

Community Impact Assessment (CIA) Report

1.0 METHODOLOGY FOR A COMMUNITY PROFILE AND IMPACT ASSESSMENT

Traditional socioeconomic technical reports support an environmental document by providing detailed technical information, as required by the National Environmental Policy Act (NEPA). A community impact assessment (CIA), which also provides technical information required by NEPA, is a more holistic and unified process of evaluating the effects of a transportation action on a community and its quality of life. In addition to using the traditional methodologies and secondary data sources used in technical reports, a CIA uses data collected from community members and reflects the community's concerns to present a more thorough description of the predicted impacts to the human environment. As directed by FHWA, CIAs should consider "both the benefits and burdens of the decisions." (FHWA 2002)

The sources of the guidance and methodologies used in preparing this CIA report are:

- INDOT: Procedural Manual for Preparing Environmental Studies (INDOT Manual) (July 1996)
- FHWA: Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents (October 30, 1987)
- FHWA: Position Paper on Secondary and Cumulative Impact Assessment (August 1992)
- FHWA: Community Impact Assessment, A Quick Reference for Transportation (September 1996)
- Council on Environmental Quality (CEQ): Considering Cumulative Effects Under the National Environmental Policy Act (January 1997),
- United States Environmental Protection Agency (USEPA): Consideration of Cumulative Impacts in EPA Review of NEPA Documents (May 1999)
- CIA trainings and conferences attended by staff members (Community Impact Assessment Training Workshop, sponsored by FHWA in Indianapolis, Indiana on July 31, 2002; and Community Impact Assessment - Southern Regional Workshop, held on December 5-7, 2002 and sponsored by FHWA, North Carolina Department of Transportation (NCDOT), the Transportation Research Board (TRB), and Center for Transportation and the Environment (CTE) in Raleigh, NC)

A Community Advisory Committee (CAC) was formed to provide input related to community issues and certain aspects of project development. The CAC members served as liaisons between the US 231 Relocation Project (proposed project) team and the groups/organizations they represented, as well as the broader community. Five meetings were scheduled, each with a focus on a unique aspect of the project:

- CAC Meeting #1 (April 11, 2002): An introduction to the NEPA process and the roles of FHWA, INDOT, the consultant (Baker), and the CAC in that process. Maps with preliminary Build Alternative alignments were presented and CAC members commented on the base mapping (e.g., identified errors and omissions) and provided their initial impression of the Build Alternative alignments.
- CAC Meeting #2 (May 16, 2002): Baker presented the revised mapping, which incorporated the CAC's comments as provided during Meeting #1. Baker shared the Draft Section 106 Phase I Survey Report. Initial Geographic Information System (GIS)-level impact analysis of the alignments was presented to the CAC. The status of a separate study of US 231 between I-65 and I-70 was also presented.
- CAC Meeting #3 (July 25, 2002): This meeting focused on the neighborhood-level impacts of the five Build Alternative alignments carried forward for detailed study (Lines 1, 4, 7, 9, and 10). There was a group discussion of potential impacts to environmental justice (low-income and minority) communities. Small groups completed a matrix of the potential and perceived neighborhood-level impacts of the Build Alternative alignments.
- CAC Meeting #4 (September 23, 2002): This meeting will introduce the Preferred Alternative to the CAC members. As this meeting will occur before the public meeting, the CAC members will continue their role as community liaisons. Potential mitigation measures will be discussed.
- CAC Meeting #5 (October, 2002): The project's landscape architect will lead an exercise to develop context-sensitive designs. The CAC will be asked to evaluate the entire CIA process.

The discussions and findings of these meetings, as well as written comments provided in person, through the mail/email, and posted onto the project website have been incorporated into this report. The CAC participant lists, meeting agendas, handouts, and exercises are posted on the project website (www.relocateus231.com). Specific comments provided by CAC members and the public are cited in this report based on the source and comment number (i.e., CAC comment #5). Conclusions or observations developed during CAC group exercises

or discussions are noted by referencing the specific CAC meeting (i.e., CAC Meeting 7/25/02). All public comments can be reviewed in the administrative record.

The CAC members and citizens were able to provide comments and suggestions throughout the NEPA process. The CAC process resulted in alignments sensitive to the community's needs and concerns. For example, early in the CAC coordination process, the CAC members identified community facilities to be avoided and preserved. These included Celery Bog, Klondike Elementary and Middle Schools, and the Lindberg Road Soccer Fields. Build Alternative alignments that had a direct effect on these facilities (Lines 2 and 3) were eliminated, and remaining alignments were redesigned to minimize any indirect effect on these facilities. Some members of the community and the CAC supported a Build Alternative alignment west of the Kankakee, Beaverville and Southern Railroad (KBS Railroad) tracks, so Line 4 was redesigned to better meet the purpose and need of the project and offer an alternative west of the railroad tracks. Additionally, the northern terminus of Lines 4 and 10 was adjusted further west on US 52 at the suggestion of the CAC in part to avoid a terminus across from a private golf course that is open to the public. These are just a few of the many examples of how CAC and public comments were incorporated in the NEPA process to avoid, minimize, and mitigate community concerns.

A community profile including the existing and projected physical, economic, and social characteristics of the community provides the baseline condition for the CIA analysis. As the Greater Lafayette region is experiencing steady residential and commercial growth, the baseline condition is a representative compilation based on the most recent and currently available data. For example, existing traffic conditions are based in the year 1999, while most demographic data was provided by the 2000 Census, and land use conditions reflect development as of July 2002. Secondary data sources and interviews with local officials and planners have been augmented by CAC and citizen comments to provide a more complete and balanced community profile. The future condition is the design year of 2025 and is based on the land use inputs in the Area Plan Commission of Tippecanoe County (TCAPC) transportation model, planned and approved development, and additional reasonable and foreseeable actions identified by community leaders and local planners.

The CIA compares the influence of the No-Build Alternative and Build Alternative alignments carried forward for detailed study (Lines 1, 4, 7, 9, and 10) to the existing baseline condition.

This CIA also documents the direct, secondary (or indirect), and cumulative impacts to the physical, economic, and social characteristics of the community. Details regarding the specific design of the alternatives and their associated impacts to natural, cultural, and other resources are found in Chapter 3 of the Environmental Document.

2.0 COMMUNITY PROFILE

2.1 Physical Characteristics Of The Community

This section describes the physical characteristics of the community, including: land use (intensity and character of development), infrastructure, farmlands, and applicable land use and community plans. These physical characteristics provide the setting for the community. A discussion of future land use is also included. Land cover as it relates to the natural environment is discussed in Chapter 3 of the Environmental Document.

2.1.1 Existing Land Use and Infrastructure

Land use is the development of the physical environment for human benefit (e.g., residential, commercial, industrial, recreational, and agricultural uses). Land use is often a function of physical constraints, the location and availability of infrastructure, and local market trends.

The intensity, timing, and character of development may be directed by local or regional comprehensive plans, general plans, or long-range plans. The goals identified in planning documents may be implemented through a variety of tools, including zoning, capital improvements, and tax incentives. A thorough understanding of these plans and mechanisms is necessary for the analysis of a transportation project's potential impact on land use.

The project is located in Tippecanoe County, Indiana, approximately 60 miles northwest of Indianapolis, Indiana. The project study area (study area) encompasses portions of the City of West Lafayette, the Purdue University campus, and unincorporated areas of Tippecanoe County, which include Wabash and Shelby Townships. Unincorporated areas are areas outside incorporated city boundaries. Although the study area falls entirely within Tippecanoe County (Exhibit CIA-1), and multiple localities have various responsibilities within the study area, the TCAPC is the primary organization responsible for land use planning and related responsibilities. The TCAPC is responsible for land use and transportation planning, zoning, capital improvements, tax incentives, and other land use regulations.

Neither Wabash nor Shelby Township have the power or authority to direct land use, zoning, or capital improvements; but each has a township trustee responsible for a variety of community services. The City of West Lafayette is geographically located within Wabash Township. Within its corporate boundaries, the city is responsible for capital improvements, tax incentives, and redevelopment. For the purpose of this study, the portion of Wabash Township outside of the city's boundary is referred to as the unincorporated portion of Wabash Township.

The most dominant landform in the region is the Wabash River. The river serves as a physical and political barrier between the cities of Lafayette and West Lafayette, as well as Wabash Township and the southern portion of Tippecanoe County. Exhibit CIA-2 represents the existing land use within the study area. Land uses identified in Exhibit CIA-2 are generally identified as follows:

- Agriculture and undeveloped lands: Lands in active agricultural use, including row crops, grazing, orchards, and all lands not classified as one of the other developed land uses. Undeveloped lands can have any land cover (e.g., forested, grassy, and wetland), and are not currently developed or preserved for a specific use. Agriculture may include the Standard Industrial Classification (SIC) categories of agriculture, forestry, and fishing (U.S. Bureau of the Census 1997). Specific impacts to farmlands and farming operations are discussed later in this section.
- Community: Any public or communally owned facility, not used solely for recreational purposes. Includes schools, libraries, fire stations, government buildings, churches, and cemeteries. Community facilities may include the SIC category of public administration.
- Multi-family residential: Includes all apartment buildings and Purdue University-affiliated housing (i.e., dorms, cooperatives, and fraternity housing), as well as most attached housing such as duplexes or townhomes.
- Office and Industrial: Includes businesses in the SIC categories of construction, manufacturing, transportation, communications, utilities, finance, insurance, real estate, and services (excluding amusement and recreational services).
- Parks and Recreation: Includes public and private recreational facilities (i.e., parks, golf courses, playgrounds, and trails) or protected open space. Recreational facilities may include the SIC categories of amusement and recreational services.
- Retail: Includes highway-related businesses (i.e., gas stations, fast food restaurants, and hotels), as well as non-highway-related retail

businesses (i.e., department stores and grocery stores). Includes businesses in the SIC categories of wholesale and retail trade.

- Single-family residential: Includes all single-family detached housing units ranging from low-density rural residential to suburban density, as well as manufactured homes.

In general, the eastern portion of the study area is more developed than the western portion. Land use in each locality is summarized in the following paragraphs. More urbanized land uses, including compact residential development, community, retail, and office uses are concentrated east of the study area in the City of West Lafayette. The central campus of Purdue University is partially located within the southeast corner of the study area with predominant land uses being multi-family residential and recreational. Retail uses flank both the east and west sides of the Purdue University campus.

The northeast corner of the study area has a concentration of office and industrial use, due in part to the Purdue Research Park. This section also includes most of the multi-family residential land use within the unincorporated portion of Wabash Township.

Residential densities in the unincorporated portion of Wabash Township range from multi-family apartment units to low-density single-family housing. Residential development is generally denser between SR 26 and US 52, east of CR 400W. Retail, industrial, and office development in the unincorporated portion of Wabash Township is concentrated along US 52, CR 300W (Klondike Road), and CR 250N. The western portion of the study area is in Shelby Township, where the land use is low-density single-family residential, agricultural, and undeveloped.

The only Section 4(f) resources within the study area are Celery Bog Nature Area, Klondike Elementary and Middle Schools playground facilities, the Ackerman Hill and Kampen golf courses, West Lafayette Cattail Trail (a bicycle and pedestrian trail), the Purdue Horticulture Park, and three historic resources (see Chapter 2 of the Environmental Document for more detail on Section 4(f) resources). Privately owned recreational facilities such as Orchards of Golf, Parview Golf Course, and the Elks Country Club are not subject to Section 4(f) protection, although private recreational facilities can be considered important community facilities.

All Purdue University-owned and associated lands are classified according to the seven land use categories, and its developed parcels are identified in Exhibit CIA-2. Purdue University's core campus is located in and beyond the southeastern portion of the study area. The core campus covers 2,282 acres, of which 650 acres are used for

recreational or athletic purposes. The Purdue Research Park, in the northeastern portion of the study area, is 619 acres and is developed for office and light industrial use (Purdue University Facts online 2002). The Purdue Research Foundation manages extensive undeveloped landholdings in and around the study area.

Infrastructure, such as roadways and railroads, are also noted in Exhibit CIA-2. Roadways, railroads, and trails are discussed in detail in the Recreation Resources and Travel Patterns and Accessibility sections of this report. In the study area, the Indiana-American Water Company, Inc. currently provides water east of CR 400W, north of US 52; and east of CR 350W, south of US 52. Both American Suburban Utilities and the City of West Lafayette provide sewer service within the study area. American Suburban Utilities provides extensive coverage to the developments between McCormick Road, CR 400W, CR 200N, and US 52. It has three lift stations and one wastewater treatment plant within the study area. The City of West Lafayette provides sewer service within the city, as well as to several developments in unincorporated portion of Wabash Township, including Sherwood Forest, Wake Robin, Huntington Farms, and Green Meadows. The city has planned a western sewer interceptor to extend a 30-inch sewer pipe from the existing treatment plant past the Purdue University Airport to Cherry Lane. The interceptor will have the capacity to provide sewer service to the unincorporated portion of Wabash Township. The city has applied for funding to begin construction on the project (Darter 2001). The provision and extension of sewer infrastructure has been identified as one of the factors driving the location and scale of development in Tippecanoe County (TCAPC October 30, 2001).

A discussion of the interaction between neighborhoods, community facilities, local and regional activity centers will be discussed in detail in Section 2.2: Social Characteristics of the Community.

2.1.2 Farmlands

The Farmland Protection Policy Act (FPPA) requires that federal agencies identify the adverse effects of their programs on the preservation of farmlands, consider alternative actions that could lessen adverse effects, and ensure that the project is compatible with state and local programs and policies to protect farmlands (7 CFR Part 658). Coordination with the Natural Resource Conservation Service (NRCS) was conducted to ensure consistency with these requirements. A Farmland Conversion Impact Rating (Form CPA 106) was completed in consultation with NRCS staff and is included in Appendix A of the Environmental Document.

In Tippecanoe County, 82 percent of all the county's land is prime or statewide important farmland and both prime and statewide important farmland soils are found within the study area (U.S. Department of Agriculture 2002). The land use matrix used in the 1981 Comprehensive Plan incorporates areas of "remarkably productive soil" to identify the areas best suited for agricultural production. This land use designation by the TCAPC does not rely on the same analysis used in the Farmland Conversion Impact Rating (Form CPA 106).

Although the region has recently experienced growth in residential and commercial development, large parcels of land in the study area remain in agricultural production. According to the 1997 Census of Agriculture, Tippecanoe County had a total of 665 farms with 241,539 acres of land in farms, at an average value per acre of \$2,595. Tippecanoe County ranked ninth highest in the state for total acres of land in farms, and the average value per acre was \$531 higher than the state average. The major crops' average annual production from 1998 to 2000 in Tippecanoe County was 14,396,033 bushels of corn, 4,341,367 bushels of soybeans, and 465,500 bushels of winter wheat (U.S. Department of Agriculture 1998-2000).

According to the Indiana Farmland Protection Program, "the gross acreage of cropland converted to urban development is not necessarily the most troubling concern. A great cause for concern is the quality and pattern of cropland being converted" (U.S. Department of Agriculture 2002). The Indiana Farmland Protection Program is a federal conservation easement program in which five Indiana counties with a total of 1,300 acres currently participate (U.S. Department of Agriculture 2002). Tippecanoe County does not currently participate in the Indiana Farmland Protection Program. While some farmland protection statues are incorporated in state and local regulations (e.g., localities can enact agricultural protection zoning, conservation easements, property tax relief, or right-to-farm legislation), no official farmland protection program is currently in place in Tippecanoe County or the State of Indiana as a whole (Hosteter 2002).

2.1.3 Future Land Use

Future land use, depicted as the white cross-hatching in Exhibit CIA-2, represents all planned and approved development within the study area. Planned and approved development includes all residential subdivision or commercial plats planned by developers and approved by Tippecanoe County. Any potential influence of the proposed Build Alternative alignments on future land use is not reflected in Exhibit CIA-2. Table 1 reports the projected growth for the region

assumed in the TCAPC travel demand model. This projected population and employment growth will have a direct effect on future land use. Agricultural and undeveloped parcels will be developed to accommodate this growth.

**Table 1
Current and Projected Population and Employment Growth**

Locality ¹	1999 Total Population	2025 Total Population	Change in Population 1999-2025	1999 Total Employment	2025 Total Employment	Change in Employment 1999-2025
Tippecanoe County	149,654	195,715	31%	95,976	130,781	36%
West Lafayette ²	26,756	30,537	14%	13,117	16,705	27%
Unincorporated Wabash Township ²	26,265	36,536	39%	16,443	17,207	5%
Shelby Township	2,097	2,418	15%	550	550	0%
Study area	27,934	37,952	36%	10,393	14,785	42%

Source: TCAPC

¹ Population and employment data are calculated for each municipality based on the total population and employment within each Traffic Analysis Zone (TAZ) contained partially or completely within the corporate boundaries. The population and employment for West Lafayette and the unincorporated portion of Wabash Township reported in the table may be overestimates.

² The City of West Lafayette is part of Wabash Township. The total population and employment for Wabash Township is equal to the sum of population and employment for West Lafayette and Unincorporated Wabash Township.

The TCAPC maintains a travel demand model for Tippecanoe County. Four kinds of socioeconomic data are used as inputs for the model: number of persons, number of households, number of available vehicles per household, and number of jobs. Socioeconomic data for each category are entered into the model for a series of traffic analysis zones (TAZs) that encompass the whole county.

The TCAPC forecasts over 10,000 additional persons and 4,000 new households between 1999 and 2025 for TAZs corresponding to the study area (Table 1). While the area of the TAZs used in this analysis is slightly larger than the study area, the household projections typify the magnitude of residential growth projected for the study area. Over 900 residential building permits were approved in the study area between 1999 and spring of 2002 (TCAPC 2002). This recent growth, concentrated north of SR 26 and east of CR 400W, represents almost 25 percent of the projected residential growth for the study area between 1999 and 2025. Additionally, approximately 30 percent of the residential growth projected for 2025 has been planned as part of subdivision plats approved by Tippecanoe County. These developments, which are indicated by white cross-hatching in Exhibit CIA-2, are likely to occur by 2025. Exhibit CIA-2 does not show the location of an additional 1,800 households, which is 45 percent of the total households projected to be developed by 2025. Based on growth trends and the availability of developable

land with water and sewer service, these households are anticipated to develop throughout the study area between 2010 and 2025 (TCAPC October 30, 2001). The development of these households throughout the study area is reasonable and foreseeable, but no subdivision plans have currently been submitted.

