Chapter 2 Environmental Description

Chapter 2 describes the existing environmental conditions at the Enrico Fermi Nuclear Power Plant (Fermi) site, the site vicinity, and the surrounding region. The environmental descriptions provide sufficient detail to identify those environmental resources that may be affected by the construction and operation of the proposed Fermi 3. This chapter is divided into eight sections:

- Station Location (Section 2.1)
- Land (Section 2.2)
- Water (Section 2.3)
- Ecology (Section 2.4)
- Socioeconomics (Section 2.5)
- Geology (Section 2.6)
- Meteorology and Air Quality (Section 2.7)
- Related Federal Project Activities (Section 2.8)

The following definitions and figures are provided as additional information related to content of the Chapter 2 sections:

- Fermi 3 region – the area within a 50-mile radius around the Fermi 3 site (Figure 2.1-1)
- Fermi 3 vicinity – the area within a 7.5-mile radius around the Fermi 3 site (Figure 2.1-2)
- Fermi 3 site – the Detroit Edison property that comprises the Exclusion Area Boundary (Figure 2.1-3)

2.1 Station Location

The Fermi site is located in Monroe County in southeastern Michigan, about 20 miles north of the Michigan/Ohio border. The U.S./Canada international border runs through Lake Erie about 7 miles east of the Fermi site. The Fermi site is on the west bank of Lake Erie, approximately 24 miles northeast of Toledo, Ohio and 30 miles southwest of Detroit, Michigan. The River Raisin is located about 6 miles southwest of the Fermi site. Figure 2.1-1 shows the location of the Fermi site in relation to the counties and larger cities and towns in the region, which is the area within a radius of 50 miles from the center of Fermi 3. The Fermi site lies within portions of Sections 16, 17, 20, and 21 of Township 6 South, Range 10 East in the Frenchtown Township, Monroe County, Michigan. Stony Point, Michigan is about 2 miles south of the Fermi site. The town of Monroe, Michigan is approximately 8 miles southwest.

The vicinity evaluated in this Environmental Report is a 7.5-mile radius circle around Fermi 3 in accordance with NUREG-1555 guidance for large, irregularly shaped sites, which specifies that the vicinity should encompass a 6-mile band around the plant property (the vicinity may differ as specified in certain sections based on the topic being evaluated). Figure 2.1-2 shows Fermi 3 in relation to the features of the surrounding 7.5-mile vicinity. The vicinity of Fermi 3 is mostly

agricultural. The proposed Fermi 3 Exclusion Area Boundary (EAB) is shown on Figure 2.1-3 and Figure 2.1-4. The EAB is depicted as a circle with a 2928 foot radius from the centerline of the Fermi 3 reactor.

The Universal Transverse Mercator NAD83 Zone 17T coordinates for the location of the Fermi 3 reactor are approximately N4,647,900 meters (41°57'39" North latitude) and E312,600 meters (83°15'43" West longitude).

The property boundary shown on Figure 2.1-3 encompasses the 1260 acres that comprise the Fermi site. There are no apparent erosion issues on the Lake Erie shore of Michigan near the Fermi site that would reduce the site acreage. A site area of 1260 acres is used throughout this report.

Interstate 75 (I-75) is the major transportation route in the vicinity, running in a north-south direction west of the Fermi site. I-75 begins at the Canadian border in Ontario and ends in Florida almost at Miami (Reference 2.1-1). I-75 is approximately 4 miles west of the Fermi site at the closest point. Several other highways are present in the site vicinity, including I-275 to the northwest and North Dixie Highway (also called State Highway M-50 or US Turnpike Road) and US 24 to the west. Public transportation by Lake Erie Transit is available within the city of Monroe, Michigan just outside the site vicinity, and dial-a-ride doorstep service is provided in the Frenchtown Township within the site vicinity (Reference 2.1-2).

Major rail lines near the Fermi site include Canadian National and Norfolk Southern lines, both of which run in a roughly north-south direction about 3 miles west of the Fermi site. There is a rail spur off the Canadian National main line into the Fermi site for large and heavy equipment transport (Reference 2.1-3).

Natural features of note in the vicinity include Lake Erie as the prominent feature just east of the Fermi site. The area also includes Stony Point, the distinctively shaped landform projecting into Lake Erie just south of the Fermi site, and several other bodies of water. These nearby bodies of water include Swan Creek just north of the Fermi site, Stony Creek about 3 miles southwest, River Raisin about 6 miles southwest, and the Huron River about 5.75 miles north.

The Fermi site, including the 120 kV and 345 kV transmission switchyard sites, are owned and operated by Detroit Edison, while the transmission system (including switchyard equipment) from the switchyard outward from the Fermi site is owned and maintained by the International Transmission Company (ITC*Transmission*). There are easements on Fermi property granted to ITC*Transmission* for the 345 kV and 120 kV transmission lines as they leave their respective switchyards. Transmission lines over the Fermi site and along the entire transmission corridor routes run within ITC*Transmission* easements.

Figure 2.1-3 and Figure 2.1-4 provide aerial photos of the Fermi site showing its property boundary and closer views of existing and proposed onsite structures, respectively. Air and water effluent release locations for Fermi 3 and distances from each location to the nearest point on the Fermi site boundary are shown in Table 2.1-1. The closest points are locations in Lake Erie.

Figure 2.1-5 shows an oblique aerial view of the main developed portion of the Fermi site. The Fermi 3 proposed location is the large parking area visible in the southwestern-most portion of the developed area seen on Figure 2.1-5. There are no other industrial structures within the site or immediate area. No recreational facilities or residential structures are present within the site boundary.

2.1.1 References

2.1-1 Interstate-Guide.com, “Interstate 75,” http://www.interstate-guide.com/i-075.html, accessed 31 March 2008.

2.1-2 Lake Erie Transit, Transit Services, “Frenchtown Dial-A-Ride,” www.lakeerietransit.com/transitservices.html, accessed 22 June 2007.

2.1-3 Michigan Railroads.com, Your Homepage for Michigan Railroading, Railroad Page, “CN North America,” http://www.michiganrailroads.com/MichRRs/Railroads/CNHomePage.htm, accessed 21 January 2008.

Table 2.1-1 Distances from Fermi 3 Effluent Release Locations to Boundary

Location	Distance to Nearest Fermi Site Boundary
Air	
Reactor Building	1976 feet
Radwaste Building	2182 feet
Fuel Building	1980 feet
Service Building	1882 feet
Turbine Building	1944 feet
Water	
Unit 3 Cooling Tower Outfall	305 feet

Figure 2.1-1 Site Region within 50-Mile Radius

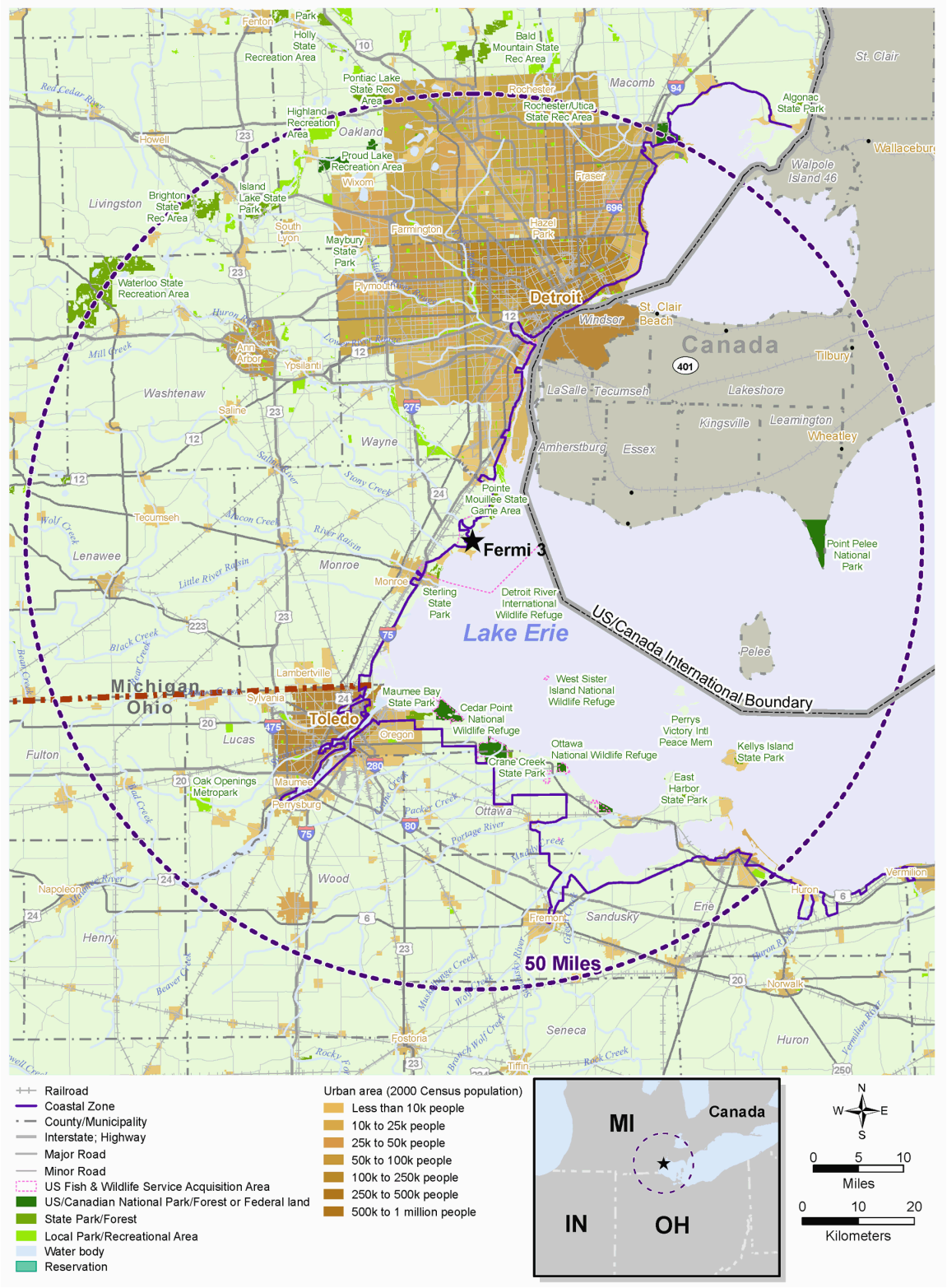

Figure 2.1-2 Site Vicinity within 7.5-Mile Radius

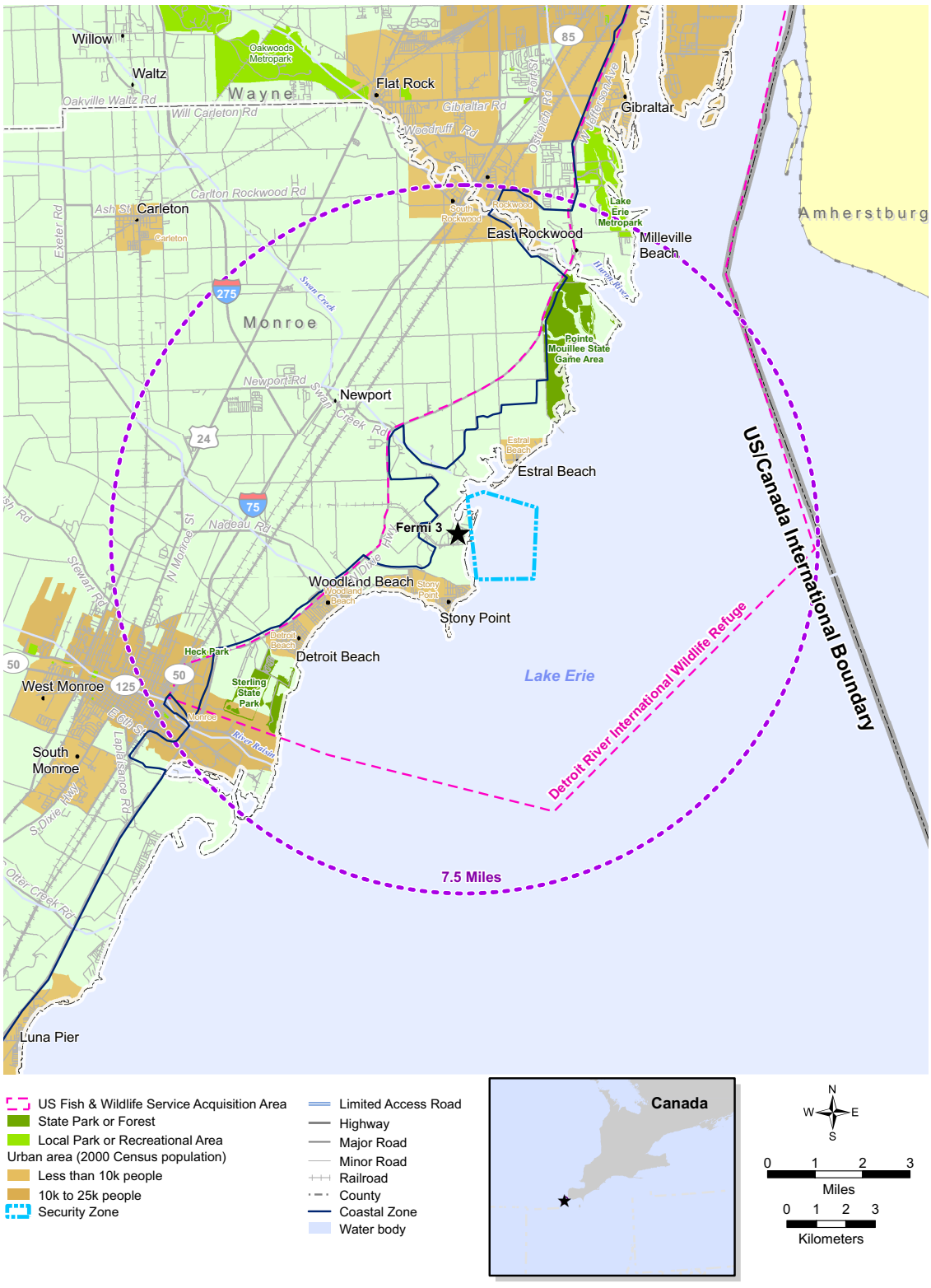

Figure 2.1-3 Fermi Property Boundary

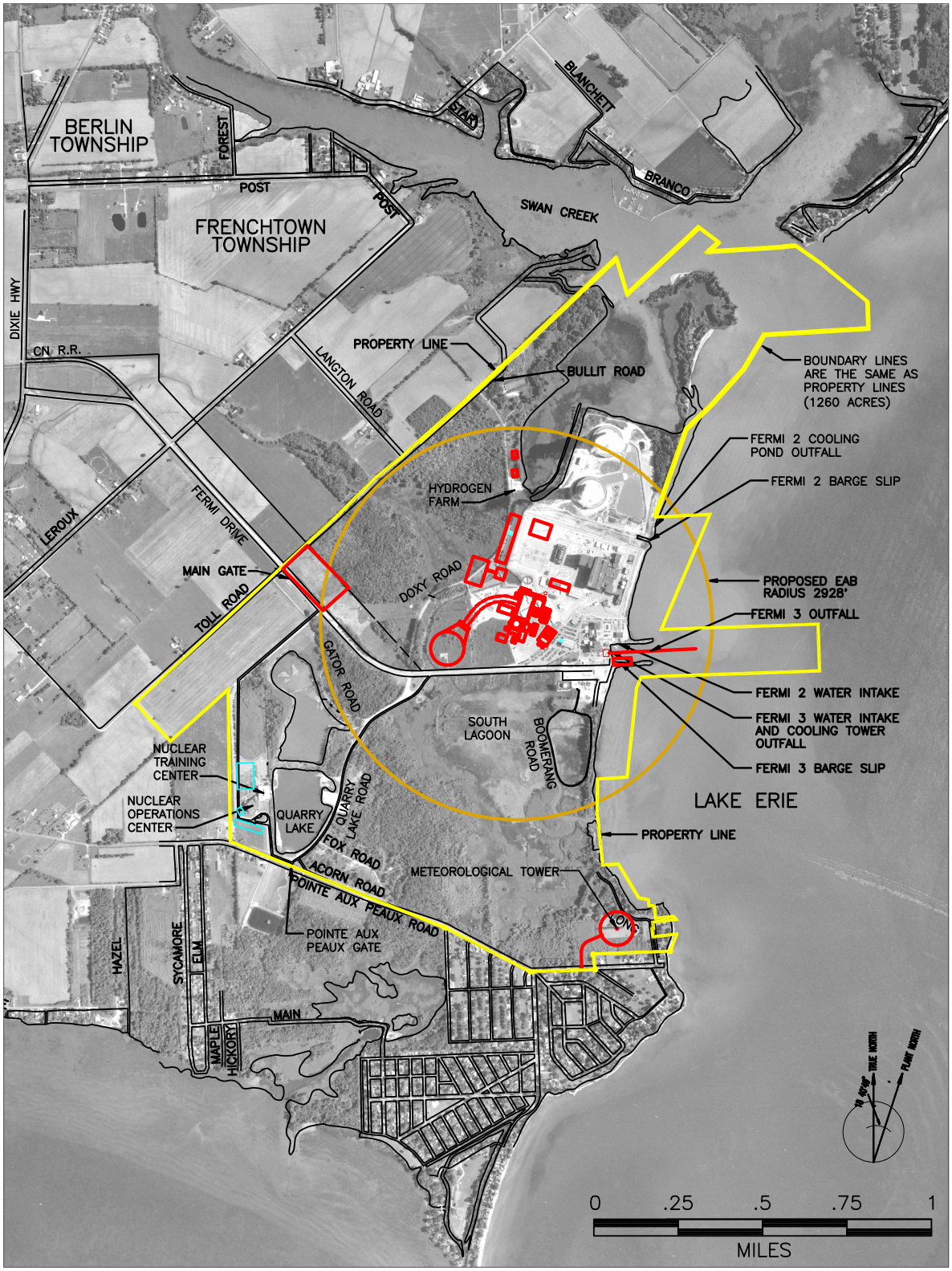

Figure 2.1-4 Fermi 3 Site Plan

Figure 2.1-5 Aerial View of Main Plant Area Looking North, Fermi Site

2.2 Land

This section describes, in general terms, the Fermi 3 site and its surroundings, with the site and vicinity described in Subsection 2.2.1, the transmission corridors described in Subsection 2.2.2, and the 50-mile region surrounding Fermi discussed in Subsection 2.2.3. For this Fermi 3 COL Environmental Report, consistent with the criteria described in NUREG-1555, Section 2.2.1, the vicinity evaluated is the 7.5-mile area as discussed in Section 2.1.

