NEXUS GAS TRANSMISSION PROJECT

RESOURCE REPORT 10
Alternatives

FERC Docket No. PF15-10-000

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NOTE TO PUBLIC STAKEHOLDER REVIEWERS

This draft of Resource Report 10 for the NEXUS Gas Transmission Project is being filed as part of the Federal Energy Regulatory Commission's (FERC's) Pre-filing process. The pre-filing process allows FERC staff to become involved with scoping of environmental issues before NEXUS files its Application (pursuant to Section 7c of the Natural Gas Act) with FERC. Therefore, NEXUS' planning process will overlap, and will be combined with, the FERC's regulatory review process.

This initial filing of Resource Report 10 is one of the first steps in the FERC's Pre-filing process and is intended to provide an introduction of the Project and an assessment of alternatives that were evaluated in its early stages of development. You will notice there are references in this Report to other Resource Reports (12 Resource Reports will be filed with NEXUS' Application to FERC), Appendices, and design drawings (shaded in grey) that have not yet been filed. These documents will be filed with later versions of Resource Report 10 in accordance with FERC guidelines. We have included these references as a means of sharing with the public what will submitted in future versions of this report.

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Filing Requirement	**Location in Environmental Report**
☒ Address the "no action" alternative. For large projects, address the effect of energy conservation or energy alternatives to the project.	Section 10.2
☒ Identify system alternatives considered during the identification of the project and provide the rationale for rejecting each alternative.	Section 10.3
☒ Identify major and minor route alternatives considered to avoid impact on sensitive environmental areas (e.g., wetlands, parks, or residences) and provide sufficient comparative data to justify the selection of the proposed route.	Section 10.5 and 10.6
☒ Identify alternative sites considered for the location of major new aboveground facilities and provide sufficient comparative data to justify the selection of the proposed site.	Section 10.7

ACRONYMS AND ABBREVIATIONS

ACEEE	American Council for an Energy Efficient Economy
AEPS	Alternative Energy Portfolio Standard
AWEA	American Wind Energy Association
Bcf/d	billion cubic feet per day
BTU	British Thermal Units
Certificate	Certificate of Public Convenience and Necessity, FERC Certificate
CO2	carbon dioxide
DTE	Detroit Energy Company
EIA	U.S. Department of Energy, Energy Information Administration
EOPUS	Executive Office of the President of the United States
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
GHG	greenhouse gasses
GIS	geographic information system
GW	gigawatts
kg	kilogram
kWh	kilowatt hours
MLV	mainline valve
MMBtu	one million BTU
MP	Milepost
MW	megawatts
NEPA	National Environmental Policy Act
NEXUS Project or Project	NEXUS Gas Transmission Project
NGA	Natural Gas Act
NHD	National Hydrography Data
NLEB	northern long-eared bat (*Myotis septentrionalis*)
NO2	nitrogen dioxide
NRC	U.S. Nuclear Regulatory Commission
NRCS	Natural Resources Conservation Service
NWI	U.S. Fish and Wildlife Service National Wetland Inventory mapping
ODNR	Ohio Department of Natural Resources
PJM	PJM Interconnection, LLC
$PM_{10/2.5}$	particulate matter less than 10 and 2.5 microns in diameter
ROW	right-of-way
RPS	Renewables Portfolio Standard
RTO	regional transmission organization
SO_2	sulfur dioxide
Spectra or Spectra Energy	Spectra Energy Partners, LP
system alternatives	natural gas transportation system alternatives
Texas Eastern	Texas Eastern Transmission, LP or Texas Eastern pipelines
U.S.	United States
USDOE	United State Department of Energy
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Vector	Vector Pipeline, LP
WNPA	World Nuclear Power Association

10.0 RESOURCE REPORT 10 – ALTERNATIVES

10.1 Introduction

Spectra Energy Partners, LP ("Spectra" or "Spectra Energy") and DTE Energy Company ("DTE" or "DTE Energy"), lead developers of the NEXUS Gas Transmission, LLC ("NEXUS") project, are seeking a Certificate of Public Convenience and Necessity ("Certificate") from the Federal Energy Regulatory Commission ("FERC") pursuant to Section 7(c) of the Natural Gas Act ("NGA") authorizing the construction and operation of the NEXUS Gas Transmission Project ("NEXUS Project" or "Project") located in Ohio and Michigan. The Project is designed to transport 1.5 billion cubic feet per day ("Bcf/d") of Appalachian Basin shale gas, including Utica and Marcellus shale gas production, to Ohio, Michigan, and Chicago, Illinois market centers in the United States ("U.S.") and to the Dawn Hub in Ontario, Canada.

As proposed, the Project includes both greenfield pipeline construction and, to minimize environmental disruption and optimize project efficiencies, the contracting of firm capacity on existing and expanded pipeline systems. The new greenfield pipeline will be constructed, owned and operated by NEXUS and will extend from Kensington, Ohio to the DTE Gas transportation system west of Detroit in Willow Run, Michigan. See Figure 1.1-1 for a NEXUS Project Location Map (Figures Section of Resource Report 1). The Project will also comprise contracted firm capacity existing on, and created by: (1) the expansion of the Texas Eastern Transmission, LP ("Texas Eastern") system in Ohio, West Virginia, and Pennsylvania to allow shippers to access gas supplies south of Kensington, Ohio where the NEXUS Project commences; (2) the expansion of the DTE Gas Transportation ("DTE Gas") system in eastern Michigan and extending to the U.S./Canada border; and (3) the possible expansion of the Vector Pipeline ("Vector") system in southern and eastern Michigan, northern Indiana, eastern Illinois and western Ontario. In this way, the Project will provide a connection between Appalachian shale gas supplies and markets in the U.S. Midwest (including Ohio, Michigan and Chicago, Illinois) and to the Dawn Hub, in Ontario, Canada. See Figure 1.1-2 for a Systems Overview Map (Figures Section of Resource Report 1).

A detailed description of proposed Project facilities can be found in Resource Report 1 along with figures showing the proposed pipeline and aboveground facilities (see Resource Report 1, Figures section.) The majority of the proposed pipeline facilities (approximately 60 percent) are co-located within existing overheard electric transmission line, pipeline, road, or railroad utility corridors. The remainder is considered greenfield pipeline.

This pre-filing draft of Resource Report 10 provides a description of alternatives identified and evaluated by NEXUS during the initial siting and refinement stages of the proposed Project. The primary objectives in evaluating alternatives for facility siting are to avoid, minimize, and if necessary, mitigate potential adverse effects on the natural and human environment while satisfying the Project's Purpose and Need. A detailed description of the Project's Purpose and Need is provided in Resource Report 1. Four principal types of alternatives are evaluated in this resource report:

- No-action alternative;
- Existing natural gas transportation system alternatives;
- Pipeline route alternatives; and
- Aboveground facility site alternatives.

A checklist showing FERC filing requirements for Resource Report 10 is included following the table of contents of this resource report.

10.2 No-Action Alternative

The NEXUS Project will provide critical access to the abundant, emerging, domestic natural gas supplies from various U.S. supply areas including Marcellus and Utica shale gas producing area and will provide energy consumers in the Ohio, Michigan, Chicago, Illinois and Ontario region with reliable, affordable,

cleaner-burning natural gas to help meet the growing need for cleaner power generation and home heating. The "no-action" alternative would avoid the temporary and permanent, short- and long-term environmental impacts associated with construction and operation of the NEXUS Project. However, by not constructing the proposed Project there would be no ability to provide the natural gas transportation service requested by the public (as evidenced by customers that have already subscribed to the majority of the Project's projected capacity) to meet energy demands beginning in 2017.

Given this demonstrated need to transport large quantities of abundant, domestically produced natural gas to the U.S. Midwest and eastern Canadian regions, other natural gas transmission companies would be required to increase their capacity on existing systems and/or construct new facilities. Such actions likely would result in the transfer of environmental impacts from one location to another, but would not eliminate or significantly reduce net environmental impacts in the region. If the No-Action Alternative were to be selected, prospective NEXUS customers would be required to find a different natural gas transmission source or sources to transport the necessary volume to meet the market demand to be supplied by the Project.

Without an increase in the capacity to transport abundantly available natural gas to this region, markets in need of additional supplies of natural gas will need to: 1) seek other sources of fuel or energy; 2) forego meeting their natural gas demand needs until energy conservation measures stabilize or decrease demand, possibly limiting their growth and the growth of the local economies they serve; and/or, 3) depend on the future development of other projects with unknown and unpredictable schedules and environmental impacts. If these existing natural gas demands were to be met incrementally with intrastate pipeline segments, the same facilities may be constructed but without the same rigorous environmental impact review and stakeholder integration afforded by the FERC's National Environmental Policy Act ("NEPA") review process.

As described in more detail below, if existing natural gas transmission systems are not expanded or new natural gas transmission systems are not created, energy shortages in times of peak demand could occur. Not building the NEXUS Project could also jeopardize plans and anticipated schedules for converting existing energy generation facilities currently burning oil or coal (which emit substantially more greenhouse gases and other pollutants) to the environmentally preferred fuel, clean burning natural gas.

10.2.1 Regional Electricity Demand Projections

PJM Interconnection LLC ("PJM") is the regional transmission organization ("RTO") that coordinates the delivery of electricity through much of the NEXUS Project area and includes parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. Based on PJM's 2014 Load Forecast Report, the summer peak electric load for power generation in the region is projected to grow an average 1.0% per year over the next 10 years, and 0.9% over the next 15 years. The PJM RTO summer peak load is forecasted to be 173,729 megawatts ("MW") in 2024, a 10-year increase of 16,450 MW, and reaches 180,017 MW in 2029, a 15-year increase of 22,738 MW. Annualized 10-year summer peak demand growth rates for individual zones (within the PJM service area) range from 0.4% to 1.8%. Winter peak load growth is projected to average 0.9% per year over the next 10-year period, and 0.8% over the next 15-years. The PJM RTO winter peak load in 2023/24 is forecasted to be 144,359 MW, a 10-year increase of 12,640 MW, and reaches 148,303 MW in 2028/29, a 15-year increase of 16,584 MW. Annualized 10-year winter peak demand growth rates for individual zones range from 0.3% to 1.7% (PJM, 2014).

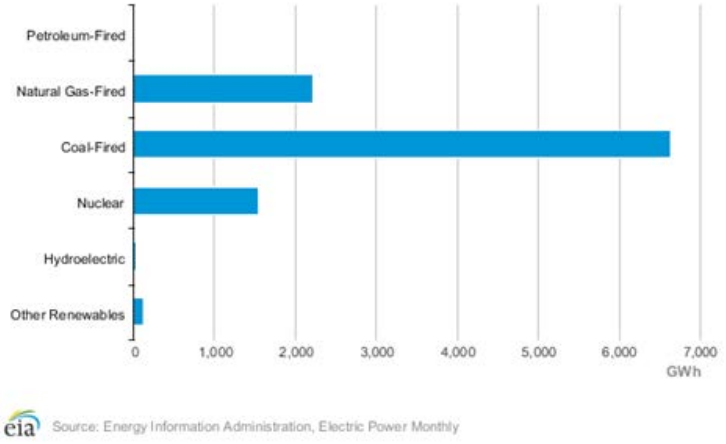
The Chief Executive Officer of PJM announced at a PJM Grid 20/20 conference in Washington, D.C. in October 2014, that the RTO's current fuel mix for electric power generation is 40 percent coal, 30 percent natural gas, 19 percent nuclear and 11 percent other, which includes renewables. But he said those percentages were changing as the power industry shifts toward natural gas. Natural gas is on pace to surpass coal as its primary source fuel for PJM by May 2015 (PJM, 2013).

Unlike coal that can be stored onsite or near power generation facilities, natural gas needs to be transported to power generation facilities by infrastructure such as pipelines. The NEXUS Project will support the anticipated shift in power generation to natural gas in the region, and could supply a significant portion of the natural gas needed to meet the projected increase in the demand for electricity in the northwest portion of the PJM service area.

10.2.2 Regional Electricity Generation by Source

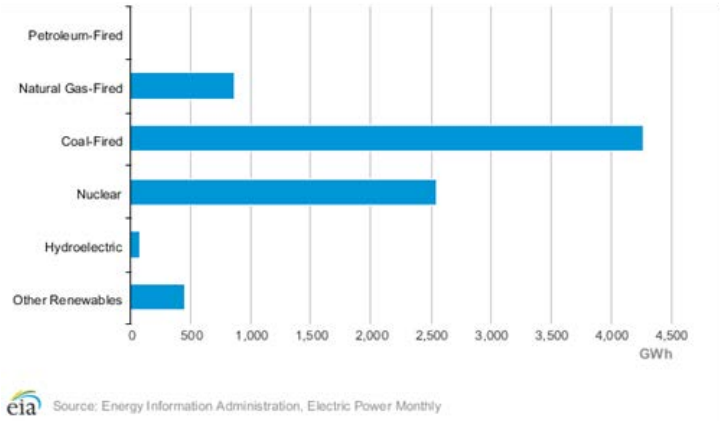
Based on the U.S. Department of Energy, Energy Information Administration's ("EIA") *State Profiles and Energy Estimates*, Ohio is currently the third largest coal-consuming state in the nation (after Texas and Indiana) and about 90 percent of the coal consumed in Ohio is used for electric power generation. In addition, coal fueled 63 percent of Ohio's net electricity generation in 2013, natural gas contributed 21 percent, and nuclear energy added another 15 percent, while renewables contributed approximately 1 percent, and petroleum and hydroelectric power generation contributed less than 1 percent (EIA, 2014a).

Exhibit 10.2-1 Ohio Net Electric Generation by Source, September 2014



In Michigan, coal fueled 52 percent of net electricity generation in 2013, nuclear energy supplied 31 percent (with three nuclear power plants and four reactor units), natural gas supplied 11 percent, renewables (led by wood biomass providing 42 percent of Michigan's net renewables generation capacity) provided 6 percent, and petroleum and hydroelectric provided less than 1 percent of net electricity generation in Michigan in 2014 (EIA, 2014b).

Exhibit 10.2-2 Michigan Net Electric Generation by Source, September 2014



10.2.3 U. S. Energy Policy

U.S. energy policy and regulations in the past decade have resulted in diversification in the U.S. energy portfolio through incentivizing development of alternative energy sources, supporting energy efficiency, and advocating conversion of power generation using fuels with high greenhouse gas emissions to cleaner burning, and domestically produced fuels, like natural gas.

In 2005, the U.S. Congress passed the Energy Policy Act ("EPAct") (Public Law 109-58) that provided regulatory guidelines to diversify America's energy supply and reduce dependence on foreign sources of energy; increase residential and business energy efficiency and conservation (Energy Star Program); improve vehicular energy efficiency; and modernize the domestic energy infrastructure.

In 2007, The Energy Independence and Security Act (Public Law 110-140), was enacted to move the U.S. toward greater energy independence and security; to increase the production of clean renewable fuels; to protect consumers; to increase the efficiency of products, buildings, and vehicles; to promote research on and deploy greenhouse gas capture and storage options; and to improve the energy performance of the Federal Government.

Furthermore, based on *All-of-the-Above Energy Strategy as a Path to Sustainable Economic Growth* (EOPUS, 2014), published in May 2014 by the Executive Office of the President of the United States, from 2005 through 2011 (the last year of available data), the U.S. reduced its total carbon pollution more than any other nation, in part because of a shift in the U.S. toward cleaner natural gas and an increasing role for renewables. Natural gas has the lowest carbon dioxide ("CO_2") emissions per unit of usable energy produced of any fossil fuel. Based on the President's *All of the Above* energy report, switching from fuels with a greater carbon footprint to natural gas has played a vital role in decarbonizing the energy sector, and will continue to do so for the coming decades. Meeting the U.S. goals and projections for further decarbonizing the energy sector in coming decades could be jeopardized if the NEXUS Project is not built.

10.2.4 Energy Conservation

Reducing the need for additional energy usage is the preferred alternative for meeting future growth in energy demand. Conservation of energy reduces the demand for the finite and over-utilized reserves of fossil fuels that emit problematic greenhouse gases and other air pollutants, and for the use of nuclear power generation that has environmental costs associated with management of radioactive wastes. Energy conservation has been strongly advocated by both federal and state regulatory policies and incentives in recent years.

Based on the EIA's Annual Energy Outlook 2014 (EIAAEO, 2014), electricity demand in the U.S. fell in only three years between 1950 and 2007, but it declined in four of the five years between 2008 and 2012

(the largest drop occurring in 2009). One contributing factor was the steep economic downturn from late 2007 through 2009, which led to a large drop in electricity sales in the industrial sector. However, other contributing factors cited include efficiency improvements associated with new appliance standards in the buildings sectors and overall improvement in the efficiency of technologies powered by electricity. Based on EIAAEO 2014 projections, the share of purchased electricity consumption used for lighting is expected to decline from 20.7 percent in 2012 to 14.7 percent in 2040, based on incentives created by the Energy Independence and Security Act of 2007. Both energy efficiency and improved technology have slowed electricity demand growth and may contribute to slower growth in the future, even as the U.S. economy continues its recovery. Nevertheless, EIAAEO 2014 also projects an increase in the U. S. demand for electricity of 29 percent from 3,826 billion kilowatt hours ("kWh") in 2012 to 4,954 kWh in 2040, an average of 0.9 percent per year. So, while the expected growth in residential consumption of electricity is weaker, the growth in industrial use is much stronger than earlier projections. The overall growth rate projection for electricity demand throughout the U.S. is similar to the regional rates projected by PJM, as cited in Section 10.2.1.

Energy conservation reduces the demand or growth in demand for natural gas and other energy sources. It is possible that the development and implementation of additional cost-effective conservation measures will have an effect on customer demands for natural gas. However, substantial new development in technology would be needed before the magnitude of energy conservation measures necessary to equal the electric generation fueled by the proposed Project could be implemented. Therefore, although energy conservation is likely to continue to be an important part of the U.S. energy strategy, it is not a viable alternative to meet the medium to short-term energy demands of the market.