Future expansion of commercial growth will be concentrated in several areas within and adjacent to the study area. Over 4,000 new jobs are projected within the study area by 2025 (Table 1). Major planned developments include Discovery Park, a biosciences complex at Purdue University; the continued build-out of the Purdue Research Park; and retail development at the proposed Meijer store and its associated out-parcels. Commercial growth will continue to develop along US 52 and Klondike Road. Purdue University's "gravel pit" area south of the Purdue University airport could be developed for office or industrial uses, but no specific plans have been developed at this time.

Future changes in agricultural, undeveloped, community, and parks and recreational land uses are discussed in relevant sections throughout this report.

2.1.4 Local and Regional Land Use and Community Plans

Nine land use and community plans were analyzed for this study. Only one plan, The Comprehensive Plan for Tippecanoe County (1981 Comprehensive Plan), guides local land uses. The following plans serve as community, resource, or Purdue University "vision" plans, and are less related to land use and more related to long-term goals and objectives:

- West Lafayette Strategic Development Plan Update 2002 (West Lafayette Plan),
- Focus on the Future of Unincorporated Wabash Township (Focus on the Future),
- A Plan for the Future of Greater Lafayette Vision 2020 (Vision 2020),
- Purdue University Strategic Plan (Strategic Plan),
- Purdue Airport Master Plan,
- Tippecanoe County Bicycle and Pedestrian Plan,
- Tippecanoe County Park and Recreation Plan, and
- West Lafayette Recreation and Conservation Sites.

Although related to land use, individual transportation plans (INDOT Long Range Plan, TCAPC Transportation Plan for 2025, and Purdue University Transportation

Plan) are not discussed below. These plans are included by reference in the Engineer's Report.

While a more detailed discussion of the 1981 Comprehensive Plan and the local vision plans follows below, the common goal between all of the non-Purdue University plans is the preservation of agricultural lands and the development of recreational facilities. The two Purdue University plans, the Strategic Plan and the Purdue Airport Master Plan, are more focused on the development of infrastructure and resources for the Purdue University campus and, as such, do not represent the needs of the community as a whole.

Only four of the nine plans (Focus on the Future, Vision 2020, West Lafayette Plan, and Purdue Airport Master Plan) specifically identify the US 231 relocation project. The other plans were either completed before the planning phase of the proposed project or the project is not directly applicable to the goals and objectives of the plan.

The Comprehensive Plan for Tippecanoe County (1981 Comprehensive Plan)

The TCAPC is responsible for planning for the City of Lafayette, the City of West Lafayette, unincorporated Tippecanoe County (including Wabash and Shelby Townships) and the Towns of Dayton, Prophetstown, and Battleground. The 1981 Comprehensive Plan was adopted September 16, 1981 and is designed to serve as a long-range, comprehensive document. The 1981 Comprehensive Plan and its associated land use potentials matrix are dynamic tools, which are updated with amendments as necessary and "are not intended to be a rigid framework for future development, but rather a dynamic tool for coordination of physical development of the county" (1981 Comprehensive Plan, Introduction, p. 3).

The land use potentials matrix divides Tippecanoe County into three categories for land use planning: urban, urbanizing, and rural. All of the City of West Lafayette is considered urban. Most of the unincorporated portion of Wabash Township is considered urbanizing, and Shelby Township is considered rural. The 1981 Comprehensive Plan notes that urbanizing and rural areas are pressured to become more urban, often conflicting with agricultural activities (1981 Comprehensive Plan, Volume 1, p. 2 and p. 9). The preservation of prime agricultural lands is a persistent theme throughout the 1981 Comprehensive Plan. The plan states that the land use potentials matrix was developed to attempt to address the conflict between development and prime agricultural land as "often, cropland is seen by the developer as well as the planner as being merely vacant and ripe for some higher

(developed) use as urbanizing inexorably overtakes the countryside” (1981 Comprehensive Plan, Volume 1: pgs. 1, 2).

The TCAPC attempts to preserve prime farmland and concentrate growth within urban and urbanizing areas by encouraging higher density mixed use development in the urban area and blending small nodes of commercial development with residential growth in the urbanizing area. The TCAPC currently refers to these efforts as “smart growth” (TCAPC August 30, 2001). The Wabash Landing development in West Lafayette is an example of smart growth coordinated between the TCAPC, the City of West Lafayette, and the private developer.

Urban, urbanizing, and rural boundaries are subject to revision as specific development factors change. For example, the plan states that the extension of a sanitary sewer line can and should be accompanied by an adjustment to the type of land use category (1981 Comprehensive Plan, Volume 1, p. 54). Projected land use changes per the phased land use plan for urbanizing and rural areas include residential expansion in Wabash Township north of the urban boundary and west along Cherry Lane, as well as scattered along CR 300W, CR 350W, and Klondike Road. The plan identifies industrial expansion adjacent to the airport, but does not identify any locations for commercial expansion. The plan does not identify any specific locations for residential, industrial, or commercial expansion in Shelby Township.

The TCAPC is also responsible for the unified zoning ordinance for Tippecanoe County, subdivision plans, and regional transportation planning.

West Lafayette Strategic Development Plan Update 2002

A draft of the West Lafayette Strategic Development Plan Update 2002 was not available when this CIA report was being prepared. However, study team members spoke with City of West Lafayette planners to develop an understanding of the plan’s treatment of the proposed project.

Focus on the Future of Unincorporated Wabash Township, an Action Plan 1996 (Focus on the Future)

Focus on the Future was developed during a series of meetings with Wabash Township residents to identify the township’s strengths and weaknesses and determine community goals. Identified strengths include high quality of life and rural character of the township. Identified weaknesses include lack of uniform zoning enforcement, lack of involvement in the 1981 Comprehensive Plan, the need

for expanded infrastructure, and the loss of farmlands. Additionally, residents expressed concern for potential future annexation by West Lafayette, development of Purdue Research Foundation landholdings, uncontrolled growth in the township, and additional high-density housing. Key findings and suggestions of Focus on the Future relevant to the proposed project include:

- Future land use plans should emphasize the rural character of the area by preserving prime farmland and encouraging low-density development.
- Township should consider incorporation.
- Residents of the township should become more involved with land use and planning in Tippecanoe County, West Lafayette City, and Purdue Research Foundation.
- The US 231 relocation “should be efficient, effective, non-intrusive, and practical and should allow for future north extension.” Additionally, it should reduce travel times and congestion, using existing corridors with a minimum displacement of homeowners.
- Water and sewer infrastructure should be improved and septic systems treatment should be removed.
- Residents view current growth patterns as detrimental and feel that the 1981 Comprehensive Plan is outdated for Wabash Township.
- Recreation development plans include the Wabash Township greenway trail network.

The TCAPC is planning on developing a land use plan for Wabash Township that could become an amendment to the 1981 Comprehensive Plan (TCAPC October 30, 2001).

A Plan for the Future of Greater Lafayette Vision 2020 (Vision 2020)

Local community leaders and stakeholders began the Vision 2020 process in September 2000. This process, described as “consensus-based, inclusive, and evolving,” involved over 1,000 community members and 11 meetings (Vision 2020, p. 4, 2001). The Vision 2020 process identified a number of community goals, but the overriding land use goal includes establishing “community land use planning and individual land use practices that more fully protect and benignly impact local landscape resources, biodiversity, and overall environmental quality” (Vision 2020, p. 27, 2001). Objectives include updating the 1981 Comprehensive Plan and revising the plan to protect watersheds, natural areas, and agricultural resources. Additional objectives included preserving and restoring a variety of natural areas for biodiversity, providing adequate housing for all residents, and enhancing and expanding parks and greenways. Smart growth “action steps” identified in the plan

include a pledge to “support the APC effort to identify a preferred route for US 231 from the Purdue Airport to US 52 to be submitted to Indiana Department of Transportation” (Vision 2020, p. 42, 2001).

Purdue University Strategic Plan (2001-2006) (Purdue Strategic Plan)

The Purdue Strategic Plan was adopted by the Purdue Board of Directors on November 2, 2001, as “a five year strategic plan to make Purdue a preeminent university with strategies to advance quality in all areas, lead the world in basic and applied sciences and engineering, and contribute to societal progress, especially in Indiana.” The plan calls for over \$156 million annually in new resources, including infrastructure enhancements. The plan does not identify specific infrastructure enhancements, but calls on each department to develop their respective strategic plans.

Discussions with facilities managers and the University Architect identified several planned land use changes including the creation, enhancement, and expansion of four athletic sites: Black Fields, Central, Northwest, and Stadium. The Northwest Athletic Site would extend from McCormick Road to the KBS Railroad south of Cherry Lane. Discovery Park, an interdisciplinary research and entrepreneurial center, is planned to replace the existing student housing in the northern portion of Purdue Village at the southeast corner of McCormick Road and State Street. Replacement student housing is planned for the southwest corner of McCormick Road and Third Street, south of the Center Athletic Site. The gravel pit south of the airport is projected to accommodate research and industrial development beyond the project horizon of 2025 (Purdue University, April 11, 2002).

Purdue University Airport Master Plan (Airport Master Plan)

The Airport Master Plan was updated in February 2001. The Airport Master Plan calls for the following improvements to the airport:

- A new passenger terminal located on the east side of the airport,
- A new parallel runway, and
- Expansion of the general aviation apron

The relocation of US 231 will put the highway on the east side of the airport providing a new “front door” access to the airport and allow for the airport terminal to be moved. Moving the terminal will provide separation of the academic and general aviation uses from the commercial airline use and provide more space for all users. Better access to the airport will increase the potential of the airport to capture a larger share of the local air travel market. The portion of US 231

relocation project that directly provides Purdue University airport access is currently under final design.

Tippecanoe County Bicycle and Pedestrian Plan

The Tippecanoe County Bicycle and Pedestrian Plan was updated in August 1997. The plan identifies an implementation strategy to improve non-motorized travel within the Greater Lafayette Area. Focuses of the plan include education and promotion of non-motorized modes of travel, development of a master plan for the community with proposed bicycle/pedestrian facilities, and improved safety for the existing network. Within and near the study area, the plan includes the northern and southern extension of the Cattail Trail, adding a bicycle trail as part of CR 200N (Lindberg Road) widening, and a trail that would connect Fort Ouiatenon to Ross Hills Park.

1999 Park and Recreation Plan, Tippecanoe County, Indiana

The TCAPC prepared this plan, which serves as the joint recreational planning document for Tippecanoe County and the Cities of Lafayette and West Lafayette. The plan contains an inventory of recreational sites, issues analysis, and an action plan. The mission of the Tippecanoe County Park and Recreation Board is to acquire, expand, administer, program, and maintain large open space park and recreation facilities for all citizens of Tippecanoe County and to focus on recreational opportunities and preservation of the Wabash River and its tributaries. According to the plan, the cities will remain responsible for smaller neighborhood-level parks. Projects identified on the action plan within the study area include:

- Develop the greenway system to Hadley Lake,
- Develop naturalist programs for the Celery Bog Nature Center,
- Improve soccer opportunities community-wide,
- Develop a working relationship with the Focus on the Future Recreation Task Force to help construct the Wabash Township Greenway, and
- Convert Lindberg Road Soccer fields from lease from Purdue University to ownership by Tippecanoe County.

West Lafayette Recreation and Conservation Sites

The West Lafayette Recreation and Conservation Sites brochure provided by the City of West Lafayette identifies all existing and planned parks, trails, and bike lanes within and adjacent to the city. The city does not have a written recreation planning document. Existing and planned recreation sites in the city were identified by reviewing the brochure and coordinating with the city's recreation planner. All existing and planned

recreation facilities are identified in Exhibit CIA-3. Major planned facilities identified in the brochure include both north and south extensions of the Cattail Trail, a new trail parallel to CR 200N (Lindberg Road), an extension of Kalberer-Morehouse Greenway to Soldiers Home Road, a trail connecting South River Road with Cherry Lane in conjunction with the Western Interceptor (sewer line), and a trail adjacent to South River Road between State Street and Fort Ouiatenon.

2.2 Social Characteristics Of The Community

This section provides general population data for the study area and nearby localities, as well as data concerning age and disability, minority population, and income, to characterize residents of the study area and surrounding area.

2.2.1 Population

Tippecanoe County, which had a population of 148,955 in 2000, experienced an annual average compounded growth rate of 1.4 percent over the past 50 years (U.S. Bureau of the Census 2001). Tippecanoe County, Lafayette, and West Lafayette experienced a larger percent increase in population (14.1 percent, 28.9 percent, and 11.1 percent respectively) than did the state (9.7 percent) between 1990 and 2000 (Table 2). Wabash and Shelby Townships, which contain the study area, experienced substantially smaller percent increases (3.9 and 3.8 percent, respectively) than these and other political jurisdictions in the region (Table 2). The growth patterns represented in Table 2 are consistent with the 1981 Comprehensive Plan, which calls for building-out the urban area in the cities before expanding into the urbanizing area of Wabash Township or the rural area of Shelby Township.

**Table 2
Study Area Population Trends**

Geographic Area	1990 Population	2000 Population	2025 Projected Population ⁴	2000 Population as a Percent of County	Percent Change (1990-2000)	Average Annual Increase (1990-2000)	Average Annual Increase (2000-2025)
Wabash Township ¹	49,348	51,261	66,136	34%	3.9%	0.35%	0.98%
Shelby Township ¹	2,002	2,078	2,418	1%	3.8%	0.84%	0.58%
West Lafayette ²	25,907	28,778	30,537	19%	11.1%	0.96%	0.23%
Lafayette ³	43,764	56,397	55,172	38%	28.9%	2.33%	-0.08%
Tippecanoe County	130,598	148,955	199,920	NA	14.1%	1.20%	1.14%
State of Indiana	5,544,156	6,080,485	NA	NA	9.7%	0.84%	NA

Source: U.S. Bureau of the Census and TCAPC travel demand model.

¹The study area is located entirely within Wabash and Shelby Townships.

²West Lafayette’s population is also included in Wabash Township.

³Lafayette is located within several townships, none of which is included in this table.

⁴2025 population data were aggregated for each geographic area based on the TAZ population contained partially or completely within the jurisdiction’s boundary.

Population projections for 2025 were provided by the TCAPC and assumed in the travel demand model. These projections are based in part on the Land Use Element of the 1981 Comprehensive Plan. A detailed population projection methodology is found in the 2025 Transportation Plan. Between 2000 and 2025, the population of Tippecanoe County is projected to grow by more than 50,000 persons, a 34 percent increase. This represents an annual average compounded rate of 1.14 percent. Projections at the township and city levels are estimated based on the population projected for each TAZ contained partially or completely within the locality. As the TAZ boundary may not directly correspond with political boundaries, the 2025 population figures for the sub-county level may be slightly overestimated. Wabash Township has the highest projected annual growth rate of any city or township in the study area. The cities of Lafayette and West Lafayette have declining and lower growth rates than both townships, suggesting that the cities have reached or will be approaching full build-out by 2025.

2.2.2 Age and Disability

In the study area jurisdictions (Wabash and Shelby Townships), 24 to 27 percent of the population is school age (5 to 19 years of age) and seven to nine percent of the population is elderly (65 years of age or older) (Table 3). Wabash Township has the highest percentage of school age persons, and this population is more concentrated in the unincorporated portion of the township (i.e., not in the City of West Lafayette). A proportionally higher school age population places unique fiscal demands on a locality to provide schools, libraries, and recreational facilities. Students of Purdue University predominantly reside in Wabash Township, which includes the City of West Lafayette; therefore, it is not surprising that these two localities have the lowest median age in the region. Both study area localities (Wabash and Shelby Townships) have equal-sized or smaller elderly populations when compared to the county.

According to the 2000 Census, 4,701 persons (9.6 percent) of the civilian non-institutionalized population in Wabash Township, and 202 persons (10.6 percent) in Shelby Township identified themselves with a disability. At the county level, 20,073 persons (14.5 percent) of the civilian non-institutionalized population identified themselves with a disability. The CAC and the Tippecanoe County Division of Family and Children confirmed that there are no known concentrations (e.g., group homes) of disabled persons within the study area. Therefore, it is reasonable to assume that while disabled persons reside in the study area, they are dispersed throughout.

**Table 3
2000 Age Characteristics**

Geographic Area	School Age Population (5-19 years old)	Percent School Age	Elderly Population (65+ years old)	Percent Elderly	Median Age
Wabash Township ¹	13,662	27%	3,363	7%	21.9
Shelby Township ¹	489	24%	193	9%	38.4
West Lafayette ²	5,373	19%	2,227	8%	22.3
Lafayette ³	10,762	19%	6,775	12%	31.7
Tippecanoe County	34,079	23%	13,532	9%	27.2
State of Indiana	1,340,171	22%	752,831	12%	35.2

Source: U.S. Bureau of the Census

¹The study area is located entirely within Wabash and Shelby Townships.

²West Lafayette's population is also included in Wabash Township.

³Lafayette is located within several townships, none of which is included in this table.

2.2.3 Minority Population and National Origin

The statistics in Table 4 compare the racial and ethnic population in the study area to that of the surrounding jurisdictions. Total racial minority population for the study area ranges from two percent in Shelby Township to 17 percent in Wabash Township. In Wabash Township, Asian is the largest racial minority group, accounting for 11 percent of the total population. Purdue University's students and faculty contribute to the multi-racial and multi-cultural characteristics of the region. The townships within the study area (Wabash and Shelby Townships) have the lowest percentage of ethnic minority (Hispanic or Latino) population in the region. Specific concentrations of racial and ethnic minority populations are further discussed under Section 3.2.4: Environmental Justice.