Fermi 3 is located on the existing 1260 acre Fermi site within the Frenchtown Township, Monroe County, Michigan, approximately 30 miles southwest of the southern suburbs of Detroit, Michigan, and about 24 miles northeast of the northern extent of Toledo, Ohio. Monroe County extends about 10 miles north, 25 miles west, and 25 miles southwest of the site. The county lies on the southeastern edge of Michigan and is bordered on the east by Lake Erie, on the north by Wayne County, Michigan, on the west by Lenawee County, Michigan, and on the south by Lucas County, Ohio.

Land use analysis for this section is based on review of appropriate existing literature, information acquired through visits to the Fermi site and contact with staff members, and information from local planning and agricultural contacts. Based on review of these documents in comparison to current information, it was concluded that land use in the vicinity of Fermi 3 has not changed significantly since Fermi 2 was constructed. Land use is not expected to change substantially during the timeframe of the COL application.

2.2.1 The Site and Vicinity

2.2.1.1 The Site

Land use on the Fermi site is split mainly into developed areas and swamp or wetland areas. Most of the forested areas on the site are subject to flooding, and, therefore, are considered woody wetlands. Wetland (including forested areas) and Open Water areas comprise about 60 percent of the total site area. The majority of the Fermi site that is not developed is included as part of the Detroit River International Wildlife Refuge (DRIWR) at the time of this COL application. The DRIWR encompasses a 656 acre portion of the Fermi site that contains habitat for common species of southeast Michigan as well as some wetland and water-dependent species such as the bald eagle (Reference 2.2-1). Detroit Edison has had a cooperative agreement with the U.S. Fish and Wildlife Service (USFWS) since 2003 that allows the USFWS to assist in managing the refuge areas while Detroit Edison retains ownership and control of the entire site. The agreement between Detroit Edison and the USFWS for management of the DRIWR is anticipated to be revised as a result of the addition of Fermi 3 to the site.

The northern and southern areas of the Fermi site feature large lagoons, while the western portions contain some forested areas and Quarry Lake. The eastern portion of the Fermi site adjacent to Lake Erie contains the power plant structures, as shown on Figure 2.1-4. To prevent flooding, the developed areas were elevated during the construction of Fermi 2 using crushed limestone taken from the southwest portion of the Fermi site (Quarry Lake). Site elevations range from the level of Lake Erie to approximately 25 feet above lake level on the western edge of the site

(Reference 2.2-2). Topography on the Fermi site is relatively level in the undeveloped areas, with an elevation range of approximately 10 feet over the site according to U.S. Geological Service (USGS) topographic maps.

The property boundary shown on Figure 2.1-3 encompasses the 1260 acres that make up the Fermi site. There are no significant erosion issues on the Lake Erie shore at the Fermi site that would affect the site acreage. A shore barrier was installed in conjunction with Fermi 2 construction to stabilize the shore along the eastern side of the site.

Detroit Edison is the licensed owner and operator of the Fermi site and currently controls the site for the purpose of generating electricity. However, some of the area within the site boundary is also used for other purposes, such as occasional ecological study by the USFWS and habitat restoration activities by state agencies or nonprofit groups. The DRIWR encompasses 656 acres of the existing 1260 acre site; the approximate boundaries of the refuge are shown on Figure 2.4-6.

Acreages of general land use categories onsite are shown in Table 2.2-1. The area previously developed for Fermi 2 plus that still occupied by deactivated Fermi 1 totals 172 acres.

There is one active railroad spur and one navigable waterway that traverse portions of the site. No public roads run through the Fermi site. Other than the decommissioned Fermi 1 structures and the existing Fermi 2 structures, there are no other industrial, commercial, or institutional structures on the site. The northwestern portion of the site also contains the security firing range. Several residences along Pointe Aux Peaux Road are present just outside the southeast property line near the village of Stony Point (Figure 2.1-3).

Detroit Edison does not allow access to Fermi property for recreational purposes. The site is posted with notifications around the perimeter to ensure awareness of access restrictions by the public.

Detroit Edison has acquired and will maintain surface ownership of all the land within the Fermi site property boundary. Detroit Edison owns and controls 99.93 percent of the mineral rights within the Fermi property; including all of the mineral rights within the EAB. One third party, the Michigan Department of Natural Resources (MDNR), owns 0.88 acre of mineral rights in the far southeast portion of the Fermi site near the location of the new meteorological tower. This very small mineral rights holding by the MDNR is in an area removed from the portions of the site that will be affected by the majority of Fermi 3 site preparation, preconstruction, construction, or operation; therefore, Detroit Edison owns and effectively controls the mineral rights in the Fermi 3 power block and associated exclusion area. There is no activity at the Fermi site or in adjacent areas involving exploration for, drilling for, or otherwise extracting minerals. The geological character of the subsurface structure and the land use in the vicinity of the Fermi site indicate that commercial mineral production appears unlikely in the foreseeable future. There are no mineral resources adjacent to or within the site boundary presently being exploited or of known commercial value, nor are such resources expected to be developed in the future.

Under Michigan law, minerals can be owned by the surface property owner or by a different party (Reference 2.2-3). In Michigan, a 1998 law allows landowners to petition the state to purchase the

state-owned minerals beneath their land as long as the land has no pending lease or development. The state must sell the minerals to the surface landowner at fair market value at the landowner's request unless the state wants to reserve minerals to prevent damage in environmentally sensitive areas or for some other legitimate reason. A deed restriction is then added to the property that prohibits the mineral rights from being severed from the surface rights in the future (Reference 2.2-4). Since Detroit Edison owns the entire Fermi site and the associated exclusion areas for Fermi 2 and Fermi 3, Detroit Edison effectively controls mineral rights to the site with respect to this law.

Near the northeast corner of the Fermi site in the area of the Fermi 2 cooling towers, there is a former barge slip that was used to offload equipment during Fermi 2 construction (Figure 2.1-3). The Fermi 2 water intake is east of the Fermi 3 location and is situated between the two groins protruding into Lake Erie. Fermi 2 discharges about 20,000 to 30,000 gallons per minute into Lake Erie from the existing circulating water basin depending on the season.

The environment of the former Fermi 2 barge slip and offloading area is cleared gravel with some trees and weedy vegetation along a sandy inlet area with no permanent structures. The barge slip area used for Fermi 2 deliveries would require substantial dredging and other preparation work before it could be used for equipment delivery. Fermi 2 components were delivered and offloaded at the barge slip.

The Fermi site, including onsite waterways, roads, and railroads, is closed to public use. No additional waterways, highways, roads, or railroads would be closed to public use as a result of Fermi 3 preparation, construction, or operation activities. There are no current plans for site modifications such as a visitor's center, parks, or similar designations on the Fermi site.

In the eastern portion of the Fermi site near Boomerang Road and Lake Erie, there is a 492-foot communication tower on land leased by Detroit Edison to the tower operator for communication use.

Natural Resources Conservation Service (NRCS) maps show areas of prime farmland around the southwestern edge of the Fermi site in the agricultural field designated for Fermi 3 construction laydown on Figure 2.1-4. This part of the Fermi site is owned by Detroit Edison and is used as cropland. Since a large portion of the Fermi site is committed to industrial development and has been previously disturbed by site-related activities, the majority of the site would likely be exempted from the definition of prime farmland (Reference 2.2-5). The NRCS classifies most of the undeveloped areas of the Fermi site as "prime farmland if drained" (Reference 2.2-6). Parts of the approximately 60 acre parcel of agricultural land are designated prime farmland and the parcel is currently used as farmland, so this parcel would most likely still be considered prime farmland even though it is part of the Fermi site. The prime farmland designation continues on a small portion of the Fermi site undeveloped area west of the Nuclear Operations Center and Nuclear Training Center; however, this small area is not farmed. Potential construction impacts to prime farmland on the Fermi site are addressed in Section 4.1.

The Fermi site falls under the jurisdiction of the Coastal Zone Management Act of 1972, which has the goal of attaining and maintaining a healthy coast through a balance of conservation and responsible development. States have their own approved coastal management programs under the Act, and Michigan was one of the first states to have its coastal management program approved in 1978. Michigan's coastal zone boundary generally extends a minimum of 1000 feet inland from the Ordinary High Water Mark of the Great Lakes and connecting channels, or further to include coastal lakes, river mouths and bays, floodplains, coastal wetlands, designated sand dune areas, public parks, recreation and natural areas, and urban areas (Reference 2.2-7). To the east of the Fermi site going into Lake Erie, the coastal zone extends to the international boundary between the United States and Canada (Reference 2.2-8). Landward boundaries of the coastal zone in the United States portion of the Fermi 50 mile region and in the Fermi vicinity are shown on Figure 2.1-1 and Figure 2.1-2.

Monroe County's Comprehensive Plan, currently being updated from the 1985 version, shows land use at the Fermi site as industrial. The Fermi property is zoned PS (Public Service District) by Frenchtown Township, which is a designation that allows power plant use. Future land use plans for Frenchtown Township and Monroe County indicate that utility and industrial use will continue on the Fermi property. General land uses within the Fermi site are shown on Figure 2.4-5.

2.2.1.2 **The Vicinity**

About 95 percent of the land area within the 7.5-mile vicinity of the Fermi site is within Monroe County; the remainder is in Wayne County (Figure 2.1-2). As shown on Figure 2.2-1, land use in the 7.5-mile vicinity around the Fermi site is predominantly agricultural. Approximately 24 percent of the Fermi vicinity is used for agriculture (pasture, hay fields, and cropland). Since land occupies less than half of the vicinity (46 percent land, 54 percent Lake Erie), agricultural uses involve more than half of the land in the vicinity. The developed uses comprise about 14 percent of the vicinity. The areas where developed uses are prevalent are mainly to the southwest of the Fermi site near the city of Monroe and along the Lake Erie shoreline. There is also a greater concentration of developed uses in the portion of southeastern Wayne County that falls within the vicinity. Small areas of forest, wetland, and grassland/herbaceous comprise the remaining approximately eight percent of the 7.5-mile vicinity. The forested and wetland areas make up only a small percentage of the overall land use within the vicinity in contrast to their status as the majority land use on the Fermi site.

Topography in the vicinity is fairly flat, with some lower elevation wetland areas along the Lake Erie shoreline, including the Fermi site. Lake Erie has an elevation of approximately 571 feet, while the area around the Fermi site ranges from approximately 577 to 600 feet (Reference 2.2-2). A topographic map of the Fermi vicinity is provided on Figure 2.4-1.

Residential areas in the Fermi vicinity are expanding, especially in Berlin and Frenchtown Townships. Relatively recent housing developments are present just south of Pointe Aux Peaux Road (the Fermi site southern boundary). There are large residential developments in the planning stages for the area between the two railroad tracks north of Newport Road. The planned

development area is about 1 mile long, and new subdivisions are proposed for the entire area. New subdivisions are also planned along Swan Creek Road and along Dixie Highway.

Scattered industrial facilities are present along the Lake Erie shore, mainly west and southwest of the Fermi site along the I-75 corridor and near Monroe. Spartan Steel Coating, National Galvanizing, MAC Steel, and Sylvania Sand are some of the nearest major industries. Commercial development is largely limited to the city of Monroe and the areas along major road corridors like Dixie Highway, Telegraph Road, and I-75. One of the commercial developments in Monroe is the Frenchtown Business Park, located at the intersection of Highways 125 and 50.

Land use plans that could affect the Fermi site and vicinity include the Frenchtown and Berlin Township Master Plans, Monroe County Comprehensive Plan, and planning efforts by the Southeast Michigan Council of Governments (SEMCOG) as part of their mission to assist local governments. According to SEMCOG, both the Frenchtown and Berlin Township Master Plan documents show the area around the Fermi site continuing to be used in a manner consistent with land use at the time of this COL application.

The land within the vicinity of the Fermi site is mainly agricultural, with areas of residential and limited industrial development near Monroe and along the Lake Erie shoreline. Figure 2.2-1 shows the USGS land use and land cover information for the vicinity of the site, which is for the most part agricultural. The nearest population concentration is located in the city of Monroe, which lies about 8 miles southwest of the Fermi site at its nearest point.

Overall land use in the vicinity is comparable to land use in the 50-mile region. The vicinity is approximately 24 percent agricultural versus the 37 percent of the region that is agricultural. These seemingly small percentages of agricultural land use can be accounted for by the fact that the open water of Lake Erie comprises a large portion of both the vicinity and the region.

The land surrounding the Fermi site has several different planned uses according to the Monroe County future land use map (Reference 2.2-9). North of the Fermi site, across Swan Creek, the planned use is mostly residential and agricultural. Also in this area, the USFWS has acquired a parcel called the Brancheau Tract Unit for addition to the DRIWR (Reference 2.2-1). The Stony Point area directly southeast of the Fermi site is also residential. The remainder of the area south of the Fermi site as well as the land abutting its northwest side is designated Rural Reserve, a land use category that includes all incorporated lands not included in other zoning categories. The majority of the land west of the Fermi site is zoned agricultural (Reference 2.2-10). A few additional industrial areas are located about 7 miles southwest in Monroe along the Lake Erie shoreline, such as the Detroit Edison Monroe Power Plant, the Automotive Components Holdings plant, and the Port of Monroe. Monroe County is, for the most part, dedicated to agricultural use (Reference 2.2-10).

No major nonresidential development projects are in progress or anticipated in the vicinity of the Fermi site, although industrial development is anticipated to increase after 2010. Road improvement projects on I-75 and Dixie Highway occurred in 2007 (Reference 2.2-11).

Future land use plans for the area around the Fermi site show prime agricultural and open space as the dominant uses. Draft future land use plans project industrial uses south of Newport and in the I-275/Telegraph Road area.

No zoning issues for townships or counties within the vicinity are expected to affect the Fermi site. According to the Monroe County Planning Director, farmland preservation and conservation will be a new area of focus in the Monroe County Comprehensive Plan update anticipated to be finished in 2008. This drive to preserve farmland in the county will keep additional residential and other development from encroaching more closely on the Fermi site since a large portion of the remaining undeveloped land near Fermi is used for agriculture.

2.2.1.2.1 Site Accessibility

The Fermi 3 site is accessible by Lake Erie, road, and rail. The major highways and rail lines in the area are found mainly west of the site, and a number of smaller state and county roads serve the area (Figure 2.1-1 and Figure 2.1-2). Dixie Highway provides access to the Fermi site from I-75. Interstate 75 connects Detroit, Michigan to the north with Toledo, Ohio, to the south and continues across the United States to its terminus in Florida. Interstate 75 is the major transportation route in the vicinity, roughly following the Lake Erie shore through Monroe and Wayne Counties and running within 4.1 miles of the northwest side of the Fermi site at the closest point.