10.2.5 Non-Gas Energy Alternatives

The NEXUS Project will increase gas transportation capacity to markets in Ohio, Michigan, Chicago, Illinois and Ontario, Canada, providing consumers greater choice and access to the abundant Marcellus and Utica shale gas supplies. This encourages greater competition in fuel markets, creates economic incentives for power generators currently burning coal or oil, with environmentally damaging emissions, to convert to natural gas; and improves national security by reducing U.S. dependence on foreign energy supplies. As discussed below, if this demand for natural gas associated with heating, lighting, and power generation is not met, other energy sources such as non-gas-fired fossil fuel generation would need to be permitted, constructed, and operated.

Fossil Fuel Generation

Based on the EIAAEO 2014, the fossil fuel share of total U.S. energy use is projected to decline from 82 percent in 2012 to 80 percent in 2040. This is based on the assumption that the renewable energy share of total energy use (including biofuels) increases from 9 percent in 2012 to 12 percent in 2040 in response to the availability of federal tax credits for renewable electricity generation and capacity during the early years of the projection and in response to state renewable portfolio standard ("RPS") programs. In reality, the availability of federal tax credits and status of state RPS programs are likely to shift based on political and economic factors between now and 2040. Therefore, the use of fossil fuels as a dominant fuel source for the U.S. through 2040 is likely to remain in the range of 80 percent.

As cited in Section 10.2.2, Ohio and Michigan currently rely heavily on the use of coal to generate electricity. Continued use of coal (and oil) fossil fuels in the U.S. upper Midwest and eastern Canadian regions to supply the needs of the market could potentially result in adverse environmental impacts due to increased air emissions and associated impacts to natural resources that otherwise would be minimized through the use of natural gas. State and federal air pollution control regulations indirectly promote the use of clean fuels to minimize adverse air quality impacts. For example, proposed U.S. Environmental Protection Agency rules reducing the emissions from the Electric Utility sector, such as the Mercury and Air Toxics Standards (40 CFR Part 63, Subpart UUUUU), the proposed Standards of Performance for

Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units (Federal Register Volume 79, Issue 5, pp. 1429-1519), the proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (Federal Register, Volume 79, Issue 117, pp. 34829-34958) and proposed Carbon Pollution Standards for Modified or Reconstructed Stationary Sources: Electric Utility Generating Units (Federal Register Volume 79, Issue 117, pp. 34959-34994), which is based on significant re-dispatching of existing coal-fired generation to natural gas-fired generation, will provide a driving force to use of natural gas as a fuel for power plants.[1]

These regulations are proposed and implemented to improve both air quality and quality of life by avoiding pollution-related environmental degradation. The Project would provide utilities access to the natural gas needed to build new power plants and re-power existing plants with natural gas as the primary fuel, enabling them to meet the U. S, Environmental Protection Agency's ("USEPA") latest standards, if promulgated. Use of alternative hydrocarbon energy sources would result in adverse air quality impacts, and these adverse impacts may conflict with federal and state long-term energy and environmental policies aimed toward improving air quality in non-attainment areas. Moreover, non-gas fossil fuel alternatives would need to displace existing and proposed natural gas fired generation no later than 2017.

Combustion of natural gas to generate electricity results in lower emission rates of greenhouse gases ("GHG")and other pollutants (e.g., sulfur dioxide ["SO_2"], nitrogen dioxide ["NO_2"], particle matter less than 10 and 2.5 microns in diameter ["$PM_{10/2.5}$"], and CO_2) than all other fossil fuels (standardized to emissions per unit of energy consumed). Based on default CO_2 emission factors for various types of fuel provided in Table C-1 of 40 CFR Part 98, *Mandatory Greenhouse Gas Reporting*, use of natural gas results in nearly half the GHG emissions as the use of coal, in terms of CO_2 per unit of energy input (i.e., 53 kilograms ("kg") of CO_2 per MMBtu of natural gas versus 93.3 kg CO_2 per MMBtu of coal). Using natural gas in place of coal and oil to generate electricity minimizes emissions of NO_X, SO_2, and PM_{10} and $PM_{2.5}$, with virtually no emissions of other fuel-bound contaminants such as mercury. The large reduction in air emissions when switching to natural gas is, in part, a result of the composition of natural gas. Pipeline natural gas, as proposed for the Project pipeline, is at least 80 percent methane (typically much higher than this minimum specification), meaning that natural gas is less chemically complex than other fuels with multiple chemical constituents. Natural gas also contains significantly less impurities that react during combustion to form air pollutants (e.g., SO_2 and mercury). The greater chemical consistency and lower impurities reduces the formation of air pollutants, but also yields higher combustion efficiency – further reducing the air emissions per unit of heat input.

To the extent the new supply of natural gas provided by the Project is used to displace electric generation using coal and oil, significant reductions in regional air emissions can be expected. Furthermore, it is probable that the permitting and subsequent construction of new, non-gas power plants would take substantially longer than that anticipated for the permitting and construction of the NEXUS Project, if they could be successfully permitted at all.

Although U.S. energy policy also advocates for "clean coal technologies," utilization of natural gas as the primary source of fuel for electric generation in this region currently offers the most cost effective, environmentally preferred alternative to both meeting the current market demands and meeting the goals of the President's *All of the Above* energy report to: 1) support economic growth and job creation; 2) enhance energy security; and 3) deploy low-carbon energy technologies and lay the foundation for a clean energy future (EOPUS, 2014).

[1] The U.S. Supreme Court has agreed to consider a challenge to the Mercury and Air Toxics Standards to review whether the USEPA "unreasonably refused to consider costs" when it determined that it was appropriate to regulate hazardous air pollution from power plants. The other proposed standards and guidelines are not final at this time, but are scheduled to be finalized in the summer of 2015.

Nuclear Energy

Nuclear energy power generation is considered an environmentally preferred alternative in terms of limiting air pollution, and because of the high energy output for relatively small land area required for generating facilities. However, following the Fukushima nuclear power plant incident in 2011, there has been a significant re-examination of nuclear safety and nuclear energy policy throughout the world. As a result, Germany decided to shut down eight nuclear reactors immediately and to shut down all remaining reactors in the country by 2022 (WNPA 2014a). Italy banned nuclear power generation facilities altogether (WNPA 2014b). In the U.S., the Nuclear Regulatory Commission ("NRC") and nuclear industry representative initiated an immediate coordinated response to the Fukushima accident, as well as implemented long-term actions intended to assure the safety of operating and planned reactors in the U.S. The ultimate cost of complying with NRC orders and proposed regulations and industry-led initiatives remains uncertain, as do the potential impacts on future nuclear power plant operations (EIAAEO, 2014).

Although nuclear power is also an important component of the U.S. *All of the Above* energy policy (EOPUS 2014), regulatory changes have the potential to introduce significant uncertainty in the timing and cost of both bringing new nuclear facilities into service and bringing existing facilities into compliance. As cited in Section 10.2.2, currently 15 percent of Ohio's, and 31 percent of Michigan's net electric energy generation is provided by nuclear reactors. Ohio currently has two operational nuclear power generating facilities; the Davis-Besse Nuclear Generation Station located in Oak Harbor, Ohio and the Perry Nuclear Generation Station located on Lake Erie in North Perry, Ohio. The Davis-Besse facility's nuclear operating license expires in April, 2017; the Perry facility's operating license expires in November, 2026 (NRC, 2014). If these nuclear power facilities do not receive authorization for relicensing, energy currently provided by these power plants would need to come from other sources, potentially as early as April of 2017.

Renewables

In 2008, Ohio created an Alternative Energy Portfolio Standard ("AEPS") that was part of broader legislation concerning the electric industry. The AEPS requires all of the state's retail electricity providers except municipal utilities and electric cooperatives to provide 25 percent of their retail electricity sales from alternative energy resources by the end of 2024. Unlike many other states, one-half of the standard can be met by "any new, retrofitted, refueled, or repowered generating facility located in Ohio," including those using fossil fuels. Therefore, the required renewables portion of the standard is 12.5 percent. The AEPS contains a carve-out for solar energy resources; the ultimate solar target is 0.5 percent of the total electricity supply. An Energy Efficiency Portfolio Standard separate and distinct from the AEPS was also created. It requires utilities to put in place energy efficiency and peak demand reduction programs that achieve a cumulative energy savings of 22 percent by the end of 2025 (EIA, 2014a).

The AEPS requires all of the state's retail electricity providers except municipal utilities and electric cooperatives to provide 25 percent of their retail electricity sales from alternative energy resources by the end of 2024. However, in 2014, Senate Bill 310 ("SB 310") instituted a two-year "freeze" of Ohio's renewable and efficiency standards, permanently repealed the "Buy Ohio" provision for renewable energy, created an exemption from the standards for large industries, and established an "Energy Mandates Study Committee" that is tasked with evaluating Ohio's standards and producing a report in 2015 (Ohio Chamber, 2014)

Michigan's Clean, Renewable, and Efficient Energy Act, enacted in 2008, requires that all electricity providers obtain at least 10 percent of their electricity supply from renewable energy resources by 2015. The act defines renewable energy resources as biomass; solar and solar thermal energy; wind energy; kinetic energy of moving water; geothermal energy; municipal solid waste; and landfill gas produced by municipal solid waste. Electricity generation from hydroelectric facilities at newly constructed dams does not count toward the 10 percent requirement, but generation from modified facilities at existing dams does. The

standard also allows electric utilities to use energy efficiency and advanced cleaner energy technologies to fulfill part of the requirement. The state's two largest investor-owned electric utilities have additional requirements called renewable energy capacity standards. Those capacity standards are based on the number of customers each of the two utilities served at the beginning of 2008. The energy produced from new facilities that meet the capacity standards may be counted towards the 10 percent required from renewable energy resources for each of those electric utilities. Michigan also offers tax incentives in Renewable Energy Renaissance Zones. Those zones were created to promote the development of a renewable energy manufacturing industry in the state (EIA, 2014b). In Michigan, where legislation was proposed in 2012 to repeal renewables and efficiency standards, opposition by businesses and organizations supporting the energy efficiency and renewable programs succeeded in averting any action (ACEEE, 2014).

Total renewable energy generating capacity in the U.S. is projected to grow by 52 percent from 2012 to 2040 (EIAAEO, 2014). Non-hydropower renewable capacity, particularly wind and solar, nearly doubles and accounts for almost all of the growth in renewable capacity in the projection period. Solar power leads the growth in renewable capacity, increasing from less than 8 gigawatts ("GW") in 2012 to more than 48 GW in 2040. Wind capacity increases from less than 60 GW in 2012 to 87 GW in 2040, the second-largest amount of new renewable capacity. Although geothermal capacity more than triples and biomass capacity nearly doubles in the projection, combined they account for less than 15% of renewable capacity additions. Wind is the top source of non-hydropower renewable energy capacity during the projection period, surpassing the hydropower share in 2036.

A summary of potential renewable energy alternatives in Ohio and Michigan is provided below.

Wind

In 2013, wind energy provided only 0.8 percent of Ohio's in-state energy production with 435 MWs of installed capacity. The state is currently ranked 25th in the nation with 32 wind projects online, but no wind projects currently under construction. Wind energy has historically been the renewable resource chosen to meet Ohio's RPS requirements, fulfilling 86 percent of RPS requirements through 2011, driving economic development in the state as a result (AWEA-OH, 2015).

In Michigan, wind energy provided 2.4 percent of all in-state electricity production in 2013. The state's wind resource is ranked as 18th in the nation and they are currently ranked 15th in the nation for installed wind capacity at 1,350 MWs. Michigan currently has 23 wind projects online and has 206 MW of wind energy capacity under construction. (AWEA-MI, 2015) However, overall renewable power generation contributes only approximately 6 percent to Michigan's net electric power generation as stated in Section 10.2.

It is likely wind projects will continue to be a prominent component of the region's renewable energy portfolio, assuming that federal tax credits, state regulatory incentives, technological improvements, transmission availability, and public interest continue to support development of this technology. However, the land area required to produce the energy equivalent of what has been requested by NEXUS' prospective customers, in addition to the inherent challenges with the regulatory permitting process for wind energy projects, make wind an infeasible alternative to the NEXUS Project by 2017.

Hydroelectric

Based on EIAAEO 2014, the predicted growth for hydroelectric capacity in the U.S. is only 0.01% annually through 2040. Currently, approximately 0.8% of net electricity generation in Ohio, and 0.3% in Michigan, is produced by hydroelectric generation facilities. Although efficiency upgrades at existing facilities may produce incremental additions to hydroelectric power in coming years, it is unlikely that large-scale improvements or new facilities will contribute substantively to the region by 2017. It is likely that hydroelectric power generation will continue to be part of the region's renewable energy portfolio, however,

hydropower is not considered a feasible alternative to meeting the NEXUS Project's Purpose and Need by 2017.

Biomass

Biomass from wood and wood waste, as well as municipal solid waste and landfill gas, has contributed to Ohio's net electricity generation from renewables. However, the total contribution of renewable energy sources to net electric generation in Ohio is less than 1 percent. In addition, researchers are investigating the potential of native Ohio switchgrass for cellulosic ethanol production and the biofuel potential of giant miscanthus, a perennial grass native to Asia. Additionally, methane from manure generated on Ohio's many farms could be used to generate electricity using biodigesters (EIA, 2013a).

In Michigan, biomass accounted for approximately 42 percent of Michigan's renewable net electricity generation in 2013. The total contribution of renewable energy sources to net electric generation in Michigan is only 5.6 percent (EIA, 2013b). Therefore, although it is likely that biomass power generation will continue to be part of the Midwest Region's renewable energy portfolio, biomass is not considered a feasible alternative to meeting the Purpose and Need of the NEXUS Project by 2017.

Solar

Solar power is not considered a feasible alternative to meeting the existing and future natural gas fuel supply needs of electric generators (by 2017) and the needs of other natural gas customers for the NEXUS Project. In addition solar power may be less practical due to developmental costs, reliability issues and availability at times of peak demand (solar power generation is intermittent, depending on the time of day and weather conditions), and the need for large expanses of land. Some of the largest completed solar photovoltaic power plants, also called solar parks or fields, have area efficiency of about 4.5 to 13.5 acres per MW (Solar by the Watt 2009). Assuming all 1.5 Bcfd of gas that will be supplied by the NEXUS Project was used to generate electricity in typical natural gas-fired combined cycle power plants, over 9,400 MW of electricity could be generated per hour (i.e., the electric generation from a 9,400 MW power plant).[2] Therefore, it is estimated that the land requirements for a 9,400 MW solar project would range between 42,300 and 126,900 acres of permanent disturbance. Note that natural gas fired power plants can generate electricity at full capacity throughout a day while solar power is more intermittent; thus, a solar project would need to be much larger than 9,400 MW to produce on a daily basis the equivalent amount of electricity produced from natural gas fired generation.

As a result of these extensive land requirements, it is not reasonable to expect solar power to be developed at a pace that would provide for the projected energy needs of the Project market area. The proposed Project may cause initial or temporary earth disturbance, however, unlike solar parks or fields, the majority of the area will be restored, revegated, and the permanent ROW will be maintained in an herbaceous condition (rather than an impervious or shaded surface that would be found in a solar park or field) that can provide habitat for flora and fauna in the long term. While solar energy development will likely continue to be a component of the energy portfolio in the region, the land requirements needed for solar power to generate the amount of electricity that could be provided by the natural gas supplied by the NEXUS Project would be cost prohibitive. As such, solar power is not considered a feasible alternative to meeting the Purpose and Need of the NEXUS Project by 2017.

[2] Based on the default high heat value for natural gas of 1,026 Btu/scf from Table C-1 of 40 CFR Part 98 and the typical combined cycle facility heat rate of 6,798 Btu/kWh from Exhibit ES-2 of the United States Department of Energy's *Cost and Performance Baseline for Fossil Energy Plants* (USDOE, 2013).

10.2.6 No-action Alternative Conclusion

The no-action alternative would avoid all of the direct environmental impacts that would be associated with the proposed action. The increasing demand for energy supply would nonetheless need to be met through other natural gas pipeline infrastructure, energy conservation or some other energy alternative (e.g., increased use of other fossil fuels for electricity generation and by other industrial/commercial/residential users, some of which may come from foreign supplies). As described in Sections 10.2.4 and 10.2.5, above, energy conservation and the use of alternative energy strategies will not fully satisfy the market needs of targeted consumers. For these reasons, the no-action alternative was not found to be a feasible alternative for the Project since that alternative would not satisfy the Project's Purpose and Need.

10.3 Existing Natural Gas Transportation System Alternatives

Transportation system alternatives ("system alternatives") are alternatives to the proposed action that would make use of other existing, modified, or proposed pipeline systems to meet the stated objectives of the proposed project. System options would involve the transportation of the equivalent amount of incremental natural gas. System alternatives would make it unnecessary to construct all or most of the proposed project, although modifications or additions to other existing pipeline system(s) may be required to increase capacity, or another entirely new system may be required. Although these modifications or additions could result in environmental impacts, the impacts may be less, similar to, or greater than that associated with construction of the proposed NEXUS Project.

System alternatives that would result in significantly less environmental impact might be preferable to the project. However, only those alternatives that are reasonable and consistent with the underlying Project Purpose and Need are required to be considered under the NEPA. Consequently, a viable system alternative that is technically and economically feasible and practicable must also satisfy the project's purpose including the necessary contractual commitments made with the shippers supporting the development of the NEXUS Project.

10.3.1 Modification of Existing Pipeline Systems

There are three pipeline systems or system combinations within the broad area to be served by the NEXUS Project that were evaluated to consider rendering the same service as proposed by NEXUS (see Figure 10.4-2). They are:

- Texas Eastern and Panhandle Eastern Pipeline
- Dominion Transmission and Panhandle Eastern Pipeline
- Columbia Gas Transmission

Each pipeline system is evaluated below for suitability to render the same service as that proposed by the NEXUS Project.