**Table 4
2000 Racial and Ethnic Populations**

Geographic Area	White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some other race alone	Two or more races	Hispanic or Latino*	Percent Racial Minority (non-white)	Percent Ethnic Minority (Hispanic or Latino)
Wabash Township ¹	42,702	1,416	104	5,621	20	654	744	1,633	17%	3%
Shelby Township ¹	2,039	5	5	13	0	6	10	7	2%	0%
West Lafayette ²	23,985	684	45	3,263	9	336	456	920	17%	3%
Lafayette ³	50,143	1,816	210	689	24	2,601	914	5,136	11%	9%
Tippecanoe County	132,354	3,752	417	6,649	48	3,687	2,048	7,834	11%	5%
State of Indiana	5,320,022	510,034	15,815	59,126	2,005	97,811	75,672	214,536	13%	4%

¹The study area is located entirely within Wabash and Shelby Townships.

²West Lafayette’s population is also included in Wabash Township.

³Lafayette is located within several townships, none of which are included in this table.

⁴Hispanic or Latino is an ethnic population and may be of any race. The population represented in the Hispanic or Latino category is also included in the racial breakdown.

At the county-level, 91.8 percent of the population is native; but of the 8.2 percent who are foreign born, over 80 percent were born in Asia or Latin America. In Wabash Township, 86.6 percent of the population is native; but of the 13.4 percent who are foreign born, over 69 percent were born in Asia. In Shelby Township, 98.4 percent of the population is native; but of the 1.6 percent who are foreign born; 54 percent were born in Europe. (U.S. Bureau of the Census 2001.)

2.2.4 Income

Table 5 shows the relative income levels of residents of the study area. Of the localities included in Table 5, Shelby Township had the highest per capita income (\$29,325) and median household income (\$65,000) and the lowest percentage of residents below the poverty level (4.7 percent). Residents of Wabash Township had the lowest per capita income (\$16,811), while West Lafayette had the lowest median household income (\$24,869) and largest percent of the population below the poverty level (38.3 percent). The lower incomes of Purdue University students are clearly reflected in the income data for both Wabash Township and West Lafayette.

Table 5
1999 Income Characteristics

Geographic Area	Median Household Income in 1999	Per Capita Income in 1999	Below the Poverty Level in 1999
Wabash Township ¹	\$29,045	\$16,811	30.1%
Shelby Township ¹	\$65,000	\$29,325	4.7%
West Lafayette ²	\$24,869	\$18,337	38.3%
Lafayette ³	\$35,859	\$19,217	12.1%
Tippecanoe County	\$38,652	\$19,375	15.4%
State of Indiana	\$41,567	\$20,397	9.5%

Source: U.S. Bureau of the Census

¹ The study area is located entirely within Wabash and Shelby Townships.

² West Lafayette's population is also included in Wabash Township.

³ Lafayette is located within several townships, none of which are included in this table.

From 1989 to 1999, the income characteristics of the region improved overall. During this time, the median household income in Wabash Township increased by 32 percent and the median household income in Shelby Township increased by 72 percent. Gains in income levels occurred throughout the region.

During the 1999/2000 school year, 4,137 students in Tippecanoe County (22 percent) received free and reduced cost lunches (STATS Indiana 2002). Less than two percent of the students in Klondike Elementary and Middle Schools receive free or reduced cost lunches, which suggests that school-age lower-income residents are not as concentrated within the study area as they are within the county. CAC exercises identified possible concentrations of lower-income populations and efforts were made to avoid and minimize impacts to these communities (CAC Meeting 7/25/02).

2.2.5 Community Cohesion and Character

Essentially, there are four general communities within the study area: Purdue University, the City of West Lafayette, unincorporated Wabash Township, and Shelby Township. Each of these communities has distinct neighborhoods, community focal points, and activity centers. Each is wholly or partially responsible to provide emergency services, education, and government to the residents of its communities. CAC members noted that a common school district and emergency service area were the most unifying elements throughout each community (CAC Meeting 7/25/02). A general description of each of these communities follows.

Purdue University is located in the southeast corner of the study area. While the core campus is located east of the study area, residence halls, intramural

recreational fields, golf courses, agricultural research facilities, and the airport are located within the study area. Founded in 1869, Purdue University is a public, doctoral-granting research university. Enrollment for the 2001 school year was over 38,000, and approximately one-third of the student body lives in on-campus student housing (Purdue University Facts online, 2002). Purdue University also serves as a major regional employer and focal point for community events. Because many students choose to live in off-campus housing, some apartment complexes, such as Jefferson Commons, Blackbird Farms, McCormick Place, and the Lodge, are more associated with the university than within the locality in which they are located. Additionally, CAC members generally do not consider these student residents as members of their community since they do not share the same services and needs (CAC Meeting 7/25/02).

The City of West Lafayette is located in the eastern portion of the study area and east of the study area. Land use within the city portion of the study area includes multi-family residential development, portions of Purdue Research Park, and Celery Bog Nature Area. Outside the study area, the former Sears/Levee site is currently being redeveloped as mixed-use development and will provide a community focal point known as Wabash Landing. Some development has been completed. At full build-out, Wabash Landing will have upscale apartments, shopping, dining, and entertainment facilities. It is connected to downtown Lafayette via a pedestrian bridge over the Wabash River. Students within West Lafayette may attend one of the three elementary schools, West Lafayette Junior High, or West Lafayette High School, all of which are administered by the West Lafayette Community School Corporation.

A majority of the study area is within the unincorporated portion of Wabash Township. Due to suburban developments, residents have expressed concern about the loss of a "rural feeling" in their community (Focus on the Future 1996). There are limited commercial and cultural focal points for the residents in the unincorporated portion of Wabash Township, as most of the opportunities are within the City of West Lafayette or Purdue University. Residents of unincorporated Wabash Township may identify themselves with one of the many planned subdivisions in the area or Wabash Township, as a whole. Students within the study area are within the Tippecanoe School Corporation district and may attend Klondike Elementary School, Klondike Middle School, or Harrison High School.

Shelby Township is more rural than Wabash Township. Economically and socially, residents of Shelby Township are more likely to be affiliated with Benton County than Tippecanoe County. School age residents generally attend Benton County schools and adults may work or shop in the town of Otterbein. Otterbein is west of the study area and is generally more convenient for Shelby Township residents than the City of West Lafayette. However, due to school district boundaries, some residents of southeastern Shelby Township may fall within the Tippecanoe County School District. Depending on their geographic location, residents of Shelby Township may identify themselves with one of the large lot subdivisions in the township, Montmorenci, which is located in the northwest corner of the study area, or Otterbein.

2.2.6 Neighborhoods, Community Focal Points, and Activity Centers

Exhibit CIA-3 identifies the established and developing neighborhoods in the study area. Neighborhoods range from high-density apartment complexes to large-lot rural residences. Due to the number and diversity of neighborhoods in the study area, only those that may be directly affected by the proposed Build Alternative alignments that were carried forward for detailed study are included in Table 6. The descriptions provided for each neighborhood are an assimilation of observations provided by CAC members and features identified during ground surveys. The descriptions are qualitative, but are provided to highlight the perceived similarities and differences between neighborhoods and the estimated level of existing community cohesion.

**Table 6
Neighborhoods Potentially Affected by Build Alternative Alignments**

Neighborhood	Description
Appleridge at the Orchard	Appleridge at the Orchard is a new neighborhood just east of Pine Meadows on SR 26. At full build-out, it is anticipated that it will feature approximately 30 detached, single-family homes.
Blackbird Farms	Blackbird Farms is a multi-density neighborhood that includes both single-family and multi-family dwelling units. It is located southeast of the McCormick and Lindberg Road intersection and was developed 1990s. According to the 2000 Census, there are over 200 households in the neighborhood. Approximately half are renter-occupied and half are owner-occupied. Residents have easy access to Celery Bog Nature Area, West Lafayette, and Purdue University. The apartments at Blackbird Farms are marketed to Purdue University students and young professionals. Residents note problems with sporting event traffic and the increase in traffic associated with student apartments. A day care center in West Lafayette Baptist Church is located north of Lindberg Road and is easily accessible to residents of this neighborhood. James Williams is Blackbird Farms’ representative on the CAC.
Brindon Woods	Brindon Woods is a multi-density housing complex completed in 2002. It is located southwest of US 52 and McCormick Road and is primarily renter-occupied. A small strip mall and car wash are located between the Brindon Woods development and US 52. A day care center operated by Bethel Life Christian Center is adjacent to the neighborhood.

Neighborhood	Description
Carrington Estates / Pine View Farms / Woodmar Court	Carrington Estates and Pine View Farms are located southwest of US 52 and McCormick Road. Both neighborhoods consist of single-family detached homes. The first phase of Carrington Farms, which is completed, has over 150 households. The second phase is to consist of approximately 130 households. Woodmar Court is adjacent to both neighborhoods and contains duplexes. The 2000 Census noted a range of 26-60 percent renter-occupied units for the two census blocks that represent these three neighborhoods. According to the Wabash Township assessor, the 1998 and 1999 average home sales price in Carrington Estates and Pine View Farms is \$110,020. A day care center operated by Bethel Life Christian Center is located across McCormick Road from these neighborhoods. Joanne Thomson and Drake Lindsay represent these neighborhoods on the CAC.
Copper Beech Townhomes (planned)	Copper Beech Townhomes is a planned and approved rental unit development with 202 townhomes on 14 acres. It is expected that Purdue University students would primarily occupy the units. It is planned to be located on the east side of Klondike Road just south of Pointe West. Construction has not been initiated.
Lindberg Village	Lindberg Village will provide multi-density housing, including both single and multi-family. As planned, it will have 545 homes on 160 acres. It is currently being developed between CR 200 N, CR 250 N, CR 300 W (Klondike Road), and CR 400 W. Existing development includes similar style duplex dwellings with a current sales price of \$134,935. Existing units are both owner- and renter-occupied. The existing units are on small lots.
The Lodge	The Lodge is an apartment complex on Cumberland Avenue that was completed in 2001. It has 96 apartments in 12 buildings and provides off-campus housing for Purdue University students. Residents have easy access to the Greater Lafayette Public Transportation Corporation (GLPTC) bus line and the commercial establishments at US 52 and Cumberland Avenue.
McCormick Place Apartments	McCormick Place is an apartment complex that was completed in 2002. It has 200 apartments in seven buildings and is primarily occupied by Purdue University students. This complex has a more suburban feel than other student apartment complexes and is close to campus and Celery Bog Nature Area.
McQuinn Estates	McQuinn Estates is an established single-family neighborhood north of SR 26 between Green Meadows and Appleridge at the Orchard. The homes are owner-occupied and prices range from \$118,000 to \$280,000. William Fitzgerald is McQuinn Estates' representative on the CAC.
Pemberly Court	Pemberly Court consists of over 80 renter-occupied duplex units and is closely associated with Pointe West, a neighborhood described below. Ruby Haltom is Pemberly Court's representative on the CAC.
Pointe West	Pointe West is a manufactured home community with over 370 homes in a neighborhood both east and west of Klondike Road. Residents can walk to the Klondike Mall, which has small retail stores and services.
Sherwood Forest	Sherwood Forest is located on CR 200 N, east of Wake Robin. It is comprised of single-family detached homes, which are primarily owner-occupied. It is an older neighborhood with established vegetation. The resident mix includes the original homeowners, as well as younger families. Residents of the neighborhood value their easy access to Lindberg Road Soccer Fields and other recreational opportunities. Residents consider the neighborhood to be quiet and safe (CAC meeting, 7/25/02). According to the Wabash Township assessor, the 1998 and 1999 average home sales price in Sherwood Forest was \$204,860. Jon Harbor is Sherwood Forest's representative on the CAC.
Sugar Hill	Sugar Hill is a small and established neighborhood of less than 20 post-World War II homes located west of McCormick Road near the Purdue University Campus. Rosemary Barnett is Sugar Hill's representative on the CAC.
Wake Robin	Wake Robin is a development of single-family detached homes in a variety of styles. Most of the homes are primarily owner-occupied and many homeowners are affiliated with Purdue University. There are three phases of development. Phase II was recently completed and has more families with young children than Phase I. The road infrastructure for Phase III has been completed. Residents value the quiet, friendly, safe nature of their neighborhood (CAC meeting, 7/25/02). According to the Wabash Township assessor, the 1998 and 1999 average home sales price in Wake Robin was \$155,600. Cindy Oneal is Wake Robin's representative on the CAC.

Source: Michael Baker Jr. 2002.

As shown in Exhibit CIA-3 the community focal points and activity centers within the study area include:

- Religious facilities: Bethel Christian Life Center Assembly of God, Faith Presbyterian Church, First Methodist Church, Grace Baptist Church, New Life Tabernacle, Weaver Chapel United Methodist, West Lafayette Christian, West Side Bible Fellowship, and White Horse Christian Center
- Schools: Klondike Elementary School and Klondike Middle School
- Child care centers: Bethel Child Care Ministry, Burgett’s Child Care Center, Indian Creek and Little Indian Creek Child Care, Sonshine Preschool, and Wonderful Weekdays, Inc. Additional home-based child care centers exist in several neighborhoods, but are not included in Exhibit CIA-3
- Recreation areas are identified Exhibit CIA-3 and described in Table 7
- Retail centers: along US 52, on CR 526 (Airport Road) in Purdue West, and on Klondike Road

2.2.7 Recreation Resources

Public and private recreational areas within the study area enhance the quality of life for residents and may serve as community focal points. Recreation resources within and adjacent to the study area are identified in Exhibit CIA-3 and described in Table 7. CAC members and the public provided information regarding the intensity and type of recreational use of these facilities, as well as the location of roads used for recreation.

**Table 7
Parks and Recreational Areas within the Study Area**

Name	Description of Facility	Owner
Ackerman Hill Golf Course*	18-hole golf course, part of the Birck Boilermaker Golf Complex. Open to the public.	Purdue University
Celery Bog Nature Area, including Lilly Nature Center and Cattail Trail*	Nature park with bicycle/pedestrian trails and a center for environmental education. Free and open to the public.	West Lafayette
Elks Country Club	Private country club on 110 acres with an 18-hole golf course, swimming pool, and reception facilities. Membership required.	B.P.O. Lodge 143
Horticulture Park*	Nature park and environmental education facility. Free and open to the public.	Purdue University
Intramural Playing Fields (Black Fields Athletic Site and Central Athletic Site)	Baseball, softball, soccer, and open space fields found throughout the campus. Free and open to the public when not being used for university activities.	Purdue University
Kampen Golf Course*	18-hole golf course, part of the Birck Boilermaker Golf Complex. Open to the public.	Purdue University

Name	Description of Facility	Owner
Klondike Elementary and Middle Schools*	Baseball, softball, basketball, football, track, and playgrounds. Free and open to the public.	Tippecanoe School Corporation (Tippecanoe County)
Lindberg Road Soccer Fields	Soccer fields on 15 acres. Used primarily for Tippecanoe County's soccer league practice and games.	Purdue University, but leased by Tippecanoe County Parks and Recreation
McCormick's Woods	Nature trails. Free and open to the public. McCormick's Woods is also used as a research facility for the forestry department.	Purdue University
Northwest Athletic Fields Site (planned)	Planned site for club and intramural recreational fields.	Purdue University
Orchard of Golf	Golf driving range, open to the public	Private
Par View Golf Course	18-hole golf course on 34.6 acres. Open to the public.	Private
Pickett Memorial Park	Open space park with picnic tables and grills. Free and open to the public when not reserved for a university function.	Purdue University
Purdue Varsity Soccer Complex	Soccer field and stadium for Purdue University. Tournaments for local high schools may also be played here.	Purdue University

Source: Michael Baker Jr. 2002

*Section 4(f) resources.

Based on ownership, there are three types of recreational facilities within the study area: public facilities, private facilities, and Purdue University facilities, which have characteristics of both.

As publicly-owned and managed facilities, Celery Bog Nature Area and the recreational facilities at Klondike Elementary and Middle Schools provide free and unlimited recreational access for the residents of the community. Lindberg Road Soccer Fields were identified by members of the CAC meeting as a key community recreational facility, used for soccer league play in addition to other activities (CAC Meeting 7/25/02).

Purdue University is a public university and its recreational facilities are managed primarily for the use of its student body. In general, the public is permitted to use the facilities of Horticulture Park, Intramural Playing Fields, McCormick's Woods, and Pickett Memorial Park free-of-charge as long as the use does not conflict with an official university use. The Ackerman Hill and Kampen golf courses owned by Purdue University are open to the general public; both courses are fee-based.

Privately owned facilities, such as Elks Country Club, Par View Golf Course, Orchards of Golf, generally charge a fee for use and may or may not be open to the public. Purdue University has planned to develop athletic fields between Cherry Lane,

McCormick Road, and the KBS railroad. This site is called the Northwest Athletic Site and would provide a variety of fields for club and intramural play.

There are few officially designated bicycle facilities within the study area. Existing pedestrian and bicycle facilities in and adjacent to the study area are the Northwest Greenway Trail, Cattail Trail (which is located within Celery Bog Nature Area), and Wabash Heritage Trail. These trails are publicly owned and managed by the City of West Lafayette or Tippecanoe County. Within the study area, there are very few pedestrian facilities, as most streets do not have sidewalks. However, the Purdue University campus, which has multiple sidewalks and trails, is more pedestrian oriented. Also, the recently completed section of US 231 includes a pedestrian and bicycle facility. The City of West Lafayette is planning to extend and add bicycle and pedestrian trails along McCormick and Airport/McCormick Roads. Wabash Township and Tippecanoe County are coordinating to develop a greenway system, known as the Wabash Township Greenway, that would connect Celery Bog Nature Area and Fort Ouiatenon; but funding and property have not yet been obtained.

Unless restricted by law, such as on highways, pedestrians and cyclists can use existing roadway facilities for recreation and transportation. Pedestrians' and cyclists' preference is often for roads with lower traffic volumes, a variety of terrain, looped routes, and scenic views. They may use the roads to access work, school, other recreational sites, to visit friends, or for general recreation. Exhibit CIA-3 illustrates the designated bicycle trails and preferred routes within and adjacent to the study area. Localities have built and maintain designated bicycle trails, such as the Cattail Trail and the Kalberer-Morehouse Greenway, to provide recreational opportunities with minimal traffic interaction. Popular bicycle routes on existing roadways open to vehicle, bicycle, and pedestrian traffic, were identified by private bicycle clubs, Tippecanoe County, the City of West Lafayette, and through meetings with the CAC. A CAC comment notes: "The facilities (pedestrian and bicycle) most frequently used are the roads themselves. McCormick, Lindberg, Cherry Lane, Klondike, Newman Rd., Division, South River Road, and SR 26 (to a lesser degree) are all popular routes... In other words, if it's paved we use it" (Deverall, 2002). CAC members also noted that Lindberg Road connects bicyclists and pedestrians in numerous neighborhoods with the recreational opportunities in Celery Bog Nature Area and the Lindberg Road Soccer Fields (CAC Meeting 7/25/02).