Detroit Edison maintains control of ingress to and egress from the Fermi site through the main gate. There is an auxiliary gate onsite, the Pointe Aux Peaux gate; however, this gate is kept locked at all times and requires a key for entry by authorized Detroit Edison personnel.

A plant emergency or a national crisis could result in closure of I-75 because of its status as a major interstate highway and its proximity to the Fermi site. There are two areas of traffic congestion along two of the nearest exit or evacuation routes to I-75 from Fermi, including the Nadeau Road and I-75 intersection as well as the east side of the Swan Creek Road and I-75 intersection. The Frenchtown Township 2002 Master Plan also states that many of the east-west oriented roads in the township, such as those that would be used to exit the Fermi site, do not span the entire township, but that there is more than enough capacity on north-south roads (Reference 2.2-12). For further discussion of this and other potential egress limitations, refer to the Fermi Evacuation Time Estimate provided in COLA Part 5.

US 24 (Telegraph Road) runs southwest-northeast in the vicinity of the site (5.8 miles northwest), then gradually zigzags southeast through parts of Ohio, Indiana, and Illinois, ending near Palmyra, Illinois. County Highway 125 is a paved, two-lane, secondary road that branches east from US 24 and runs north-south into the center of the city of Monroe, passing within about 4 miles west of Fermi 2. County Highway 125 dead-ends into the east-west County Road 50 in downtown Monroe. Interstate 275 connects Interstate 96 in northern Detroit to Interstate 94 in southern Detroit and ends about 4 miles northwest of Fermi 2.

Toll Road runs north from Fermi Drive (near the main gate) just outside the property boundary. Toll Road is a public county road south of Langton Road; north of Langton Road, it is a private gravel road called Fisher Street with an easement for public use. This road is not heavily used, but

provides access to the agricultural parcels just west of the Fermi site. Fermi Drive is also a private road with an easement for public use on the portion west of the site boundary and main security gate. Fermi staff coordinates with the Monroe County Emergency Management Division to provide effective access control for Toll Road, Fermi Drive, and other local roads as needed.

2.2.1.2.2 Local Communities

Many townships and villages are present within the 7.5-mile vicinity around the Fermi site in Monroe and Wayne Counties, Michigan, as well as Amherstberg municipality in Essex County, Ontario, Canada.

Estral Beach, Stony Point, Detroit Beach, and Woodland Beach are small towns located along the Lake Erie shore within 5 miles of Fermi. These communities are blended summer resort and permanent residential areas. The nearest of these is Stony Point, about 2 miles south of Fermi. The land within 5 miles of Fermi is primarily agricultural with the exception of these communities and the small Newport-Oldport residential area to the northwest.

Socioeconomic information covering the Fermi vicinity, including population information and traffic conditions, is discussed in Section 2.5.

2.2.1.2.3 Land Use and Planning

State laws authorize Michigan townships to provide planning and zoning services in their communities. The majority of townships have a zoning ordinance and/or a master plan; others have planning and zoning provided through county governments (Reference 2.2-13). Frenchtown Township and Berlin Township have their own master plans that apply to the Fermi site and vicinity. The Monroe County Comprehensive Plan also governs planning and zoning for the area.

The 1985 Monroe County Comprehensive Plan (being updated at the time of this COL) includes the retention of agricultural land to serve as buffers between recommended major development corridors. The available land use plan maps and local contacts indicate that the majority of land located east of US 23, US 24, and I-75 in the northeast quadrant of the county will be reserved primarily for agricultural use. The Monroe County Planning Department provided information indicating that there is an increasing emphasis on conservation of agricultural lands in the county to preclude their development for other uses. The new comprehensive plan for Monroe County is likely to place more emphasis on protection and preservation of the county's agricultural lands.

The development activities planned for the Fermi vicinity include residential subdivisions in Berlin Township, along Swan Creek Road, and along Dixie Highway, as well as construction of a big box store. No new industrial developments are projected for the area by the Monroe County Planning Director since many of the available land parcels are too small to support large industrial developments.

Industries and business parks near the Fermi site include the Frenchtown Business Park, Port of Monroe, Migano Industrial Park (formerly Ternes), MAC Steel, TWB, Spartan Steel, Monroe Recycling, Detroit Stoker, the Automotive Components Holdings (formerly Ford) plant, Advanced

Heat Treatment, National Galvanizing and the Meijer Distribution Center. Businesses with the largest numbers of employees in the area are given in Table 2.5-3. The Automotive Components Holdings plant is anticipated to close in late 2008.

In the southwest corner of the intersection of Newport Road and Telegraph Road about 4 miles northwest of the Fermi site, there is a former Department of Defense (DOD) property. Previously, about 480 acres were owned by the DOD; however, the majority of the site was sold to a private owner in the mid-1980s. A portion of the site is currently owned by the State of Michigan and is used by the Michigan Army National Guard. Plans for future use of this site have not been specified by the DOD.

Land use categories included in the 7.5-mile vicinity are included in Table 2.2-2. Topographic maps of the Fermi site vicinity are included in Section 2.4.

Refer to Section 4.1 and Section 5.1 for comparisons of site and vicinity land use that may be changed by Fermi 3 construction and operation.

2.2.1.2.3.1 **Agricultural Land Use**

The 1985 Monroe County Comprehensive Plan and the draft 2007 version of the plan update are consistent and show the majority of the area around the Fermi site being used for agriculture at the time of this COL application and into the future (Reference 2.2-9).

Lennard Ag Company operates in the Fermi vicinity and is a large potato and soybean agribusiness with 4700 acres split between Southwest and Southeast area operations in Michigan. Its Southeast operation covers the area between Blissfield and Monroe and is about 16 miles west-northwest of the Fermi site (Reference 2.2-14).

According to Michigan Department of Agriculture (MDA) information for Monroe County, there are very few dairy operations in the county. Because of the small number of dairy operations in Monroe County, the MDA, National Agricultural Statistics Service (NASS), and Michigan State University extension agents do not provide specific information on quantities of dairy products produced. No milk animals were identified in a recent land use census for the 5-mile area around the Fermi site. However, these animals are documented in the agricultural district that includes Monroe County (Reference 2.2-15). There are goats and sheep within 5 miles of Fermi, but no information was available about animal numbers or use of these animals for dairy production. Estimates of 2006 milk cow numbers for Monroe and Wayne Counties and District 9 as well as Essex County and Southern Ontario are presented in Table 2.2-3.

The small portion of Wayne County within 10 miles of the Fermi site is predominantly a residential area and has a limited amount of agricultural activity, mostly comprised of small crop growers of field corn, soybeans, hay, and some fresh market vegetables. There are very few dairy farms in this area and relatively little agriculture in Wayne County compared to other counties in the area because of the presence of Detroit and its urbanized expanse (Reference 2.2-15).

2.2.1.2.4 Viewshed

There are several areas in the vicinity of the Fermi site that could be considered visually sensitive; these are most likely to be recreation areas and tourist attractions such as Pointe Mouillee State Game Area and Sterling State Park. Existing Fermi 2 structures (cooling towers) are visible from both Pointe Mouillee and Sterling State Park as well as from much of the surrounding area. Certain points within the recreation areas likely have enough forest vegetation to shield views of Fermi from the perspective of an observer on the ground. Fermi can be seen along the shore of Lake Erie and, because it has been an existing facility in the vicinity for more than 20 years, it is likely to be accepted by most observers as part of the expected view in the area.

Section 3.1 provides additional discussion of the potential aesthetic aspects of the Fermi site, and shows projected views of the Fermi site from various vantage points, including the Pointe Mouillee State Game Area.

2.2.1.2.5 Natural and Recreational Areas

Natural features in the Fermi vicinity include Swan Creek to the west-northwest, Lake Erie to the east and north, South Lagoon in the southeastern portion of the Fermi site, Quarry Lake in the southwest corner of the Fermi site, the Huron River north at the Wayne-Monroe County boundary, and Stony Creek and the River Raisin to the south near Monroe.

There are several recreational facilities within the vicinity of the Fermi site, including wildlife conservation areas that provide hiking, fishing, and other recreation opportunities. The Fermi site and surrounding area along Lake Erie are part of the USFWS designated DRIWR (Reference 2.2-1). The DRIWR Congressionally approved acquisition boundary, shown on Figure 2.1-1 and Figure 2.1-2, extends along the shore of Lake Erie from the River Raisin at its south extent to the Detroit River at its northern point. Lands for eventual inclusion in the DRIWR are being added as they become available within the acquisition boundary. However, the DRIWR is not open to the public (Reference 2.2-1).

Major recreation areas in the Fermi vicinity are described in Table 2.2-4.

Hunting opportunities are available at several of the above recreation areas as well as many within the 50 mile region. Waterfowl hunting is a popular activity at some spots along the shoreline of Lake Erie. Public hunting areas along the shore are limited to a few locations such as the Pointe Mouillee State Game Area and portions of Lake Erie Metroparks. The most popular type of waterfowl hunting is by boat. Upland game hunting within the authorized DRIWR boundary is limited by local ordinances and the amount of undeveloped lands and public hunting areas. The portion of the DRIWR in southern Monroe County contains the greatest number of private croplands, open fields and woodlots where hunting for deer, wild turkeys, rabbits and other upland game is possible (Reference 2.2-16).

Estimates of the number of people who make use of the beaches along the western Lake Erie shoreline for swimming were not available. There are several public and private beaches along the Lake Erie shoreline of Monroe County and Wayne County, all open for swimming and other forms of

water recreation. Lake Erie water quality in the Fermi vicinity and the region has improved greatly since the 1980s. Within the Fermi vicinity, members of the public who live in or stay temporarily in vacation homes along the shore are likely to use the beach areas, especially in the summer months.

Many land trust holdings for conservation were found in the vicinity and the region and are generally held by environmental organizations. There are no land trust holdings in Monroe County, but neighboring counties outside the Fermi vicinity feature various examples of this type of property (Reference 2.2-17). Because of the number and variety of trust lands within the region and the fact that they are not usually major recreation areas, these lands are discussed in general terms in Subsection 2.2.3.

2.2.1.2.6 **Water, Rail, and Air Transportation**

Lake Erie ports and shipping activities have major benefits for the regional economy. The ports along the Lake Erie shoreline in Monroe, Michigan and Ohio serve as destinations for raw materials and distributors of finished goods associated with mining, steelmaking, construction, power generation, and many support industries throughout the world.

Near the Port of Monroe, the navigation channel depth is 21 feet (Reference 2.2-18). The shallow draft near Monroe and the Fermi site requires dredging of a shipping channel so that commodities can be loaded and unloaded to and from large vessels.

Many small marinas and docks line the shore areas of Lake Erie throughout the vicinity. The closest marinas are just north of the Fermi site on the north side of Swan Creek (Swan Boat Club and Swan Yacht Basin at 1.4 miles). Brest Bay Marina is another nearby facility at 2.2 miles southwest of the Fermi site. A comprehensive list of marinas and similar facilities is provided in Subsection 2.5.2.

Lake Erie, which is adjacent to the east side of the Fermi site, provides access to water transportation at the site and in the vicinity. There is a significant amount of barge traffic on Lake Erie near the Fermi site, most of which is in transit to or from the Port of Monroe, the Port of Detroit, or the Port of Toledo. The nearest river port facility is the Port of Monroe, located in the southeast area of the city of Monroe near the mouth of the River Raisin as it flows into Lake Erie. The Port of Monroe is a small facility and Michigan's sole port on Lake Erie. The port offers industrial businesses the resources for transporting bulk raw materials and has immediate access to rail routes and highways. The port is in close proximity to an airport (Reference 2.2-18). This facility is about 7 miles south of the Fermi site at its closest point. Ports in the Fermi vicinity and the cargo transported are further discussed in Subsection 2.5.2.

Four rail lines enter the 7.5-mile area around Fermi, as shown on Figure 2.1-2. The Canadian National line enters the 7.5-mile area approximately 5 miles north of the Fermi site and leaves the vicinity about 6 miles southwest of the site, traveling southwest toward Toledo. This line is a small portion of the nationwide railroad system operated by Canadian National. No plans to expand the current level of rail service in the area are indicated in the Michigan State Transportation Plan (Reference 2.2-19).

A single spur track off the Canadian National main rail line crosses the Fermi site in a west-east direction generally parallel to the route of Fermi Drive. Coming from the north toward the Fermi site, service on the Canadian National main line continues past the plant (about 4 miles west) and south into the rail yards of Toledo, and beyond to Columbus, Dayton, Chicago, Bellevue, and Tiffin (Reference 2.2-20).

Along a parallel path in the same area as the Canadian National line west of Fermi, Norfolk Southern also has two lines that traverse the 7.5 mile radius in the vicinity of Newport (lines are very close together and appear as one line in Figure 2.1-2). There are no spurs off the Norfolk Southern line in the vicinity of Fermi. Rail lines beyond the 7.5 mile radius are described in Subsection 2.2.3.

Further west, about 8 miles west of the Fermi site, is a CSX Transportation rail line running roughly parallel to the Canadian National and Norfolk Southern lines discussed above. This line also runs north through Detroit and south to Toledo, where it branches southwest (Reference 2.2-21).

The Windsor Airport is located about 27 miles northeast of the Fermi site in Ontario, Canada (Reference 2.2-22). Other large airports in the region are farther from the Fermi site and are discussed in Subsection 2.2.3 and Subsection 2.5.2.

2.2.1.2.7 Pipelines

Two major natural gas pipelines are present in the vicinity of the Fermi site, traversing the Fermi vicinity in a southwest-northeast direction. The nearest gas-transmission pipeline is a 22-inch diameter Panhandle Eastern Pipeline Company line running roughly southwest-northeast about 10 miles west of Fermi 3, as shown on Figure 2.2-2. There is another Panhandle Eastern line running parallel to the first one about 0.5 mile further west; this line has a 26 inch diameter. The pipelines carry natural gas.

In Monroe County, the main natural gas providers are Michigan Gas Utilities and Michigan Consolidated Gas. The smaller gas lines from these companies that serve homes and businesses are located in the more populated areas and along major road frontages (Reference 2.2-23). Large natural gas pipelines in the vicinity of the Fermi site are located in the far western portion of the 7.5 mile vicinity. They generally run from the Toledo area through Detroit, then branch in east-west directions north of Detroit. Locations of pipelines are shown on Figure 2.2-2 and Figure 2.2-6.

Several petroleum lines are present within the vicinity; all of these lines run in essentially the same corridor about five to 6 miles west of the Fermi site in a southwest-northeast direction roughly parallel to the route of I-75.

2.2.2 Transmission Corridors and Offsite Areas

The proposed offsite transmission system for Fermi 3 is described in Section 3.7. In summary, three new 345 kV transmission lines and a separate switchyard are needed to serve Fermi 3. The route for the new lines will span approximately 29.4 miles within an assumed 300-foot right-of-way (ROW) along existing corridors to the Milan Substation. It is assumed that the Milan Substation may be expanded from its current size of 350 by 500 feet to an area approximately 1,000 by 1,000 feet to accommodate the three new transmission lines from Fermi 3.

Additional temporary access corridors are not anticipated for construction of the transmission system and there are no new offsite areas under the control of Detroit Edison that will be required for construction or operation of Fermi 3.

2.2.2.1 Existing Transmission Routes and Land Use

The International Transmission Company (ITC*Transmission*) owns and operates the transmission system in Southeastern Michigan. The 345 kV transmission system which provides power to and receives power from Fermi 2 is anticipated to serve Fermi 3.

Electrical power is also provided to the Fermi site via the 120 kV switchyard. This 120 kV system is not directly connected to Fermi 3 and is therefore not discussed. The existing transmission lines serving Fermi 2 and the route proposed to serve Fermi 3 are shown on Figure 2.2-3.

The existing 345 kV transmission corridor on the Fermi site runs from the onsite switchyard west past Doxy Road, then continues west along and just north of Fermi Drive (Figure 2.1-4). There is a small area abutting the west property boundary under the transmission lines that has been restored to native prairie.

The 345 kV infrastructure consists of two double-circuit lines carrying power between Brownstown Substation and Fermi 2. The Brownstown Substation is located north-northwest of the intersection of I-75 and Vreeland Road near Woodhaven, Michigan. From the Fermi site, the 345 kV lines run in a 5-mile corridor to a point just west of I-75 (Figure 2.2-3). The transmission corridor crosses agricultural land outside the west Fermi property boundary up to its intersection with I-75. From this point, the two Fermi-Brownstown double-circuit 345 kV lines run north to the Brownstown Substation for about 12 miles adjacent to and on both sides of I-75. The routes to the Brownstown Substation are characterized by the intersection of agricultural land and the developed land corridor adjacent to I-75.