10.3.1.1 Texas Eastern and Panhandle Eastern Pipeline

This transportation path contemplated utilizing existing pipeline systems to deliver gas from the Kensington Plant to the Dawn storage facility via expansions of the Texas Eastern and Panhandle Eastern systems for volumes up to 1 Bcf/d. To create 1.0 Bcf/d of capacity would entail approximately 320 miles of pipeline looping and new pipeline segments and approximately 155,000 hp compressor additions at 10 existing and two greenfield compressor stations. It was determined that this path did not meet the economic expectations for the transportation path and was eliminated from consideration.

10.3.1.2 Dominion Transmission and Panhandle Eastern Pipeline

This path is very similar to the Texas Eastern and Panhandle Eastern path in that it would involve moving gas from the Kensington area to Gas City, OH along Dominion's existing system as well as greenfield pipe

into the Panhandle Eastern system. It was determined by comparison that this option presents similar concerns as the Texas Eastern/Panhandle Eastern alternative described above and was not evaluated further.

10.3.1.3 Columbia Gas Transmission

The Columbia Gas Transmission system has a segment of pipeline that extends from near Kensington to the Toledo, OH area, generally similar to a large portion of the proposed NEXUS path. Columbia's information portal indicates that the capacity on the Columbia Gas Transmission system into the Toledo area is approximately 200 mmcf/d. To create the ability to deliver 1.5 Bcf/d into the Toledo area or to DTE at Willow Run along Columbia would require incremental facilities similar to those being proposed by NEXUS. Thus the environmental and socio-economic impacts from such a project would be similar to that proposed by NEXUS.

10.3.2 Proposed Pipeline Systems

There are three (3) proposed pipeline systems within the broad regional area that would be served by the NEXUS Project. NEXUS evaluated whether the proposed Rover project (FERC Docket No. PF14-14-000), Leach XPress (FERC Docket No. PF14-23), or ANR East Pipeline Project could meet the demands of NEXUS' customers and avoid the need for the proposed NEXUS Project. The following sections describe this analysis.

10.3.2.1 ET Rover Pipeline Project

Rover Pipeline, LLC (Rover) is a subsidiary of Energy Transfer and proposes to construct a new natural gas pipeline system that would consist of approximately 820 miles of supply laterals and mainlines, ten compressor stations, and associated meter stations and other aboveground facilities that would be located in parts of West Virginia, Pennsylvania, Ohio, and Michigan. The Rover Pipeline Project would extend for approximately 618 miles from the vicinity of New Milton, Doddridge County, West Virginia to the U.S./Canada border near East China, St. Clair County, Michigan. An additional 15.0 miles of 42-inch diameter pipeline would then extend from the U.S./Canada border to the Union Gas Dawn Hub, in the vicinity of Beaver Meadow, Ontario, Canada. The proposed in-service date for supply laterals and mainlines is December 2016 and the in-service date for the additional facilities is proposed to be no later than June 2017. As currently proposed, Rover is stated to have the capacity to transport 3.25 Bcf/d of natural gas. Rover held an open season that concluded on July 25, 2014 and has reported executed binding precedent agreements with shippers representing 3.25 Bcf/d, which represents the total capacity of the proposed project (Rover, 2014).

The Rover Pipeline Project would provide a connection with producers in the Marcellus and Utica Shale areas of West Virginia, Pennsylvania, and Ohio, and would allow movement of their production to markets in the Gulf Coast, Midwest and Canada, Including interconnections with Energy Transfer's existing Panhandle Eastern Pipeline and other Midwest pipeline interconnects near Defiance, Ohio, and a connection into the Canadian gas trading hub located in Dawn, Canada (Rover, 2014).

The Rover Pipeline Project is described a producer-driven pipeline project in which Marcellus and Utica producers have made long-term commitments for transportation capacity to move natural gas production to connections with interstate natural gas pipelines and storage facilities, as well as to gas consuming markets in the Gulf Coast, Midwest and Canadian regions. The receipt points are defined by the compressor stations and receipt meters located at or near the beginning of each of the eight supply laterals. The delivery points are defined by the interconnecting pipeline systems located near Defiance, Ohio; Manchester and Byron, Michigan; and the Dawn Hub in Canada.

10.3.2.2 Leach Xexpress Project

Columbia Gas Transmission, LLC (Columbia) proposes to construct and operate the Leach Xpress facilities in West Virginia and Ohio to transport natural gas produced in northern West Virginia, southwestern

Pennsylvania, and eastern Ohio westward to Columbia's existing pipeline system located in central Ohio. From this point, natural gas would flow south via Columbia's existing and the proposed project facilities for delivery to various market and interconnect points located on Columbia's system. The Leach Xpress Project is proposed to provide up to 1.5 Bcf/d of new firm transportation service through approximately 157 miles of new pipeline. The proposed in-service date is November of 2017. The project would involve the abandonment in place, of a segment of one existing natural gas pipeline (Columbia, 2014).

Columbia proposes to construct new 30- and 36-inch-diameter high pressure pipelines, along with associated compression and other appurtenant facilities, which would connect with its existing pipeline system and to third-party systems in the Majorsville, West Virginia and Clarington, Ohio areas before extending to a connection into Columbia's existing pipeline system near the Crawford Compressor Station in central Ohio. These new facilities are being proposed to provide portions of the new capacity from central Ohio via Columbia's existing pipeline system to the Ohio market as well for Columbia's other operational requirements (Columbia, 2014).

In addition to the pipelines, the proposed Leach Xpress Project is proposed to include the construction and operation of three new greenfield compressor stations and four new regulator stations as well as modifications at two existing compressor stations and one existing regulator station. Facility improvements are also being proposed that would provide a majority of the new capacity to the existing Ceredo Compressor Station in Wayne County, West Virginia for further transport southward to customers located outside of Ohio (Columbia, 2014).

10.3.2.3 ANR East Pipeline Project

The ANR East Pipeline Project has been announced by TransCanada and would include construction of a new pipeline originating at the Cadiz Gas Plant in southeastern Ohio and terminating at the ANR Joliet Hub in Lake County, Indiana. The pipeline would consist of approximately 320 miles of large diameter, 1440 psig MAOP pipeline and up to 140,000 HP of compression and is anticipated to have a capacity between 1.2 and 2.0 Bcf/d, depending upon contractual commitments, project scope and final design. In addition to receipt points at Cadiz, the ANR East Pipeline Project is proposed to provide receipt points at Tuscarawas with Dominion Transmission (TL-400) and Tennessee Gas Pipeline. The project would deliver gas into ANR's ML 3 tariff zone at Defiance and into ANR's Zone ML7 at the Joliet Hub in Lake County, Indiana (TransCanada, 2014a).

According to TransCanada, pending customer interest, the ANR East Pipeline Project could be extended from the Cadiz Gas Plant to the Clarington Hub where the following additional pipelines could be accessed: Dominion Transmission (TL-377); EQT Ohio Valley Connector; Eureka Hunter Midstream; PVR Utica Ohio River Project; and Texas Eastern M2 Zone/OPEN Project. This extension would require an additional 34 miles of pipeline and compression with a design capacity between 0.6 and 1.2 Bcf/d (TransCanada, 2014a), depending on final scope and design of the project.

The ANR East Pipeline Project is proposed to interconnect with ANR in two different Tariff Zones. At Defiance, the project would interconnect to ANR's ML3 Tariff Zone. From Defiance, ANR has expansions to facilitate deliveries to ANR's at Defiance south to its Southeast Head Station at Eunice, Louisiana, and north to MichCon at Willow Run, Michigan. ANR could also provide transportation services to and from its storage facilities in northern Michigan via arrangements with its affiliate Great Lakes Gas Transmission (TransCanada, 2014a).

The ANR East Pipeline Project would provide additional export transportation capacity for shippers to move gas supplies from southeast Ohio (Cadiz Gas Plant) or northwest Ohio (near Defiance), to markets in the U.S. Midwest and Gulf Coast. The announced targeted in-service date is the 3rd Quarter of 2017 (TransCanada, 2014b).

10.4 Facility Design and Siting of the NEXUS Facilities

NEXUS is proposing a combination of compression and new pipeline facilities to meet the needs of the Project Shippers in a way that maximizes the overall efficient use of its system. The location of the proposed NEXUS facilities was determined by the contractual requirements of the service to be rendered by the Project and by the requirements of NEXUS' existing customers.

NEXUS began the facilities siting process with an understanding of prospective customer needs and known receipt and delivery locations. The process of siting pipeline facilities between these receipt and delivery points was initiated with a critical issues analysis that employed a Project-specific geographic information system ("GIS") for the evaluation of siting constraints. This project-specific GIS included U.S. Geological Survey ("USGS") topographic mapping; recently flown aerial photography, U.S. Fish and Wildlife Service ("USFWS") National Wetland Inventory ("NWI") mapping; Natural Resources Conservation Service ("NRCS") medium intensity soil surveys; National Hydrography Data ("NHD"); and public lands datasets obtained from the Ohio and Michigan state agencies.

Potential siting constraints were evaluated by a multidisciplinary team of professionals including representatives from engineering, environmental, land acquisition, regulatory, and construction disciplines. Each segment of the proposed pipeline route was evaluated carefully using GIS data, supplemented with field reconnaissance where necessary, to identify the least-constrained route that meets the Project's purpose and need. Once this initial route was identified, NEXUS deployed its multidisciplinary team to the field where access is available to further refine the route and to initiate communications with landowners; local, state, and federal public officials; and regulatory agencies. As described in Resource Report 1, NEXUS held nine informational meetings along the proposed route to obtain public feedback on its initial siting of Project facilities. This public feedback and additional feedback received since the information meetings continue to be evaluated. Extensive regulatory agency outreach has also been initiated and will continue throughout the facilities siting process.

Determination of facilities and their proposed locations, detailed below, were further refined by considerations which include, but were not limited to, potential for impacts to the natural and human environment, proximity to major gas consumers, minimization of disturbance to local residents and businesses, access, suction pressure, discharge pressure, available horsepower, contract pressures and flows, site availability and site suitability for the proposed use.

In accordance with the FERC's Pre-Filing Process, NEXUS is committed to continuing review of the pipeline route and above ground facility locations with stakeholders and working to accommodate their concerns. As NEXUS continues these ongoing efforts to refine the route alignment and site the new compressor stations, updates will be submitted to Commission Staff in future resource report filings.

10.5 Major Route Alternatives

Based on FERC guidance, a major route alternative is an alignment that has the potential to meet the Project objective but would deviate significantly from the proposed route. In evaluating the routing alternatives for the Project, NEXUS strived to co-locate the pipeline right-of-way ("ROW") within or adjacent to existing ROWs, including public and private roadways, railroads, and existing electric transmission line and pipeline corridors, to the maximum extent practicable. The use of co-location as a principal design element by NEXUS was necessitated, not only by Commission guidelines, which stress the corridor co-location concept, but also to avoid and minimize impacts to adjacent landowners to the extent practicable. Siting pipeline facilities along existing corridors and ROWs reduces the need to establish new maintained utility corridors in previously undisturbed areas and reduces the number of affected landowners.

This section examines several route alternatives that were identified during the initial planning and siting stage of the Project. Because the majority of these route changes were necessitated to avoid and minimize

environmental and engineering constraints, the preferred alternatives are now part of the proposed route and the original route is described as the "alternative route" in the following sections.

The main determinants used to select the proposed route over the alternative routes focused on minimizing adverse environmental impacts, minimizing the number of affected landowners, ensuring constructability, and meeting NEXUS' desire to limit the extent of disruption on the communities potentially being affected during construction. Existing GIS data sources were evaluated by a multi-disciplinary team including engineering, environmental, lands and construction personnel. To ensure consistency across the evaluations, field data collected for the proposed route was not included in these evaluations since equivalent field data was not collected for the alternative routes. Data sources include high resolution aerial photography, USGS topographic maps; Google Earth™; GIS databases from county, state and federal sources; National Hydrography Dataset ("NHD"); USFWS, NWI maps; and state natural resource and public land use data layers.

The following Major Route Alternatives were evaluated for the NEXUS Project during the early stages of siting the pipeline facilities to avoid and minimize environmental and stakeholder impacts.

10.5.1 Ohio Southern Route Alternative

During the early stages of Project development NEXUS evaluated an Ohio Southern Route Alternative that would depart from the current Route in Wayne County and parallel the preferred route approximately 12-20 miles to the south, for approximately 100 miles to the west, and then traverse north to where it would join the preferred route in Wood County, Ohio. This route alternative is not considered a viable alternative as it does not provide a readily available connection between Appalachian shale gas supplies and the Ohio market area located primarily along the shores of Lake Erie. However, due to recent feedback received from Project stakeholders during NEXUS' informational meetings, and based on communications with public officials, NEXUS will incorporate further analysis of the Ohio Southern Route Alternative in the next filing of Resource Report 10.

10.5.2 Lake Erie Crossing Alternative

During the initial stages of Project development, NEXUS considered two conceptual Major Route Alternatives that involved crossing Lake Erie. The western corridor extends from the Huron to Lorain shoreline area in Ohio across the lake to east of Pt. Pelee Park, in Ontario. The eastern corridor extends from the Willoughby to Ashtabula shoreline area in Ohio across the lake to east of Rondeau Park, in Ontario. The distance across the lake is between 45 and 60 miles in length depending on the selected route. The evaluation focused on the feasibility of crossing Lake Erie, and land routes to the crossing locations or the location of supporting aboveground facilities were not developed. These lake crossing alternatives were discarded early in the development process because of the technical challenges and obstacles associated with crossing Lake Erie. This conceptual alternative also does not meet critical drivers of the NEXUS Project's Purpose and Need as it does not provide a connection between Appalachian shale gas supplies and markets in Michigan or Chicago, Illinois.

10.5.3 Major Route Alternatives Incorporated into the NEXUS Project

The following Major Route Alternatives were evaluated for the NEXUS Project during the early stages of siting the pipeline facilities to avoid and minimize environmental and stakeholder impacts. The following Major Route Alternatives were incorporated into the current pipeline Route and are organized by milepost ("MP"), generally from east to west. Table 10.5-1 (Tables Section) provides a comparison of the following Major Route Alternatives incorporated into the NEXUS Project route.

10.5.3.1 MP 36.2 to MP 45.6 – Nimisila Reservoir Alternative

Alternative Description

The Nimisila Reservoir Alternative route begins at approximate milepost 36.2 in Summit County, Ohio and heads west/northwest for approximately 7.0 miles (see Figures 10.5.-1A – 10.5-1C, Figures Section). This alternative route would cross Portage Lakes State Park, managed by the Ohio Department of Natural Resources ("ODNR"), for approximately 5,500 feet and would involve an approximately 3,870 foot open water crossing of the Nimisila Reservoir, which is contained within the state park.

Portage Lakes State Park is a 411-acre park located in Akron, Ohio and contains some of the highest points of elevation in Ohio and lies on a major watershed divide where water drains into both Lake Erie and the Ohio River. The Portage Lakes formation was a direct result of glacial activity. Some of the lakes were created to maintain the surrounding canal system in the early 1900s. In 1949, the Portage Lakes were acquired by the ODNR Parks and Recreation Division. The park is a valued recreational resource and offers trail hiking, camping, swimming, boating, fishing, hunting, winter recreation, and picnicking amenities.

Because of the extent of impacts associated with these public land and major waterbody crossings, NEXUS' team used GIS and field reconnaissance to identify a preferred route which would still parallel existing utility corridors to the maximum extent practicable, while also minimizing the length of the Portage Lakes State Park crossings and the width of the Nimisila Reservoir crossing. Based on past project experience, ODNR land crossings have been avoided or minimized by NEXUS to the maximum extent practicable. NEXUS met with ODNR staff on October 14, 2014 to introduce the Project and discussed this area of the Project specifically. Consultation with the ODNR is ongoing to develop a route which is mutually acceptable to both the ODNR and the Project.

Environmental and Engineering Comparison

As shown in Table 10.5-1, there are several environmental disadvantages to the alternative route for the Nimisila Reservoir crossing. The proposed route crosses the southern end of the reservoir and approximately 40 feet of open water, crosses Portage Lakes State Park for approximately 1,150 feet and crosses 3,896 fewer feet of waterbodies than the alternative route. While the Nimisila Reservoir alternative route crosses three fewer wetlands, five fewer waterbodies and 3.2 fewer acres of wetland than the proposed route, the primary environmental disadvantages of the alternative route are that it would cross approximately 3,830 additional feet of the Nimisila Reservoir (i.e., open water) and would cross approximately 4,350 additional feet of Portage Lakes State Park than the proposed route.

The primary engineering advantage of the proposed route to the south of the Nimisila Reservoir is that it avoids a large open water crossing, only a narrow extremity of the reservoir. The crossing methodology for this area has not yet been determined. NEXUS is performing geotechnical evaluations of the proposed reservoir crossing location and will work with the ODNR to identify the preferred location for crossing the park and the reservoir in this location. From an engineering perspective, the primary disadvantage of the Nimisila Reservoir alternative route is the approximately one-mile, open water crossing of the reservoir, which would likely require a more complex crossing method and associated additional construction workspace (i.e., HDD or push/pull). Another advantage of the proposed route is that it has fewer residential structures (25) within 50 feet of the construction workspace than the alternative route (33). Much of the alternative route (4.6 of 7.0 miles) was co-located along existing powerline ROWs; however, to minimize the public lands crossing and length of the reservoir crossing, routing to the south was favored, reducing co-location of the proposed route within existing pipeline ROWs to 3.4 miles of 9.4 total miles. The proposed route crosses a total of 13 roads, which is one more than the alternative route. Neither route crosses any railroads. Figures 10.5-1A through 10.5-1C depict the current and alternative routes starting at MP 36.2 for the Nimisila Reservoir crossing.