Although the Indiana Department of Natural Resources Wabash-Wildcat Region Bikeway is no longer maintained as part of the Hoosier Bikeway System, these roads may still be used for recreation.

2.2.8 Emergency Services and Safety

Tippecanoe County is served by a countywide 911 emergency management system. This system coordinates and dispatches emergency units to incidents based on location, availability, and severity. Each of the four communities (Purdue University, West Lafayette, unincorporated Wabash Township, and Shelby Township) has its own emergency response unit (Exhibit CIA-3).

Both Purdue University and the City of West Lafayette have their own fire and police departments and stations. As requested by 911, they may also assist with any incident located throughout the county based on cooperative service agreements between all emergency services in the county.

The Wabash Township Volunteer Fire Department provides fire protection in Wabash Township. There are two fire stations that cover the unincorporated portion of Wabash Township: Station #1 (on Klondike Road north of CR 250N and south of US 52) and Station #2 (on Newman Road north of South River Road). Generally, Station #1 responds to all incidents north of SR 26 and Station #2 responds to all incidents south of SR 26. Fire hydrants are located in some neighborhoods north of SR 26; if a fire hydrant is not available, a tanker from Station #1 is dispatched with the fire engines. The fire department also provides medical emergency first responder services, but does not transport patients. Over 75 percent of all incidents are medical emergencies. Should transport be required, a county-owned ambulance stationed at either St. Elizabeth Hospital or Home Hospital is dispatched to transport from the incident back to the hospital. Both hospitals are located in Lafayette and the hospitals provide staff to man the ambulances.

The Tippecanoe County Sheriff provides law enforcement to the unincorporated portion of Wabash Township. The 911-computer system identifies and dispatches the closest officers to the incident. Officers are rarely at the station located north of the study area along I-65, as each patrol vehicle is equipped with a mobile data computer terminal. The department has 49 sworn police officers to provide coverage for the county (Tippecanoe County Sheriff, website, 2002).

In Shelby Township, the Otterbein Volunteer Fire and Rescue Department provides fire protection and ambulance service. The department has two engines, two tankers, one brush truck, two ambulances, and a rescue vehicle. Instead of relying on ambulances located at the hospitals, the department provides emergency medical assistance and transportation from Shelby Township to any of Lafayette's hospitals. The department is located in Otterbein and is staffed by 25 volunteers, who generally work in either Benton or Tippecanoe County. The Tippecanoe County Sheriff's department also provides Law enforcement for Shelby Township.

As discussed above, the individual fire, police and emergency units have their respective jurisdictions; however, all will respond to emergencies within the study area as needed. Access to emergencies is provided along the roadway network within the study area. A community concern about the proposed project is whether the new roadway will cut off existing roadways and thus impede emergency personnel in responding to emergencies (CAC Meetings 5/16/02 and 7/25/02).

In addition to medical emergencies, communities have two types of safety concerns: traffic safety and personal safety against crime. Traffic safety is often quantified through an analysis of the type and location of vehicle and bicycle/pedestrian crashes. Available crash data along the existing US 231 corridor was provided by the TCAPC and presented in Chapter 1 of the Environmental Document. Several intersections along US 231 and SR 26 (State Street) in the vicinity of Purdue University were identified as experiencing ten or more crashes per year or having more than one pedestrian or bicycle crash per year. Residents have noted concerns that additional traffic in their neighborhood would likely increase the number of crashes. Specifically, residents suggest that the proposed project would add traffic to existing roads, neighborhoods, and community facilities, thereby endangering children and reducing bicycle and pedestrian safety.

Personal safety from crime does not appear to be a major concern of area residents, adding, in part, to the attractiveness of the neighborhoods within the study area.

2.2.9 Travel Patterns and Accessibility

Primary modes of travel in the study area include private vehicle, bus, bicycle, or walking. Several classifications of roadways exist within the study area including 4-lane divided highways (US 52 and relocated US 231), 2- and 4-lane urban arterial streets (e.g., SR 26 and River Road), rural county roads (e.g., CR 200N, CR 300W, McCormick Road) and neighborhood streets. All the roadways in the study area are

available for all modes of travel identified above and provide for local circulation. The roadways designated as state routes also carry inter-city and more statewide traffic. Access to neighborhoods is provided predominately through the network of rural county roads.

Tippecanoe County is located between Chicago and Indianapolis along I-65 (Exhibit CIA-1). The proposed project is considered part of the Statewide Mobility Corridor to enhance the connection between metropolitan areas.

Within the study area, travel is focused southeast towards West Lafayette and Lafayette; however, some residents in Shelby Township may be more likely to travel into Benton County and the Town of Otterbein. Travel patterns and their associated traffic volumes and congestion levels are discussed in more detail in the Engineer's Report. CAC exercises confirmed that local travel patterns are generally to the southeast towards Purdue University and southeastern Lafayette. Additional daily trip attractions for CAC members and their neighbors are the Wal-Mart on Cumberland Avenue, Klondike Elementary and Middle Schools, and grocery stores in the City of West Lafayette (CAC Meeting 7/25/02).

Occasional special events create a change in the everyday traffic patterns within the study area. Purdue University's events, particularly football games, are major but temporary traffic generators. Football games can draw over 60,000 persons; the annual Fourth of July celebration can draw over 50,000; and basketball games can draw 15,000. While the number of football games and events are limited to fewer than 10 events per year, event traffic can create a temporary inconvenience for local residents of the study area. Purdue University Police, with the assistance of other local law enforcement officers, temporarily alter traffic patterns to maximize traffic volumes into and out of the stadium and its parking lots. For example, McCormick Road can be used as a one-way road for vehicles to travel north away from the campus after the event. There is no set traffic plan for events because conditions, including the availability of other roads, weather, traffic volume, the location of parking lots, can change from event to event.

The Feast of the Hunter's Moon is also a major annual event held at Fort Ouiatenon Historic Park each fall. Since 1967, it has been a re-creation of a mid 1700's annual fall gathering of the French and Native Americans at Fort Ouiatenon's fur-trading outpost. Shuttle busses run from Purdue University's parking lots at Ross-Ade Stadium to the event. This weekend event draws spectators from all parts of the state and other areas.

Traffic congestion levels can alter travel patterns and influence quality of life. Measures of congestion (i.e., specific volumes and levels of service) for roadway segments throughout the study area are reported in the Engineer's Report. Although in 1999, only segments of US 52, US 231, River Road, and the Harrison Bridge had an unacceptable level of service (LOS) (LOS D or E), residents have identified additional segments or intersections that they believe are congested. This *perception* of congestion differs from the congestion analyzed in the Engineer's Report because it is based on human opinion and not on the volume and capacity of the roadway. While multiple comments note that the intersection at Lindberg and McCormick roads is currently too congested, data, as reported in the Engineer's Report, indicate that these road segments operate at a LOS between A and C - acceptable levels of service. The comments do suggest that residents of the neighborhoods within the study area expect routes around their neighborhood to maintain a rural feel and remain uncongested. Actual or perceived congestion may make an area less attractive and may prompt residents to choose alternative routes.

Greater Lafayette Public Transportation Corporation (GLPTC) provides bus service for West Lafayette, Purdue University, and Lafayette via 14 routes. The central bus terminal is located at Riehle Plaza (Big Four Depot) on Second and Ferry Streets in Lafayette and provides multi-modal connections to Amtrak, Greyhound, and taxi services. Bus service is provided up to seven days a week. Fares range from free-of-charge to \$0.75. In 2000, more than 2.8 million passengers were served by the city bus system, a 66 percent increase over 1998. Ridership for 2001 was approximately 3.1 million riders (GLPTC 2002). There is an unlimited access agreement with Purdue University, which provides fare-free rides to students and university staff. Purdue University pays for this service through student fees. Free rides are also available for local youth in kindergarten through 12th grade.

The study area is served by one bus route: Route 8 Klondike, which provides service to Wal-Mart on US 52, CR 300W (Klondike Road), CR 200N (Lindberg Road), SR 526 (McCormick Road), and the Purdue University campus. Three of the other routes provide service to the Purdue University campus, but do not enter the study area. An additional nine routes exclusively serve the Purdue University campus during the fall and spring semesters (GLPTC 2002).

Tippecanoe School Corporation provides a two-tiered bus service for its students. Twenty-two bus routes transport students to Klondike Elementary and Middle Schools and eight bus routes transport students from the study area to Harrison

High School. The bus routes are revised each school year based on changes in attendance and students driving personal vehicles.

The Area IV Agency on Aging and Community Services, Inc. provides demand responsive rural transportation services for the elderly in the outlying areas of the Greater Lafayette area. There are two private taxi services and three private limousine services that serve the West Lafayette area located in Lafayette. Door-to-door and 24-hour services are available.

Greyhound Bus Lines provides three daily connections to Indianapolis and three daily connections to Chicago, Illinois. The connection point and ticket office are located at Riehle Plaza (Big Four Depot) on Second Street in downtown Lafayette.

The Purdue University Airport (LAF) is located west of the Purdue University campus, adjacent to and west of the section of US 231 currently under final design. As the second busiest airport in Indiana, over 170,000 aircraft operations occurred at the airport in 1998 (Purdue University 2002, and Purdue University February 2001). Commercial air travel is provided by Northwest Airlines. Two arriving and two departing flights between Detroit, Michigan are available daily. Over 16,300 enplaned passengers were served in 2000. Twenty-year forecasts project enplanements to increase to between 20,000 and 80,000 passengers annually (Purdue University February 2001). The closest alternative commercial air travel is in Indianapolis, located 63 miles to the southeast, and in Chicago, located 130 miles to the northwest.

Bicycle and pedestrian routes and travel patterns are described in the Recreation Resources section in Section 2.2: Social Characteristics of the Community.

2.3 Economic Characteristics Of The Community

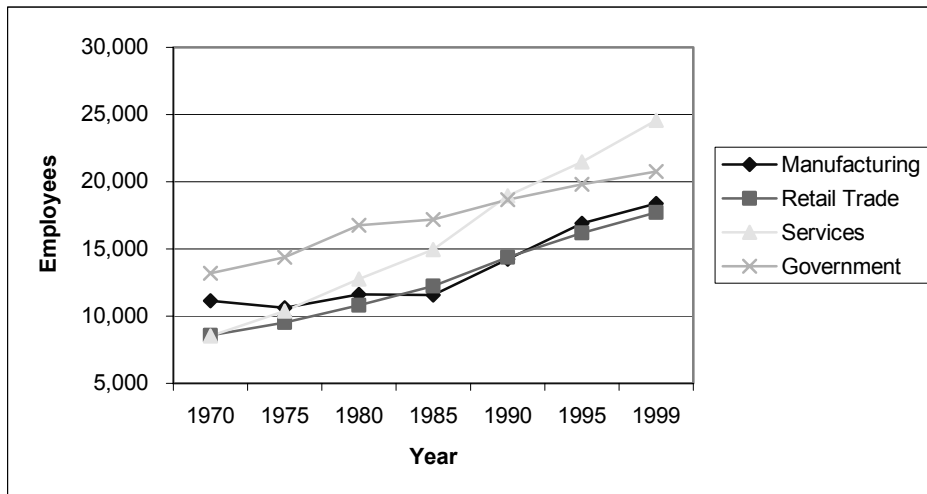
This section provides the employment and unemployment trends for Tippecanoe County and identifies commercial centers within the study area. The economic basis for the study area is diversified and includes the influences of Purdue University and agriculture.

2.3.1 Employment and Unemployment

Tippecanoe County has a stable, healthy, and relatively diverse economy, when compared to the State of Indiana. Total full- and part-time employment in Tippecanoe County in 1999 was over 98,000 jobs with average earnings per job of \$29,537 (U.S. Bureau Of Economic Analysis, 1999). For the past three decades, the

major employment sectors have been services, government, manufacturing and retail trade, sectors that accounted for 83 percent of Tippecanoe County’s total employment in 1999 (Figure 1). Although agricultural-related employment accounted for only 1,900 jobs in Tippecanoe County in 1999, the social, environmental, and visual influence of agriculture is evident throughout the study area, as documented in this study. In Tippecanoe County, retail sales increased from \$1,120,000 in 1992 to \$1,479,813 in 1997 (U.S. Bureau of the Census 1997). Countywide, the average employment growth rate was 2.5 percent annually between 1990 and 1999 (U.S. Bureau Of Economic Analysis 2002).

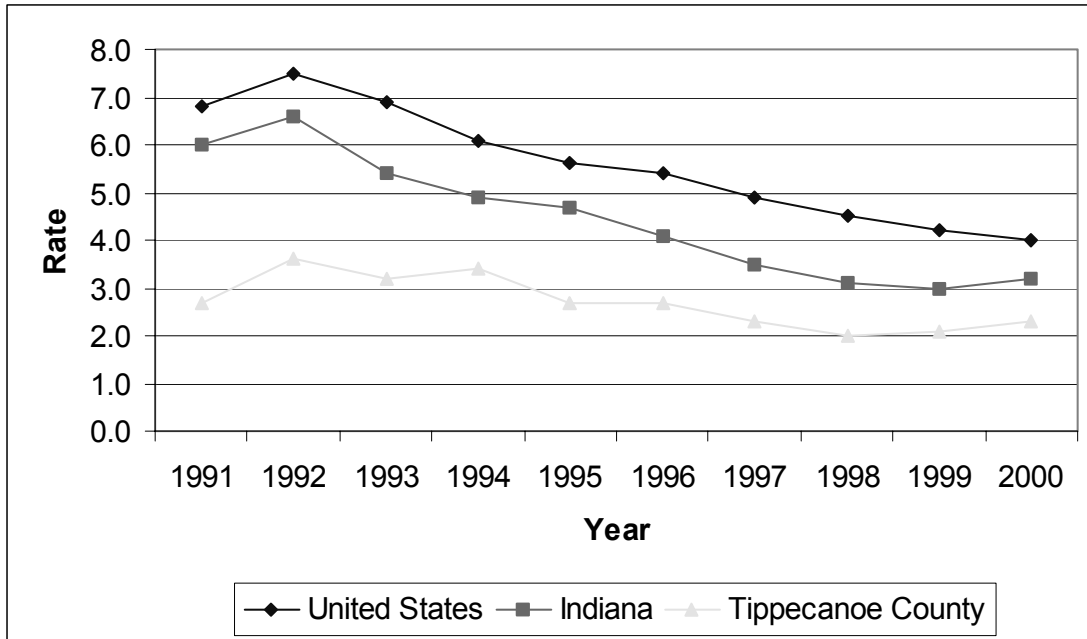
Figure 1
Tippecanoe County Sector Employment Trends



Source: U.S. Bureau of Economic Analysis 1999

Tippecanoe County’s unemployment rates have roughly mirrored, but have remained at least one percent less than, state and national rates (Figure 2). This is due in part to the diversification of the economy and the steady employment influence of Purdue University, the Lafayette region’s biggest employer (Table 8).

**Figure 2
Unemployment Rate Trends**



Source: U.S. Bureau of Labor Statistics 2001

Local taxing districts are stratified, and the largest district is at the county level. In addition to the Tippecanoe County tax district and taxes, there are city, township, school, and library tax districts and taxes. Currently, commercial and industrial properties provide 60 percent of the total tax revenues, residential properties provide 38 percent, and utilities provide 23 percent. Lands in agricultural production receive a tax break based on their productivity index and use. Tax rates are the same for commercial and residential properties. Annual assessments for Tippecanoe County increased from 1.8 billion in 1985 to 4.8 billion in 2000 (McKee 2001).

2.3.2 Business Districts and Employment Centers

As noted in Exhibit CIA-2, commercial development within the study area is concentrated in Purdue West in the southeastern corner of the study area, along US 52 in the northeastern corner, along CR 300W (Klondike Road), and north of CR 250N. Wal-Mart at Cumberland Avenue and US 52 is currently the only major retail outlet within the study area, although a Meijer store is planned for the northwest corner of US 52 and McCormick Road. Smaller scale and highway-related retail is located on US 52 and Klondike Road within the study area. Outside of the study area, West Lafayette’s central business district is located at the eastern edge of Purdue University along State Street and Northeastern Avenue. CAC members note

that they most frequently patronize the Wal-Mart on Cumberland Avenue, other retail in West Lafayette, and the big-box retail in southeastern Lafayette.

Major employers in Tippecanoe County and the study area are identified in Table 8.

**Table 8
Major Lafayette Area Employers**

Company	Employees	Product/Business
Purdue University	12,250	Education
Wabash National Corporation	3,600	Commercial semi-trailers
Subaru-Isuzu Corporation	3,200	Automobile/trucks
Caterpillar Tractor	1,400	Diesel engines
Eli Lilly and Company	1,275	Pharmaceutical/agricultural
Fairfield Engineering	1,065	Custom gear shafts/drives
Lafayette School Corporation	1,005	Education
Alcoa	900	Aluminum extrusions
Arnett Clinic	798	Medical clinic
Tippecanoe School Corporation	780	Education
Lafayette Venetian Blind	702	Custom window coverings
State Farm Insurance	605	Regional claims center
Indiana Veteran’s Home	540	Long-term care
Bank One Lafayette	528	Bank
McDonald’s Restaurants	469	Restaurants
Ross Gear Division/TRW	460	Steering gears
Tippecanoe County Government	447	Government
Ruston Corporation	350	Custom molded plastic parts
Great Lakes Chemical	310	Corporate office and R&D

Source: Greater Lafayette Progress 2002

Note: Companies in bold are located within the study area.

As shown in Table 1, total employment in Tippecanoe County is projected to reach over 131,000 jobs in 2025, representing a 36 percent increase from 1999 (TCAPC 2001). Within the study area, the new employment growth will be concentrated in Discovery Park on the Purdue University campus, the retail expansion area on US 52 (i.e., the Meijer store), and in the expanding Purdue Research Park. The study area is slated to have a larger percentage of the employment growth than the City of West Lafayette, unincorporated Wabash Township, or Shelby Township individually, due to the concentration of Purdue University-affiliated expansions and commercial development of the urbanizing area within the study area.