Land use restrictions within the transmission line easements for lines serving Fermi are governed by agreements between ITC*Transmission* and the property owners along the route. ITC*Transmission* safety guidelines reference the use of agricultural equipment in areas beneath and near transmission lines, and agricultural land use occurs beneath the lines as can be seen on aerial photographs (Reference 2.2-24).

The routes and lengths for the two 345 kV transmission lines that exit the Fermi site are as follows:

1. Fermi-Brownstown #2 345 kV

   Brownstown Substation South - 15.4 miles north of Fermi (Woodhaven, MI)

2. Fermi-Brownstown #3 345 kV

   Brownstown Substation North - 16.2 miles north of Fermi (Woodhaven, MI)

The land use along the existing transmission routes consists mainly of agriculture (cropland and pasture), with some parts of the corridors surrounded by residential, forested, and developed areas. The existing transmission routes and the types of land use along the routes are shown in Table 2.2-5 and on Figure 2.2-3. Figure 2.2-3 shows land use within an approximately 0.5 mile

area around each existing route and the proposed Milan transmission route for orientation. The land uses within 0.5 mile of existing and proposed 345 kV transmission corridors are detailed in Table 2.2-6. The existing Fermi-Brownstown 345 kV transmission corridors are maintained at an approximate 150 to 200 foot width range outside of the site.

Land use along the existing transmission line routes roughly corresponds with land use in the region around the Fermi site, which is largely agricultural with some developed areas. Refer to Subsection 2.2.3 for a listing of land uses in the 50-mile region. All of the existing Fermi transmission routes cross roads, and most cross major highways (I-75). None of the routes cross designated or protected natural areas. The routes to the Brownstown Substation cross Swan Creek and the Huron River.

2.2.2.2 Proposed Transmission System Modifications and Land Use

Three new transmission lines and a separate switchyard will be needed for Fermi 3 per System Impact Study Report (MISO G867) performed by ITC*Transmission* (Reference 2.2-51). The study indicated the use of new and existing towers, steel poles and/or combinations of these structures will be used in the construction of the new transmission lines to the Milan substation. Without the new transmission lines, the study also indicates that the full power output of Fermi 3 contributes to post contingency overloads on the system, most notably at the points of interconnection on the 345 kV, 230 kV, and 120 kV portions of the system. The study further finds that if Fermi 2 and Fermi 3 have switchyards tied together, unstable conditions may arise. Both 345 kV switchyards will be separate from the onsite 120 kV transmission system.

Onsite

Within the Fermi site, there will be a short length of new transmission corridor needed to transmit power from the Fermi 3 generator to the Fermi 3 switchyard at the intersection of Toll Road and Fermi Drive (refer to Figure 2.1-4). This new transmission corridor will be approximately 170 feet wide and include two sets of towers. The towers will carry both rerouted Fermi 2 transmission lines and new Fermi 3 transmission lines. The new corridor will head west-southwest out of the Fermi 2 switchyard and Fermi 3 power block, turn northwest and cross the canal north of the proposed cooling tower location, then proceed northwest over a Berns Drain area that is a mosaic of phragmites/cattail wetland and along a forested wetland. Near the perimeter fence adjacent to Toll Road, the corridor turns southwest along the fence through woodlot forest, forested wetlands, and thicket until it enters the Fermi 3 switchyard. The switchyard is located in a prairie restoration area.

Onsite 120 kV support for Fermi 2 will be routed underground along the disturbed Fermi Drive corridor.

Offsite

In addition to the Department of Interior “Environmental Criteria for Electric Transmission Systems" and the Federal Power Commission "Guide Lines for the Protection of Natural Historic, Scenic, and Recreational Values in the Design and Location of Rights-of-Way and Transmission Facilities," when this transmission route to the Milan Substation was originally considered for Fermi 2, the

criteria used to select and evaluate the new transmission line route between Fermi and Milan Substation, included the following (Reference 2.2-52):

- Use the shortest route with minimum turns to minimize impact on property owners and property acquisition and construction costs.
- Follow property lines as much as possible to minimize impact on property owners.
- Route through less populated areas and avoid homes and buildings to the extent possible.
- Avoid trees, where practical, and use selective cutting and feathering techniques when wooded areas cannot be avoided to minimize impact on environmental and construction costs.

Several alternate route options for the new transmission line were studied during that previous selection process, and the route option proposed (Fermi to Milan Substation) was that which minimized the line's environmental impact at a reasonable cost.

The proposed route for the three new 345 kV transmission lines from Fermi to the Milan Substation will span approximately 29.4 miles within an assumed 300-foot wide ROW along the entire corridor, with the first 18.6 miles (going west and north from Fermi) installed alongside the 345 kV lines that are already in place (refer to Figure 2.2-3). While ITC*Transmission* has indicated that the lines in this 18.6 mile portion of the route would be created largely by the reconfiguration of conductors on existing towers within the transmission ROW, placement of additional transmission infrastructure may be necessary.

Most of the route for the new transmission lines crosses an area that is agricultural and forested in nature. The majority of the 18.6 mile portion of the route would cross large crop fields, while the construction along the 10.8 mile stretch of ROW heading east near the Milan Substation would run through forests, rural residential areas, and agricultural fields.

It is assumed that the Milan Substation may also be expanded from its current size of 350 by 500 feet to an area approximately 1,000 by 1,000 feet to accommodate the three new transmission lines from Fermi 3. This expansion would encroach into maintained grass and agricultural areas.

The final 10.8 miles of the route approaching the second ITC*Transmission* system interconnection point at the Milan Substation near Milan, Michigan, would be located in a portion of the transmission ROW previously authorized for transmission use, but is largely undeveloped (some transmission tower footings were installed as part of the original Fermi 3 plan) and has been minimally maintained. For the purpose of this land use discussion, the 10.8 mile portion of the proposed route is presumed to be of 300-foot ROW width. To accommodate construction of new transmission towers, steel poles, footings, and conductors along this portion of the corridor, ITC*Transmission* has indicated that acquisition and clearing of additional land adjacent to the existing ROW could be necessary. Methods of transmission line and tower construction will be in accordance with utility industry best practices and ITC*Transmission* construction standards.

Near the transition point where the Fermi-Milan lines running west and north for approximately 12 miles in a corridor shared with other non-Fermi lines meets Fermi-Milan lines continuing west for

approximately 10 miles to the Milan Substation (east-northeast of the intersection of Arkona Road and Martinsville Road), the route runs just north of one public recreation land, Crosswinds Marsh Wetlands Interpretive Preserve. This preserve, located in Sumpter Township of Wayne County, Michigan, is an approximately 900 acre parcel of wetlands, prairies, and forests that is open for multiple uses, including birding, hiking, and educational programs. The preserve is roughly bounded by Haggerty Road (east), Oakville-Waltz Road (south), Martinsville Road (west), and Willow Road (north).

The 18.6 mile developed section of the transmission ROW crosses two wetlands and 12 drains or streams, while the 10.8 mile undeveloped section crosses eight wetlands and nine drains or streams, mostly tributaries of Stony Creek.

There are no airports located within 2 miles north or south of the 10.8 mile portion of the Fermi-Milan route. Transmission towers/poles would likely be at a height low enough that no conflicts with airports or flight paths would occur.

Using an assumed 300-foot transmission corridor width for the new 345 kV lines to the Milan Substation, the entire 29.4 mile length of the route has the potential to impact about 1069 acres. Since the first 18.6 miles of the transmission route travels within transmission corridors with towers and lines present, it is likely that the impact area would be smaller along this portion than the area potentially affected by the new construction along the 10.8 mile portion of the transmission route nearest to the Milan Substation which could be approximately 393 acres. It is likely that most of these 393 acres would be impacted due to construction of new transmission lines on new towers and steel poles along the transmission ROW. It has not been determined whether additional areas outside the assumed 300-foot corridor are needed for laydown of equipment. As discussed above, the interconnection studies are performed by ITC*Transmission*, including determining the route for these new transmission lines. As part of this process, Detroit Edison is not involved in the evaluation or decision making for proposed changes to the transmission system or possible design alternatives. Accordingly, Detroit Edison cannot reasonably provide the transmission system design alternatives considered by ITC*Transmission*.

The route to the Milan Substation would begin on the Fermi site at the proposed new Fermi 3 switchyard at the intersection of Toll Road and Fermi Drive. It would follow the existing 4.5 mile common Fermi transmission corridor west across agricultural land uses to I-75. After crossing I-75, the route would continue west in the existing transmission corridor, crossing agricultural and low density residential areas and Old Town Golf Course through northern Monroe. The route crosses Stony Creek Road, Highway 125, and Telegraph Road (Highway 24), then crosses agricultural land and cuts through scattered forest and additional agricultural land before turning north near Steiner Road. From this point, the route continues almost directly north (parallel to and east of Exeter Road) through agricultural cropland with scattered forest and residential areas. It crosses the Panhandle Eastern Pipe Line Company natural gas line in northern Monroe County, then continues across agricultural areas until a point just north of Arkona Road in Wayne County, where it turns west. The 18.6-mile developed portion of this existing transmission ROW continues briefly to the west to a point midway between Haggerty Road and Martinsville Road. Up to this point, the route would pass mostly agricultural areas, with some nearby commercial and scattered industrial

facilities present near the Monroe area and just before the route turns west. West of Haggerty Road, use of the 10.8-mile undeveloped portion of the existing ROW would begin as the route runs through rural residential and agricultural areas to the second grid interconnection at the Milan Substation in Washtenaw County.

From its beginning point, the 10.8 mile portion of the route would traverse the following features and land uses, and cross the following roads, from east to west as it runs toward the Milan Substation interconnection:

Haggerty Road to Martinsville Road - forest and undeveloped land.

Martinsville Road to Sumpter Road - mostly forest with some agricultural and rural residential areas.

Sumpter Road to Elwell Road - forest, large parcel of undeveloped land in beginning stages of development (adjacent to the north of ROW).

Elwell Road to Karr Road - agricultural with some forest.

Karr Road to Sherwood Road - forest and agricultural land.

Sherwood Road to Rawsonville Road - forest and agricultural/rural residential.

Rawsonville Road to Bunton Road - agricultural land, forest, rural residential.

Bunton Road to Sikorski Road - forest edges along rural residential/agricultural land.

Sikorski Road to Tuttle Hill Road - forest and few rural residential.

Tuttle Hill Road to Whittaker Road - forest, agricultural, golf course, rural residential.

Whittaker Road to Hitchingham Road - mostly forest, one undeveloped or agricultural portion.

Hitchingham Road to Gooding Road - forest and agricultural lands.

Gooding Road to McCrone Road/Milan Substation - agricultural, Norfolk Southern railroad line crossing, McCrone Road crossing just before Milan Substation interconnection.

The new transmission route would pass through Monroe, southwest Wayne, and southeast Washtenaw Counties. Michigan State land use plans and SEMCOG regional plans do not specifically address compatibility of new transmission system siting with existing land use plans. Although additional land may need to be acquired for the corridor, the new transmission route would have manageable effects on land use in the surrounding areas. These impacts would be lessened somewhat by the use of a ROW that is already authorized and maintained for transmission use. Sumpter Township (Wayne County) and the City of Milan, Milan Township, and York Township (Washtenaw County) have local codes and ordinances that govern essential services such as electric transmission lines; these codes generally hold that essential utility uses in agricultural and rural residential areas are acceptable. Sumpter and Milan Townships allow essential services such as electric transmission lines to be exempted from most ordinances or authorize them on most land

uses under the zoning code using a special exception. York Township implements a Stony Creek Watershed Management Plan since the watershed covers much of the township, including much of the new transmission route to the Milan Substation.

Augusta Charter Township in the southeast corner of Washtenaw County has a Master Plan and Zoning Ordinance that allows essential utility uses in existing rights-of-way in agricultural and other rural areas, including those along the proposed route of the new transmission line route to the Milan Substation. The state of Michigan and most local jurisdictions have goals of protecting and preserving farmland, and township maps show local conservation or open space lands near the new transmission route (Reference 2.2-28). Use of the new transmission route along existing and expanded rights-of-way would be consistent with local goals and would prevent greater land use impacts to large areas of valuable farmland and open space that could result from development of an entirely new corridor (Reference 2.2-29 and Reference 2.2-30). Therefore, it is reasonable to conclude that the use of the 10.8-mile undeveloped section of corridor to the Milan Substation would be compliant with local, state, and regional land use plans.

Land use restrictions within the new transmission line easements would be governed by agreements between ITC*Transmission* and the property owners along the proposed route. Any expansions needed to existing ROW along the new transmission route are expected to involve largely temporary changes to existing land uses adjacent to the corridor.

The land uses crossed within 0.5 mile of existing Fermi 345 kV transmission corridors including the proposed route to the Milan Substation are detailed in Table 2.2-6.

2.2.3 **The Region**

The 50-mile region surrounding the Fermi site is dominated by agricultural land use. Outside of the major metropolitan areas of Detroit, Michigan; Toledo, Ohio; and Windsor, Ontario, Canada; most of the area is cropland and pasture.

No Native American tribes are located wholly within the 50-mile region and no Native American land claims have been made in the Fermi 7.5-mile vicinity; therefore, Native American land use plans do not apply to the Fermi region. A very small portion of the Walpole 46 First Nation Reserve northeast of the Fermi site in Ontario, Canada, is just inside the 50-mile region. The Walpole Reserve is a 17,050 acre parcel that extends about 10 miles further northeast outside the 50 mile region (Reference 2.2-25).

The 50-mile region surrounding Fermi is characterized by its proximity to the Great Lakes. The Fermi site falls within the coastal zone of Michigan, which extends along the state's shoreline. Ohio has a similar coastal zone along its Lake Erie shoreline; however, Canada does not have a comparable coastal zone management program for its Great Lakes shoreline areas. Coastal zone boundaries on the land within the 50-mile region are shown on Figure 2.1-1.

2.2.3.1 **Regional Land Use**

Overall land use in the 50-mile region is substantially similar to land use in the 7.5-mile vicinity. The 50-mile region is approximately 37 percent agricultural, whereas the 7.5-mile vicinity agricultural

land use is 24 percent. These seemingly small percentages of agricultural land use can be put into perspective by the fact that the open water of Lake Erie comprises a large portion of both the region (28 percent) and the vicinity (54 percent), as shown on Figure 2.2-1 and Figure 2.2-4. As in the vicinity, the agricultural land use comprises just over half of the available land in the region.

Michigan's unique flat geography and proximity to four of the five Great Lakes contribute to its status as the second most agriculturally diverse state in the United States. Michigan's 50,000 farmers grow over 125 crops, contributing to a farm industry that adds over $50 billion to the state's economy (Reference 2.2-26). Development pressures and poor returns on conventional products are forcing many small and mid-sized farms out of the market on a yearly basis; however, agricultural land use continues to dominate the region.

Table 2.2-7 presents land use within the 50-mile region and the portion of the region that each land use comprises.

The states of Michigan and Ohio are each divided into nine districts for reporting agricultural information by the NASS. The 50-mile region includes most of Michigan District 9 with the remainder being a small portion of Jackson County, which is in District 8. The counties included in District 9 are St. Clair, Lapeer, Genesee, Livingston, Oakland, Macomb, Washtenaw, Wayne, Monroe, and Lenawee (Reference 2.2-27). Portions of Ohio Districts 1 and 2 fall within the 50-mile region and include the following counties, respectively: Williams, Fulton, Lucas, Wood, Henry, Defiance, Paulding, Putnam, Hancock, Allen, and Van Wert for District 1 and Ottawa, Sandusky, Erie, Lorain, Huron, Seneca, Wyandot, Crawford, Richland, and Ashland for District 2 (Reference 2.2-28). Ontario, Canada is divided into five regions for reporting by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), with the portion in the 50-mile region falling within Southern Ontario. Southern Ontario includes the following areas: Brant County, Chatham-Kent Division, Elgin County, Essex County, Haldimand-Norfolk Regional Municipality, Hamilton Division, Lambton County, Middlesex County, Niagara Regional Municipality, and Oxford County (Reference 2.2-29).

The major agricultural products and livestock of the region are soybeans, corn, wheat, milk, cattle, and hogs and pigs. Table 2.2-8 provides detailed production by year and averages over 3-year periods for most agricultural products in the 50-mile region. Lenawee County is ranked the second highest among principal counties for corn growing for grain and soybeans, and third highest for wheat, according to 2006 NASS county rankings for Michigan. Monroe County was ranked fifth highest among principal soybean growing counties. None of the Michigan counties in the 50-mile region were listed in the top five principal production counties for livestock or fruits and vegetables (Reference 2.2-30).