10.5.3.2 MP 60.5 to MP 64.2 – Hubbard Valley Park, Western Reserve Land Conservancy Alternative

Alternative Description

The Hubbard Valley Park, Western Reserve Land Conservancy alternative route begins at approximate milepost 60.5 in Medina County, Ohio and heads west/northwest for approximately 3.5 miles. This alternative route would cross Hubbard Valley Park for approximately 3,000 feet and would cross approximately 630 feet of a parcel of land held under conservation easement by the Western Reserve Land Conservancy as shown in Table 10.5-1. Figure 10.5-2 depicts the current and alternative routes starting at MP 64.2 for the Hubbard Valley Park, Western Reserve Land Conservancy crossings.

Hubbard Valley Park was established as a flood-control project on Chippewa Creek in Guilford Township. Chippewa Subdistrict constructed the dam at Hubbard Lake and while doing so acquired additional land to permit the development of a permanent reservoir. The reservoir is approximately 18 acres and non-motorized boating is allowed. In the park, visitors have access to hiking trails, wildlife viewing areas, fishing, picnic amenities, playground, and winter recreation capabilities. This park is managed by the County of Medina. The Cox parcel is 62 acres of private land encumbered by a conservation easement and is managed by the Western Reserve Land Conservancy, which is a non-governmental organization ("NGO").

Because of the impacts associated with these public and conservation land crossings, NEXUS' team used GIS to identify a preferred route which would eliminate the Hubbard Valley Park and Cox parcel conservation easement crossings.

Environmental and Engineering Comparison

The primary disadvantage of the alternative route is that it crosses Hubbard Valley Park and the Cox parcel for a total of approximately 3,630 feet of public lands or lands held under a conservation easement. No public lands or lands encumbered by conservation easements are crossed by the proposed route. Furthermore, the proposed route avoids crossing forested wetland, crosses three fewer waterbodies and 20 fewer feet of waterbodies than the alternative route. Both routes cross one wetland, while the proposed route crosses 0.3 additional acres of wetland more than the alternative route.

The proposed route has slightly more engineering complexity than the alternative route. The proposed route is 0.2 miles longer than the alternative and crosses two more roads. Neither of the routes are co-located with existing utility corridor ROWs or crosses any railroads. No residential structures are located within 50 feet of the construction corridor of the proposed route, while the alternative route crosses within 50 feet of one residential structure.

10.5.3.3 MP 105.3 to MP 108.4 – Edison Woods Preserve and Apple Orchard Alternative

Alternative Description

The Edison Woods Preserve and apple orchard alternative route begins at approximate milepost 105.3 in Erie County, Ohio and heads west for approximately 2.7 miles. Figure 10.5-3 shows both the current and alternative routes starting at MP 105.3. This alternative route would cross approximately 3,155 feet of Edison Woods Preserve and approximately 2,750 feet of an existing apple orchard.

The Edison Woods Preserve is located in Berlin Heights and includes about 1,300 acres of wetlands, woodlands, sandstone cliffs, and meadows. The trails are boardwalks meant to be accessible by the elderly and handicapped. Within the Edison Woods Preserve, there is a wetland mitigation site which will restore approximately 140 acres of wetland forest. Upon completion, the preserve will offer hiking, horseback riding, wildlife observation points, interactive wildlife figures along paths, and a buffer for the wetland mitigation site within the preserve. The Preserve is managed by Erie MetroParks.

This alternative route has additional impacts associated with the public land crossing, impacts to landowners from crossing the apple orchard, and costs to the Project for reimbursing the landowners for the loss of apple trees. NEXUS' team used GIS and site reconnaissance to identify a preferred route which would minimize the length of public lands and apple orchard crossed.

Environmental and Engineering Comparison

As shown in Table 10.5-1, the main advantages of the proposed route are; it minimizes the length of apple orchard crossed to approximately 125 feet; and, it passes through the southwestern corner of the preserve and minimizes the length of Edison Woods Preserve crossed to 130 feet. While the proposed route is 0.4 miles longer and crosses approximately 0.4 acres more wetland than the alternative route, the proposed route crosses one fewer waterbody than the alternative route. The proposed and alternative routes cross the same number of wetlands and have similar waterbody crossing lengths (proposed route: 13 feet and alternative route: 16 feet).

The proposed and alternative routes are similar from an engineering perspective. The entire 2.7 miles of the alternative route was co-located along existing powerline corridor ROWs; however, to minimize the public lands and apple orchard crossings, routing to the south was favored, reducing co-location of the proposed route with existing pipeline ROWs to 0.2 miles of 3.1 total miles. Both routes cross four roads and neither route crosses any railroads. No residential structures are located within 50 feet of the construction corridor of the proposed route, while the alternative route crosses within 50 feet of five residential structures.

10.5.3.4 MP 136.5 to MP 144.0 – Black Swamp Land Conservancy, Sandusky River Alternative

Alternative Description

The Black Swamp Land Conservancy, Sandusky River Alternative route begins at approximate milepost 136.5 in Sandusky County, Ohio and heads west/northwest for approximately 7.2 miles (see Figures 10.5-4A through C). This alternative route would cross approximately 3,030 feet of the Miller Peninsula Farm which is located on the western side of the Sandusky River and is held under conservation easement by the Black Swamp Land Conservancy. The Miller Peninsula Farm has historical significance in the region because in 1781, the Wyandot Native American tribe gave this land to James and Elizabeth Whittaker, the first white settlers north of the Ohio River between Pittsburgh and Detroit. In 2001, Don Miller and Black Swamp Conservancy signed a perpetual land conservation agreement which restricts future use of the land for conservation purposes. Consultation with the Black Swamp Land Conservancy's director indicated that their easements prohibit pipeline crossings. Because of the potential impacts associated with conservation easement crossing, NEXUS' team identified a route which would still parallel existing infrastructure corridors to the maximum extent practicable, while also avoiding crossing any public conservation or conservation easement encumbered lands.

Environmental and Engineering Comparison

The main environmental advantage of the proposed route is that is avoids crossing through the Miller Peninsula Farm; the proposed route in this area crosses no public or conservation lands as shown in Table 10.5-1. Furthermore, the proposed route crosses 0.26 fewer acres of wetland, crosses one fewer waterbody, and crosses 99 fewer feet of waterbodies than the alternative route. Both of the routes cross one forested wetland and the Sandusky River. The main environmental disadvantage of the alternative route is that it would cross through the Miller Peninsula Farm.

The proposed and alternative routes are similar from an engineering perspective. Much (5.4 of 7.2 miles) of the alternative route was co-located along existing pipeline corridor; however, to avoid crossing the Black Swamp Land Conservancy easement, routing to the north was favored, reducing co-location of the proposed route with Interstates 80 and 90 to 3.8 miles of 7.5 total miles. No residential structures are

located within 50 feet of the construction corridor of the proposed route, while the alternative route crosses within 50 feet of nine residential structures. Both routes cross 11 roads and one railroad.

10.5.3.5 MP 182.9 to 186.1 – Maumee State Forest Alternative

Alternative Description

The Maumee State Forest Alternative route begins at approximate milepost 182.9 in Lucas County, Ohio, heads northwest and extends into Fulton County, Ohio; the total alternative route length is approximately 2.6 miles (see Figure 10.5-5). This alternative route would cross approximately 9,155 feet of the Maumee State Forest.

The Maumee State Forest is a combination of several tracts of forest, totaling over 3,000 acres. There is a designated "self-guided" two-mile hiking trail, 66 miles of unmarked firelanes, eight miles of bridle trails, seven miles of ATV trails, a windbreak arboretum, a tree improvement area, and a wet-sedge meadow. The state forest is open to fishing, hunting, camping, hiking, biking, picnicking, winter recreation, wildlife observations, horseback riding, and ATV use. The state forest is located in three Ohio counties: Fulton, Henry, and Lucas. The state forest is managed by the ODNR. Significant wetland areas containing rare plant species or communities are located within the portions of the forest.

The NEXUS team identified a route which would minimize the crossing length of the state forest. Based on past project experience, ODNR land crossings will be avoided or minimized by NEXUS to the maximum extent practicable. NEXUS met with ODNR staff on October 14, 2014 to introduce the project. On December 12, 2014, NEXUS representatives met in the field with ODNR to review the proposed routing options through the Maumee State Forest area. Consultation with the ODNR is ongoing. NEXUS is committed to working with ODNR to develop pipeline routing that is mutually acceptable to both the ODNR and the Project.

Environmental and Engineering Comparison

The main environmental advantage of the proposed route is that it reduces the crossing length of the Maumee State Forest to approximately 5,170 feet, as shown in Table 10.5-1. Furthermore, the proposed route crosses six fewer wetlands, 2.4 fewer acres of wetland, one fewer waterbody, and 32 less feet of waterbodies than the alternative route. The primary disadvantage of the alternative route is that it crosses 9,155 feet of Maumee State Forest, which is 3,985 additional feet over the proposed route. In addition, five of the six additional wetlands crossed by the alternative route are forested.

The proposed route is more complex from an engineering perspective than the alternative route. The proposed route is 0.6 miles longer than and crosses two additional roads than the alternative route. Neither route is co-located with existing infrastructure corridor nor crosses any railroads. The proposed route construction corridor is within 50 feet of 12 residential structures, while the alternative route is within 50 feet of one residential structure.

10.5.4 MP 234.1 to 240.3 – School Complex Alternative

Alternative Description

The School Complex Alternative route begins at approximate milepost 234.1 in Washtenaw County, Michigan and heads northeast/east for approximately 6.1 miles (see Figures 10.5-6A and B) to where it reconnects with the proposed route. The alternative route is in closer proximity to an elementary school, two neighborhoods, a church, and a cemetery and would involve approximately 3.6 miles of street lay in Bemis Road. The proposed route avoids these features and does not include street lay; however, the proposed route would still be in relatively close proximity to residences and waterbodies.

Environmental and Engineering Comparison

The proposed route has slightly less environmental impact than the alternative route. As shown in Table 5.2-1, both routes cross two wetlands; the proposed route crosses one forested and one scrub shrub wetland and the alternative route would cross one scrub shrub and one emergent wetland. Both routes affect 1.5 acres of wetland. The proposed route crosses six waterbodies with a total waterbody crossing length of 41 feet while the alternative route would cross eight waterbodies with a total waterbody crossing length of 69 feet. Neither route crosses any protected public lands.

The primary advantage of the proposed route is that it would involve no street lay; however, the route would still be in close proximity to residences and waterbodies. The proposed route, which is 6.2 miles in length, has no co-location with existing utility corridors. The proposed route includes eight road crossings, while the alternative route crosses three roads. The alternative route would involve 3.6 miles of street lay in Bemis Road, in close proximity to multiple residences. The alternative route is co-located along existing pipeline corridor for approximately 2.6 miles of the total 6.1 mile route. The alternative route construction corridor would cross within 50 feet of 17 residential structures, while the proposed route crosses within 50 feet of three residential structures. Neither of the routes cross any railroad.

10.6 Implemented Minor Route Variations

The following sections provide a summary of minor route deviations and variations identified by NEXUS and incorporated into the proposed pipeline route. In general, minor route variations differ from system alternatives or major route alternatives in that they are identified to reduce impacts on specific localized features, are significantly shorter in length than major route alternatives, and do not always clearly display an environmental advantage other than reducing or avoiding impacts on specific features. These minor route variations were incorporated into the proposed route because they avoid engineering and/or environmental constraints and/or facilitate constructability

Table 10.6-1 (see Tables section) summarizes the minor route variations that were incorporated into the proposed pipeline route and the reasons for their consideration. Figures depicting the minor route variations are included as Figures 10.6-1 through 10.6-26 labeled and are organized by starting MP (see Figures section). The Figures show in red the current route and the blue line depicts the original route. NEXUS will continue to investigate and evaluate viable minor route variations throughout the Pre-filing Process.

MP 2.0: This route variation is located just north of Campbell Road in Columbiana County, Ohio and was developed to avoid a wellhead and to minimize the distance that the pipeline would run parallel to a perennial stream. The variation avoids the well and reduces the distance that the pipeline would parallel the perennial stream by approximately 240 feet. The variation also reduces the distance the pipeline will traverse a Federal Emergency Management Agency ("FEMA")-mapped floodplain by approximately 30 feet and is approximately 120 feet shorter than the original route. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 2.0 are depicted in Figure 10.6-1.

MP 5.3: This route variation was implemented to avoid crossing directly adjacent to a small manmade pond. Feasible alternatives for this route variation were limited due to existing powerline infrastructure (i.e. towers), surrounding residential development, and the presence of large, mature forested uplands and wetlands in the vicinity of the alignment. The implemented variation crosses the existing powerline and parallels the cleared utility corridor to the south, crossing Rochester Road and avoiding the pond before crossing the powerline again and rejoining the original route northwest of Rochester Road. The current route is approximately 75 feet longer than the original route alternative, however, impacts to the pond and portions of an adjacent riparian forest will be avoided. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 5.3 are depicted in Figure 10.6-2.

MP 7.2: This route variation was implemented to avoid steep slopes, three ravines and to minimize crossing distance in a large ponded wetland system. The implemented variation traverses an area where the slope is not as steep and the ravines are narrower, and deviates from the original route alternative to the south of the largest portion of a seasonally flooded forested wetland. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 7.2 are depicted in Figure 10.6-3.

MP 11.2: This route variation deviates to the south of the existing powerline corridor in order to avoid a large, flooded stream channel and associated forested floodplain wetland. This variation also utilizes a cleared agricultural field to avoid the stream channel, thus minimizing forested wetland conversion. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 11.2 are depicted in Figure 10.6-4.

MP 13.5: This route variation was implemented to create a right-angle crossing of Highway 183. The current route helps avoid existing pipeline infrastructure and reduces impacts associated with the highway crossing. The current route avoids needing to install a road-bore operation within or immediately adjacent to the confluence of two ditched streams east of the highway. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 13.5 are depicted in Figure 10.6-5.

MP 18.7: This route variation was implemented to avoid a crude oil storage tank and a survey corner point installed by the Ohio State Survey. The implemented variation takes advantage of existing cleared areas (field) in order to minimize tree clearing. The implemented variation will avoid conversion of approximately 425 linear feet of forested upland and wetland versus the original alternative. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 13.5 are depicted in Figure 10.6-6.

MP 24.4: This route variation was implemented to avoid a pond. The variation route also reduces wetland and upland forest crossing requirements by approximately 1,200 linear feet, avoids one stream crossing, minimizes the crossing distance through FEMA-mapped floodplain, avoids several proximal homesteads, and avoids at least five pump jacks and two sets of storage tanks in the vicinity of the alignment. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 24.4 are depicted in Figure 10.6-7.

MP 30.3: This route variation was implemented to avoid a pond. The current route in this location deviates from an existing powerline corridor, but by doing so it reduces forested wetland clearing and emergent and shrub/scrub wetland impacts, and moves the alignment further from several homes north of the corridor. The minor route variation at MP 30.3 is depicted in Figure 10.6-8.

MP 79.6: This route variation was developed to avoid a pond and associated wetland. The implemented deviation also moves the alignment further from several homes west of the corridor. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 79.6 are depicted in Figure 10.6-9.

MP 80.0: This route variation was implemented to avoid crossing through an established pet cemetery at the request of landowners. The implemented variation deviates from the existing powerline corridor and runs parallel and to the south of the powerline in order to both avoid the pet cemetery and increase the distance between the pipeline and several homes. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 80.0 are depicted in Figure 10.6-10.

MP 81.5: This route variation was implemented to move the proposed pipeline further away from several homes and to minimize the crossing distance through Lorain County Metro Park District's "Chamberlain Road Property". The implemented variation deviates from the existing powerline corridor for approximately two miles, traversing primarily through cleared agricultural lands, crossing Chamberlain Road and running northwest to create a single, right-angle crossing under the Black River (approximate

MP 83) before re-connecting with the powerline west of the river. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 81.5 are depicted in Figure 10.6-11.

MP 82.6: This route variation is an extension of the variation implemented at MP 81.5. The implemented variation at MP 82.6 was devised per landowner request to avoid clearing within a maple farm. The implemented variation minimizes upland forest conversion by utilizing existing cleared agricultural fields and does not increase wetland or stream crossings. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 82.6 are depicted in Figure 10.6-12.

MP 90.5: This route variation was implemented to shift the pipeline to the south of the original alignment to avoid five existing pipelines that converge in this area. An initially proposed deviation in this area was slightly revised following review team analyses, and four points-of-inflection (PIs) were added to the current alignment avoid a large forested wetland area within an ODNR conservation parcel ("Black Swamp Woods"). This conservation parcel also includes an ODNR-mapped conservation site (maple-ash-oak swamp), which the variation was implemented to avoid. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 90.5 are depicted in Figure 10.6-13.

MP 96.0: This route variation avoids crossing through a large section of an ODNR-mapped rare habitat (beech-sugar maple forest), minimizes the crossing length through a conservation property owned by the Boy Scouts of America, avoids at least one stream crossing, and minimizes the area of upland and wetland forested conversion required for the Project. The implemented variation collocates the route's stream, wetland and conservation land crossings with existing pipeline corridors. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 96.0 are depicted in Figure 10.6-14.

MP 108.8: This route variation was implemented to avoid two barns that would have been proximal to the original alignment. Due to landscape and residential development, there are unavoidable wetlands and stream crossings in this vicinity, however the implemented variation appears to maintain consistent wetland and stream crossing widths as the original alignment. The variation reduces the crossing length through a FEMA-mapped floodplain by approximately 290 feet. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 108.8 are depicted in Figure 10.6-15.