3.0 COMMUNITY IMPACT ASSESSMENT

The National Environmental Policy Act (NEPA), as amended (42 USC §4321 et seq.), by statutory action and implemented by the USDOT (23 CFR §771.119), requires that environmental assessments determine which aspects of proposed federally-funded actions have the potential for social, economic, or environmental effects.

Accordingly, this chapter details the direct, indirect (or secondary), and cumulative effects of the proposed project to the community.

Indirect effects and secondary effects are synonymous. Indirect effects are defined as those effects "that are caused by an action and are later in time or farther removed in distance, but still reasonably foreseeable" (40 CFR §1508.8). This type of effect is typically considered an effect indirectly caused or induced by a proposed project. Indirect effects are discussed where applicable.

Cumulative effects are defined as those effects that "result from the incremental consequences of an action when added to other past and reasonably foreseeable future actions" (40 CFR §1508.7). Foreseeable actions are generally defined as those actions for which plans exist. Federally- and privately-sponsored past and future actions are considered. Cumulative land use, social, and economic interactions are summarized at the end of this report.

In the impact discussions that follow, the No-Build Alternative is compared to the Build Alternative alignments. While both the No-Build and Build Alternatives include other planned transportation projects, the focus of the direct impact analyses is the "footprint" impacts of the proposed project. Except where it is directly relevant for comparison purposes, the discussion of impacts from other projects included in the No-Build and Build Alternatives is limited to the sections on secondary and cumulative impacts.

3.1 Impacts To The Physical Characteristics Of The Community

3.1.1 Direct Land Use and Infrastructure Impacts

Direct land use impacts, which describe the conversion of land from existing uses as a direct result of the construction of the project, were estimated based on a worst-case scenario. As final design has not been completed for the Build Alternative alignments, an approximate 300-foot "footprint" width was selected to provide adequate right-of-way for four travel lanes, a median, and a roadside border area. Land use impacts that occur within the footprint width were determined for each alignment. However, because the actual roadway cross-section may differ from the 300-foot wide "footprint," it is unlikely that the total footprint land use impacts represent the precise impacts that would occur if an alignment were constructed.

Table 9 provides a comparison of the types of land use affected by each of the Build Alternative alignments. The percentage land use type should be directly compared, rather than the absolute area of affected land use. The No-Build Alternative would

not have any direct land use impacts. Lines 4 and 10 affect the largest total area and, as such, have the largest "footprint." Line 1 affects the smallest area out of all the Build Alternative alignments. Line 1 affects the largest amount of developed land (20 percent of the total alignment area is developed), while Line 9 affects the smallest amount of developed land (nine percent of the total alignment area).

The loss of farmlands and open space is a persistent community concern (1981 Comprehensive Plan, Focus on the Future). A detailed farmland impact analysis is provided in Section 3.1.3. As noted in Table 9, the largest percentage of the impacts to land use will affect farmlands and undeveloped parcels. If fewer farmlands and undeveloped lands are affected, then impacts to developed lands are more likely and the number of residential, community, and/or business displacements will likely increase. Comments and plans also note that impacts to existing homes and businesses should be kept to a minimum. The social and economic implications of the land use impacts to farmlands, residential areas, and businesses are discussed in detail in the following sections. Impacts to land cover (i.e., vegetation) are discussed in the Environmental Document under Natural Environment.

There are no direct impacts to water and sewer infrastructure by the No-Build Alternative or Build Alternative alignments. Lines 1, 7, and 9 use portions of existing roads and locally alter traffic patterns. Line 1 also displaces a power sub-station at the corner of McCormick and Lindberg Roads.

The planned Western Interceptor sewer line is anticipated to take the alignment selected for this project into account when its location is developed. The City of West Lafayette seeks to minimize neighborhood disruption with the location of the Western Interceptor, and this can best be accomplished by choosing a close, parallel corridor to the US 231 relocation project, as long as the US 231 corridor is in the planned service area, although a corridor along the power line easement is also being considered (Darter 2001). At the same time, the City's recreation department seeks to provide a secondary use of the Western Interceptor corridor as a recreation facility, since an access road to service the sewer line will need to be developed (Payne 2002). This is an example of coordination of planning efforts among the physical infrastructure elements in the community.

**Table 9
Direct Land Use Impacts of Build Alternative Alignments**

Land Use	Build Alternative Alignments									
	Line 1		Line 4		Line 7		Line 9		Line 10	
	Area affected (in acres)	Percent of alignment	Area affected (in acres)	Percent of alignment	Area affected (in acres)	Percent of alignment	Area affected (in acres)	Percent of alignment	Area affected (in acres)	Percent of alignment
Agriculture and undeveloped lands	96.8	80%	147.1	89%	117.4	90%	132.2	91%	145.7	89%
Community	0	0%	1.5	1%	4.1	3%	4.1	3%	1.5	1%
Multi-Family Residential	19.8	16%	0	0%	2.5	2%	2.7	2%	0.5	0%
Office and Industrial	3.3	3%	4.2	3%	0	0%	0	0%	3.5	2%
Parks and Recreation	0.6 ²	0%	5.3	3%	0	0%	0	0%	5.3	3%
Retail	3.2	3%	5.0	3%	0	0%	0	0%	0.4	0%
Single-Family Residential	0.2	0%	1.7	1%	5.8	4%	6.6	5%	7.3	4%
Total area within right-of-way ¹	120.8	NA	164.8	NA	129.8	NA	145.7	NA	164.2	NA

Source: Michael Baker, Jr. 2002

Note: Percent of Build Alternative alignment may not add to 100 percent due to rounding.

NA=Not applicable

¹ All alignments are based on a 300-foot ROW.

² This is a Section 4(f) resource..

3.1.2 Secondary Land Use Impacts

The No-Build Alternative includes future planned and forecasted development as described in Table 10, as well as the programmed transportation projects in the 2025 Transportation Plan (see Section 2.3.4 of the Environmental Document for details). The programmed transportation improvements would also have direct land use impacts, but environmental studies of these projects have not been completed that would enable inclusion of these impacts in this document. These programmed projects are widenings or extensions of existing roads and are not anticipated to alter general planned development patterns in the study area.

As discussed in the subsections that follow, the only anticipated changes to planned and forecasted land use patterns resulting from the Build Alternative are:

- Changes to the location, character, and amount of planned and approved development, and
- Changes to the distribution of additional forecasted growth.

During the early phases of this project, concern was expressed by citizens and local agencies that a western alignment of the US 231 relocation could cause changes in future development plans that would be inconsistent with local objectives to maintain the rural character of Shelby Township and to encourage efficient development patterns within the urbanizing area of Wabash Township.

However, because the alignments carried forward for detailed study do not provide access west of the urbanizing area, the boundary of which is CR 500W, as defined in the 1981 Comprehensive Plan, the proposed project would not have this effect. Nor would the proposed project affect the large agricultural parcels in the rural area of Shelby Township. US 231 will be a limited access facility and none of the alignments would provide new, direct access to undeveloped parcels. Additionally, most of these undeveloped parcels are within the service areas of American Suburban Utilities or the City of West Lafayette and, as such, can receive sewer service through existing gravity feed or forced main sewer lines. As development is encouraged throughout the urbanizing area based on the 1981 Comprehensive Plan and development is able to occur based on existing infrastructure, the Build Alternative under any alignment is not anticipated to induce new and unexpected development that would be inconsistent with the distinct urbanizing and rural areas defined in the 1981 Comprehensive Plan. As documented in Table 10, the study area is projected to experience substantial development by the year 2025, which will affect the existing character of both Wabash and Shelby Townships.

CAC members expressed concern that Lines 4 and 10 would draw commercial and higher density residential development farther west than is desirable, despite the alignments' consistency with local area plans (July 25, 2002 CAC Meeting #3).

**Table 10
Existing and Future Land Use in the Study Area**

Land Use	Existing (2002) Land Use¹ (acres)	Planned & Approved Future Development² (acres)	Additional Forecasted Growth³ (estimated acres)	Future (2025) Land Use (acres)
Community	88	0	NA	88
Multi-family residential	365	107	NA	472
Office and Industrial	246	33	9	288
Parks and Recreation	794	146	0	940
Retail	142	29	11	182
Single Family residential	3,481	57	900	4,438
Agriculture and Undeveloped land ⁴	9,796	-372	-920	8,504
Total Area	14,912	NA	NA	14,912

Source: Michael Baker Jr., Inc. 2002

NA=Not applicable

¹ Based on total area of existing land use developing lands within the Study Area in Exhibit CIA-2.

² Based on total "Planned and Approved Future Development" land use within the Study Area in Exhibit CIA-2.

³ These acres are not represented in Exhibit CIA-2, as the land use areas are estimations and do not reflect actual planned and approved development. Acres of additional forecasted growth are estimated based on converting the remaining forecasted households and jobs into acres assuming conservative (i.e., average to low) densities. All forecasted households were assumed to be single family residential. Changes in Community and Parks and Recreation land uses could not be determined based on the available data (TCAPC travel demand model).

⁴ This analysis assumes all future development will occur on agricultural or undeveloped land.

Changes to the Location, Character, and Amount of Planned and Approved Development

Changes to the location, character, and amount of planned and approved development would result from the Build Alternative alignments interacting with, or in the case of the planned Meijer store not interacting with, such development. In general, under the No-Build Alternative, the planned and approved developments would be expected to proceed as planned, with the possible exception of the planned Meijer store on US 52, as discussed later in this section. Changes in planned and approved development were developed based on information about future planned and approved development, infrastructure, the location of the alignments, and discussions with TCAPC staff regarding the likelihood of the alignments altering future development patterns. Residential displacements within planned and approved development are discussed in "Displacements" in Section 3.2: Impacts to the Social Characteristics of the Community and are included in Table 14, which documents displacement totals. Exhibit CIA-2 shows each alignment's potential interaction with future planned and approved development.

Line 1 bisects the location planned for Purdue University's Northwest Athletic Site. According to University officials, as recreation facilities closer to campus are replaced with academic and research buildings, recreational facilities will be relocated to this site. Lines 4, 7, 9, and 10 also pass through the Northwest Athletic Site, but at the far western edge along the KBS railroad easement. These Build Alternative alignments would not bisect the Northwest Athletic Site and, as a result, would affect less of the site than Line 1.

Line 4 clips the northeastern corner of the currently developing Lindberg Village. This section of the development is planned to provide higher-density housing, such as townhomes. If Line 4 is selected, this section will not be completed as planned and over 120 planned units would not be built at that site. The remainder of Lindberg Village could develop as planned, but the development might not be as cost-effective and profitable for the developer.

Lines 7 and 10 have no interaction with planned and approved land uses and, therefore, have no effect on planned future development.

Line 9 clips the southeastern corner of the parcel planned and approved for Copper Beech Townhomes. This alignment would reduce the number of townhomes that could be built on the site, but would not preclude development of the community.

In addition, the selection of a Build Alternative alignment other than Lines 7 or 9 could result in the planned and approved Meijer store relocating to the intersection created by the selected alignment's terminus on US 52, if feasible. The parcel on which the Meijer store is currently planned to be developed was purchased due to its strategic location at the intersection of US 52 and the TCAPC's preferred alignment, as identified in the 2025 Transportation Plan. It was assumed that this alignment, which has approximately the same terminus as Lines 7 and 9, would be implemented. Site planning for the store has been postponed until this study is concluded and an alternative selected. If the No-Build Alternative were selected, it is not clear whether the Meijer store development would proceed as planned.

Changes to the Distribution of Forecasted Growth

The Build Alternative would also result in localized changes in the distribution of forecasted growth. If the No-Build Alternative is selected, development would likely occur according to existing zoning. If the Build Alternative is selected, existing zoning would likely change due to new infrastructure improvements. The proposed project will represent a substantial infrastructure improvement that will serve as a catalyst for other infrastructure improvements, such as the provision of water and sewer, at strategic intersection locations (i.e., the intersection of the proposed

project’s new access points with major roads). According to the TCAPC, areas receiving these infrastructure enhancements would likely be rezoned from residential or mixed-use to commercial use. The selection of a Build Alternative alignment, therefore, would result in some commercial growth projected for areas currently zoned for commercial use shifting to areas that would be rezoned for commercial use. In turn, residential growth would also shift. These changes shift the location of forecasted development within the urbanizing area, but would not change the total population, household, employment, or commercial development growth currently forecasted, nor the desired overall future pattern of development identified in the 1981 Comprehensive Plan.

3.1.3 Farmland Impacts

Farmland Soils

Because all the Build Alternative alignments scored less than 160 points on the Farmland Conversion Impact Rating (Table 11), further consideration for protection and further evaluation is not required (7 CFR §658.4(c)(2)). Based on the CPA-106 impact rating, none of the Build Alternative alignments will have a substantial impact to farmland soils (Table 11). Alternatives other than those discussed in this document would not be considered without an evaluation of their potential impacts upon farmland.

**Table 11
Farmland Soil and Agricultural Operation Impacts**

Farmland Impacts	No-Build Alternative	Build Alternative Alignments				
		Line 1	Line 4	Line 7	Line 9	Line 10
Acres of prime and statewide locally important soils converted (not all soils are used for agricultural production)	0	72	109	79	104	110
Farmland Conversion Impact Rating (out of 260 points)	0	89	100	101	104	89
Number of agricultural parcels bisected	0	9	10	10	7	7
Acres of farmland displaced within corridor	0	53	56	47	64	65
Acres of farmland left unfarmable (unfarmable = parcels less than 5 acres)	0	19	11	3	5	7

Source: Michael Baker Jr. 2002

The No-Build Alternative would have no direct impacts on prime or statewide important farmland soils relative to the Build Alternative alignments.

Agricultural Operations

The No-Build Alternative would not affect any agricultural operations. Exhibit CIA-4 identifies the location of agricultural lands that may be affected by the alignments. Lines 9 and 10 bisect the least number of parcels in agricultural operation. As noted in Table 11, the Build Alternative alignments would remove between 50 to 72 acres of farmlands from agricultural production (acres of farmland displaced and acres left unfarmable). The INDOT manual provides a methodology to estimate the financial loss associated with the project's projected impact on agricultural production. For this estimate, it was assumed that the farmlands removed were producing corn, the annual production was 170 bushels/acre, and the average sales price was \$1.95 per bushel (U.S. Department of Agriculture 2002). Based on these assumptions and the farmland acres estimated to be displaced by each alignment, Line 7 would have the least impact on agricultural production with a loss of \$16,600 and Lines 1, 9, and 10 would have the greatest impact with a loss of over \$23,500.

3.1.4 Consistency with Local and Regional Plans

FHWA *Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (October 30, 1987) advises that the "land use discussion should assess the consistency of the alternatives with the comprehensive development plans adopted for that area." Consideration of the proposed project's consistency with area plans, as well as its direct, secondary, and cumulative effects is required during the NEPA process. Area plans are discussed in Section 2.1.4: Local and Regional Land Use and Community Plans and in the Engineer's Report. Table 12 indicates how the No-Build Alternative and each alignment and its associated impacts are consistent or inconsistent with area plans. The No-Build Alternative is consistent with two plans: the 1981 Comprehensive Plan and the Purdue University Strategic Plan. Only Lines 7 and 9 are consistent with all applicable plans. Line 1 is consistent with four of the eight applicable plans, and Lines 4 and 10 are consistent with six of the eight applicable plans.

Table 12
Consistency with Local and Regional Plans

Plan	No-Build Alternative	Build Alternative Alignments				
		Line 1	Line 4	Line 7	Line 9	Line 10
INDOT Long Range Plan	Inconsistent: does not allow for creation of Statewide Mobility Corridor.	Consistent: allows for creation of Statewide Mobility Corridor.	Consistent: allows for creation of Statewide Mobility Corridor.	Consistent: allows for creation of Statewide Mobility Corridor.	Consistent: allows for creation of Statewide Mobility Corridor.	Consistent: allows for creation of Statewide Mobility Corridor.
1981 Comprehensive Plan	Consistent: a new facility is not identified in the plan.	Consistent: a new facility is not restricted by the plan and the alignment is located within the urbanizing area.	Consistent: a new facility is not restricted by the plan and the alignment is located within the urbanizing area.	Consistent: a new facility is not restricted by the plan and the alignment is located within the urbanizing area.	Consistent: a new facility is not restricted by the plan and the alignment is located within the urbanizing area.	Consistent: a new facility is not restricted by the plan and the alignment is located within the urbanizing area.
2025 Transportation Plan	Inconsistent: is not similar to the TCAPC's preferred alignment, as identified in the plan.	Inconsistent: is not similar to the TCAPC's preferred alignment, as identified in the plan.	Inconsistent: is not similar to the TCAPC's preferred alignment, as identified in the plan.	Consistent: is identified as the TCAPC's preferred alignment, as identified in the plan.	Consistent: is similar to the TCAPC's preferred alignment, as identified in the plan.	Inconsistent: is not similar to the preferred alignment in the plan.
City of West Lafayette*	Inconsistent: does not complete US 231 Relocation Project.	Consistent: completes US 231 Relocation Project.	Consistent: completes US 231 Relocation Project.	Consistent: completes US 231 Relocation Project.	Consistent: completes US 231 Relocation Project.	Consistent: completes US 231 Relocation Project.
Focus on the Future of Unincorporated Wabash Township	Inconsistent: conflicts with the plan statement: "a continuation of US 231 to US 52 west of West Lafayette will definitely be needed to relieve the congestion."	Inconsistent: does not allow for future northern extension to I-65.	Consistent: does allow for future northern extension to I-65.	Consistent: does allow for future northern extension to I-65.	Consistent: does allow for future northern extension to I-65.	Consistent: does allow for future northern extension to I-65.
Vision 2020	Inconsistent: does not support the TCAPC's preferred route.	Inconsistent: does not support the TCAPC's preferred route.	Inconsistent: does not support the TCAPC's preferred route.	Consistent: does support the TCAPC's preferred route.	Consistent: does support the TCAPC's preferred route.	Inconsistent: does not support the TCAPC's preferred route.
Purdue University Strategic Plan and other planning documents	Consistent: a new facility is not identified in the plan.	Inconsistent: bisects the planned Northwestern Athletic site.	Consistent: a new facility is not restricted by the plan and the alignment may make some Purdue University properties more valuable.	Consistent: a new facility is not restricted by the plan and the alignment may make some Purdue University properties more valuable.	Consistent: a new facility is not restricted by the plan and the alignment may make some Purdue University properties more valuable.	Consistent: a new facility is not restricted by the plan and the alignment may make some Purdue University properties more valuable.
Purdue University Transportation Plan	Inconsistent: the relocation of US 231 is assumed in the Purdue University Transportation Plan.	Consistent: the relocation of US 231 is assumed in the Purdue University Transportation Plan.	Consistent: the relocation of US 231 is assumed in the Purdue University Transportation Plan.	Consistent: the relocation of US 231 is assumed in the Purdue University Transportation Plan.	Consistent: the relocation of US 231 is assumed in the Purdue University Transportation Plan.	Consistent: the relocation of US 231 is assumed in the Purdue University Transportation Plan.
Purdue Airport Master Plan	NA: this project will not directly influence the airport.	NA: this project will not directly influence the airport.	NA: this project will not directly influence the airport.	NA: this project will not directly influence the airport.	NA: this project will not directly influence the airport.	NA: this project will not directly influence the airport.
Tippecanoe County Bicycle and Pedestrian Plan	NA	NA	NA	NA	NA	NA
1999 Park and Recreation Plan	NA	NA	NA	NA	NA	NA

Source: Michael Baker Jr. 2002

*A draft of the West Lafayette Strategic Plan Update 2002 was not available when this report was being prepared. However, the study team discussed the anticipated contents of the plan with City of West Lafayette planners to determine project consistency

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3.2 Impacts To The Social Characteristics Of The Community

Neither the No-Build Alternative nor the Build Alternative alignments will have direct or indirect impacts on the study area population trends and associated demographics. Under all alternatives, population growth is anticipated to continue as assumed in the TCAPC transportation model. Impacts to specific residences, special communities, and neighborhoods are discussed in the following sections.