2.2.3.1.1 Agriculture in Michigan

Dairy farms in the Michigan portion of the region are located in the Carleton, Milan, Adrian, Dundee, and Ann Arbor areas north and mostly west of Fermi. Milk production for the seven county area encompassed by Wayne, Oakland, Macomb, Monroe, Washtenaw, Livingston, and Lenawee Counties was 448,000,000 pounds in 2006. Average annual milk production in the region is

estimated at about 25,000 pounds per dairy cow. Some large Confined Animal Feeding Operations (CAFO) type dairies are present in Lenawee County, Michigan, and these types of facilities are also located in the Ohio portion of the 50-mile region.

Fresh market and processed fruits and vegetables comprise a large segment of the agriculture within the 50-mile region. The Eastern Market in Detroit is a major fresh market vegetable distribution location.

Grains grown in the area typically flow toward Toledo. Other significant destinations include ethanol plants in Riga and Marysville, Michigan. At times, significant grain exports head toward Canada to supply biofuels production. When the currency exchange rates are favorable, livestock and grain are exported to Canada to support livestock production operations. A significant amount of meat is processed around Detroit's Eastern Market, and most meat and dairy products are exported out of Michigan. Fruits and vegetables are either sold as commodities to processing companies or through farm markets and roadside stands.

Southeast Michigan is also home to the largest metropolitan area in the state and one of the largest in the nation, with over two million people living in Detroit (Wayne County) and its surrounding suburbs. More than 300,000 people live in cities and villages within Washtenaw County, mostly near Ann Arbor. This population represents the main consumer base for the agricultural counties of Monroe, Lenawee, and other less populated counties in southeast Michigan. Most agricultural products are shipped out of state (Reference 2.2-26).

2.2.3.1.2 **Agriculture in Ohio**

In the Ohio portion of the 50-mile region, urban Lucas County contains the Toledo metropolitan area. It is similar to Wayne County, Michigan in that it is host to a major city in the region and does not have as much agriculture as surrounding counties that are less urbanized. In Lucas County, there are no dairies and very few beef cattle. Crops are grown in greenhouses in the county, and most greenhouse operations raise vegetable starts. Many truck farming products are grown in the area, such as squash, tomatoes, cucumbers, and melons. There are a significant number of farmer's markets in Lucas County. One large poultry facility (two million laying hens) in the county supplies about 10 percent of the egg production for Ohio. Most of the large agricultural producers in the county sell their products to the eastern markets (Chicago, New York, and Philadelphia).

Overall in the area, general crops like corn, soybeans, and wheat are the major agricultural products. Lucas County trades crops with Canada; usually, more crops are imported from Canada than are exported from Lucas County. Cattle are usually shipped to Striker, Ohio, to a collection point, and are then shipped to other locations. Hogs and pigs go to Sandusky County to the Roth packing facility. Produce is exported to Florida, Chicago, and other large metropolitan areas.

Outside of Lucas County, vegetable crops generally move toward the larger cities like Detroit, but not many crops are exported to Canada. Roadside stands and farmer's markets are the primary distribution points for crops in the area.

Sandusky and Ottawa Counties do not have many dairies of large size. There are four dairies with about 100 cows or less each existing in Ottawa County and nine dairies with about 100 cows or less each existing in Sandusky County. There are a few hog farmers in the area. Truck farm production in the counties consists mainly of tomatoes, cabbage, cucumbers, and pickles. Fresh produce can be found at a number of farmer's markets in the area, including large markets in Toledo, Columbus, and Cleveland. A produce auction is also available in the Bloomville area.

Northern Ottawa County, on the peninsula that juts out into Lake Erie, is the location of many fruit farms. Most fruits are generally sold in the bigger cities like Toledo.

2.2.3.1.3 Agriculture in Southern Ontario

Outside the Windsor metropolitan area, most of the land in the Canada portion of the region is agricultural.

The province of Ontario has many commercial poultry, hog, dairy, and beef cattle farms. Significant crops include soybeans, corn, mixed grains, forage crops, and wheat and barley. Vegetables also comprise a large share of Ontario's agricultural production. The rich agricultural lands and mild climate of Southern Ontario allow, in addition to the major soybean, corn, and wheat crops grown, for the cultivation of fruits including peaches, plums, and grapes, and specialty crops such as tobacco, ginseng, dry beans, and mushrooms (Reference 2.2-31).

2.2.3.2 Regional Transportation and Utility Networks

Transportation infrastructure within the region includes Lake Erie, US 24 and I-75 about 4 miles west of Fermi, and Dixie Highway, which runs about 1.2 miles west of the Fermi 2 reactor. From Monroe, I-75 goes north to Ontario, Canada at its northernmost point and south almost to Miami, Florida at its southern reach (Reference 2.2-32). US 24 (Telegraph Road) runs northeast-southwest in the vicinity of the site, then gradually zigzags southeast through parts of Ohio, Indiana, and Illinois, ending near Palmyra, Illinois. Figure 2.2-5 shows the locations of highways, railroads, and airports in the 50-mile area.

There are many airports in the 50-mile region, the largest of which is the 6700 acre Detroit Metropolitan Wayne County Airport about 19 miles north-northwest of the Fermi site (Reference 2.2-33). The Coleman A. Young International Airport (Detroit City) commuter airport is located about 33 miles north-northeast of the Fermi site (Reference 2.2-34). The other large airport in the United States portion of the region, the Toledo Express Airport in Ohio, is undergoing a four year renovation project (Reference 2.2-35 through Reference 2.2-37). In addition to the aforementioned major passenger airports, Willow Run Airport is located 24 miles northwest of the Fermi site. Willow Run is one of the nation’s largest airports for handling cargo air freight (Reference 2.2-38).

Other than the rail lines in the vicinity of the Fermi site discussed in Subsection 2.2.1, the surrounding region includes a CSX Transportation rail line traveling roughly north-south in the easternmost portion of the region in Lenawee County. Other rail lines in the region travel through the southeast Michigan area in a general southwest-northeast direction. Rail lines traversing the

region include Tuscola & Saginaw Bay Railway, which travels northwest to southeast, is crossed by a Norfolk Southern line at Milan, Michigan, and becomes a Norfolk Southern line just south of Dundee, Michigan. At the same point where the line ownership changes, an Indiana & Ohio Rail System track branches off the line to the southwest. To the south-southwest in the Toledo area, the main Canadian National and Norfolk Southern lines branch out into several lines, many owned by Norfolk Southern and a few others by CSX as they branch out from Toledo through Ohio. There is also an Amtrak line that passes through Toledo and connects to Chicago and New York. Toledo is a major national transportation hub, located at the crossroads of four railroads and two transcontinental highways (Reference 2.2-21). A Canadian Pacific rail line loops through the city of Windsor in Essex County, Ontario, Canada, about 27 miles northeast of Fermi. Major transportation infrastructure is shown on Figure 2.2-5.

2.2.3.3 Regional Transmission Lines and Pipelines

There are various voltages of transmission lines, including 345 kV and 120 kV that serve the region. Natural gas pipelines are found throughout the region, and the closest two major natural gas lines exist outside the 7.5-mile vicinity, about 11 miles west of the Fermi site. These pipelines run in a general southwest-northeast direction through Monroe and Wayne Counties and further northeast through Oakland and Macomb Counties, where they later branch off east and west. The major lines running through Monroe County and the general area to the west of the Fermi site pass near Dundee, Maybee, and Carleton along their route toward downtown Detroit and points farther north. Figure 2.2-6 shows major pipelines in the region.

2.2.3.4 Regional Natural and Recreational Areas

In addition to those recreation areas within the 7.5-mile vicinity discussed previously in Subsection 2.2.1, some of the major recreational areas of the 50-mile region include those in Table 2.2-9. There are also many state game areas, wildlife areas, and trust lands in the region, as shown on Figure 2.2-7. The Southeast Michigan Land Conservancy has conservation properties in various counties in southeast Michigan (Reference 2.2-17). Black Swamp Conservancy manages thousands of acres of conservation lands in Ohio. The Nature Conservancy is also active in land preservation efforts, with many parcels in the region in both Michigan and Ohio (Reference 2.2-39). Similar to organizations in the United States, the Ontario Land Trust Alliance and Canada South Land Trust work to preserve lands in Canada through conservation easements (Reference 2.2-40).

2.2.3.5 Regional Planning and Zoning

The main planning and zoning authorities in the 50-mile region are Frenchtown Township, Monroe County, and SEMCOG. Similar to SEMCOG, there is a planning organization called the Toledo Metropolitan Area Council of Governments (TMACOG) that assists in planning for the Toledo, Ohio area.

Most communities in the region have zoning and land use plans that apply to townships and entire counties. Each township controls planning and zoning within its boundaries in coordination with the county. Almost all counties in the region have land use plans and zoning in place. The city of Monroe and other incorporated cities in the region have their own codes and regulations under the

county and independent of townships. Villages are governed by township rules. The relationships between various government entities are further explained in Section 2.5.

Monroe County is currently revising its Comprehensive Plan. The plan was updated in the period from 1985 to 1987 and is being updated at the time of this COL application. The updated plan is forecast to be completed in 2008.

The Michigan Association of Planning (MAP) is dedicated to promoting sound community planning that benefits the residents of Michigan through comprehensive community planning that includes opportunities for a variety of lifestyles and housing, employment, commercial activities, and cultural and recreational amenities. MAP provides models and tools that assist community planners with improved development patterns that conserve land and resources, build a vital economy, and provide sustainability for the future (Reference 2.2-41).

None of the planning or zoning activities performed by organizations in the region are anticipated to significantly affect the Fermi 3 site.

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Table 2.2-1 Acreage Associated with Land Uses on Fermi Site

	Area[1] Acres
Total Site	1260
Water	215
Forest	256
Wetland	273
Grassland	168
Other	136
Developed Areas	212

Notes:
1. Acreages given are approximate based on Figure 2.4-5 and Table 2.4-1.

Table 2.2-2 Land Use within the 7.5-Mile Vicinity

USGS Land Use Category	Acreage	Percent of 7.5-Mile Vicinity
Open Water	66,520	52.94
Developed, Open Space	4576	3.64
Developed, Low Intensity	8591	6.84
Developed, Medium Intensity	3802	3.03
Developed, High Intensity	1014	0.81
Barren Land (Rock/Sand/Clay)	1223	0.97
Deciduous Forest	3318	2.64
Evergreen Forest	6.67	0.005
Mixed Forest	23.13	0.02
Shrub/Scrub	95.41	0.08
Grassland/Herbaceous	1209	0.96
Pasture/Hay	6932	5.52
Cultivated Crops	23,465	18.67
Woody Wetlands	3331	2.65
Emergent Herbaceous Wetland	1550	1.23
TOTAL	125,655	100

Table 2.2-3 Livestock Population Estimates for Local Counties and Districts, 2006

	Milk Cows (head)
Monroe County	NR
Wayne County	NR
District 9[1]	24,000
Essex County[2]	910
Southern Ontario[2]	73,172

NR - Not reported

Notes:
1. Michigan Agricultural Statistics District 9 includes St. Clair, Lapeer, Genesee, Livingston, Oakland, Macomb, Washtenaw, Wayne, Lenawee, and Monroe Counties.
2. For Canada, statistics are reported by county and province rather than agricultural statistics districts as they are in the United States. The two most local datasets available for Essex County, Ontario, Canada are presented in this table to provide similar statistics as those presented for the United States.

Source: Reference 2.2-42

Table 2.2-4 Recreation Areas in the Fermi Vicinity

Swan Creek and Swan Boat Club - Residences on the north bank of Swan Creek just west of its inlet from Lake Erie keep private boats along the shore for recreation. This area is about 0.52 mile north of the northern boundary of the Fermi site.
Nearby Recreation Areas - The closest areas to the plant that are used for recreation are along the Lake Erie shore at Stony Point Beach, about 2 miles south, and Estral Beach, 2 miles northeast. These areas are resort communities along the lake. There is reported to be some swimming at these facilities.
Pointe Aux Peaux State Wildlife Area - Directly south of Fermi property boundary west of Stony Beach residential area, this area is estimated to encompass 100 to 200 acres of wetland and offers wildlife watching and hiking opportunities.
Pointe Mouillee State Game Area - 3.1 miles northeast of the Fermi site near the towns of Rockwood and Gibraltar; it is a piece of land that extends into Lake Erie near the Huron River and is reportedly one of the largest fresh water marsh restoration projects in the world. Its approximately 4000 acres consist of wetlands, diked marshes, and river bayous. Pointe Mouillee offers activities such as hiking, public hunting, and waterfowl activities.
William C. Sterling State Park - 4.8 miles south-southwest of Fermi, this 1300 acre lakefront park provides recreational opportunities close to Detroit and features many lagoons and marshes, which are good habitat for a variety of wildlife species. Swimming, boating, fishing, lakefront camping, hiking and biking trails, and wildlife viewing are available at this park. The campground offers 288 modern sites and is open April 15 to November 1.
Captain Norman Heck Park - This 15 acre Monroe County park includes a Vietnam veterans' memorial and is about 5.5 miles southwest of Fermi. The park offers pavilion seating for about 30 adults, trails, a playground, basketball court, Sled Hill, and charcoal operated cooking grills.
Raisin River Golf Club - 5.4 miles southwest, this is Monroe's only 36 hole full service golf facility.
Lake Erie Metropark (Wayne County) - 6.6 miles north-northeast, 1607 acre recreation complex that offers views of Lake Erie along its 3 mile shoreline. The park has excellent bird watching opportunities and an abundance of wildlife and waterfowl. Park features include a wave action swimming pool, an 18 hole golf course, children's play area, a museum and nature center, boat launches, and a marina.
Monroe Multi-Sport Complex - About 7 miles southwest of Fermi in Monroe, this 5 acre recreational facility hosts a wide variety of events. The facility is used for conventions and trade shows, concerts, shows, soccer, flag football, lacrosse, and other field sports, and features two ice rinks and a sports shop.
River Raisin Battlefield - about 7 miles southwest of Fermi, this site is located in Historic Monroe. It is the site of the Battles of Frenchtown, sometimes referred to as the River Raisin Massacre, during the War of 1812. The River Raisin battles and massacre were among the largest military encounters in the War of 1812. More American casualties occurred here than in any other single battle.
Monroe County Historical Museum and Custer Museum - There two facilities in the city of Monroe draw large numbers of visitors each year; both are about 8 miles west-southwest of Fermi.

Source: Reference 2.2-2, Reference 2.2-43 through Reference 2.2-49

Table 2.2-5 Land Use within Existing Transmission Line Corridors

	Transmission Line Routes	
Land Use	**Existing 345 kV Route (both lines) to Brownstown (North and South) Substation (miles)[1]**	**Acreage[2]**
Agriculture	4.5	109
Forest	0	0
Developed	11.7	284
Total Miles*	16.2 (North)	393

Notes:
1. Total miles counts the 4.5 mile segment of corridor from Fermi to I-75 that is shared by all lines only one time. The longer Brownstown North corridor mileage is used in this table to represent both 345 kV lines since they share essentially the same route from Fermi to Brownstown Substation.
2. Acreage is based on the nominal 200 foot corridor width.