MP 114.0: This route variation was implemented to avoid an active private shooting range. The implemented variation has consistent natural resource crossing distances as the original alternative, albeit, with a slightly wider crossing of FEMA-mapped floodplain. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 96.0 are depicted in Figure 10.6-16.

MP 126.9: This route variation was implemented to allow a safer, more constructible right-angle crossing of Interstate-90; the implemented variation was also designed to cross I-90 at a lower elevation than the original alternative. The implemented variation has consistent natural resource crossing lengths as the original alternative. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 126.9 are depicted in Figure 10.6-17.

MP 134.3: This route variation was implemented to avoid property owned by a wastewater management facility (the property has various test wells within its boundaries). The implemented variation also avoids paralleling a large stream for approximately 830 feet, and reduces wetland crossing distance compared to the original alternative. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 134.3 are depicted in Figure 10.6-18.

MP 148.7: This approximately 0.9-mile variation avoids crossing through approximately 1,365 feet of a Black Swamp Conservancy easement property. The implemented variation crosses one additional small stream than the original alternative, but avoids paralleling another small stream for approximately 1,164

linear feet and avoids several houses in the vicinity of the alignment. The implemented variation also avoids crossing approximately 170 feet of FEMA floodplain. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 148.7 are depicted in Figure 10.6-19.

MP 150.0: This route variation was implemented to avoid crossing through approximately 1,740 feet of a Black Swamp Conservancy easement property. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 150.0 are depicted in Figure 10.6-20.

MP 175.5: This route variation was implemented to provide a right-angle approach and crossing for the proposed HDD under the Maumee River. West of the river, the route shifts from the original alternative to the south, avoiding approximately 1,100 linear feet of forested wetland by crossing through existing cleared fields. The implemented variation also avoids traversing within 100-feet of a pond and residential subdivision access road. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 175.5 are depicted in Figure 10.6-21.

MP 177.6: This route variation was implemented to provide a right-angle approach and crossings for Highway 24 and Hertzfeld Road. Based on desktop analysis, the variation has consistent natural resource crossing lengths as the original alternative. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 177.6 are depicted in Figure 10.6-22.

MP 189.9: This route variation deviates from the powerline corridor in order to shift the alignment further away from several homes and yards. This implemented variation was also devised to create a right-angle crossings of a stream and an active railroad, and to avoid an existing electrical substation. The implemented variation route also avoids 944 linear feet of forested upland crossing as compared to the original alternative. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 189.9 are depicted in Figure 10.6-23.

MP 206.4: This route variation was implemented to avoid forested floodplain wetlands adjacent to the River Raisin. The implemented variation also provides a right-angle crossing at the River Raisin and the adjacent Beamer Road. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 206.4 are depicted in Figure 10.6-24.

MP 228.8: This route variation was implemented to reduce the amount of forested wetland and floodplains crossed adjacent to the Saline River and shifts the proposed pipeline further from residences. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 228.8 are depicted in Figure 10.6-25.

MP 243.8: This route variation was implemented to avoid crossing through an existing junkyard. There do not appear to be any natural resources in the vicinity of the route in this location. The proposed pipeline route with this implemented minor route variation and the considered, alternative route at MP 243.8 are depicted in Figure 10.6-26.

10.7 Aboveground Facility Alternatives

NEXUS is conducting engineering evaluations to determine optimal siting and layout for aboveground facilities located along the Project route. The following sections describe the aboveground facilities siting process conducted to date.

10.7.1 Compressor Station Alternatives

NEXUS completed a hydraulic analysis to determine the optimum horsepower and compression to transport the new volumes of natural gas necessary to meet market demand and to accommodate the NEXUS Purpose and Need. The hydraulic analysis identified the need for up to four new compressor stations, all of which would need to be located in Ohio. The initial priority for finding suitable compressor station sites was to identify available, suitably-sized parcels of land located adjacent or close to the proposed Project mainline

pipeline. The following site design considerations also influenced the analyses for finding acceptable sites for the new compressor stations:

- Pipeline Design: Compressor station sites were initially selected to be as evenly spaced along the mainline route as practical, taking into account system hydraulics, site availability and suitability, and proximity to sensitive land use or receptors.
- Land/workspace Requirements: Undeveloped parcels totaling approximately 40 acres or larger were prioritized for evaluation to accommodate the construction and operation of new compressor station facilities.
- Engineering, Design and Construction: Several engineering, design and construction factors were evaluated for selection of suitable sites, including property configuration (to maximize distance from adjacent properties), topography (parcels featuring relatively flat topography were preferred), and access to electric utilities and water supply.
- Road Access: NEXUS sought to maximize proximity of the new compressor station sites to existing public roads, thereby minimizing the need for new access roads, as well as minimizing the need for modifications or improvements to existing roads.
- Interconnecting Pipe: To minimize potential impacts to the surrounding community, the siting analysis favored properties closest to the proposed ROW so that they would minimize the need for suction and discharge piping or an extension of the mainline. This approach also minimizes the land requirements for the Project, thereby minimizing the number of affected property owners and potential environmental impacts.
- Land Use: Rural, agricultural, and/or undeveloped settings were preferred, since the landowners in these areas typically own multiple properties or large tracts of land.
- Environmental Effects: An initial evaluation of environmental resources was completed for each site based on a review of the project-specific GIS data generated from publically-available state and federal GIS datasets, including recently flown aerial photography, Lidar topographic contours, conservation land datasets, USGS/NHD/NWI mapping, and NRCS soils mapping. In addition, publicly available literature on environmental resources in the vicinity of each site was reviewed and incorporated. Several factors were evaluated and compared for each potential site including:
    - Existing Land Use: a comparison of the land use on each of the sites was completed, which included the following land use categories: forested, agricultural, open land, open water, residential, and commercial/industrial;
    - Water Resources: the locations of major, intermediate, and minor waterbodies; presence of designated fisheries or natural and scenic rivers; and presence and type of wetlands on site were compared;
    - Public and Private Properties: the proximity to residential or public lands and other Noise Sensitive Areas ("NSA"); e.g., schools, churches, nursing homes, etc., was evaluated;
    - Protected Habitat: the potential for each site to provide critical habitat or habitat for federal and/or state-listed threatened or endangered species, based on lists of protected species and species of concern provided by state and federal agencies was identified; and
    - Cultural or Historic Resources: each potential compressor station site was reviewed by the designated Cultural Resources Principal Investigator for the NEXUS Project to determine the likelihood of occurrence of historic or prehistoric cultural resources.

Following the desktop-level review, NEXUS performed a more in-depth analysis of the preferred alternative sites, including coordination with landowners to obtain field survey access. Following coordination with landowners, NEXUS performed environmental resource field surveys including wetland and waterbody field delineations, land use cover-type mapping, and preliminary engineering evaluations including construction access, proximity to existing utilities, and topographic assessments. These sites were also reviewed for potential cultural resources. Table 10.7.1-1 provides a comparison of the NEXUS compressor station alternatives, which are further described below.

10.7.1.1 Compressor Station 1 (Columbiana County)

Following the protocol described above, five site alternatives were evaluated for Compressor Station 1 ("CS1"). Following initial review, two of the sites were removed from consideration due to limiting property size or configuration and three alternatives were analyzed further to determine a preferred site. The currently preferred compressor station site (Alternative 1) and the two alternatives are discussed below and depicted in Figure 10.7-1. A comparative analysis of the three alternatives for compressor station 1 is presented in Table 10.7.1-1.

CS1 Alternative Site 1 (MP 1.25) – Currently Preferred Alternative

CS1 Alternative Site 1 is an approximately 116-acre parcel of land that intersects with the NEXUS mainline pipeline route at approximate MP 1.25. The property is located northeast of the intersection of State Highway 644 and Mechanicstown Road, in the Town of Hanover, Ohio. Existing land use within the proposed site is primarily agriculture (hayfields) with a small area of upland, hardwood forest on the northeastern boundary and small inclusions of forested and non-forested wetland. Preliminary engineering design suggests that the compressor station could be sited to avoid the forest and wetlands; however siting may require significant grading to construct compressor station facilities. CS1 Alternative Site 1 has public road access, access to existing electric utilities, is located in close proximity to the proposed pipeline, and has a landowner who has shown initial willingness to discuss placement of a compressor station on this property.

CS1 Alternative Site 2 (MP 3.14)

CS1 Alternative Site 2 consists of an approximately 38-acre parcel located northeast of the NEXUS mainline alignment at approximate MP 3.14 in the Town of Hanover, Ohio. At its closest boundary, CS1 Alternative Site 2 is located approximately 200 feet north of the mainline alignment, on the opposite side of Buffalo Road. A new road crossing and a currently indeterminate length of mainline extension or suction discharge lines would be required for this site. Current land use on CS1 Alternative Site 2 is primarily agricultural (corn and pasture/hay) with a small section of upland, hardwood forest on the northwestern corner of the site. No wetlands or streams were identified during field review on this property. This alternative is smaller than the other potential CS1 sites, and the majority of the site is unscreened and visible from Buffalo Road. Preliminary engineering review indicates that due to topographic relief on this site, approximately 20 feet of cut-and-fill would be required to prepare the site for station construction. Additionally, no sources of municipal water were noted in the area, thus a new water well may be required for this alternative.

CS1 Alternative Site 3 (MP 3.25)

CS1 Alternative Site 3 consists of portions of four parcels, totaling approximately 55 acres located southwest of the NEXUS mainline alignment at approximate MP 3.25. CS1 Alternative Site 3 is located in the Town of Hanover, Columbiana County, Ohio. No wetlands or streams were identified during field review on this property. CS1 Alternative Site 3 will require a road crossing of Buffalo Road and approximately 140 feet of mainline extension or suction discharge lines to achieve connection with the alignment at its closest point. Due to the rolling nature of the topography of this alternative site, costly site grading would be necessary to construct proposed compressor station facilities. Land use on Alternative

Site 3 is primarily agricultural (corn and pasture/hay) with three small areas of mature, hardwood forest (including two forested valleys in the field and a small strip of trees between the field and Buffalo Road). Access and development of the pipeline connection for this site would require removal of a section of the forested land between Buffalo Road and the open fields. Clearing mature forest in this area may require additional review by NEXUS biologists as this area of Ohio is mapped by the USFWS as potential habitat for the northern long-eared bat ("NLEB") (*Myotis septentrionalis*), a species proposed for listing under the federal Endangered Species Act. NLEB may roost in mature trees within their home range, however, it is unlikely that the limited clearing associated with development of CS1 Alternative Site 3 would result in significant or adverse modifications to potential NLEB forested habitat. CS1 Alternative Site 3 has public road access, access to existing electric utilities, is in close proximity to the proposed pipeline, and has a landowner who has shown initial willingness to discuss placement of a compressor station on this property.

10.7.1.2 Compressor Station 2 (Medina County)

In accordance with the process for analyses discussed in Section 10.7.1, eight sites were initially analyzed for Compressor Station 2 ("CS2"). Access permission for field surveys was denied for four of the alternative sites and these were removed from further consideration. A fifth site was dismissed because it was located very close to Buckeye Woods Park and on a busy public road. It was determined that the potential for noise and visual impact concerns was prohibitive at this location. The three remaining alternatives were analyzed further, and a preferred site was chosen. The currently preferred CS2 location and the two alternatives are discussed below and are depicted on Figure 10.7.1-2. A comparative analysis of the three alternatives considered for Compressor Station 2 is presented in Table 10.7.1-1.

CS2 Alternative Site 1 (MP 60.1) – Currently Preferred Alternative

CS2 Alternative Site 1 is an approximately 75-acre parcel that intersects with the NEXUS mainline alignment at approximate MP 60.1. CS2 Alternative Site 1 is located east of Guilford Road and north of Route 76, in the Town of Montville, Ohio. Existing land use within the site is primarily agriculture (hayfields) with a small area of mature, hardwood forest and two small wetlands on the eastern property boundary. Preliminary design suggests that the compressor station could be sited to avoid the forest and wetlands on the property. The proposed location has good public road access, access to electric utilities, is proximal to the pipeline alignment, and it has a landowner who has shown initial willingness to discuss placement of a compressor station on this property. There is currently a home and barns on the western boundary of the property adjacent to Guildford Road, however there are few homes in the area adjacent to Guilford Road.

CS2 Alternative Site 2 (MP 61.8)

CS2 Alternative Site 2 consists of an approximately 59-acre parcel that intersects with the NEXUS mainline alignment at approximate MP 61.8. The site is east of Guilford Road in the Town of Guilford, Ohio. There is no existing access to CS2 Alternative Site 2 and there are three houses located between the site and the nearest road. Land use on the CS2 Alternative Site 2 is primarily agricultural (row crops and pasture/hay) with a large component (approximately 22 percent of the entire property) of mature, hardwood forest on the northwest and northeast corners of the property. Preliminary engineering design and layout of facilities on this site are in the early stages of development. It is currently unknown if forest clearing would be necessary to build the compressor station at this site.

CS2 Alternative Site 3 (MP 62.9)

CS2 Alternative Site 3 consists of an approximately 36-acre parcel that intersects with the NEXUS mainline alignment at approximate MP 62.9. The site is north of Good Road and just west of Interstate 71 in the Town of Montville, Ohio. There is existing access to CS2 Alternative Site 3 via Good Road. Land use on the Alternative Site 3 is primarily agricultural (pasture/hay) with a small component of upland, hardwood forest on the northeast corner of the site. A large stream runs along the western border of the site, adjacent

to the existing gravel access road. Additionally, the site has undulating topography, and construction of a compressor station at this location would require earth work and grading. There does not appear to be a municipal water supply in this area, and there is limited accessibility to electricity at this alternative site.

10.7.1.3 Compressor Station 3 (Erie and Sandusky Counties)

Four alternative sites were analyzed for Compressor Station 3 ("CS3"). One of the sites did not provide adequate setback from property lines to facilitate construction of the compressor station. Three remaining alternatives were analyzed further, and a preferred site was chosen. The currently preferred CS3 location and the two alternatives are discussed below and are depicted on Figure 10.7.1-3 and a comparative analysis of the three alternatives is presented in Table 10.7.1-1.

CS3 Alternative Site 1 (MP 124.2)

CS3 Alternative Site 1 is an approximately 54-acre parcel that intersects with the NEXUS mainline alignment at approximate MP 124.2. The site is west of Billings Road and north of I-80/90 in the Town of Groton, Erie County, Ohio. Existing land use on the property is primarily agriculture (corn) with a small area of residential property (a farmhouse, barn and yard) on the western boundary of the site along Billings Road. There are currently two existing pipelines that traverse this site to the south, parallel with I-80/90, and there is existing access to electric utilities. Mill Creek, a small perennial channel, abuts this site along the western property boundary. Preliminary engineering design indicates that the proposed compressor station could avoid the stream. However, the FEMA-mapped floodplain of Mill Creek extends across most of CS3 Alternative Site 1. CS3 Alternative 1 has good public road access, is proximal to the pipeline alignment, has been developed for pipeline corridors in the past, and it has a landowner who has shown initial willingness to discuss placement of a compressor station on this property.

CS3 Alternative Site 2 (MP 127.0)

CS3 Alternative Site 2 consists of an approximately 68-acre parcel that intersects with the NEXUS mainline alignment at approximate MP 127.0. The site is west of Northwest Road and north of I-80/90 in the Town of Townsend, Sandusky County, Ohio. CS3 Alternative Site 2 intersects the pipeline alignment and access would be via Northwest Road. Current land use of the property is agriculture (corn and other row crops). The landowner of this parcel has rejected permission to access the property and is currently unwilling to negotiate a potential option with NEXUS.

CS3 Alternative Site 3 (MP 129.3) – Currently Preferred Alternative

CS3 Alternative Site 3 consists of an approximately 60-acre assemblage of three parcels that intersects with the NEXUS mainline alignment at approximate MP 129.3. The site is east of County Road 302 and south of Interstate 80/90 in the Town of Townsend, Sandusky County, Ohio. Based on site visits, there are no streams or wetlands on CS3 Alternative Site 3. Current land use of the property is agriculture (soybeans). There is good access to this site, it is relatively level and the landowners of this site have granted survey permission and have shown initial willingness to discuss placement of a compressor station on this property.

10.7.1.4 Compressor Station 4 (Lucas County)

Three alternative sites were analyzed for Compressor Station 4 ("CS4"). Following initial desktop review, these alternatives were analyzed further and a preferred site was chosen. The currently preferred CS4 site and the two alternatives are discussed below and are depicted on Figure 10.7.1-4 and a comparative analysis of the three alternatives is presented in Table 10.7.1-1.

CS4 Alternative Site 1 (MP 177.7 – south side of alignment)

CS4 Alternative Site 1 is an approximately 40-acre parcel intersects with the NEXUS mainline alignment at approximate MP 177.7. The parcel is located at the southern end of an undeveloped, cul-de-sac named Moosman Drive. The site is just west of US-24 in the Town of Waterville, Ohio. Existing land use within

the proposed site is agriculture (corn). A ditched stream (named "Whitmeir Ditch") runs through a portion of the site, but preliminary design suggests that the compressor station can be sited to avoid this feature; however a pipeline extension would need to be constructed across the stream to reach CS4 (there is an existing box culvert crossing over the stream within the field). Preliminary analyses indicate municipal water is not available in the immediate vicinity of this site, therefore, a new water well may need to be installed if this site is selected. This site has good road access, access to electric utilities, is proximal to the pipeline alignment, and it has a landowner who has shown initial willingness to discuss placement of a compressor station on this property.