3.2.1 Community Cohesion and Character

Impacts to community cohesion include displacements, bisecting neighborhoods, and altering travel patterns and accessibility. Each of these aspects of community cohesion is discussed in the following sections.

A summary of community cohesion comments provided by the CAC during the July 25, 2002 meeting is provided in Table 13. In a group exercise, a group of three or more persons assessed the potential impact of each alignment on travel patterns and community cohesion for each neighborhood. Additionally, some CAC members provided alignment-specific comments for their respective neighborhoods. Because different groups and individuals worked independently on each alignment, the impact descriptions shown in Table 13 are not consistent or have parallel levels of detail. Neutral comments are not included in the table and, in some cases, a variety of anticipated alignment impact conflicts are presented. This qualitative information provided by the CAC members is used to augment the findings of the transportation model, secondary data sources, discussions with local planners, and ground survey observations. The data incorporated into this table supports the following sections.

Section 3.2.6: Neighborhoods, Community Focal Points, and Community Centers details the neighborhood-level impacts of the alternatives, including aspects of community cohesion, such as the ways neighborhoods will be affected by displacements and changes in access. Based on discussion with the CAC members, it appears that residents of the neighborhoods along Lindberg Road are particularly concerned about community disruption, as these neighborhoods seem to relate to each other, as well as with the soccer fields on Lindberg Road. Lines 1 and 7 could result in the proposed project presenting a psychological barrier between some neighborhoods. Lines 4, 9, and 10 would likely result in more Purdue University traffic along Lindberg Road and in front of the soccer fields, making turning into and out of neighborhoods and the soccer fields on Lindberg Road more difficult. These concerns are documented in Table 13. Some citizens have requested that Lindberg Road not intersect with relocated US 231, but this proposal does not allow the project to fulfill its purpose, particularly given that Lindberg Road is planned to be widened to four lanes by 2010. However, mitigation proposals will be developed to address concerns for the Lindberg Road area.

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**Table 13
Summary of Neighborhood-Related Secondary Impact Concerns***

	Build Alternative Alignments				
	Line 1	Line 4	Line 7	Line 9	Line 10
Appleridge at the Orchard	NA	Line 4's potential noise impacts are a concern, which might have a minor negative influence on community cohesion.	NA	NA	NA
Blackbird Farms	Line 1 increases congestion on Lindberg Road and interferes with existing traffic patterns. However, it would provide an additional route to southern part of Lafayette and shopping. Line 1 would have a very high negative impact to community cohesion for the Blackbird Farms apartments (due to high displacements).	NA	Line 7 will have a negative impact on traffic at McCormick and Lindberg and, as a result, Blackbird Farms will become more isolated.	NA	NA
Brindon Woods	NA	NA	Brindon Woods will be trapped between heavy traffic on US 52 and the new US 231. Direct access from US 231 should be removed and access should be provided via frontage road from the Cumberland Avenue extension. A different CAC comment noted that Line 7 will speed up traffic on US 52 south.	Brindon Woods will be bound by busy roads. Bicycle and pedestrian traffic from Brindon Woods will be obstructed when traveling to Carrington Estates.	NA
Carrington Estates / Pine View Farms	NA	NA	Carrington Estates/Pine View Farms will be trapped between heavy traffic on US 52 and the new US 231. Direct access from US 231 should be removed and access should be provided via frontage road from the Cumberland Avenue extension. A different CAC comment noted that Line 7 will speed up traffic on US 52 south.	Carrington Estates/Pine View Farms will be bound by busy roads. Bicycle and pedestrian traffic from Carrington Estates/Pine View Farms will be obstructed when traveling to Brindon Woods.	NA
Lindberg Village	NA	Line 4 could increase congestion at Lindberg and Klondike, which may have a potential negative effect on emergency response times and school busses. Line 4 would provide better access for emergency service vehicles. Noise and light pollution would be high due to the bridges. Line 4 would have a high negative impact on community cohesion.	NA	NA	Line 10 would provide an additional route to access the southeast.

Build Alternative Alignments					
	Line 1	Line 4	Line 7	Line 9	Line 10
The Lodge	Line 1 would add additional congestion at US 52 and Cumberland Avenue and emergency services, city bus, and bicycle/pedestrian use could be diminished due to the congestion. Line 1 would have a medium negative community cohesion impact.	NA	NA	NA	NA
McCormick Place Apartments	Line 1 would likely remove the entire development, but if any portion remains, safety is a concern. Line 1 adds additional congestion on Lindberg Road and interferes with existing traffic patterns. Line 1 would have a high negative community cohesion impact to McCormick Place Apartments.	NA	Line 7 would have a negative impact due to increased traffic on McCormick and Lindberg Roads; however, it will not have a negative impact on emergency services and school busses.		NA
Pemberly Court / Pointe West	NA	NA		Line 9 would delay eastbound traffic on Lindberg.	Line 10 would provide improved ambulance service with the access at Klondike Road. However, the intersection with Klondike could become dangerous for pedestrians, bicycles, and mopeds and would reduce cohesion between east and west sections of Pointe West.
Sherwood Forest	Line 1 would create a more difficult and congested Lindberg and McCormick intersection and would decrease the bike and pedestrian activity between Sherwood Forest and Blackbird Farms. Line 1 would have a negative low community cohesion impact on Sherwood Forest.	Line 4 would provide an alternate route to Purdue’s campus and southeastern destinations. Line 4 will bring congestion to the neighborhood entrance and reduce pedestrian and bicycle use along Lindberg road. Congestion could create problems for emergency vehicles and school busses. Line 4 would have a medium negative community cohesion impact on Sherwood Forest.	Neighborhood concerns for Line 7 include noise pollution, light pollution, air pollution, increased flooding due to a higher water table, reduced water quality, and disruption of wildlife migration and travel routes. Line 7 would result in a high negative impact as the neighborhood would be cut off from the city that it identifies with and neighbors it frequently interacts with.	Line 9 would create increased traffic on Lindberg, which may reduce bicycle and pedestrian activity to the soccer fields and adjacent neighborhoods.	Line 10 would create increased traffic on Lindberg, which may reduce bicycle and pedestrian activity to the soccer fields and adjacent neighborhoods.
Wake Robin	Line 1 would create congestion at McCormick Road and Lindberg Road intersection impeding southeast travel. Pedestrians or bicyclists will have increased difficulty traveling to the soccer fields, Celery Bog, and Blackbird Farms. Traffic safety is a concern.	Line 4 would provide an alternate route to Purdue’s campus and southeastern destinations. Pedestrians and bicyclists will have increased difficulty traveling to the soccer fields, Celery Bog Nature Area, and Blackbird Farms. Safety concerns due to traffic interaction are enhanced and could create problems for emergency vehicles and school busses. Viewsheds to the west would be negatively altered. Line 4 would have a medium negative community cohesion impact.	Line 7 would provide increased access to the southeast. Pedestrians or bicyclists will have increased difficulty traveling to the soccer fields, Celery Bog Nature Area, and Blackbird Farms. Traffic safety is a concern.	Line 9’s access ramp will cause congestion at Wake Robin’s neighborhood entrance. Pedestrians or bicyclists will have increased difficulty traveling to the soccer fields, Celery Bog Nature Area, and Blackbird Farms. Traffic safety is a concern. Access at Cumberland Avenue would provide enhanced emergency service access.	Line 10 would create more conflicts at the access ramp at Lindberg Road. Ambulance service to Wake Robin would be improved. Pedestrians or bicyclists will have increased difficulty traveling to the soccer fields, Celery Bog Nature Area, and Blackbird Farms. Low positive community cohesion impact due to increased access and improved travel patterns.

	Build Alternative Alignments				
	Line 1	Line 4	Line 7	Line 9	Line 10
<p>Other concerns and suggestions identified</p>	<p>CAC members stated a concern for maintaining access to the existing businesses (Wal-Mart) at US 52 and Cumberland. Line 1 will bisect the planned Purdue University athletic fields for a negative impact.</p>	<p>The cost of Line 4 is much more expensive than the other alignments. Line 4 will speed up "urbanization" in rural Wabash Township and Shelby Township, which is a negative effect.</p>	<p>Line 7 makes access to Lindberg Road Soccer Fields dangerous. CAC members noted that the access point at Lindberg Road will have a negative impact on bike and pedestrian access, safety, and emergency services. Some members felt strongly that this access point should be removed. Additionally, one group noted that the access at Carrington Estates and Brindon Woods should also be eliminated. They suggested that access could be provided by the Cumberland Road Extension and frontage roads. One CAC member noted that, as a whole, Line 7 provides the most traffic benefits with the least number of negative neighborhood impacts.</p>	<p>One CAC member notes that Line 9 would solve the congestion problem at US 52 and McCormick Road and would be the second most desirable alignment.</p>	<p>Increased traffic on Lindberg would have a negative impact on the soccer fields. Construction of single-family homes would move west of alignment creating urban sprawl. Line 10 would interfere with Klondike School traffic. The cost of this longer alignment is also a concern.</p>

Source: Provided during and after CAC meeting #3, July 25, 2002.

*Direct impacts such as displacements were not the focus of this exercise, and as such, discussion was kept at a minimum.

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3.2.2 Displacements

The displacement of residences, businesses, and activity centers can have a profound effect on a community. Potential displacements are identified in Table 12 and the impacts of these displacements are referred to throughout this report.

Displacements were determined by analysis of project GIS and confirmed during a ground survey. If an existing residence, business, or community structure is located within the 300-foot wide “footprint,” it is considered a displacement. Additionally, if a structure becomes isolated and loses access as a result of the footprint, it is also considered a displacement. As the roadway cross-section may differ from the 300-foot footprint, displacements are likely to be further minimized during final design. A range of displacements is shown in cases where development is currently occurring or is planned to occur before the initiation of construction of this proposed project.

The impact of agricultural and commercial displacements was discussed in detail in the land use and economic sections and is summarized in Table 14. Community facility displacements are discussed under Neighborhoods, Community Focal Points, and Activity Centers.

**Table 14
Displacement Totals**

Type of Displacement	No-Build Alternative	Build Alternative Alignment				
		Line 1	Line 4	Line 7	Line 9	Line 10
Residential*	0	335 (2 single-family and 333 rental units)	124 (4 single-family and 30 four-unit buildings planned for Lindberg Village)	18 (18 single-family)	109 (23 single-family and 86 apartment units planned for Copper Beech Townhomes)	36 (36 single-family)
Business	0	3 (Cumberland Place Exhibition Center, University Inn, and Applebees)	4 (Klondike Storage, Wabash Valley Feed, Tree Pro, and Orchards of Golf)	0	0	2 (Road Works Manufacturing and Orchards of Golf)
Community Facility	0	0	1 church (Westside Bible Fellowship)	1 church and daycare (Bethel Christian Life Center)	1 church and daycare (Bethel Christian Life Center)	1 church (Westside Bible Fellowship)

Type of Displacement	No-Build Alternative	Build Alternative Alignment				
		Line 1	Line 4	Line 7	Line 9	Line 10
Other	0	1 (electric power sub-station)	0	7 (5 barn/sheds, 1 abandoned school district #5, and 1 Vectron Energy Delivery Site)	1 (construction trailer)	2 (construction trailer and barn/shed)

Source: Michael Baker Jr., Inc. 2002

Note: Displacement totals are worst-case estimates based on a 300-foot wide alignment footprint for buildings constructed and occupied July 2002, all efforts will be made to minimize displacements and the final number of displacements may be lower.

* A range of displacements is provided when the alignments could displace planned and approved development. The high-end incorporates existing structures and estimates the number of structures that could be lost if the planned and approved development is completed before the construction of this project is initiated.

The No-Build Alternative includes other transportation projects, such as the widening of Lindberg Road to four lanes and the Cumberland Avenue extension that may generate residential, commercial, or community displacements. The impacts will be studied in separate environmental documents and would also occur with the Build Alternative.

Build Alternative alignments Lines 7 and 10 will have fewer residential displacements than Line 1. Line 4 could displace 120 units planned for Lindberg Village and Line 9 could displace 86 units planned for Copper Beech Townhomes. Representative family characteristics of the potential displacements are noted in Table 3, Table 4, and Table 5. Additionally, potential impacts to low-income and minority groups are analyzed in the following section on environmental justice.

Of the Build Alternative alignments, Line 1 displaces the highest number of residences and highest percentage of existing renter-occupied units. Line 10 displaces 26 residences in the Pointe West manufactured home community, which is considered affordable housing. These two types of displacements (renter-occupied and manufactured home) are important to note due to the potential difficulty of identifying suitable replacement housing.

3.2.3 Relocation Policies and Availability of Replacement Housing

Relocation assistance and benefits will be made available to all individuals and businesses displaced by the proposed project in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Relocation Act) and Title VI of the Civil Rights Act of 1964. The Uniform Relocation Act requires that no person shall be displaced until adequate, decent, safe, and sanitary housing is made available. The acquisition and relocation program will be

conducted in accordance with 49 CFR Part 24 and relocation resources are available to all residential and business relocatees without discrimination.

The local real estate market was assessed by identifying residential properties on the market for sale and rent as of May 2002 (*Journal and Courier Classifieds, Coldwell Banker, Shook Agency, Century 21, Right Angle Realtors, and Realtor.com*). This review of the local real estate market, as well as an evaluation of the 2000 U.S. Census housing data, indicates that an adequate supply of decent, safe, and sanitary replacement housing in a diverse price range is available in the study area and surrounding area (Table 15). All Build Alternative alignments are located in Census Tract 102.04, which is in Wabash Township.

**Table 15
Housing Units**

Type of Housing Unit	Census Tract 102.04*	Wabash Township
Total housing units	2,671	16,693
Vacant housing units	191	759
Vacant housing units for rent	122	426
Vacant housing units for sale only	19	96
Vacant housing units, rented or sold, not occupied	19	86
Vacant housing units for seasonal, recreational, or occasional use	6	28
Vacant housing units for migrant workers	0	0
Vacant housing units, other vacant	25	123

Source: U.S. Bureau of the Census 2000

*All alignments and, therefore, all displacements are located within Census Tract 102.04.

For Lines 4, 7, and 9, adequate relocation housing for rental units and single-family homes is available based on Census data and a review of properties available in the local real estate market. While the magnitude of the displacements of Line 1 exceeds the other alignments, there appears to be adequate replacement rental housing within Wabash Township, but not in Census Tract 102.04 (Table 15). Additionally, some of the displaced renters may elect to purchase a home instead of continuing renting. Line 10 would require the relocation of 26 households of Pointe West Mobile Home Park; however, only a limited number of relocation sites that allow mobile homes have been identified. A portion of these residents may have to be relocated to comparable housing, such as townhomes or condominiums.

Adequate replacement housing must be within the financial means of displaced families or individuals. Information about the state’s Relocation Assistance Program will be made available during the public involvement process. Affected individuals

will be contacted personally and all benefits and services of the program will be made available to them.

CAC members noted concern about the availability of affordable housing in the area. They noted that homes for less than \$100,000 were likely available in the neighborhoods of Hadley Lake, Pine View, and Lindberg Village (CAC Meeting 7/25/02).

3.2.4 Environmental Justice

Section 601 of Title VI of the 1964 Civil Rights Act (42 USC Part 2000) provides that: "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," (Executive Office of the President 1994) seeks to avoid or minimize disproportionate effects of federal programs on minority and low-income populations and involve these populations in the process.

In accordance with Title VI and this executive order, data on the presence of and effects to minority and low-income populations have been analyzed at the corridor-level to ensure that the proposed project does not subject these populations to a "disproportionately high and adverse effect." In addition, efforts were made to include all affected communities and populations, including minority and low-income populations, in the public involvement and decision-making processes. Public outreach efforts included announcements in local English and Spanish media, the CAC (which included representatives from six neighborhoods who attended four CAC meetings), a citizen information meeting, a location public hearing, project newsletters, and a project website.

3.2.5 Disproportionate Effects Test

Disproportionate effects analysis includes both a statistical component in which the potential for environmental justice impacts is tested, and a community outreach component that provides a check and context for the environmental justice findings and serves as one of the basis for determining whether a disproportionate effect is anticipated.