Table 2.2-6 Land Use Acreages within 0.5 Mile of Fermi Transmission Lines

USGS Land Use Category	Brownstown North (345 kV)	Brownstown South (345 kV)	Milan (proposed 345 kV)
Open Water	1.1	0.4	14.2
Developed, Open Space	35.4	38.9	736.1
Developed, Low Intensity	71.4	68.3	674.1
Developed, Medium Intensity	78.1	35.1	86.7
Developed, High Intensity	5.8	11.3	7.6
Barren Land (Rock/Sand/Clay)	0	0	26.2
Deciduous Forest	16.9	14.5	1434.4
Evergreen Forest	0	1.0	2.2
Mixed Forest	0	9.1	7.1
Shrub/Scrub	0	0	47.6
Grassland/ Herbaceous	19.7	9.1	332.0
Pasture/Hay	18.6	25.4	1441.6
Cultivated Crops	128.4	173.4	4306.9
Woody Wetlands	12.5	16.3	884.0
Emergent Herbaceous Wetland	3.0	4.1	123.4
Total acreage	390.9	406.9	10,124

Table 2.2-7 Land Use within the 50-Mile Region

Land Use	Acres	Percentage of 50-Mile Region
United States		
Open Water	725,910	14.61
Developed, Open Space	346,966	7.00
Developed, Low Intensity	371,809	7.48
Developed, Medium Intensity	264,167	5.32
Developed, High Intensity	106,853	2.15
Barren Land (Rock/Sand/Clay)	10,346	0.21
Deciduous Forest	282,046	5.68
Evergreen Forest	6717	0.14
Mixed Forest	5765	0.12
Shrub/Scrub	3179	0.06
Grassland/Herbaceous	41,308	0.83
Pasture/Hay	219,241	4.41
Cultivated Crops	1,217,689	24.51
Woody Wetlands	128,090	2.58
Emergent Herbaceous Wetland	56,711	1.14
US Total Percentage of Region	3,786,795	76.24
Canada		
Open Water	678,492	13.66
Urban	60,749	1.22
Woodlot	22,173	0.45
Agriculture	413,285	8.32
Wetlands	6826	0.14
Canada Total Percentage of Region	1,181,525	23.76
Combined Total	4,968,320	100

Table 2.2-8 Average Annual Yields for Major Agricultural Products of the Fermi Region[4] (Sheet 1 of 5)

County[1]	All Cattle and Calves (head)	Beef Cattle (head)[2]	Milk Cows (head)	Milk produced (1000 pounds)	Hogs and Pigs (head)[2]	Sheep (head)[2]	Laying Chickens (head)[2]	Wheat (bushels)[5]	Soybeans (bushels)[5]	Oats (bushels)[5]	Corn (bushels)[5]	Potatoes[3] (1000 cwt)	Tomatoes (tons)
Michigan								(1000 bushels)	(1000 bushels)	(1000 bushels)	(1000 bushels)		
Monroe	0 6,000 3 4,800 6 4,200 Av 5,000	0 600 1 600 2 NR 3 NR 6 NA Av 600	0 600 3 NR 6 NR	0 5,600 3 NR 6 NR	0 5,000 3 6,500 5 6,000 Av 5,833	0 1,200 1 1,200 2 1,400 3 1,150 Av 1,238	0 2,800 1 1,700 2 1,300 Av 1,933	0 1,520 3 2,130 6 2,070 Av 1,907	0 4,230 3 2,740 6 3,670 Av 3,547	0 56 3 133 6 67 Av 85	0 8,100 3 10,470 6 9,590 Av 9,387	0 NR 1 270 2 300 Av 285	NA
Wayne	0 700 3 NR 6 NR	0 NR 1 NR 2 NR 3 NR 6 NA	0 NR 3 NR 6 NR	0 NR 3 NR 6 NR	0 NR 3 NR 5 NR	0 NR 1 NR 2 NR 3 NR	0 1,200 1 1,300 2 NR Av 1,250	0 NR 3 35 6 24 Av 30	0 NR 3 125 6 112 Av 119	0 NR 3 NR 6 NR	0 NR 3 325 6 NR	0 NR 1 NR 2 NR	NA
Lenawee	0 19,500 3 23,000 6 27,500 Av 23,333	0 1,500 1 1,300 2 1,500 3 1,200 6 NA Av 1,375	0 8,200 3 10,200 6 9,900 Av 9,430	0 199,000 3 280,000 6 307,000 Av 262,000	0 12,000 3 NR 5 9,000 Av 10,500	0 1,400 1 1,400 2 1,600 3 1,200 Av 1,400	0 NR 1 7,000 2 5,000 Av 6,000	0 2,590 3 3,205 6 2,926 Av 2,907	0 5,040 3 3,760 6 5,340 Av 4,713	0 71 3 120 6 57 Av 83	0 11,800 3 13,990 6 13,800 Av 13,197	0 NR 1 NR 2 NR	NA
Livingston	0 10,000 3 8,200 6 7,800 Av 8,667	0 1,300 1 1,100 2 1,000 3 800 6 NA Av 1,050	0 3,200 3 2,600 6 2,800 Av 2,867	0 67,000 3 66,500 6 66,000 Av 66,500	0 NR 3 900 5 900 Av 900	0 1,100 1 1,200 2 1,200 3 1,850 Av 1,338	0 1,400 1 1,400 2 1,000 Av 1,267	0 540 3 715 6 625 Av 627	0 890 3 580 6 866 Av 779	0 NR 3 NR 6 NR	0 2,600 3 2,660 6 2,320 Av 2,527	0 NR 1 NR 2 NR	NA
Macomb	0 3,500 3 4,000 6 4,100 Av 3,867	0 NR 1 NR 2 NR 3 NR 6 NA	0 NR 3 650 6 600 Av 625	0 10,300 3 8,400 6 9,300 Av 9,333	0 2,800 3 1,700 5 1,200 Av 1,900	0 NR 1 NR 2 NR 3 NR	0 1,100 1 NR 2 NR	0 370 3 305 6 303 Av 326	0 720 3 415 6 932 Av 689	0 NR 3 45 6 NR	0 900 3 825 6 1,620 Av 1,115	0 NR 1 NR 2 NR	NA
Oakland	0 1,800 3 NR 6 NR	0 NR 1 NR 2 NR 3 NR 6 NA	0 NR 3 NR 6 NR	0 NR 3 NR 6 NR	0 NR 3 NR 5 NR	0 800 1 800 2 800 3 900 Av 825	0 1,200 1 NR 2 NR	0 NR 3 80 6 55 Av 68	0 NR 3 75 6 130 Av 103	0 NR 3 NR 6 NR	0 NR 3 235 6 NR	0 NR 1 NR 2 NR	NA

Table 2.2-8 Average Annual Yields for Major Agricultural Products of the Fermi Region[4] (Sheet 2 of 5)

County[1]	All Cattle and Calves (head)	Beef Cattle (head)[2]	Milk Cows (head)	Milk produced (1000 pounds)	Hogs and Pigs (head)[2]	Sheep (head)[2]	Laying Chickens (head)[2]	Wheat (bushels)[5]	Soybeans (bushels)[5]	Oats (bushels)[5]	Corn (bushels)[5]	Potatoes[3] (1000 cwt)	Tomatoes (tons)
Washtenaw	0 17,000 3 14,300 6 13,000 Av 14,767	0 1,000 1 1,000 2 800 3 1,200 6 NA Av 1,000	0 4,200 3 3,200 6 2,900 Av 3,433	0 78,800 3 63,400 6 55,200 Av 65,800	0 4,700 3 4,900 5 5,000 Av 4,867	0 11,600 1 11,000 2 10,500 3 12,500 Av 11,400	0 2,600 1 2,500 2 1,800 Av 2,300	0 980 3 1,000 6 970 Av 983	0 1,830 3 1,240 6 1,950 Av 1,673	0 70 3 76 6 46 Av 64	0 4,850 3 5,030 6 4,970 Av 4,950	0 NR 1 NR 2 NR	NA
Other Counties	0 NR 3 1,500 6 1,800 Av 1,650	0 800 1 700 2 700 3 1,300 6 NA Av 875	0 950 3 700 6 800 Av 817	0 900 3 8,500 6 10,800 Av 6,733	0 600 3 7,500 5 500 Av 2,867	0 700 1 700 2 800 3 1,000 Av 800	0 9,700 1 1,700 2 2,100 Av 4,500	0 120 3 NR 6 NR	0 320 3 NR 6 NR	0 70 3 42 6 55 Av 56	0 700 3 NR 6 290 Av 495	0 NR 1 302 2 400 Av 351	NA
District 90	0 98,000 3 92,000 6 93,000 Av 94,333	0 10,100 1 9,500 2 7,600 3 9,500 6 NA Av 9,175	0 26,000 3 25,000 6 24,000 Av 25,000	0 515,000 3 560,000 6 575,000 Av 550,000	0 35,000 3 27,000 5 28,500 Av 30,200	0 19,400 1 18,800 2 19,000 3 22,500 Av 19,925	0 26,000 1 23,000 2 16,000 Av 21,667	0 8,290 3 10,500 6 9,750 Av 9,513	0 18,300 3 12,000 6 20,200 Av 16,833	0 415 3 670 6 410 Av 498	0 39,700 3 43,900 6 43,600 Av 42,400	0 NR 1 572 2 700 Av 636	NA
Jackson	0 21,000 3 23,000 6 23,000 Av 22,333	0 2,600 1 2,700 2 3,000 3 2,500 6 NA Av 2,700	0 4,300 3 3,700 6 3,900 Av 4,000	0 98,600 3 129,000 6 118,000 Av 115,200	0 3,500 3 NR 5 3,500 Av 3,500	0 4,600 1 4,500 2 5,000 3 7,200 Av 5,325	0 2,200 1 1,000 2 1,000 Av 1,400	0 500 3 690 6 621 Av 604	0 1,630 3 1,110 6 1,830 Av 1,523	0 60 3 70 6 68 Av 66	0 5,650 3 5,720 6 6,520 Av 5,963	0 NR 1 NR 2 NR	NA
Other Counties	0 NR 3 NR 6 NR	0 NR 1 NR 2 NR 3 NR 6 NR	0 NR 3 NR 6 NR	0 NR 3 NR 6 NR	0 NR 3 150,000 5 NR	0 NR 1 NR 2 NR 3 NR	0 1,346,000 1 1,900 2 2,000 Av 449,967	0 NR 3 NR 6 NR	0 NR 3 NR 6 NR	0 69 3 99 6 49 Av 72	0 NR 3 NR 6 NR	0 395 1 710 2 570 Av 558	NA
District 80	0 245,000 3 227,000 6 231,000 Av 234,333	0 22,500 1 20,000 2 17,500 3 19,500 6 NA Av 19,875	0 75,500 3 71,000 6 75,000 Av 73,833	0 1,450,000 3 1,650,000 6 1,720,000 Av 1,607,000	0 230,000 3 225,000 5 225,000 Av 227,000	0 19,600 1 19,400 2 20,000 3 27,000 Av 21,500	0 1,370,000 1 1,545,000 2 1,970,000 Av 1,628,333	0 9,700 3 12,200 6 11,400 Av 11,100	0 25,700 3 19,300 6 30,850 Av 25,283	0 620 3 1,000 6 840 Av 820	0 80,700 3 87,100 6 95,600 Av 87,800	0 2,415 1 2,760 2 2,420 Av 2,532	NA

Table 2.2-8 Average Annual Yields for Major Agricultural Products of the Fermi Region[4] (Sheet 3 of 5)

County[1]	All Cattle and Calves (head)	Beef Cattle (head)[2]	Milk Cows (head)	Milk produced (1000 pounds)	Hogs and Pigs (head)[2]	Sheep (head)[2]	Laying Chickens (head)[2]	Wheat (bushels)[5]	Soybeans (bushels)[5]	Oats (bushels)[5]	Corn (bushels)[5]	Potatoes[3] (1000 cwt)	Tomatoes (tons)
Other Districts	0 NA 3 NA 6 NA	0 NA 1 NA 2 NA 3 NA 6 NA	0 NA 3 NA 6 NA	0 NA 3 NA 6 NA	0 NA 3 NA 5 NA	0 NA 1 NA 2 NA 3 NA	0 NA 1 NA 2 NA	0 NA 3 NA 6 NA	0 120 3 80 6 NR Av 100	0 NA 3 NA 6 NA	0 NA 3 NA 6 NA	0 818 1 1,167 2 1,038 Av 1,008	NA
Ohio													
Fulton	3 19,000 5 19,700 7 20,500 Av 19,733	NA	3 1,400 5 2,400 7 2,900 Av 2,233	3 31,800 5 52,100 6 52,400 Av 45.433	2 61,900 4 51,200 6 57,600 Av 56,900	3 NR 5 NR 7 NR	NA for Ohio since 1980	0 1,498,200 3 1,667,200 6 1,856,400 Av 1,673,933	0 3,568,200 3 3,233,300 6 4,192,700 Av 3,664,733	0 NR 3 NR 6 NR	0 12,875,400 3 14,763,500 6 13,546,000 Av 13,728,300	NA	0 21,060 3 19,890 6 15,560 Av 18,837
Henry	3 5,600 5 5,100 7 5,600 Av 5,433	NA	3 1,100 5 2,000 7 2,700 Av 1,933	3 29,300 5 49,300 6 47,600 Av 42,100	2 12,100 4 7,600 6 9,300 Av 9,667	3 NR 5 NR 7 NR	NA	0 3,459,900 3 2,852,600 6 2,967,800 Av 3,093,433	0 4,044,500 3 3,754,800 6 4,948,100 Av 4,249,133	0 NR 3 NR 6 NR	0 11,637,200 3 12,325,700 6 11,727,900 Av 11,896,933	NA	0 9,460 3 27,690 6 31,020 Av 22,723
Lucas	3 1,600 5 1,100 7 1,000 Av 1,233	NA	3 NR 5 NR 7 NR	3 NR 5 NR 6 NR	2 10,600 4 9,000 6 8,000 Av 9,200	3 NR 5 NR 7 NR	NA	0 667,800 3 587,400 6 484,900 Av 580,033	0 1,386,200 3 1,224,700 6 803,600 Av 1,138,167	0 NR 3 NR 6 NR	0 3,576,500 3 4,511,200 6 3,258,100 Av 3,781,933	NA	0 NR 3 NR 6 NR
Wood	3 5,700 5 4,900 7 5,600 Av 5,400	NA	3 NR 5 1,000 7 1,400 Av 1,200	3 NR 5 20,300 6 26,500 Av 23,400	2 10,200 4 6,000 6 7,400 Av 7,867	3 1,100 5 NR 7 NR	NA	0 4,404,300 3 4,261,600 6 4,141,000 Av 4,268,967	0 5,440,700 3 5,232,400 6 6,157,100 Av 5,610,067	0 NR 3 NR 6 NR	0 13,975,300 3 16,604,300 6 13,382,100 Av 14,653,900	NA	0 34,500 3 14,710 6 15,760 Av 21,657
Other Counties	3 NR 5 NR 7 NR	NA	3 4,300 5 6,700 7 600 Av 3,900	3 130,400 5 164,600 6 10,100 Av 101,700	2 NR 4 NR 6 NR	3 4,100 5 4,100 7 3,700 Av 4,000	NA	0 NR 3 NR 6 NR	0 NR 3 NR 6 NR	0 410,000 3 215,500 6 210,000 Av 278,500	0 NR 3 NR 6 NR	NA	0 4,240 3 6,530 6 5,250 Av 5,340
District 10	3 85,200 5 99,700 7 101,800 Av 95,567	NA	3 17,900 5 27,100 7 36,000 Av 27,000	3 452,400 5 565,100 6 656,200 Av 557,900	2 NR 4 232,200 6 277,900 Av 255,050	3 8,300 5 8,000 7 7,300 Av 7,900	NA	0 27,429,800 3 26,908,900 6 26,227,500 Av 26,855,400	0 41,381,900 3 40,825,200 6 50,583,100 Av 44,263,400		0 105,466,100 3 118,069,400 6 103,636,500 Av 109,057,333	NA	0 113,880 3 133,290 6 124,800 Av 123,990
Erie	3 4,100 5 2,800 7 2,700 Av 3,200	NA	3 NR 5 NR 7 NR	3 NR 5 NR 6 NR	2 4,000 4 2,200 6 2,600 Av 2,933	3 1,300 5 NR 7 NR	NA	0 516,200 3 652,000 6 598,800 Av 589,000	0 1,368,500 3 914,000 6 1,530,400 Av 1,270,967	0 NR 3 NR 6 NR	0 3,799,100 3 4,288,300 6 4,747,000 Av 4,278,133	NA	0 NR 3 NR 6 NR

Table 2.2-8 Average Annual Yields for Major Agricultural Products of the Fermi Region[4] (Sheet 4 of 5)