CS4 Alternative Site 2 (MP 177.7 – north side of alignment) – Currently Preferred Alternative

CS4 Alternative Site 2 consists of two parcels, totaling approximately 38 acres that intersect with the NEXUS mainline alignment at approximate MP 177.7. CS4 Alternative Site 2 is located at the southern end of an undeveloped, cul-de-sac named Moosman Drive and just west of US-24 in the Town of Waterville, Ohio (just north of CS4 Alternative Site 1). Existing land use within the site is agriculture (soybeans). A ditched stream ("Whitmeir Ditch") runs along the western and southwestern boundary of the site, but preliminary engineering design suggests that the compressor station could be sited to avoid this feature. CS4 Alternative Site 2 has good road access, access to electric utilities, is bisected by the pipeline alignment, and it has a landowner who has shown initial willingness to discuss placement of a compressor station on this property.

CS4 Alternative Site 3 (MP 181.0)

CS4 Alternative Site 3 is an approximately 79-acre parcel that intersects with the NEXUS mainline alignment at approximate MP 181.0. The site is located south of Neapolis Waterville Road and just west of Berkey Southern Road (OH-295), in the Town of Providence, Ohio. Land use on the CS4 Alternative Site 3 is primarily agricultural (soybeans and corn) with a component of wetland forest on the western boundary of the site (the forest makes up approximately 20 percent of the site). There is also an intermediate, perennial waterbody that flows across the northern end of the site. Access from Neapolis Waterville Road would need to cross this stream to access the proposed mainline pipeline and the larger portions of the property. The preliminary design is inconclusive thus far as to whether the compressor station could be sited to avoid the stream or upland and wetland forest on this site. CS4 Alternative Site 3 is proximal to the pipeline alignment, and it has a landowner who has shown initial willingness to discuss placement of a compressor station on this property. However, CS4 Alternative Site 3 has no existing access to the pipeline without crossing a stream or traversing another property along the pipeline alignment from the east.

10.7.2 Metering and Regulation Stations, Mainline Valves, and Other Aboveground Facilities

Proposed metering and regulation station locations will reflect customer and system requirements and are still in the initial stages of development. Proposed mainline valve ("MLV") locations will be spaced along the pipeline in accordance with the spacing requirements of 49 CFR Part 192, *Transportation of Natural or Other Gas by Pipeline: Minimum Federal Safety Standards*. The locations of new valve sites will be selected based on their proximity to existing all-weather roads, which would be utilized for maintenance access. Smart pigging facilities will be sited for efficient testing and cleaning of the pipeline and will be co-located with other aboveground facilities to the maximum extent practicable, to minimize environmental impacts. Proposed communications towers will also be sited based on detailed engineering considerations and with a clear objective to avoid and minimize potential impacts the extent practicable. Alternatives evaluated for the siting of these additional aboveground facilities will be submitted in future filings of this report.

10.8 Future Considerations Regarding Alternatives

NEXUS has, and will continue to, engage in extensive landowner and public agency outreach in the siting of the proposed pipeline and associated aboveground facilities. NEXUS understands that as the Project

moves forward in the public permitting process and the routing is examined more closely by affected parties, some additional concerns and issues are likely to be raised and additional alignment changes and changes to the siting of aboveground facilities may be proposed. NEXUS remains open to the consideration of such alternatives and will continue to investigate and evaluate viable alternatives.

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TABLES

TABLE 10.5-1

Comparison of Major Route Alternatives with the Corresponding Segments of the Proposed Route

County, State	Alternatives by Milepost (MP) Environmental / Engineering Factors	Unit a/	Alternative Route	Proposed Route
SUMMIT, OH	**MP 36.2 - NIMISILA RESERVOIR ALTERNATIVE**			
	MP to MP b/	(MP)	0.0 - 7.0	36.2 - 45.6
	Total Length	(miles)	7.0	9.4
	Parallel/Adjacent to Existing ROW	(miles)	POWER (4.6)	PIPELINE (3.4)
	Construction within Roadways	(miles)	TBD	TBD
	Number of Railroads Crossed	(no.)	0	0
	Number of Roads Crossed c/	(no.)	12	13
	Number of Residential Structures within 50 feet of Construction ROW d/	(no.)	33	25
	Total Number of Wetlands Crossed e/	(no.)	4	7
	Forested	(no.)	0	1
	Scrub Shrub	(no.)	1	2
	Emergent	(no.)	2	2
	Scrub Shrub/Emergent	(no.)	1	2
	Wetlands Affected f/	(acre)	2.1	5.3
	Total Number of Waterbodies Crossed g/	(no.)	7	12
	Total Number of Waterbodies -Length g/	(LF)	4078	182
	Major Waterbodies (>100 feet) g/	(no.)	1	0
	Public Lands or Conservation Lands Crossed	(LF)	5500	1150
	Potential Contaminated Sites Crossed	(no.)	TBD	TBD
MEDINA, OH	**MP 60.5 - HUBBARD VALLEY PARK, WESTERN RESERVE LAND CONSERVANCY ALTERNATIVE**			
	MP to MP b/	(MP)	0.0 - 3.5	60.5 - 64.2
	Total Length	(miles)	3.5	3.7
	Parallel/Adjacent to Existing ROW	(miles)	0	0
	Construction within Roadways	(miles)	TBD	TBD
	Number of Railroads Crossed	(no.)	0	0
	Number of Roads Crossed c/	(no.)	5	7
	Number of Residential Structures within 50 feet of Construction ROW d/	(no.)	1	0
	Total Number of Wetlands Crossed e/	(no.)	1	1
	Forested	(no.)	1	0
	Scrub Shrub	(no.)	0	0
	Emergent	(no.)	0	0
	Scrub Shrub/Emergent	(no.)	0	1
	Wetlands Affected f/	(acre)	0.2	0.5
	Total Number of Waterbodies Crossed g/	(no.)	8	5
	Total Number of Waterbodies -Length g/	(LF)	56	36
	Major Waterbodies (>100 feet) g/	(no.)	0	0
	Public Lands or Conservation Lands Crossed	(LF)	3630	0
	Potential Contaminated Sites Crossed	(no.)	TBD	TBD
ERIE, OH	**MP 105.3 - EDISON WOODS PRESERVE AND APPLE ORCHARD ALTERNATIVE**			
	MP to MP b/	(MP)	0.0 - 2.7	105.3 - 108.4
	Total Length	(miles)	2.7	3.1
	Parallel/Adjacent to Existing ROW	(miles)	POWER (2.7)	POWER (0.2)
	Construction within Roadways	(miles)	TBD	TBD
	Number of Railroads Crossed	(no.)	0	0

TABLE 10.5-1

Comparison of Major Route Alternatives with the Corresponding Segments of the Proposed Route

County, State	Alternatives by Milepost (MP) Environmental / Engineering Factors	Unit a/	Alternative Route	Proposed Route
	Number of Roads Crossed c/	(no.)	4	4
	Number of Residential Structures within 50 feet of Construction ROW d/	(no.)	5	0
	Total Number of Wetlands Crossed e/	(no.)	1	1
	Forested	(no.)	0	0
	Scrub Shrub	(no.)	0	0
	Emergent	(no.)	0	0
	Scrub Shrub/Emergent	(no.)	1	1
	Wetlands Affected f/	(acre)	0.3	0.7
	Total Number of Waterbodies Crossed g/	(no.)	3	2
	Total Number of Waterbodies -Length g/	(LF)	16	13
	Major Waterbodies (>100 feet) g/	(no.)	0	0
	Public Lands or Conservation Lands Crossed	(LF)	3155	130
	Potential Contaminated Sites Crossed	(no.)	TBD	TBD
SANDUSKY,OH	**MP 136.5 - BLACK SWAMP LAND CONSERVANCY, SANDUSKY RIVER ALTERNATIVE**			
	MP to MP b/	(MP)	0.0 - 7.2	136.5 - 144.0
	Total Length	(miles)	7.2	7.5
	Parallel/Adjacent to Existing ROW	(miles)	PIPELINE (5.4)	ROAD (3.8)
	Construction within Roadways	(miles)	TBD	TBD
	Number of Railroads Crossed	(no.)	1	1
	Number of Roads Crossed c/	(no.)	11	11
	Number of Residential Structures within 50 feet of Construction ROW d/	(no.)	9	0
	Total Number of Wetlands Crossed e/	(no.)	1	1
	Forested	(no.)	1	1
	Scrub Shrub	(no.)	0	0
	Emergent	(no.)	0	0
	Scrub Shrub/Emergent	(no.)	0	0
	Wetlands Affected f/	(acre)	0.3	0.04
	Total Number of Waterbodies Crossed g/	(no.)	9	8
	Total Number of Waterbodies -Length g/	(LF)	561	462
	Major Waterbodies (>100 feet) g/	(no.)	1	1
	Public Lands or Conservation Lands Crossed	(LF)	3030	0
	Potential Contaminated Sites Crossed	(no.)	TBD	TBD
LUCAS, OH - FULTON, OH	**MP 182.9 MAUMEE STATE FOREST ALTERNATIVE**			
	MP to MP b/	(MP)	0.0 - 2.6	182.9- 186.1
	Total Length	(miles)	2.6	3.2
	Parallel/Adjacent to Existing ROW	(miles)	0	0
	Construction within Roadways	(miles)	TBD	TBD
	Number of Railroads Crossed	(no.)	0	0
	Number of Roads Crossed c/	(no.)	4	6
	Number of Residential Structures within 50 feet of Construction ROW d/	(no.)	1	12
	Total Number of Wetlands Crossed e/	(no.)	7	1
	Forested	(no.)	6	1
	Scrub Shrub	(no.)	0	0
	Emergent	(no.)	0	0
	Scrub Shrub/Emergent	(no.)	1	0

TABLE 10.5-1

Comparison of Major Route Alternatives with the Corresponding Segments of the Proposed Route

County, State	Alternatives by Milepost (MP) Environmental / Engineering Factors	Unit a/	Alternative Route	Proposed Route
	Wetlands Affected f/	(acre)	2.8	0.4
	Total Number of Waterbodies Crossed g/	(no.)	6	5
	Total Number of Waterbodies -Length g/	(LF)	77	45
	Major Waterbodies (>100 feet) g/	(no.)	0	0
	Public Lands or Conservation Lands Crossed	(LF)	9155	5170
	Potential Contaminated Sites Crossed	(no.)	TBD	TBD
WASHTENAW, MI	**MP 234.1 - SCHOOL COMPLEX ALTERNATIVE**			
	MP to MP b/	(MP)	0.0 - 6.1	234.1 - 240.3
	Total Length	(miles)	6.1	6.2
	Parallel/Adjacent to Existing ROW	(miles)	PIPELINE (2.6)	0
	Construction within Roadways	(miles)	TBD	TBD
	Number of Railroads Crossed	(no.)	0	0
	Number of Roads Crossed c/	(no.)	3	8
	Number of Residential Structures within 50 feet of Construction ROW d/	(no.)	17	3
	Total Number of Wetlands Crossed e/	(no.)	2	2
	Forested	(no.)	0	1
	Scrub Shrub	(no.)	1	1
	Emergent	(no.)	1	0
	Scrub Shrub/Emergent	(no.)	0	0
	Wetlands Affected f/	(acre)	1.5	1.5
	Total Number of Waterbodies Crossed g/	(no.)	8	6
	Total Number of Waterbodies -Length g/	(LF)	69	41
	Major Waterbodies (>100 feet) g/	(no.)	0	0
	Public Lands or Conservation Lands Crossed	(LF)	0	0
	Potential Contaminated Sites Crossed	(no.)	TBD	TBD

a/ no. = number of features crossed; LF = linear feet crossed; acre = acreage of area within estimated workspace
b/ Each alternative route may have distinct mile-posting; these MPs do not necessarily correlate to the MPs of the currently Proposed Route
c/ Number of roads crossed includes federal, state and local roads, but does not include driveways.
d/ Number of residential structures includes houses, garages and sheds based on review of aerial photography
e/ Number of wetlands crossed calculated by intersecting centerline with NWI data
f/ Estimated wetland acreages are based on a 75-foot-wide-construction ROW in wetlands based on NWI data
g/ Total number of waterbodies, length of waterbodies, and number of major waterbodies calculated by intersecting centerline with NHD waterbodies and from review of aerial photography and USGS topographic maps

TABLE 10.6-1

Minor Route Variations Implemented into the Proposed NEXUS Project Pipeline Route

MP Start	MP End	Length of Implemented Variation (miles)	County (or Counties)	Town (or Towns)	Change in Length (feet) a/	Supporting Reason(s) for Variation	Data Sources Reviewed in Route Variation Analyses b/
2.0	2.2	0.2	Columbiana	Hanover Township	-120	Avoids a well, minimizes distance paralleling stream and reduces footprint within FEMA floodplain	Field/Aerial/FEMA
5.3	5.8	0.5	Columbiana	West Township	+75	Avoids pond	Field
7.2	7.6	0.4	Columbiana	West Township	+160	Minimizes steep slope and wetland crossings	Field/NHD/NWI
11.2	11.5	0.3	Columbiana	Knox Township	+130	Avoids and minimizes crossing through forested wetlands and along stream, which minimizes forested wetland conversion	NWI/NHD
13.5	13.7	0.2	Stark	Washington Township	+201	Creates a right-angle crossing at Highway 183; avoids two ditched streams at boring location	Field/NHD/NWI/Aerial
18.7	19.0	0.3	Stark	Washington Township	+110	Avoids a crude oil storage tank, minimizes forested wetland clearing adjacent to a creek and avoids a survey section corner point installed by Ohio State Survey	Field
24.4	25.1	0.7	Stark	Marlboro Township	+335	Avoids a pond and several houses, reduces forested wetland impacts, eliminates a stream crossing and avoids a large section of FEMA-mapped floodplain	Field/FEMA
30.3	30.7	0.4	Stark	Lake Township	+60	Avoids a pond and large associated wetland area and moves the alignment further away from two residences	Field/NHD/NWI
79.6	79.9	0.3	Lorain	Grafton Township	+120	Avoids a pond and moves the route further away from nearby homes	Field/NHD/NWI
80.0	80.6	0.6	Lorain	Grafton Township	-110	Avoids a pet cemetery at request of landowners	Field
81.5	82.5	1.0	Lorain	Grafton Township	+345	Avoids several homes and yards and reduces crossing distance through a portion of public park land	Field/NWI/NHD
82.6	82.8	0.2	Lorain	Grafton Township	+130	Avoids a maple farm and minimizes mature forest conversion	Field
90.5	92.2	1.7	Lorain	New Russia Township, Oberlin City, Pittsfield Township	-101	Avoids a confluence of five existing pipelines and avoids Black Swamp Woods conservation easement and its constituent conservation site (maple-ash-oak swamp)	Field/Aerial/NEXUS lands agents
96.0	98.9	2.9	Lorain, Erie	Henrietta Township (L), Florence Township (E)	-117	Avoids crossing through a large section of an ODNR-mapped rare habitat (beech-sugar maple forest) and avoids a large area of forested wetland and upland. The variation will also reduce the crossing length through a conservation property owned by the Boy Scouts of America	Field/NWI/NHD/ ODNR
108.8	109.9	1.1	Erie	Berlin Township	+420	Avoids two barns and avoids approximately 290 feet of crossing distance through a FEMA-mapped floodplain	NWI/NHD/LIDAR/ FEMA
114.0	114.4	0.4	Erie	Milan Township	+215	Avoids an active private shooting range	Aerial/FEMA
126.9	128.8	1.9	Sandusky	Townsend Township	+116	Creates a right-angle crossing at I-90	Aerial/LIDAR

TABLE 10.6-1

Minor Route Variations Implemented into the Proposed NEXUS Project Pipeline Route

MP Start	MP End	Length of Implemented Variation (miles)	County (or Counties)	Town (or Towns)	Change in Length (feet) a/	Supporting Reason(s) for Variation	Data Sources Reviewed in Route Variation Analyses b/
134.3	134.8	0.5	Sandusky	Riley Township	+60	Avoids a waste management facility (property has various test wells within its boundaries), avoids paralleling a large stream and minimizes wetland impacts	Field/Aerial
148.7	149.6	0.9	Sandusky	Washington Township	-51	Avoids Black Swamp Conservancy easement and avoids paralleling small stream for approximately 1,164 linear feet	Aerial/NWI/NHD/ Public lands data
150.0	150.7	0.7	Sandusky	Washington Township	-204	Avoids Black Swamp Conservatory easement	Public lands data
175.5	177.1	1.6	Wood, Lucas	Middleton Township (W), Waterville Township (L)	-132	Provides a right-angle approach for the Maumee River crossing therefore reducing crossing distance; avoids forested wetland impact	NWI/NHD/Field
177.6	179.2	1.6	Lucas	Waterville Township	+83	Provides right-angle crossings for Highway 24 and Hertzfeld Road reducing crossing distance	Field/Aerial
189.9	192.0	2.1	Fulton	Swan Creek Township, Fulton Township	+465	Avoids residences, creates a right-angle crossing at roads and railroad, avoids electrical substation and avoids 944 linear feet of forested upland	Field/NHD/NWI/Aerial
206.4	207.7	1.3	Lenawee, Washtenaw	Ogden Township (L), Palmyra Township (W)	+409	Avoids large forested floodplain wetland and crosses the Raisin River at a right angle	Field/NHD/NWI
228.8	230.1	1.3	Washtenaw	York Township	+253	Minimizes forested floodplain wetland impacts	Field/NWI
243.8	243.9	0.1	Washtenaw	Ypsilanti Township	+60	Avoids an existing junkyard	Aerial

a/ Change in length represents the difference in overall length of pipeline resulting from the variation:
'+' means the implemented variation is longer than the original alternative and resulted in a net increase in pipeline length
'-' means the implemented variation is shorter than the original alternative and resulted in a net reduction in the pipeline length

b/ Pipeline alignment planning decisions were based on a number of data sources including onsite assessment of project constraints (in some areas) along with review of the NEXUS Project Geographic Information System (GIS) database. The database includes information collected from commercial, municipal, state, federal, educational, and conservation sources. Additionally, data sources particularly pertinent to the minor route variations described in Resource Report 10 include:
Aerial = 2014 Aerial Photography interpretation
FEMA = Federal Emergency Management Agencies National Flood Insurance Rate Maps
Field= NEXUS resource field surveys
LIDAR = (light detection and ranging) – remote sensing technology providing three-dimensional surface data from aerial reconnaissance
NHD = National Hydrography Dataset (NRCS)
NWI = National Wetlands Inventory (USFWS)
ODNR = Ohio Department of Natural Resources