The disproportionate effects test (Shalkowski 1999) is a statistical test used to determine whether a project may potentially result in a disproportionate impact to

minority or low-income populations. A disproportionate effects test was conducted by comparing the representative minority and income characteristics of the residents within each of the alignment footprints with the characteristics of residents of Wabash Township as a whole (Table 16, Table 17, and Table 18). 2000 block-level Census data were used to represent the racial and ethnic minority characteristics of the households in the alignment footprints. The 2000 Census blocks used in these analyses are illustrated in Exhibit CIA-5. Block-level data are the most current and smallest geographic data set. Only blocks located within each alignment are included in this analysis. These totals do not represent the actual population within the alignments, but rather are representative of the population potentially affected by the alignment.

The results of the disproportionate effects test were shared with the CAC and members were asked to comment on the results. The local knowledge provided by CAC members served as a check of and provided context to the statistical disproportionate effects test. This information from the CAC, along with an analysis of impacts, such as displacements, served as the basis of a final determination of whether a disproportionately high and adverse effect on minority or low-income populations would actually occur.

In Table 16, racial minority populations include all persons who identified with the racial categories of Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, some other race, or two or more races in the 2000 Census. As noted in Table 16, the racial minority populations of all the alignments, except Line 1, are lower than the Wabash Township threshold of 16.7 percent. Because Line 1 exceeds the Wabash Township percent non-white by ½ percent, a potential for a disproportionate impact on racial minorities was determined. Block-level Census data and CAC discussion support the assumption that Purdue University students, who are more racially diverse than the community as a whole, live in some of the apartment complexes affected by Line 1 (i.e., The Lodge and Blackbird Farms). Given that the impacts of Line 1 consist primarily of displacing Purdue University student renters, for whom replacement housing is readily available (see Section 3.2.3), no disproportionately high and adverse effect to racial minority populations is anticipated.

Table 16
Disproportionate Effects Test for Racial Minority Populations

Build Alternative alignment or area	2000 Total Population	2000 Non-White Population	Percent Non-White
Line 1	2,615	447	17.1%
Line 4	751	54	7.2%
Line 7	1,924	287	14.9%
Line 9	2,050	308	15%
Line 10	1,788	162	9.1%
Wabash Township	51,261	8,559	16.7%

Source: U.S. Bureau of the Census 2000

Table 17 includes the total number of persons reporting Hispanic, Latino, or Spanish ethnic origin in the 2000 Census. As race and ethnic origin are two separate and distinct concepts, the persons represented in this table may be of any race. As noted in Table 17, the ethnic minority populations of Lines 1, 7, 9, and 10 exceed Wabash Township's ethnic minority population of 3.2 percent. Therefore, there is the potential that these alignments would disproportionately affect Hispanic or Latino populations. Only Line 4 does not have the potential to have a disproportionately high and adverse effect on Hispanic or Latino populations.

A block-level analysis and CAC discussion of the location and concentration of Hispanic and Latino populations revealed the following. An ethnic minority concentration greater than 3.2 percent is found in Pine Meadows, Lindberg Village, Pemberly Court, Pine View, Pointe West, Woodman Court, and Blackbird Farms. These concentrations tend to be transient because the neighborhoods largely consist of rental units. The core of the Hispanic community, particularly homeowners, is concentrated in Lafayette. Representatives of the schools and 911-dispatch service have noted that there are some Spanish-only speakers, which presents language-barrier problems. Members of the neighborhoods with Hispanic populations were represented on the CAC. Also, while Line 4 falls below the Wabash Township average for Hispanic population in 2000, CAC members pointed out that Lindberg Village, which is under construction in the vicinity of Line 4, has rental units that seem to be attracting Hispanic residents (CAC meeting 7/25/02).

With Lines 1 and 10, displacements occur within two of the neighborhoods with an ethnic minority concentration (Blackbird Farms and Pointe West, respectively). Given the transient nature of the displacees and the availability of replacement housing (see Section 3.2.3), these displacement impacts are not considered disproportionate. Because no displacements occur within neighborhoods having an ethnic minority concentration as a result of Lines 7 and 9, no disproportionately

high or adverse effects are anticipated as a result of these alignments. Based on information provided by the CAC, no other community impacts are anticipated to disproportionately affect ethnic minority populations. Thus, none of the alignments are anticipated to have a disproportionately high and adverse effect on ethnic minority populations. As noted above, opportunities for participation in the public involvement and decision-making processes were extended to ethnic minority communities and populations.

Table 17
Disproportionate Effects Test for Hispanic or Latino Populations

	2000 Total Population	2000 Hispanic or Latino Population	Percent Hispanic or Latino
Line 1	2,615	106	4.1%
Line 4	751	22	2.9%
Line 7	1,924	89	4.6%
Line 9	2,050	80	3.9%
Line 10	1,788	69	3.7%
Wabash Township	51,261	1,633	3.2%

Source: U.S. Bureau of the Census 2000

Low-income is defined in "Actions to Address Environmental Justice in Minority and Low-Income Populations" (FHWA December 2, 1998) as "a person whose household income level is at or below the Department of Health and Human Services poverty guidelines." 1990 Census block group data have been used to represent the income characteristics of the households in the alignment footprints. The 1990 Census block groups used in this analysis are illustrated in Exhibit CIA-5. Block groups are the smallest geographic level for which income data are currently available. 1990 data are the most current income data available for the State of Indiana. The findings of this analysis indicate that the representative low-income populations of the alignments are in the 10 percent range, which is well below Wabash Township's low-income population of 51 percent. Because the representative low-income population within the alignments is below the township low-income population, the disproportionate effects test did not reveal a potential for a disproportionately high and adverse impact to low-income populations.

The CAC identified several lower-income neighborhoods in the study area. Line 10 is the only Build Alternative alignment that has a direct impact on a neighborhood identified by the CAC as being low-income (Pointe West). The CAC did not indicate that this neighborhood would be disproportionately affected. While disproportionate impacts to low-income communities (Table 18) are not anticipated

with any of the alignments, additional outreach efforts were undertaken to include Pointe West residents in the transportation planning process.

Table 18
Disproportionate Effects Test for Low-Income Populations

	1990 Total Population	1990 Low-Income Population	Percent Low-Income
Line 1	2,151	229	10.6%
Line 4	3,751	341	9.1%
Line 7	2,151	229	10.6%
Line 9	2,151	229	10.6%
Line 10	3,751	341	9.1%
Wabash Township	49,348	25,343	51.4%

Source: U.S. Bureau of the Census 1990

3.2.6 Neighborhoods, Community Focal Points, and Activity Centers

The No-Build Alternative will not directly affect any neighborhood, community focal point, or activity center.

Line 1 will bisect and create displacements in three renter-occupied apartment complexes: Blackbird Farms, McCormick Place, and The Lodge. Line 1 is not anticipated to negatively affect any community focal points, but it will displace three commercial activity centers (Applebee’s, University Inn, and Cumberland Place Exhibition Center) that serve Wabash Township and other areas.

Line 4 will not bisect any existing neighborhoods, but will alter development in the northeast corner of Lindberg Village and will have an access point at the entrance of Sherwood Forest. Line 4 will displace one church (Westside Bible Fellowship), and four businesses, of which Orchards of Golf and Wabash Valley Feed are the most likely community focal points. CAC members note that Line 4’s access on Lindberg Road would indirectly negatively affect Lindberg Road Soccer Fields by increasing traffic and noise, and by separating it from the nearby residents (CAC Meeting 7/25/02).

Line 7 will not bisect any neighborhoods, but will alter the access to Brindon Woods and Carrington Estates. Carrington Estates will maintain its access to McCormick Road, but McCormick Road will no longer have direct access to US 52. Traffic bound for US 52 will travel south on McCormick Road, which now serves as a frontage road, and then north on US 231 to access US 52. While this makes access more complicated, it provides a buffer between Carrington Estates and relocated US 231. Line 7 will displace one community facility, Bethel Christian Church, which also provides a daycare service. The community impacts of Line 7 are most

concentrated at the intersection of McCormick Road and US 52. CAC members noted that Line 7 would separate Blackbird Farms from the Lindberg Road Soccer Fields (CAC Meeting 7/25/02).

Line 9 will alter access to Brindon Woods, Carrington Estates, and Wake Robin. Carrington Estates will maintain its access to McCormick Road, but McCormick Road will no longer have direct access to US 52. Traffic bound for US 52 will travel south on McCormick Road, which now serves as a frontage road, and then north on US 231 to access US 52. While this makes access more complicated, it provides a buffer between Carrington Estates and relocated US 231. CAC members noted that the access on Lindberg Road would have negative indirect effects on Lindberg Road Soccer Fields by increasing traffic and noise and by separating it from the nearby residents (CAC Meeting 7/25/02). Visual and noise impacts are anticipated for Pointe West.

Line 10 will alter traffic patterns at the entrance of the Wake Robin neighborhood and will result in multiple displacements at the southwestern corner of the Pointe West neighborhood. Line 10 will displace one church (Westside Bible Fellowship), and two businesses, of which Orchards of Golf is a likely community focal point. CAC members noted that the access on Lindberg Road would indirectly negatively affect Lindberg Road Soccer Fields by increasing traffic and noise, and by separating it from the nearby residents (CAC Meeting 7/25/02).

An overwhelming number of comments identified keeping alignments away from homes, neighborhoods, and schools to reduce displacements, noise impacts, and safety concerns from increased traffic. The CAC noted that Lindberg Road Soccer Fields and the schools were the most valued community focal points in the study area and that these locations were sensitive to changes in congestion due to the amount of pedestrian and bicycle traffic associated with them (CAC Meeting 7/25/02).

3.2.7 Recreation Resources

The interaction of each alignment with existing and planned recreational facilities is identified in Table 19. All alignments have been designed to minimize interaction with existing parks and trails. Trail and bikeway access will be maintained by bridging existing trails and maintaining access on existing roadways. Lines 4 and 10, both of which displace the privately owned Orchards of Golf, are the only alignments anticipated to have a high impact on a recreational resource. Overall, Lines 7 and 9 seem to have the least potential for a negative impact to existing and

planned recreational facilities. Section 4(f) resources would not be directly affect by any of the alignments.

Impacts are based on the proximity and impact of each alignment on the recreational facility. The range of impacts is:

- No – no interaction due to proximity.
- Moderate – potential noise or visual impacts or changes in bicycle and pedestrian accessibility, but facility use will not be restricted or limited.
- High – potential direct impacts that would result in the displacement of the recreational resource.

**Table 19
Impacts on Recreational Resources**

Recreation facility	Build Alternative Alignment				
	Line 1	Line 4	Line 7	Line 9	Line 10
Orchards of Golf	No	High	No	No	High
Celery Bog Nature Area	Moderate	No	No	No	No
Lindberg Road Soccer Field	Moderate	Moderate	Moderate	Moderate	Moderate
Bikeway route– SR 26	Moderate	Moderate	Moderate	Moderate	Moderate
Bikeway route- Lindberg	Moderate	Moderate	Moderate	Moderate	Moderate
Bikeway route– CR 250 N	No	Moderate	No	No	Moderate
Bikeway route – CR 300 W	No	No	No	No	Moderate
Wabash Township Greenway	Moderate	Moderate	Moderate	Moderate	Moderate
Cattail Trail Extension to Kalberer Road	Moderate	No	No	No	No
Totals	3: No 6: Moderate 0: High	3: No 5: Moderate 1: High	5: No 4: Moderate 0: High	5: No 4: Moderate 0: High	3: No 5: Moderate 1: High

Source: Michael Baker, Jr. 2002

3.2.8 Emergency Services and Safety

The No-Build Alternative would fail to provide an alternate, uncongested route for emergency services in the study area. As none of the Build Alternative alignments limit access on existing roads, either by bridging existing roads or providing access roads, the Build Alternative alignments will not have a negative impact on emergency service response times. All alignments would provide an alternative north/south travel route that would benefit the Wabash Township Volunteer Fire Department by better linking stations with service areas. Line 10, with its connection at CR 300 W (Klondike Road), would provide the closest access for Station #1. There are plans to replace Station #1, but a new location has not yet been determined.

The main concern noted by local law enforcement officers is that no existing roadways be closed or dead-ended (Law enforcement meeting 2002). Only Lines 7 and 9 alter travel patterns on an existing road (McCormick Road at US 52).

CAC members noted a decline in traffic safety, specifically on Lindberg Road and at the Lindberg Road Soccer Fields, as a common impact of all the Build Alternative alignments. The interaction of access points for each of the alignments (Table 20) was identified as adding additional traffic conflicts and decreasing vehicular, bicycle, and pedestrian safety (CAC Meeting 7/25/02). Build Alternative alignments west of the soccer fields (Lines 4, 9, and 10) would cause traffic from relocated US 231 destined for Purdue University via Lindberg Road to pass by the soccer fields, making this busy area even busier. The Build Alternative alignments east of the soccer fields (Lines 1 and 7) would not have this impact.

3.2.9 Travel Patterns and Accessibility

Regional travel patterns will not change as a result of the No-Build Alternative or Build Alternative. However, both alternatives include the first two phases of the US 231 relocation project, across the Wabash River and across the south end of West Lafayette to SR 26 near the airport. These portions of the US 231 project have altered regional travel patterns, bringing north-south regional trips and Purdue University-bound traffic directly into the study area.

The No-Build Alternative provides several new access points to the rapidly developing eastern portion of the study area, without providing a limited access through-route. The Cumberland Road extension, the widening of Lindberg Road, and the completion of relocated US 231 to SR 26 at the southeast corner of the study area will all "point" traffic into the study area. Increasing congestion on Northwestern Avenue will cause traffic to seek alternate routes. This means that existing north-south roads, including SR 26, McCormick Road, and Klondike Road, which is also to be widened, will bear the burden of this traffic in the study area. The resulting congestion is not anticipated to result in dramatic changes in travel patterns, but will reduce the ease of access within the study area and between the study area and West Lafayette.

Based on changes to the existing roadway network and the access points provided by the alignments, the Build Alternative would also affect local travel patterns. Table 20 identifies the factors that will influence local travel patterns. These factors include access points, roads to be bridged, and changes to the existing roadway network.

Table 20
Factors that Influence Local Travel Patterns

Build Alternative Alignment	Access Points	Roads to be Bridged	Changes to existing roadway network
Line 1	<ul style="list-style-type: none"> • SR 26 • SR 126 (Cherry Lane extension) • CR 200 N (Lindberg Road) • US 52 	<ul style="list-style-type: none"> • Cumberland Avenue extension 	None
Line 4	<ul style="list-style-type: none"> • SR 26 • SR 126 (Cherry Lane extension) • CR 200 N (Lindberg Road) – Dogleg connection • CR 400 W • US 52 	<ul style="list-style-type: none"> • CR 200 North and KB&S Railroad • CR 300 West • CR 250 North • KB&S Railroad 	None
Line 7	<ul style="list-style-type: none"> • SR 26 • SR 126 (Cherry Lane extension) • CR 200 N (Lindberg Road) • Cumberland Extension • Frontage Road • US 52 	None	<ul style="list-style-type: none"> • McCormick Road will be turned into a cul-de-sac north of the CR 200 N intersection. • Brindon Woods, Pine View Farms, and Carrington Estates will be connected to Line 7 by frontage roads, which incorporate the existing US 231.
Line 9	<ul style="list-style-type: none"> • SR 26 • SR 126 (Cherry Lane extension) • CR 200 N (Lindberg Road) • Cumberland Extension • Frontage Road • US 52 	<ul style="list-style-type: none"> • CR 200 North 	<ul style="list-style-type: none"> • McCormick Road will be turned into a cul-de-sac north of the Cumberland extension intersection with McCormick Road. • Brindon Woods, Pine View Farms, and Carrington Estates will be connected to Line 9 by frontage roads, which incorporate the existing US 231.
Line 10	<ul style="list-style-type: none"> • SR 26 • SR 126 (Cherry Lane extension) • CR 200 N (Lindberg Road) – Dogleg connection • CR 300 W (Klondike Road) – Dogleg connection • CR 400 W • US 52 	<ul style="list-style-type: none"> • CR 200 North • CR 250 North and CR 300 West 	None

Source: Michael Baker Jr. 2002

All of the Build Alternative alignments provide an additional north-south route within the study area. According to traffic model results, traffic is drawn from roadways throughout the area, with longer trips responding to the availability of the limited

access highway, and shorter trips responding to the localized changes in access. As noted under the discussion of the No-Build Alternative, several other projects are planned to facilitate travel, particularly east-west travel, in the study area. The Build Alternative links these projects and prevents congestion that otherwise would occur at various locations, thereby improving general ease of access. Localized travel patterns in the vicinity of the alignment's access points will be altered and additional traffic can be expected, particularly on Lindberg Road and the Cherry Lane extension. Projected volumes and LOS in the study area are noted in the Engineer's Report. CAC members are particularly concerned about additional traffic created at alignment access points and how that will interact with neighborhoods. However, planning-level intersection analysis indicates that traffic signals will be warranted at the access points, and these intersections will operate satisfactorily in 2025 (Details are provided in the Engineer's Report). Also, no segment links along Lindberg Road and McCormick Road show any decline in LOS from the 2025 No-Build Alternative condition.

Another traffic congestion area of concern is US 52 between Klondike and McCormick Roads. In 2025 under the No-Build Alternative condition, this segment is projected to operate at a LOS D with a 21,000 Average Annual Daily Traffic (AADT). With Lines 1, 4, 7, 9, and 10, that same segment is also anticipated to operate at a LOS D with a volume ranging from 14,800 to 25,100 AADT.

With the No-Build Alternative or Lines 4 and 10, Cumberland Avenue would be extended to Klondike Road, which is planned for four-lane widening between US 52 and Lindberg Road. Two schools are located on this portion of Klondike Road. Lines 7 and 9 would intersect the Cumberland Road extension east of Klondike Road, providing alternate north-south access and keeping more of the traffic to the east of Klondike Road.

According to local law enforcement officers, Line 1 could exacerbate event congestion due to its proximity to the Purdue University campus. Lines 4, 7, 9 and 10 were not anticipated to have a negative effect on event traffic and the access points at the Cherry Lane extension and Lindberg Road could potentially reduce congestion (Law enforcement meeting 2002).

