-Connector	Miles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.05
	HydroLine- Ditch	Miles	0.90	0.71	0.87	0.66	1.00	0.09	0.72	0.00	0.00	0.00	0.00	1.95	0.00	0.00	2.06	2.05	2.07	2.35
	HydroLine- Stream	Miles	0.00	0.00	0.40	0.40	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.32	0.45	0.91
	Stream/River - named	Miles	0.00	0.00	0.33	0.20	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.64	0.19	0.22	0.82
	Stream/River - other	Miles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	1.81	1.60	0.84	0.07
	Streams 303(d)	#	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.19	0.22	0.00	
	Artificial Path	Miles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Stream Impacts	Miles	0.90	0.71	1.60	1.26	1.27	0.09	0.72	0.00	0.00	0.00	2.64	0.00	0.00	5.22	4.16	3.58	4.19	
	Total Stream Impacts	Feet	4,752	3,744	8,437	6,653	6,706	465	3,802	0	0	0	13,929	0	0	27,565	21,938	18,881	22,128	
Cost of Impacts to Streams	\$200 per linear feet @ 10%	\$95,040	\$74,870	\$168,749	\$133,056	\$134,112	\$9,293	\$76,032	\$0	\$0	\$0	\$278,573	\$0	\$0	\$551,295	\$438,768	\$377,626	\$442,570		
MAN-MADE FEATURES	CERCLA	Acreage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44	
	Archaeological Sites	Acreage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.51	0.00	0.00	0.00	
	Farmland (Prime)	Acreage	14.58	0.00	0.00	0.00	2.72	0.00	0.00	0.00	0.00	0.00	129.02	35.83	20.72	296.40	233.08	275.18	350.92	
	Farmland (Prime if Drained)	Acreage	0.00	42.04	63.42	94.70	60.81	49.23	94.93	0.04	64.04	61.63	73.38	34.97	45.60	81.86	123.29	207.70	3.31	
	Farmland (Statewide Importance0	Acreage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.92	1.99	0.00	0.00	2.72	0.00	
	Mines	Acreage	0.00	0.00	0.00	5.78	2.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.24	36.26	28.50	4.22	
	Recreational Facilities	Acreage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
INFRASTRUCTURE	Water Wells	Acreage	0.00	0.00	0.00	0.67	0.20	1.02	0.67	0.78	0.72	0.72	3.61	0.00	0.00	0.00	0.72	1.28	4.10	
	Transmission Line Crossings	#	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Gas Line Crossings	#	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	

Agency Coordination and Public Involvement

An Agency Scoping Meeting was held on August 23, 2012 at the MDOT Administrative Building to introduce the Port Bienville project to the resource agencies. The goal of the meeting was to present the methodology for the feasibility study and verify the data to be used for analysis. The study team provided an overview of the project, the study area for the feasibility study and the Alignment Alternatives Research Tool (AART). The agencies were asked to review data and the associated criteria collected by the project team. Agencies provided their initial input on the available data. A demonstration of the AART tool was given to explain how the data would be used to identify rail corridors and the refinement process.

A Coordination meeting with the Stennis Space Center was held August 21, 2012. The study team provided an overview of the proposed PBVR, its objective, and the feasibility study. SSC representatives provided input on areas of the facility that would be unavailable for rail corridors.

A Public Information Meeting was held on October 16, 2012 from 5:00 – 7:00 p.m. in Bay St. Louis, MS at the St. Louis Public Library. The meeting was hosted by Mississippi Department of Transportation (MDOT) in cooperation with HCPHC, and was conducted in an open house format which invited the public to comment on the Feasibility Study for Port Bienville Railroad. Forty people attended the meeting.

An Agency Coordination Meeting was held on December 18, 2012 with resource and regulatory agencies. Representatives from MDOT, FRA, and HCPHC were in attendance. The study team provided a summary of the previous meeting and presented the results of the alternative corridors identified, including criteria used and the process used to analyze and refine the corridors. The presentation covered identification of the initial corridors, refinement of the corridors and the recommended reasonable alternatives.