TABLE 10.7.1-1

Comparison of Potential NEXUS Compressor Station Alternatives

Property and Resources Evaluated	Compressor Station 1			Compressor Station 2			Compressor Station 3			Compressor Station 4		
	Alt. 1 (Currently Preferred Site)	**Alt. 2**	**Alt. 3**	**Alt. 1** (Currently Preferred Site)	**Alt. 2**	**Alt. 3**	**Alt. 1**	**Alt. 2**	**Alt. 3** (Currently Preferred Site)	**Alt. 1**	**Alt. 2** (Currently Preferred Site)	**Alt. 3**
Approximate Milepost	1.25	3.14	3.25	60.1	61.8	62.9	124.2	127.0	129.3	177.7 (south)	177.7 (north)	181
Property Size (approx. acres)	116.3	37.5	54.8	75.3	59.4	36.4	53.6	67.9	59.7	40.1	37.7	78.8
Wetlands (acres) a/	0.9	0	0 (*estimated)*	0.7	1.6	0.7	0	0 (*estimated*)	0	0.1	0	7.6
Streams (linear feet) b/	1,157	0	0 (*estimated*)	0	2,148	138	0	0 (*estimated*)	0	656	332	2,517
Predominant Land Uses (approx. % of property)												
Agricultural	87%	83%	40%	80%	71%	86%	93%	100%	100%	100%	100%	81%
Forest/Wood-land	13%	17%	45%	15%	22%	14%	-	-	-	-	-	19%
Open Land	-	-	15%	-	7%	-	-	-	-	-	-	-
Residential	-	-	-	5%	-	-	7%	-	-	-	-	-
Distance from Property to Pipeline (feet)	0 (intersects)	200	75	0 (intersects)	0 (intersects)	0 (intersects)	0 (intersects)	0 (intersects)	0 (intersects)	0 (intersects)	0 (intersects)	0 (intersects)
Prime Farmland Soils (approx. % of total property)												
Prime	22%	16%	-	56%	>1%	33%	10%	12%	>1%	-	-	3%
Prime if drained	-	-	-	39%	76%	35%	87%	88%	100%	100%	100%	76%
Prime if drained and protected from flooding	1%	-	-	-	10%	1%	-	-	-	-	-	-
Prime if protected from flooding	-	-	-	-	-	-	-	-	-	-	-	-
Total % of Actual or Potential Prime Soils	23%	16%	-	75%	87%	69%	97%	100%	100%	100%	100%	79%
Critical Habitat, Federal T&E Species c/	potential habitat for NLEB; other T&E TBD upon further review	potential habitat for NLEB; other T&E TBD upon further and review	potential habitat for NLEB; other T&E TBD upon further review	None identified; TBD upon further review	potential habitat for NLEB and IBat; other T&E TBD upon further review	potential habitat for NLEB and IBat; other T&E TBD upon further review	potential habitat for NLEB and IBat; other T&E TBD upon further review	None identified; TBD upon further review	None identified; TBD upon further review	None identified; TBD upon further review	None identified; TBD upon further review	None identified; TBD upon further review
Cultural Resources Onsite	No	No	No	No	No	No	No	No	No	No	No	No

TABLE 10.7.1-1

Comparison of Potential NEXUS Compressor Station Alternatives

Property and Resources Evaluated	Compressor Station 1			Compressor Station 2			Compressor Station 3			Compressor Station 4		
	Alt. 1 (Currently Preferred Site)	**Alt. 2**	**Alt. 3**	**Alt. 1** (Currently Preferred Site)	**Alt. 2**	**Alt. 3**	**Alt. 1**	**Alt. 2**	**Alt. 3** (Currently Preferred Site)	**Alt. 1**	**Alt. 2** (Currently Preferred Site)	**Alt. 3**
Approx. Number of NSAs within ½-mile of Property	89	27	33	73	79 (campground to southwest assessed as one NSA)	54	33	31	34	16	28	41
Nearest NSA To Property Boundary (approx. feet) d/	60	350	180	0 (farmhouse on property)	112	615	0 (farmhouse on property)	40 (farmhouse on outparcel)	25 (house on outparcel)	1,085	650	158
Preliminary Visual Impact Assessment	Visible from OH 644	Visible from Buffalo and Campbell Roads Potentially visible from Ellyson Road	Visible from Buffalo and Myers Roads Potentially visible from Mardis Road	-Visible from Guilford Road and US-224/I-76 and Guilford Road - Potentially visible from Route 118 (Blake Road) and Route 97 (Greenwich Road)	- Visible from Guilford Road - Potentially visible from Route 118 (Blake Road) and Good Road	- Visible from I-71, Good Road, Hubbard Valley Road - Potentially visible from Route 3 (Wooster Pike)	- Visible from I-80/90, Billings Road, Route 13 (Mason Road), Deyo Road, and Route 32 (Portland Road)	- Visible from I-90/80, Northwest Road, County Road 235, Dining Road, OH 269, and OH 101	- Visible from I-90/80, North County Roads 278, 294 and 302, OH-101, and County Road 237	-Visible from US 24, Route 221 (Hertzfeld Road), Route 136 (Neapolis Waterville Road), Route 143, and Moosman Drive - Potentially visible from Norward Road, and Blue Creek Park	-Visible from US 24, Route 221 (Hertzfeld Road), Route 136 (Neapolis Waterville Road), Norward Road, and Moosman Drive - Potentially visible from Route 143) , and Blue Creek Park	- Visible from Route 136 (Neapolis Waterville Road), Route 295 (Berkey Southern Road), Yawberg Road, and Route 142 (Doran Road) - potentially visible from Blue Creek Park

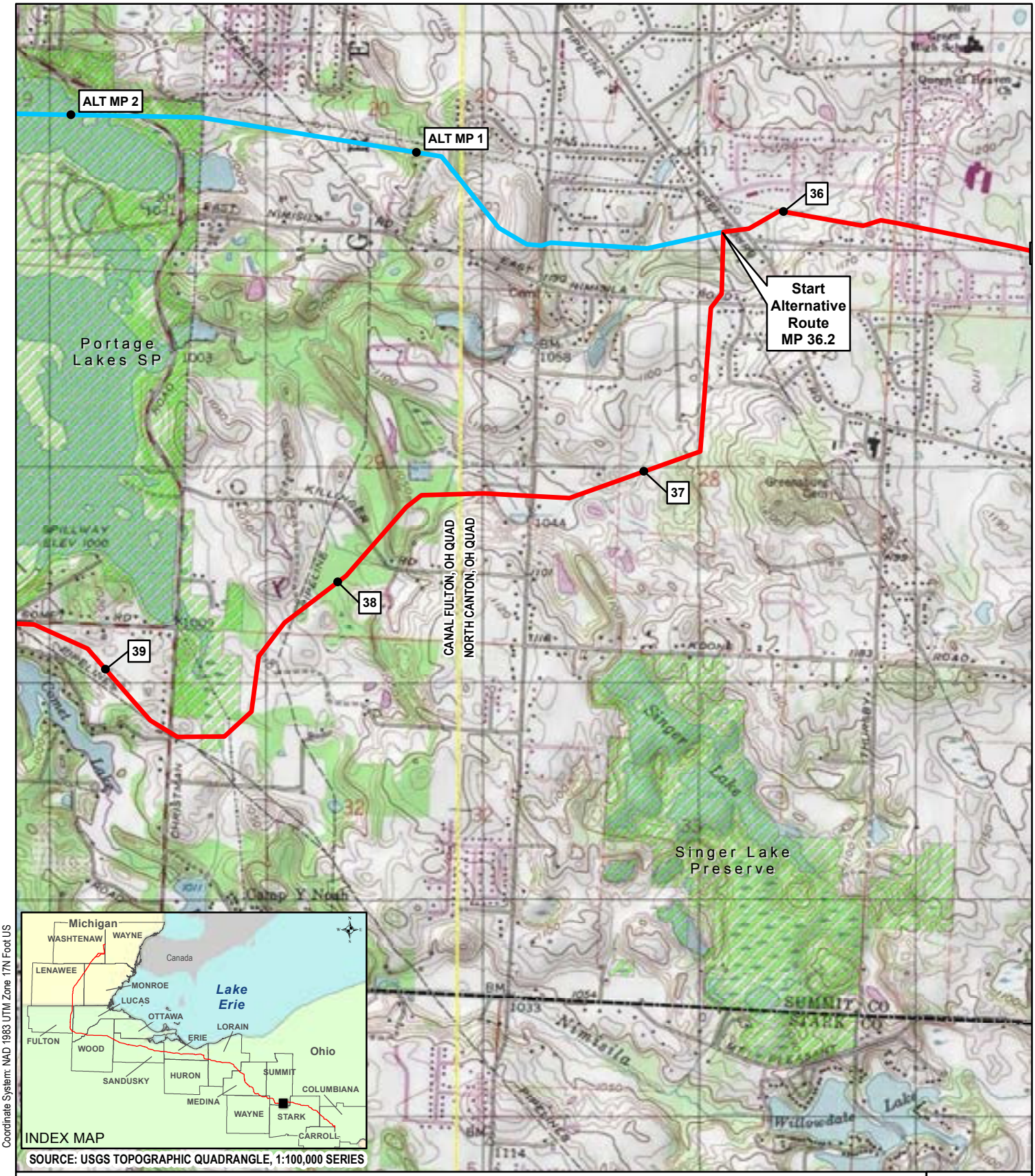
a/ Unless noted, wetlands were field delineated. The term “estimated” means resource areas were estimated based on aerial photo interpretation or Project GIS datasets (in most cases because land access was not authorized in time for this report.) The acreage provided includes all wetland areas within the boundary of the proposed or alternative compressor station site and does not correlate with potential impacts. These data, if applicable, will be included in the next filing of Resource Report 10 when compressor station engineering designs have progressed.

b/ Unless noted, streams were field delineated. The term “estimated” means resource areas were estimated based on aerial photo interpretation or Project GIS datasets (in most cases because land access for field surveys was not authorized in time for this report.) The linear footage provided includes all stream lengths within the boundary of the proposed or alternative compressor station site and does not correlate with potential impacts. These data, if applicable, will be included in the next filing of Resource Report 10 when compressor station engineering designs have progressed.

c/ T&E = Threatened & Endangered
TBD = To Be Determined
NLEB = Northern Long Eared Bat (*Myotis septentrionalis*)
IBat = Indiana Bat (*Myotis sodalis*)

d/ NSA is noise sensitive areas. Physical locations (i.e., construction footprint) of compressor station facilities within alternative sites are TBD, the measurements for this early analysis of NSAs are measured from the property lines of the site being described herein.

FIGURES



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:100,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

PUBLIC LANDS

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

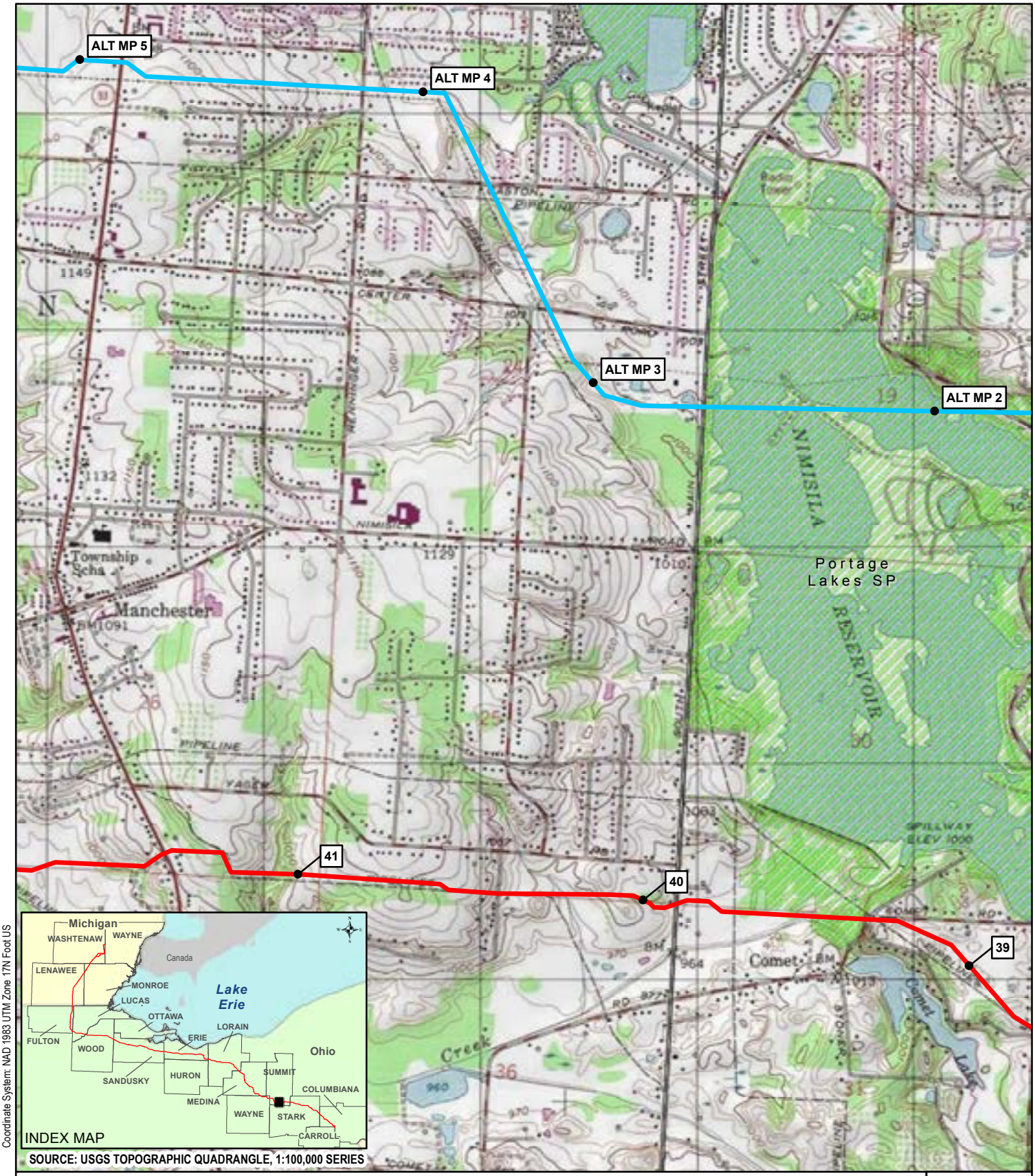
TITLE: **NEXUS GAS TRANSMISSION PROJECT**
ALTERNATIVE ROUTE MP 36.2 - USGS QUAD MAP

LOC.: SUMMIT COUNTY, OHIO

CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-1A	MAP 1A of 6

I.G.

NEXUS GAS TRANSMISSION



Coordinate System: NAD 1983 UTM Zone 17N Foot US

SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:100,000 SERIES

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

PUBLIC LANDS

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

TITLE:

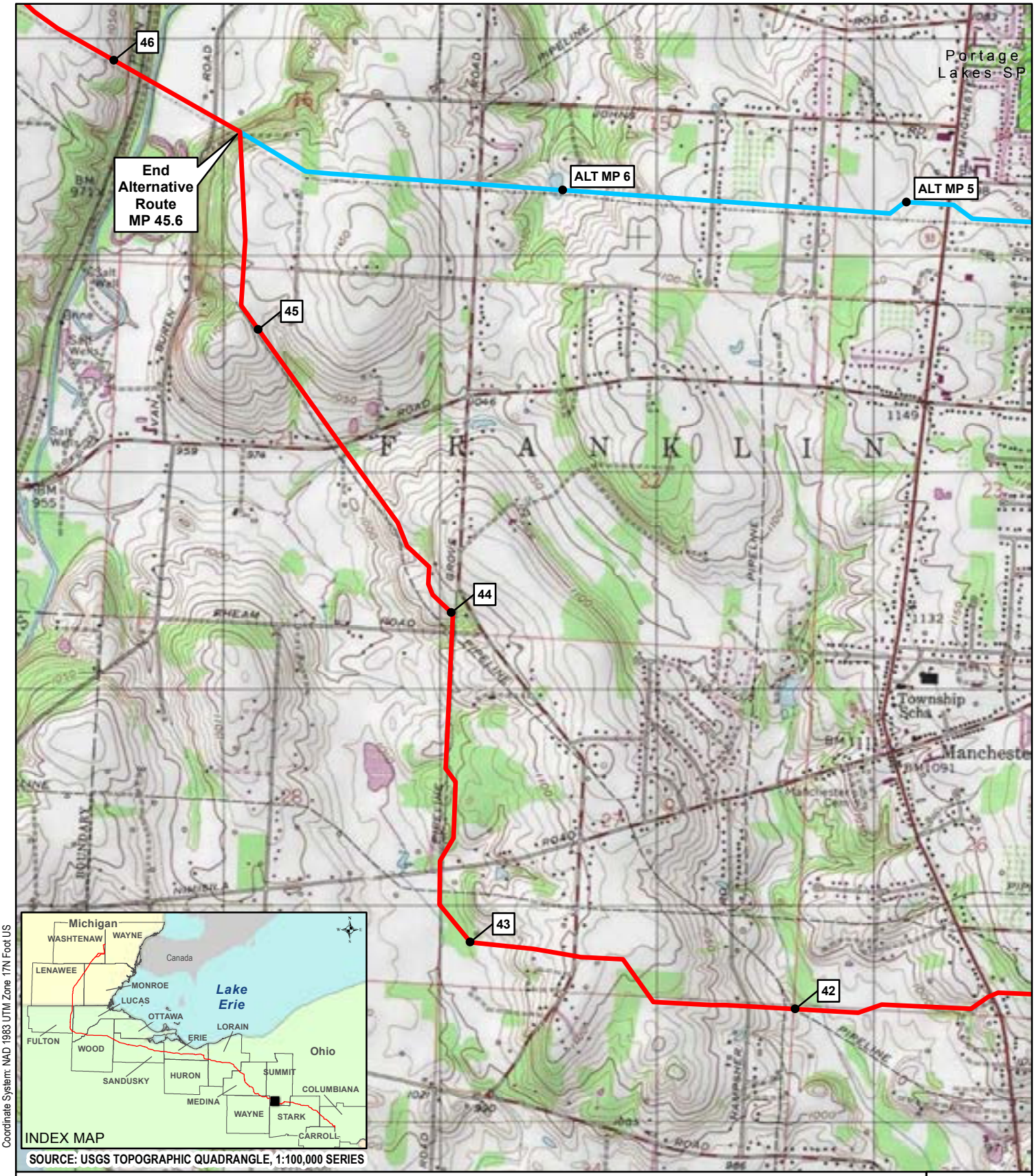
NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 36.2 - USGS QUAD MAP

LOC.: SUMMIT COUNTY, OHIO

CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-1B	MAP 1B of 6

I.G.