The Build Alternative alignments will not affect bus service provided by the GLPTC. Additionally, the alignments will not affect regional Greyhound bus service, rail service, or airline service. A representative of the Tippecanoe School Corporation expressed concern regarding the potential intersection congestion with Line 1 at

Lindberg Road and Lines 7 and 9 at US 52. Line 10 is the Tippecanoe School Corporation's preferred alignment due to its access point on Klondike Road and western terminus on US 52 (Mugg 2002).

Impacts to bicycle and pedestrian travel patterns are discussed in Section 3.2.7: Recreation Resources.

3.3 Impacts To The Economic Characteristics Of The Community

Neither the No-Build nor the Build Alternative alignments will affect employment and unemployment trends within the study area or Tippecanoe County. Each of the alignments will have direct impacts on businesses or on access to businesses, but no cumulative economic impacts are anticipated.

3.3.1 Direct Impacts

Direct economic impacts include the displacement of existing businesses and their associated jobs. Although the exact number of jobs lost due to commercial displacements could not be determined without individual business surveys, which are outside the scope of this study, U.S. Census County Business Pattern data were used to estimate the number of employees at each displaced business (Table 21). The 1999 data set included all businesses within the 47906 zip code, representing all businesses with a West Lafayette address, based on the North American Industrial Classification System (NAICS). Ground surveys and discussions with local businesses were used to confirm these estimates of the potential number of lost jobs resulting from commercial displacements.

The No-Build Alternative, Line 7, and Line 9 will not displace any businesses.

Line 1 will displace four businesses (Applebee's restaurant, University Inn, Cumberland Exhibition Center, and an utility sub-station). Of the alignments, Line 1's commercial displacements will result in the largest loss of jobs. The potential number of jobs displaced ranges from 150 to 348 employees.

Line 4 will displace four businesses (Wabash Valley Feed, Klondike Storage, Tree Pro, and Orchards of Golf). The estimated number of jobs displaced ranges from 12 to 71 employees. While this is the same number of businesses displaced by Line 1, the number of potential displaced employees is much lower.

Line 10 will displace two businesses (Road Works Manufacturing and Orchards of Golf), with a potential loss of 21 to 53 jobs.

Based on County Business Pattern data from 1999, there were 672 business establishments within the West Lafayette zip code (47906), with an estimated 10,597 employees. Line 1’s highest potential number of job displacements (348 jobs) would only account for three percent of the total number of jobs within this community. While individual business displacements could result in a temporary or permanent negative effect on the displaced business’s owner and employees, the range and scale of the Build Alternative’s potential business displacements is not anticipated to have regional economic impacts.

Review of the local real estate market indicates that an adequate supply of commercial real estate and vacant land exists to accommodate the commercial property and business relocations resulting from each of the alignments. Displaced businesses could choose to relocate in the area, which would diminish the economic impact of the displacement. Relocation policies are discussed in “Relocation Policies and Availability of Replacement Housing” in Section 3.1: Impacts to the Physical Characteristics of the Community.

**Table 21
Potential Employment Displacements**

Business Name	North American Industrial Classification System (NAICS) Category	Estimated Number of Employees
Applebee’s restaurant	Accommodations and food services - Full-service restaurant	50-99
Bethel Christian Life Center – day care	Health care and social assistance - Child daycare services	20-49
Cumberland Place Exhibition Center	Unclassified	Varies according to event
Klondike Storage	Real estate, rental, and leasing - Lessors of mini warehouses and self storage units	1-9
Orchards of Golf	Arts, entertainment, and recreation - Golf courses and country clubs	1-4
Road Works Manufacturing	Construction – Highway and street	20-49
Tree Pro	Wholesale - nursery	5-49
University Inn	Accommodations and food services - Hotel	100-249
Wabash Valley Feed	Retail – Pet and pet supply store	5-9

Sources: U.S. Bureau of the Census, County Business Patterns 1999 - zip code series

3.3.2 Indirect Economic Impacts

Changes in access resulting from the alignments have the potential to influence existing businesses, especially highway-related businesses. Lines 1, 4, and 7 will not change access for existing businesses. Line 9 with its connection at CR 300W (Klondike Road) and CR 250N will provide improved and additional access to businesses along CR 300 (Klondike Road), including: Lafayette Venetian Blind,

Lafayette Limo, Road Works Manufacturing, and the businesses in the Klondike Mall; and the businesses along CR 250N: the businesses in Oakland Business Complex, Tippecanoe Foods, and Tree Pro. Line 10 with its connection at CR 300W (Klondike Road) will provide improved access for these same businesses, with the exception of Road Works Manufacturing, which is displaced by the alignment.

Existing businesses along US 52 and Northwestern Avenue in West Lafayette will have a two-fold effect resulting from the Build Alternative. A reduction in traffic congestion will improve patrons' access to these businesses, but the proposed project might divert some traffic and potential customers away from existing highway-related businesses. Over time, traffic levels will increase following implementation of the proposed project so that, depending on the roadway segment and alignment, traffic levels approach or exceed existing levels again by 2025.

As noted in the previous section, some alignments may influence the future location of commercial development; however, no major cumulative effect to the economic environment is anticipated.

3.4 Cumulative Land Use, Social, and Economic Impacts

3.4.1 Methodology

The secondary and cumulative impacts analysis was completed based on the guidance and suggested methodologies found in the Council of Environmental Quality's (CEQ) 1997 "Considering Cumulative Effects Under the National Environmental Policy," FHWA's 1992 Position Paper on Secondary and Cumulative Impact Assessment, and the US Environmental Protection Agency (USEPA) 1999 paper, "Consideration of Cumulative Impacts in EPA Review of NEPA Documents."

Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR Part 1508.7). Available information regarding other past, present, and reasonably foreseeable actions was evaluated to determine whether these actions and the proposed project result in a cumulative impact. Based on the public input, a review of traffic modeling results, and existing information about planned projects and their projected impacts to sensitive resources, the conversion of farmland for development and the extension

of the relocated US 231 north to I-65 were identified as the key cumulative impact analysis issues.

3.4.2 Existing Environment

The limits of the study area were identified during project scoping as the appropriate spatial boundary or “project impact zone” for the cumulative impact analysis. With the exception of areas north of the study area that relate to the future extension of relocated US 231 north to I-65, and related segments of the highway network that fall outside the study area boundary such as Northwestern Avenue, additional geographic areas have not been identified as potentially subject to cumulative impacts. The land use and potential traffic impact areas that are of concern for cumulative impacts are sufficiently captured by these boundaries. The time frame for this cumulative impact analysis includes all past, present, and reasonably foreseeable future actions that have occurred or may occur until the year 2025.

Past, Present, and Reasonably Foreseeable Future Actions

The original vegetation in Tippecanoe County consisted of mixed hardwood forests and prairie grasslands. The county is in the transition zone between the prairies to the west and the forests to the east. The study area was primarily covered with prairie or grassland vegetation, although mixed hardwoods covered Wabash River valley terraces. Due to the cultivation of land for agriculture, little of the original vegetation remains. With the exception of steep slopes along the Wabash River, which retain substantial amounts of original vegetation, and wetland areas along Wabash River tributaries, all lands within the study area have been cultivated for agricultural use, converted for other uses, or developed (1981 Comprehensive Plan).

Early settlers began the initial conversion of natural vegetation to land for agricultural and other uses. The first settlers arrived in Wabash and Shelby Townships in the 1820s. With settlement, lands were cultivated for subsistence agriculture. Both townships remained predominantly agricultural, with farmland punctuated by a few small villages containing merchants, service providers, and post offices. Agriculture in the study area evolved from subsistence farming to stock farming in the mid- and late-nineteenth century, and to modern farming with the introduction of the tractor, grain combines, corn pickers, and other machinery between 1920 and 1950. As a result of the modernization of farming and the consequent significant increase in capital and operating costs, the average farm size

grew and the number of farms in the study area and remainder of Tippecanoe County decreased. Some farms were abandoned. The farmers who remained increasingly specialized in a few crops, mainly corn, soybeans, and wheat. (See the Section 106: Phase 1 Survey Report for the proposed project.)

As a result of these changes in the farming industry and the value of land increasing for development, farmland was sold and developed for primarily suburban and rural residential use. The conversion of farmland to residential and commercial uses increased with the growth of Purdue University and the build-out of West Lafayette and Lafayette. Consistent with the county's 1981 designation of the eastern portion of the study area (i.e., Wabash Township) as urbanizing and the western portion (i.e., Shelby Township) as rural, the eastern portion is more developed than the western portion. A detailed description of current land uses and development is provided in "Existing Land Use and Infrastructure" in Section 2.1: Physical Characteristics of the Community.

As land use has changed in Tippecanoe County, the transportation system has evolved to meet the needs of the area's population, industry, and commerce. As an "urbanized area" exceeding 50,000 population, Tippecanoe County is designated a Metropolitan Planning Organization (MPO) and, as such, must meet federal requirements (23 CFR Part 450) for transportation planning. Fiscally constrained long-range transportation plans must be developed in a three-year planning cycle, based on procedures for estimating travel demand that fulfill USDOT certification requirements, and fulfilling planning requirements including public involvement, consideration of alternate modes of travel, goods movement, and socioeconomic analysis. The US 231 relocation project is a product of this planning process. The history of this project is described in Chapter 1 of the Environmental Document.

The existing environment, as described throughout Section 2.1, with supporting traffic information provided in the Engineer's Report, represents the baseline condition for cumulative impact analysis.

Actions and trends within the spatial and temporal boundaries that relate to the key cumulative impact issues are:

1. Planned and approved residential and commercial development, and
2. Planned and approved transportation projects.

Planned and approved residential and commercial development is presented in the "Future land use" in Section 2.1: Physical Characteristics of the Community.

Extensive development of open land is already planned and approved in much of the eastern portion of the Study area, as shown in Exhibit CIA-2. This exhibit also shows that several large, lower-density developments have been approved in the rural, western portion of the study area. Table 10 summarizes the acres of land that are existing or developing, acres that are planned and approved for development in the study area, and the estimated acres of development for additional growth that is forecast in the study area to the year 2025.

Major improvements that may interact with the proposed project include:

- The extension of Cumberland Avenue to Klondike Road
- The intersection of Cumberland Avenue to Line 7 or 9
- The extension of Cherry Lane to Line 1, 4, 7, 9, or 10
- The widening of Lindberg Road to four lanes between CR 300W (Klondike Road) and Northwestern Avenue
- The extension of relocated US 231 from US 52 to I-65

All of these improvements, with the exception of the extension of relocated US 231 from US 52 to I-65, are programmed transportation improvements that were included in the TCAPC travel demand modeling for this study. The interactions of these projects with the Build Alternative are reflected in the traffic analysis and preliminary engineering. The extension of relocated US 231 beyond US 52 is not determined at present. INDOT is developing an environmental document pertaining to the extension of US 231 from US 52 to I-65 as part of a broader study of US 231 from I-70 to I-65. The I-70 to- I-65 study is independent of this study. It is intended that both the I-70 to- I-65 study and this study identify alignments that can connect at US 52 to contribute to a Statewide Mobility Corridor. Statewide Mobility Corridors have been designated by INDOT to provide connections between major metropolitan areas throughout the state.

To assist in the goal of providing a continuous US 231 route from I-70 to I-65, the northern terminus of this proposed project at US 52 must allow for US 231 to continue north to I-65. The potential system continuity for each alignment is considered in the land use and travel patterns and accessibility analyses in Section 3.1: Impacts to Physical Characteristics of the Community. Environmental features potentially constrain the continuation of US 231 through certain areas. Because the results of the I-70 to I-65 study are not available, existing public information and mapping have been analyzed to determine the environmental constraints of the

extension of US 231 from US 52 to I-65. Potential environmental constraints include:

- Hadley Lake and associated wetlands
- An historic church and cemetery
- Affordable housing
- A private golf course
- The site of the planned and approved Meijer store

3.4.3 Environmental Consequences

Cumulative Effects

Based on public input, a review of traffic modeling results, and existing information about planned projects and their projected impacts to sensitive resources, the conversion of farmland for development and the extension of the relocated US 231 north to I-65 were identified as the key cumulative impact analysis issues. The resources of concern for cumulative effects are farmlands and the human community (i.e., consistency with local area plans, development patterns, and traffic congestion). Given the long history of disturbance to the land in the study area and the minimal incremental effects of the proposed project to natural resources (Natural Resources section of the Environmental Document), natural resources, such as wetlands, water quality, and wildlife resources, do not warrant cumulative impact analysis, per USEPA's 1999 paper, "Consideration of Cumulative Impacts in EPA Review of NEPA Documents."

Conversion of Farmland for Development

The communities within the study area value agricultural lands and the economic, social, cultural, and aesthetic characteristics associated with them. The communities' land use and vision plans (i.e., 1981 Comprehensive Plan, Focus on the Future, Vision 2020) and CAC and public comments emphasize the importance of agricultural lands and of protecting them. Residents of the Wabash Township portion of the study area have observed first-hand the conversion of farmland for residential and commercial land uses. Many of the remaining agricultural lands serve as buffers for some of the larger residential developments. In Shelby Township, agricultural land use is interspersed with larger-lot residential developments. These developments are popular, in part, due to the surrounding agrarian landscape.

As noted in the farmland impacts section, each of the alignments directly displaces agricultural and undeveloped lands, as well as prime agricultural soils. The Purdue

Research Foundation owns extensive open land in the study area, including all of the parcels south of Lindberg Road that would be directly affected by the alignments. As the purpose of the foundation is to make the most profitable use of the land to financially support the university, it is reasonable to assume that this land, which is not currently in active agricultural production, will eventually be developed. Additionally, development is planned and approved for this area, which, independent of the alignments, will convert open/agricultural lands to developed lands. The alignments, in conjunction with other transportation projects and planned and approved development, will likely encourage the development of agricultural lands adjacent to connections along the alignments (i.e., where the proposed project intersects with existing roadways and planned extensions). As noted in Chapter 2, as well as in the indirect land use impacts section, the alignments carried forward for consideration avoid large agricultural parcels in the designated rural portion of Tippecanoe County.

If the No Build Alternative were selected, existing market forces in the study area would lead to continued development of agricultural land, as evidenced by the approved development plans and the population and employment forecasts within this area (Table 2). The incremental impact of the Build Alternative thus appears to relate more to the location and timing of development within the urbanizing area of Wabash Township, as discussed in the indirect effects to land use subsection. General trends in the use of agricultural lands do not appear to be affected by any of the Build Alternative alignments.

Impacts Resulting from the Extension of US 231 North to I-65

An analysis of the constraint locations indicates that relocated US 231 could be continued north of US 52 to I-65 from each of the Build Alternative alignments, with the exception of Line 1. The extension of US 231 north from Line 1 does not appear feasible due to extensive development along the Cumberland Avenue corridor. (Line 1, the original preferred alternative, has been studied in detail for comparative purposes. See Chapter 2.)

To estimate the traffic impact of the US 231 extension combined with the proposed project, a “what-if” scenario was modeled using the TCAPC traffic demand model. Traffic on various segments under the No-Build Alternative, Build Alternative, and Build Alternative + US 231 extension scenarios for 2025 are reported in Table 22 (the Build Alternative is represented by the preferred alignment, Line 7). A comparison of the No-Build and Build Alternative results indicates that the proposed

project will alleviate congestion and generate new capacity on roads within the study area. A comparison of the Build Alternative and Build Alternative + US 231 extension results suggests that the US 231 extension will result in new traffic using the extra capacity on area roads created by the Build Alternative. It appears from the traffic demand model that some traffic destined for Purdue University will use the US 231 extension to get from I-65 instead of using SR 43 and River Road. This diverted traffic is expected to increase volumes on US 231, US 52, Northwestern Avenue, Cherry Lane, SR 26, and McCormick Road over the volumes under the Build Alternative. However, none of the volume increases are expected to result in a lower LOS for the affected roadways.

Table 22
2025 Traffic Conditions if US 231 Extension were Constructed

Roadway Segment	No-Build Alternative	Build Alternative*	Build Alternative* + US 231 Extension
US 52 - W. of US 231 (proposed)	21,000	25,100	29,300
US 52 - E. of US 231 (proposed)	34,400	31,500	33,300
US 231 (Northwestern Ave) – S. of Lindberg Rd.	23,600	16,800	18,700
River Road - S. of SR 443	23,700	23,000	20,100
CR 300 W (Klondike Rd.) – N. of Lindberg Rd.	8,900	6,200	6,400
McCormick Rd – S. of Cherry Ln.	8,500	6,300	6,900
Lindberg Rd. – E. of US 231 (proposed)	6,200	6,000	5,900
Cherry Ln. – E. of US 231 (proposed)	2,200	2,200	2,300
SR 26 – E. of US 231 (proposed)	12,300	19,800	22,800
US 231 (proposed) – N. of Lindberg Rd.	-	19,300	25,500
US 231 (proposed) – S. of Lindberg Rd.	-	17,700	22,800

* The preferred alignment, Line 7, was represents the Build Alternative in this analysis.
Source: Michael Baker Jr., Inc.

The construction of the US 231 extension is not a foregone conclusion. Both projects have independent utility. Therefore, the proposed project could be constructed without US 231 later being extended. Whereas the proposed project is a programmed project on the 2025 Transportation Plan and INDOT Long Range Plan, the US 231 extension is only included in the INDOT Long Range Plan as a study corridor. Whether the extension will become a programmed project will be an outcome of the I-65 to I-70 Study and future planning processes.

4.0 MITIGATION

Community Impact issues that remain a concern with the preferred alternative will be addressed with mitigation proposals. These proposals will be developed with the CAC's input, and may include landscaping of the median, pedestrian treatments at crossings, and measures to mitigate the project's impacts on access to neighborhoods and community facilities.

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Community Impact Assessment (CIA) Report Exhibits

Exhibit CIA-1	Project Location
Exhibit CIA-2	Current and Future Land Use
Exhibit CIA-3	Community Resources
Exhibit CIA-4	Lands in Agricultural Production
Exhibit CIA-5	Environmental Justice-Racial Minority
Exhibit CIA-6	Environmental Justice-Ethnic Minority
Exhibit CIA-7	Environmental Justice-Low Income
Exhibit CIA-8	Community Access