County[1]	All Cattle and Calves (head)	Beef Cattle (head)[2]	Milk Cows (head)	Milk produced (1000 pounds)	Hogs and Pigs (head)[2]	Sheep (head)[2]	Laying Chickens (head)[2]	Wheat (bushels)[5]	Soybeans (bushels)[5]	Oats (bushels)[5]	Corn (bushels)[5]	Potatoes[3] (1000 cwt)	Tomatoes (tons)
Ottawa	3 1,200 5 1,400 7 1,400 Av 1,333	NA	3 NR 5 NR 7 NR	3 NR 5 NR 6 NR	2 4,300 4 3,100 6 3,400 Av 3,600	3 NR 5 NR 7 NR	NA	0 1,001,400 3 1,252,400 6 1,109,400 Av 1,121,067	0 1,152,400 3 1,865,900 6 1,767,000 Av 1,595,100	0 NR 3 NR 6 NR	0 2,279,600 3 3,252,700 6 2,823,300 Av 2,785,200	NA	0 NR 3 NR 6 8,250
Sandusky	3 6,900 5 7,400 7 6,500 Av 6,933	NA	3 NR 5 NR 7 NR	3 12,700 5 NR 6 NR	2 11,300 4 5,100 6 3,800 Av 6,733	3 1,000 5 NR 7 NR	NA	0 1,626,100 3 1,393,500 6 1,568,500 Av 1,529,367	0 2,724,000 3 2,970,700 6 3,475,000 Av 3,056,567	0 NR 3 NR 6 NR	0 8,770,700 3 10,766,300 6 9,172,400 Av 9,569,800	NA	0 12,090 3 10,480 6 5,600 Av 9,390
Seneca	3 11,800 5 11,700 7 10,700 Av 11,400	NA	3 1,100 5 NR 7 NR	3 NR 5 NR 6 NR	2 33,600 4 31,400 6 33,200 Av 32,733	3 2,800 5 3,000 7 3,300 Av 3,033	NA	0 3,387,700 3 2,845,600 6 2,717,300 Av 2,983,533	0 4,629,300 3 3,857,800 6 5,005,600 Av 4,497,567	0 186,800 3 144,200 6 103,100 Av 144,700	0 11,237,500 3 12,552,200 6 10,866,400 Av 11,552,033	NA	0 NR 3 NR 6 NR
Other Counties	3 NR 5 NR 7 NR	NA	3 1,000 5 2,100 7 2,100 Av 1,733	3 34,800 5 35,400 6 35,600 Av 35,300	2 NR 4 NR 6 NR	3 1,600 5 2,500 7 2,500 Av 2,200	NA	0 NR 3 NR 6 NR	0 NR 3 NR 6 NR	0 258,100 3 153,100 6 215,400 Av 208,867	0 NR 3 NR 6 NR	NA	0 2,400 3 7,940 6 NR Av 5,170
District 20	3 104,500 5 114,700 7 107,000 Av 108,733	NA	3 27,900 5 26,700 7 26,600 Av 27,100	3 469,300 5 457,900 6 465,600 Av 464,267	2 NR 4 191,600 6 223,700 Av 207,650	3 13,800 5 14,500 7 15,000 Av 14,433	NA	0 14,956,400 3 13,889,300 6 12,295,100 Av 13,713,600	0 26,276,600 3 23,935,200 6 29,917,300 Av 26,709,700	0 936,000 3 545,300 6 575,300 Av 685,533	0 66,505,200 3 74,582,100 6 69,376,400 Av 70,154,567	NA	0 14,490 3 18,420 6 13,850 Av 15,587
Other Districts	NA	NA	NA	3 NR 5 NR 6 NR	NA	NA	NA	NA	NA	NA	NA	NA	NA
Canada, Ontario				(kilolitres)			(total poultry - chickens and turkeys)	(winter + spring wheat, 0 is winter only) (1,000 bushels)	(1,000 bushels)	(1,000 bushels)	(1,000 bushels)		
Essex	0 5,470 3 6,550 6 6,015 Av 6,012	0 1,100 3 1,100 6 998 Av 1,066	0 600 3 900 6 910 Av 803	(Essex and Kent) 3 12,503 5 11,259 7 11,331 Av 11,698	0 51,100 3 38,750 6 36,151 Av 42,000	0 980 3 2,850 6 3,811 Av 2,547	NA	0 3,320 3 5,402 6 6,018 Av 4,913	0 6,650 3 5,021 6 7,551 Av 6,407	0 6 3 6 6 41 Av 18	0 7,155 3 7,169 6 5,600 Av 6,641	NA	NA

Table 2.2-8 Average Annual Yields for Major Agricultural Products of the Fermi Region[4] (Sheet 5 of 5)

County[1]	All Cattle and Calves (head)	Beef Cattle (head)[2]	Milk Cows (head)	Milk produced (1000 pounds)	Hogs and Pigs (head)[2]	Sheep (head)[2]	Laying Chickens (head)[2]	Wheat (bushels)[5]	Soybeans (bushels)[5]	Oats (bushels)[5]	Corn (bushels)[5]	Potatoes[3] (1000 cwt)	Tomatoes (tons)
Chatham-Kent	0 6,490 3 15,700 6 12,944 Av 11,711	0 900 3 1,700 6 2,439 Av 1,680	0 700 3 900 6 596 Av 732	(Essex and Kent) 3 12,503 5 11,259 7 11,331 Av 11,698	0 214,700 3 177,600 6 169,793 Av 187,364	0 1,640 3 1,150 6 1,413 Av 1,401	NA	0 5,084 3 9,099 6 9,684 Av 7,956	0 10,780 3 7,288 6 10,594 Av 9,554	0 44 3 112 6 57 Av 71	0 17,125 3 18,576 6 19,940 Av 18,547	NA	NA
Lambton	0 62,270 3 54,050 6 42,989 Av 53,103	0 10,300 3 7,600 6 7,665 Av 8,522	0 5,500 3 4,500 6 4,301 Av 4,767	3 31,698 5 32,893 7 32,276 Av 32,289	0 216,400 3 275,300 6 299,986 Av 263,895	0 7,520 3 8,600 6 5,108 Av 7,076	NA	0 6,560 3 11,005 6 11,360 Av 9,642	0 10,491 3 5,613 6 11,412 Av 9,172	0 70 3 353 6 161 Av 195	0 10,353 3 10,964 6 11,898 Av 11,072	NA	NA
Southern Ontario Region	0 406,780 3 400,050 6 348,937 Av 385,226	0 53,700 3 45,300 6 47,488 Av 48,829	0 79,250 3 83,000 6 73,172 Av 78,474	3 578,824 5 585,322 7 596,168 Av 586,771	0 1,345,500 3 1,454,700 6 1,650,084 Av 1,483,428	0 41,400 3 59,300 6 49,056 Av 49,919	Southern Ontario - NA Total Ontario - 2 210,353,000 4 212,674,000 6 211,224,000 Av 211,417,000	0 27,900 3 46,225 6 50,484 Av 41,536	0 51,348 3 35,348 6 57,211 Av 47,969	0 1,095 3 1,640 6 1,398 Av 1,378	0 89,294 3 99,597 6 110,812 Av 99,901	NA	NA

Notes:

1. Michigan District 80 includes the following counties: Barry, Branch, Calhoun, Clinton, Eaton, Hillsdale, Ingham, Ionia, Jackson, St. Joseph, & Shiawassee. Michigan District 90 includes the following counties: St. Clair, Lapeer, Genesee, Livingston, Oakland, Macomb, Wayne, Washtenaw, Lenawee, & Monroe. Ohio District 10 includes the following counties: Williams, Fulton, Lucas, Wood, Henry, Defiance, Paulding, Putnam, Hancock, Allen, and Van Wert. Ohio District 20 includes the following counties: Ottawa, Sandusky, Erie, Lorain, Huron, Seneca, Wyandot, Crawford, Richland, and Ashland. Ontario, Canada Southern Ontario Region includes the following counties: Brant County, Chatham-Kent Division, Elgin County, Essex County, Haldimand-Norfolk Regional Municipality, Hamilton Division, Lambton County, Middlesex County, Niagara Regional Municipality, and Oxford County.
2. After 2003, beef cattle and sheep numbers were no longer reported for Michigan counties in the NASS data due to state budget reductions. Beef cattle and sheep numbers given for Michigan are averages of the numbers reported from years 2000 to 2003. Laying chicken numbers were similarly unreported after 2002, so averages for laying chickens are calculated from years 2000 to 2002. Pig numbers were last reported for Michigan in 2005, so 2005 numbers were used in place of 2006 numbers when averages were calculated.
3. Potato statistics were unreported after 2002, so averages for potatoes are calculated from years 2000 to 2002.
4. Years given for statistics in table are designated by their last digit (0 = 2000, 2 = 2002, 6 = 2006, etc.) Average of the available numbers designated by Av.
5. Wheat, soybeans, oats, and corn for Michigan and Ontario reported in 1,000 bushel quantities; Ohio reported in bushels.

NA - not available (absent from agricultural statistics reports)
NR - not reported (no number given for the county or district)

Source: Reference 2.2-50

Table 2.2-9 Recreation Areas in the Fermi Region (Sheet 1 of 2)

Oakwoods Metropark - 9.6 miles north-northwest
Fort Malden National Historic Site (Canada) - 11.7 miles northeast
Bois Blanc Lighthouse (Canada) - 12 miles northeast
Willow Metropark - 12 miles northwest
East Sister Island National Wildlife Refuge (Canada) - 15 miles east-southeast
West Sister Island National Wildlife Refuge - 16 miles southeast
Erie State Game Area, 16.5 miles southwest
Cedar Point National Wildlife Refuge -18 miles south
Maumee Bay State Park - 20 miles south-southwest
Miller Park - 20 miles southwest
Ojibway Prairie Nature Reserve (Canada) - 22 miles north-northeast
Petersburg State Game Management Area - 22.8 miles west-southwest
Crane Creek State Park - 24 miles south-southeast
Ottawa National Wildlife Refuge - 27 miles southeast
Lake Erie Islands State Park (Catawba, Kelleys [includes Kelleys Island State Park], and South Bass Islands included) - about 30 miles southeast
Perry's Victory and International Peace Memorial - 31.3 miles southeast
Lighthouse Point (northern Pelee Island, Canada) - 33 miles southeast
Fish Point (southern Pelee Island, Canada) - 34.4 miles southeast
Maybury State Park - 34.6 miles north-northwest
East Harbor State Park - 36 miles southeast
Point Pelee National Park (Canada) - 37 miles east
Marblehead Lighthouse State Park - 40 miles southeast
Oak Openings Preserve Metropark - 41 miles southwest
Two Creeks Conservation Area (Canada) - 42 miles east-northeast
Wheatley Provincial Park (Canada) - 42 miles east-northeast
Island Lake Recreation Area/State Park - 43 miles northwest
Hudson Mills Metropark - 43.2 miles northwest
Kensington Metropark - 43.3 miles north-northwest
Proud Lake Recreation Area - 43.4 miles north-northwest
Maumee State Forest - 44 miles southwest

Table 2.2-9 Recreation Areas in the Fermi Region (Sheet 2 of 2)

Dodge #4 State Park - 45 miles north-northwest
W. J. Hayes State Park - 45 miles west-northwest
Brighton Recreation Area - 46.7 miles northwest
Highland Recreation Area - 47 miles north-northwest
Pinckney Recreation Area - 47 miles northwest
Waterloo Recreation Area - 48 miles west-northwest
Pontiac Lake Recreation Area - 49 miles north-northwest
Mary Jane Thurston State Park - 50 miles southwest
Lake Hudson Recreation Area - about 50 miles west
Cambridge State Historic Park - 50 miles west-northwest
Onsted State Wildlife Management Area - 51 miles west-northwest

Figure 2.2-1 Land Use within the 7.5-Mile Vicinity

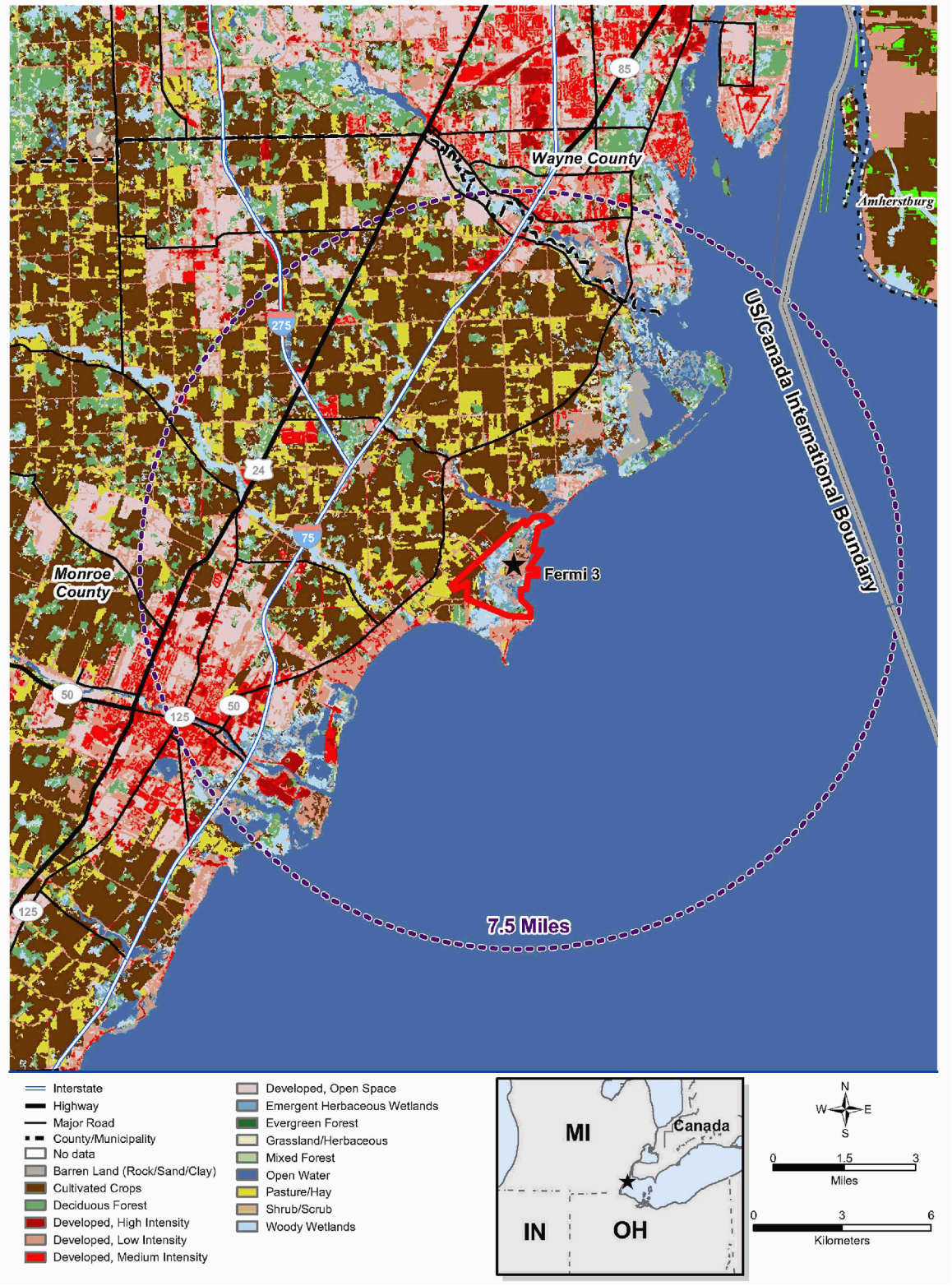

Figure 2.2-2 Utility Infrastructure within the 7.5-Mile Vicinity

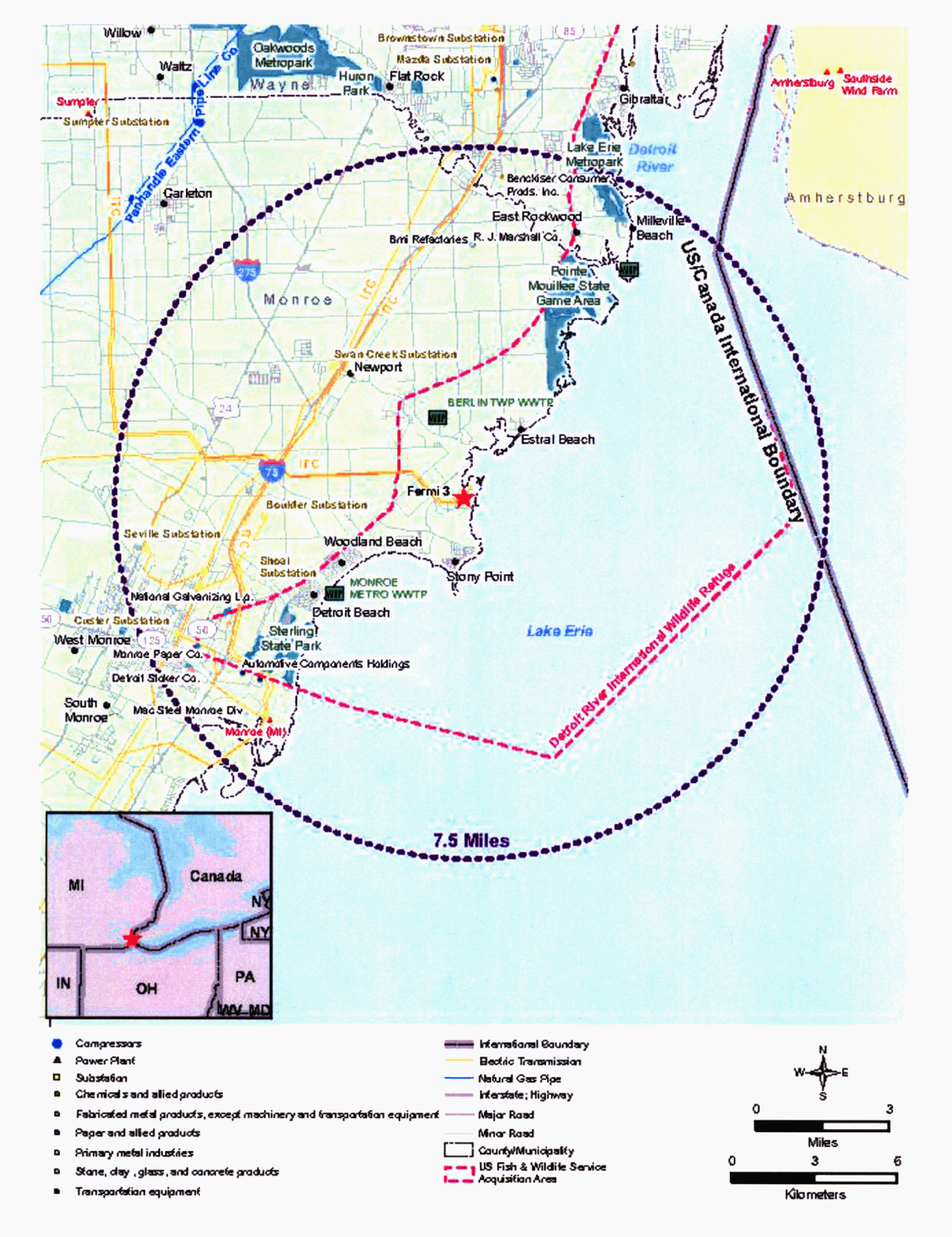

Figure 2.2-3 Land Use in Existing and Proposed Fermi Transmission Corridor Areas (within 0.5 mile)

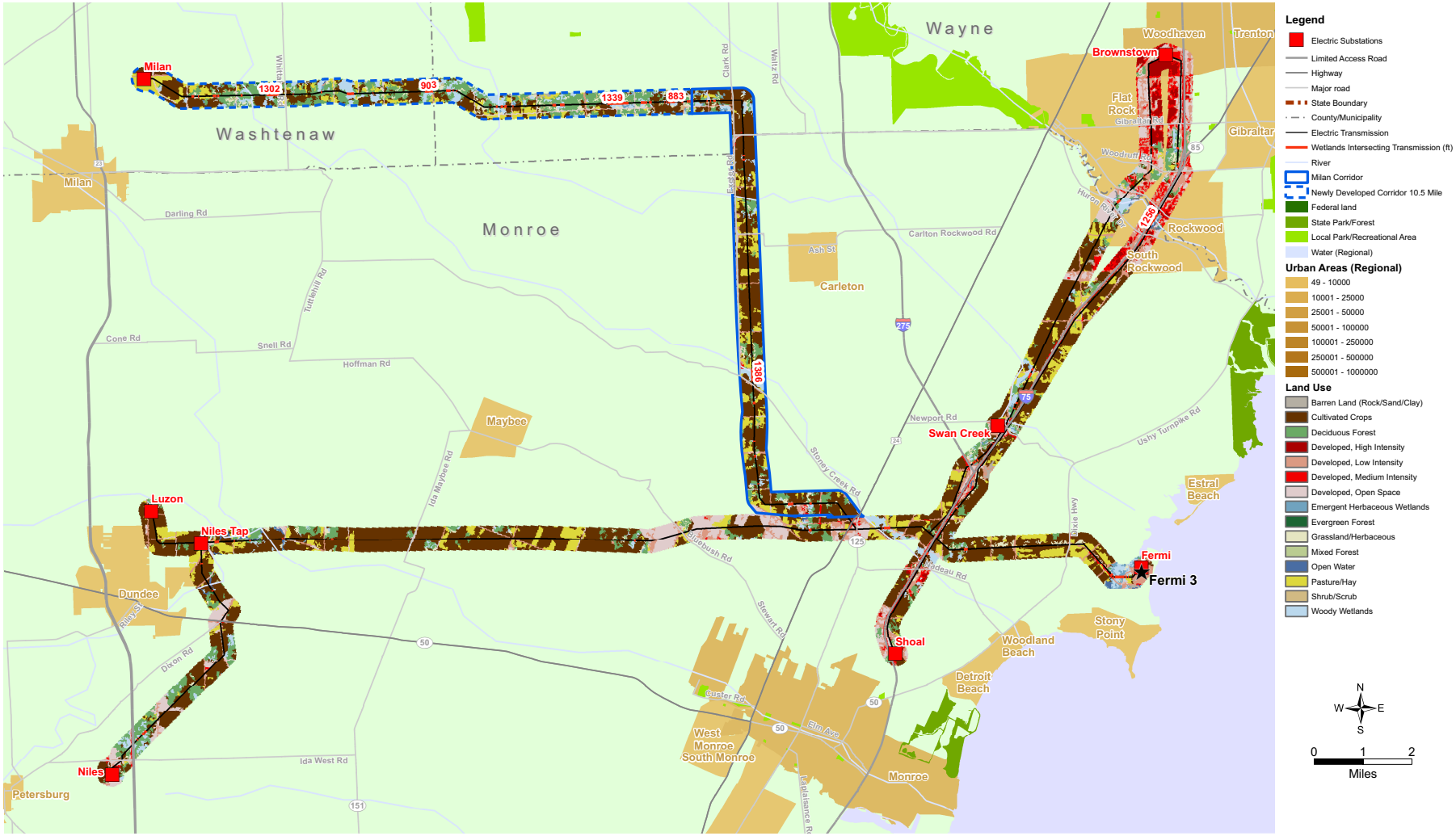

Figure 2.2-4 Land Use within the 50-Mile Region

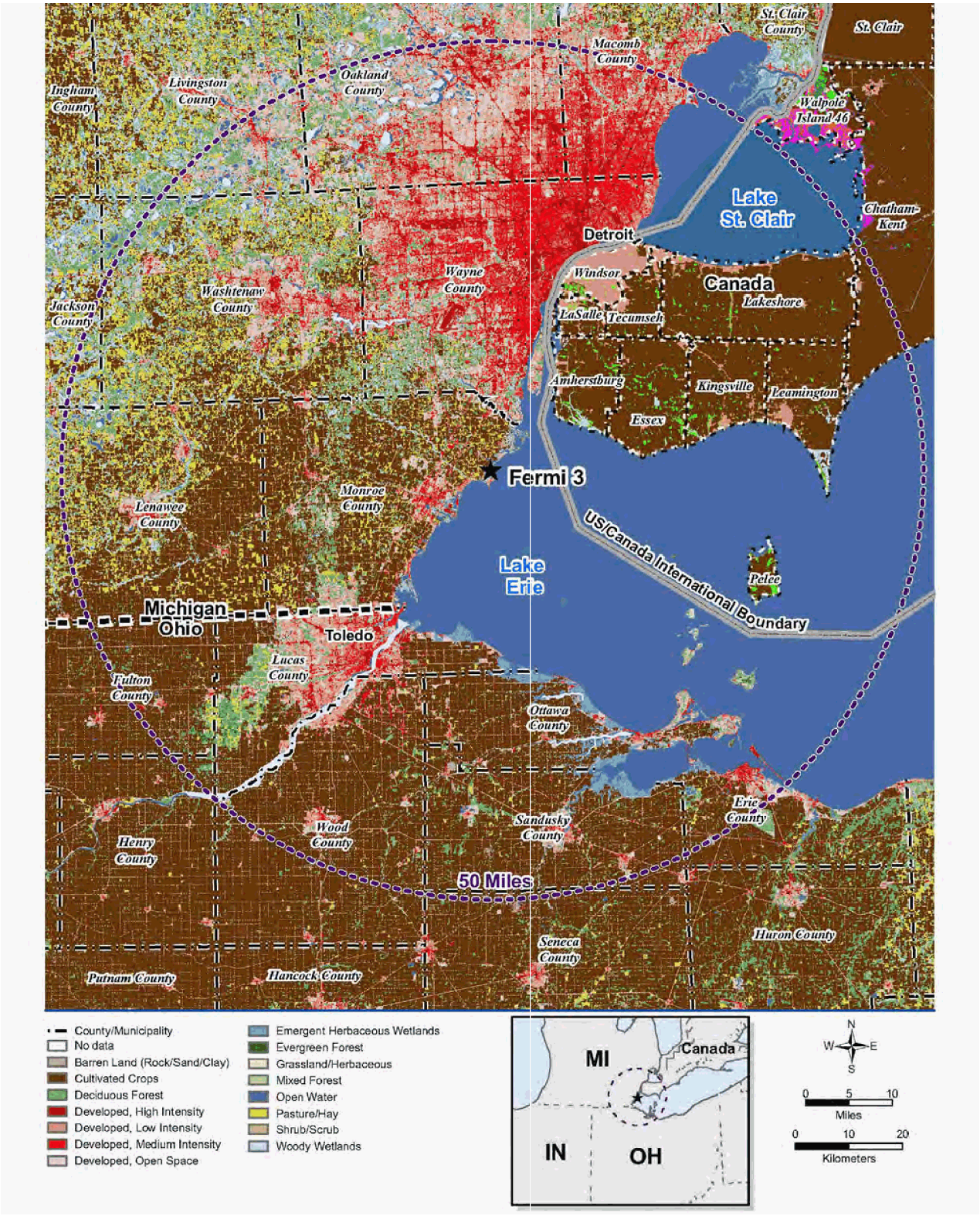

Figure 2.2-5 Transportation Resources within the 50-Mile Region

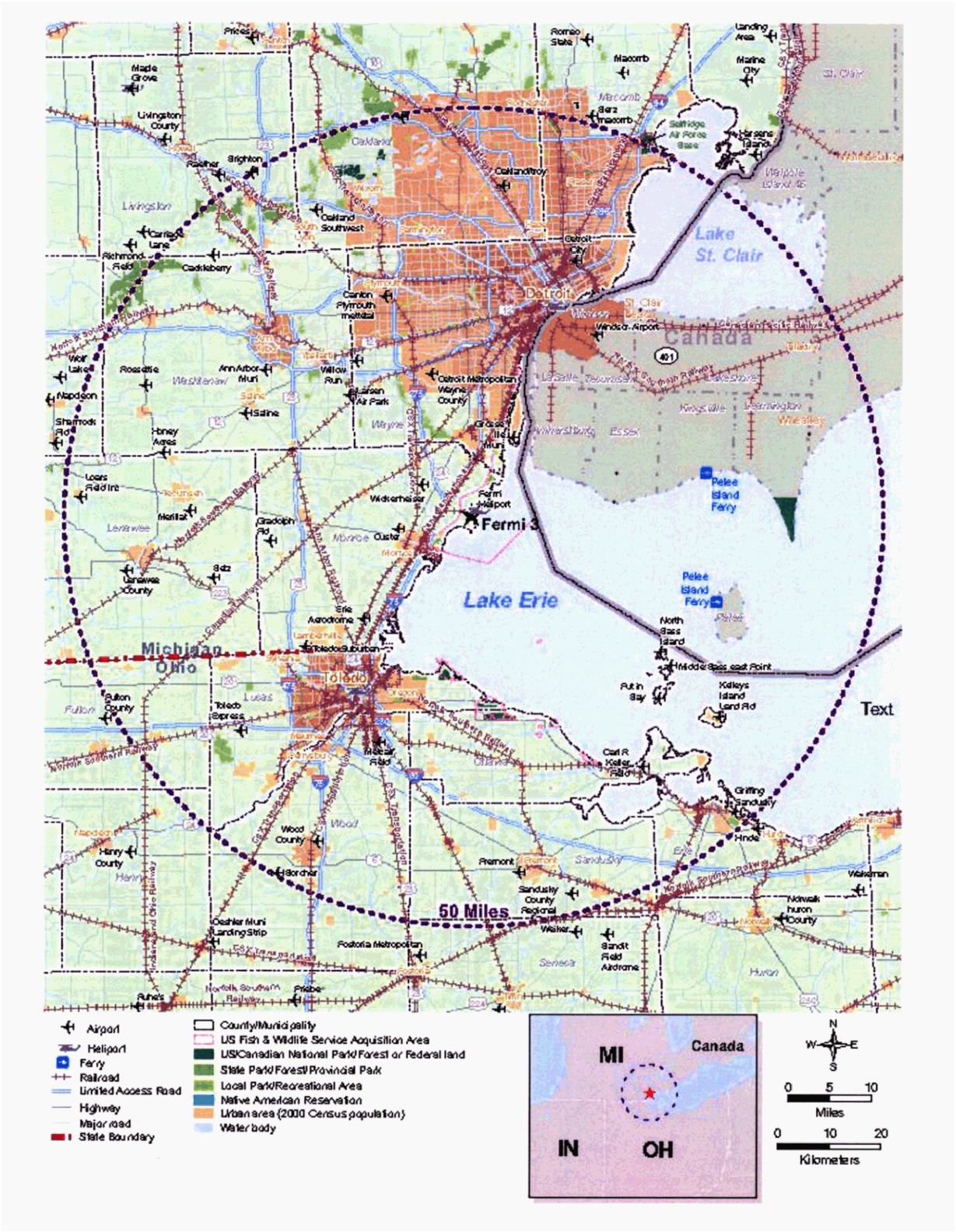

Figure 2.2-6 Utility Infrastructure within the 50-Mile Region

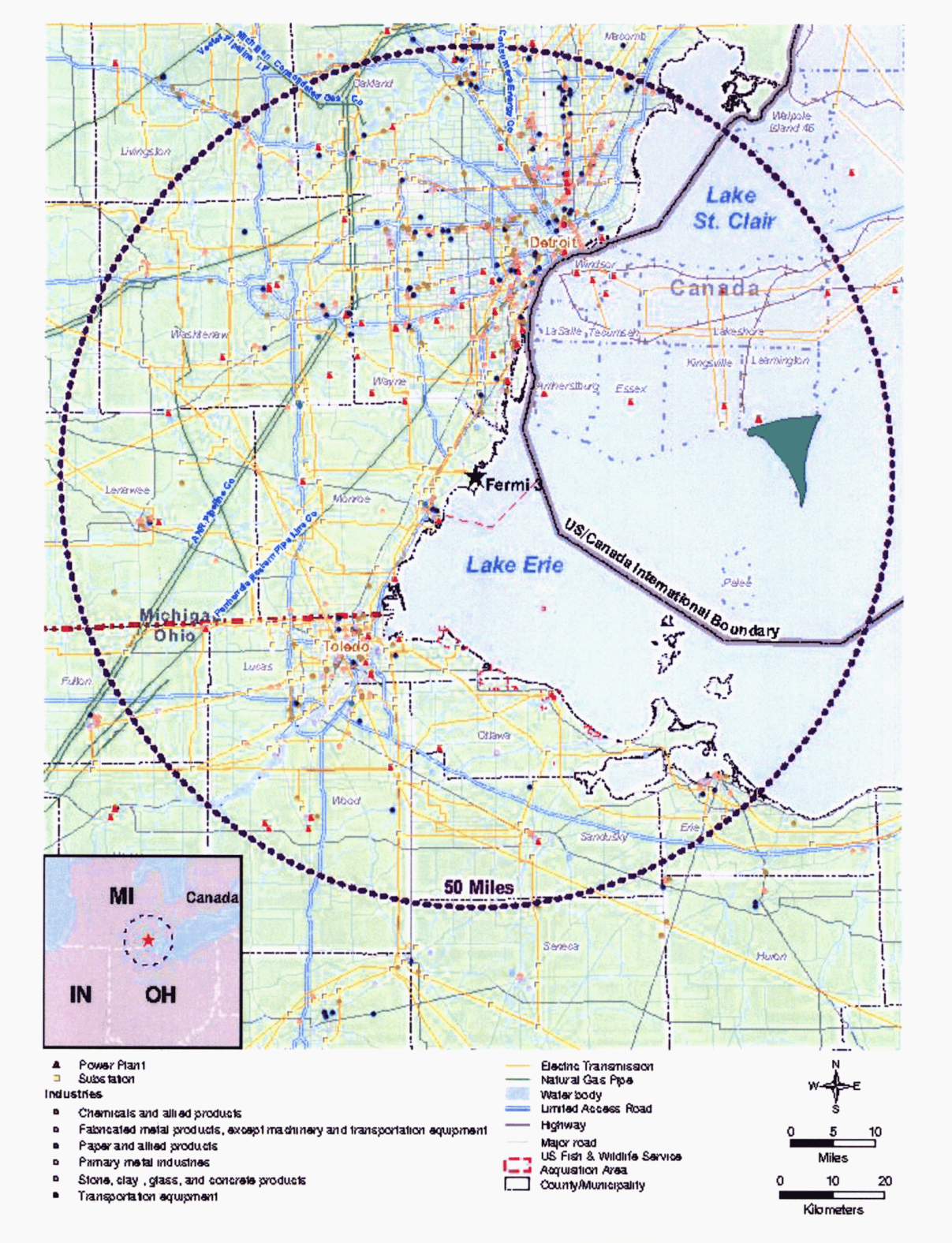

Figure 2.2-7 Natural, Public, and Recreation Areas within the 50-Mile Region