NEXUS GAS TRANSMISSION

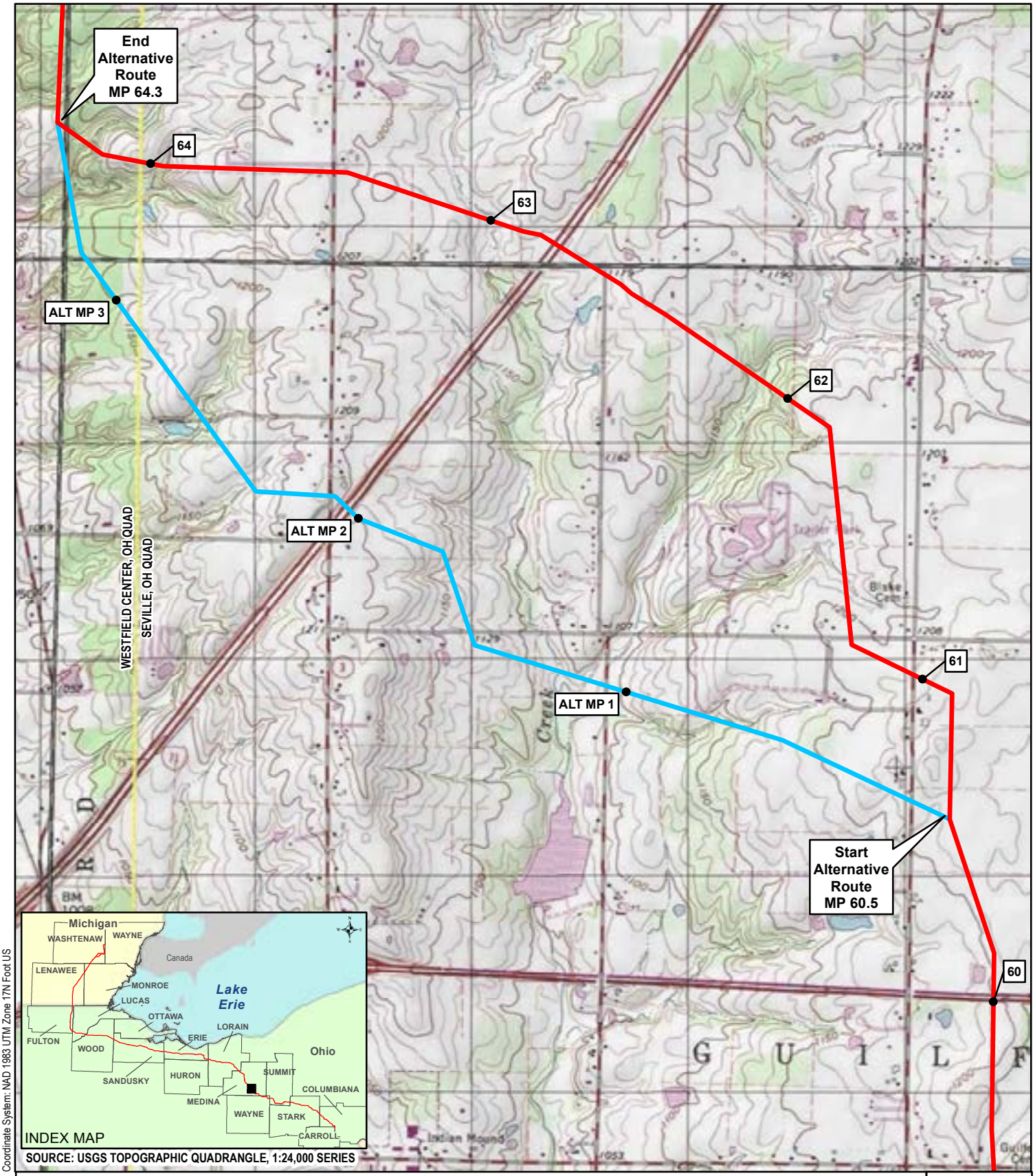


TITLE: **NEXUS GAS TRANSMISSION PROJECT**
ALTERNATIVE ROUTE MP 36.2 - USGS QUAD MAP

LOC.: SUMMIT COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-1C	MAP 1C of 6

I.G.

NEXUS GAS TRANSMISSION

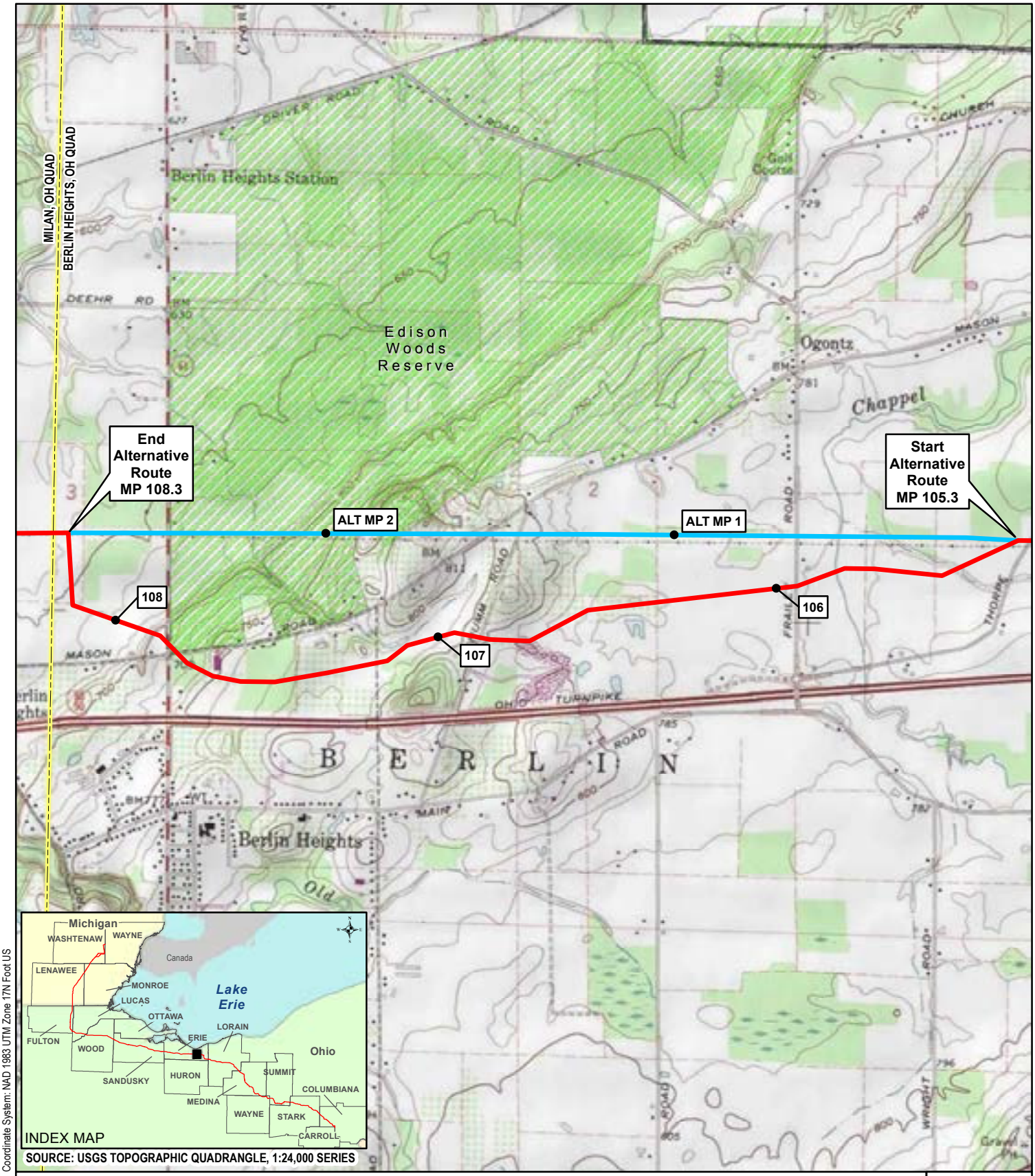


TITLE: **NEXUS GAS TRANSMISSION PROJECT**
ALTERNATIVE ROUTE MP 60.5 - USGS QUAD MAP

LOC.: MEDINA COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-2	MAP 2 of 6

I.G.

NEXUS GAS TRANSMISSION

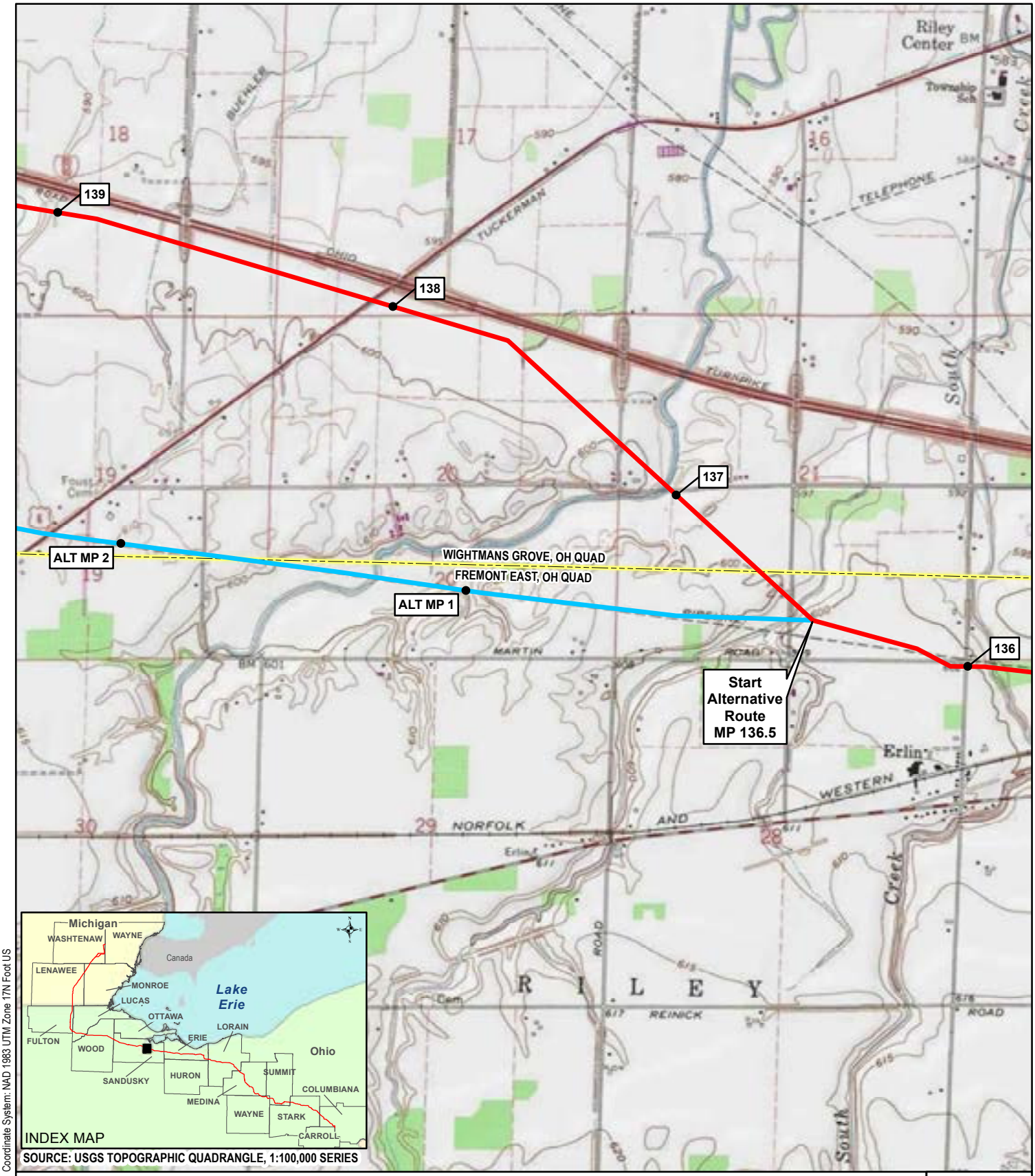


TITLE: **NEXUS GAS TRANSMISSION PROJECT**
ALTERNATIVE ROUTE MP 105.3 - USGS QUAD MAP

LOC.: ERIE COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-3	MAP 3 of 6

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:100,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST
PROPOSED MAINLINE PIPELINE
ALTERNATIVE ROUTE
USGS QUADRANGLE BOUNDARY
PUBLIC LANDS
COUNTY BOUNDARY
MUNICIPALITY BOUNDARY
STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

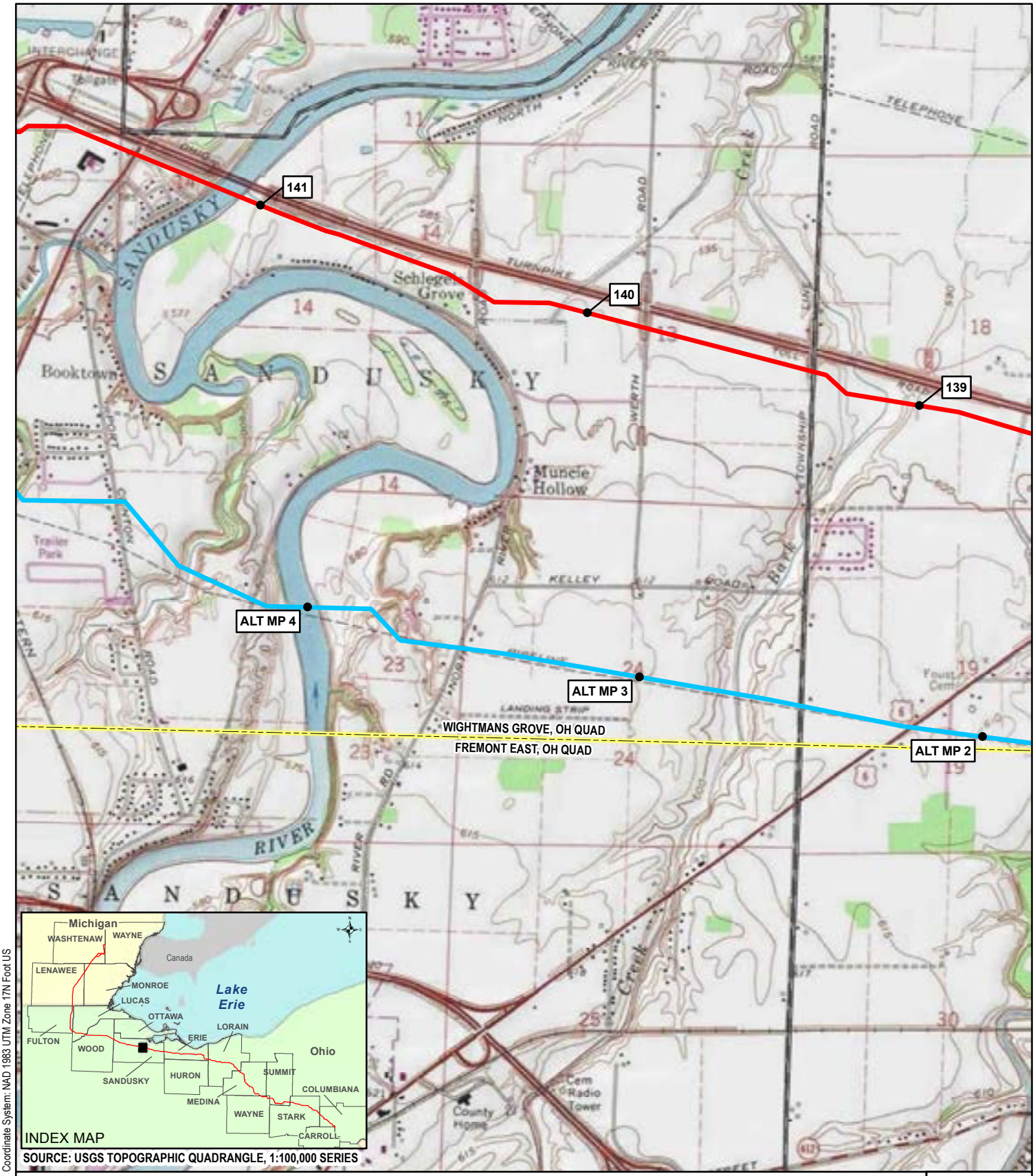
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 136.5 - USGS QUAD MAP

LOC.: SANDUSKY COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-4A	MAP 4A of 6

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:100,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

PUBLIC LANDS

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

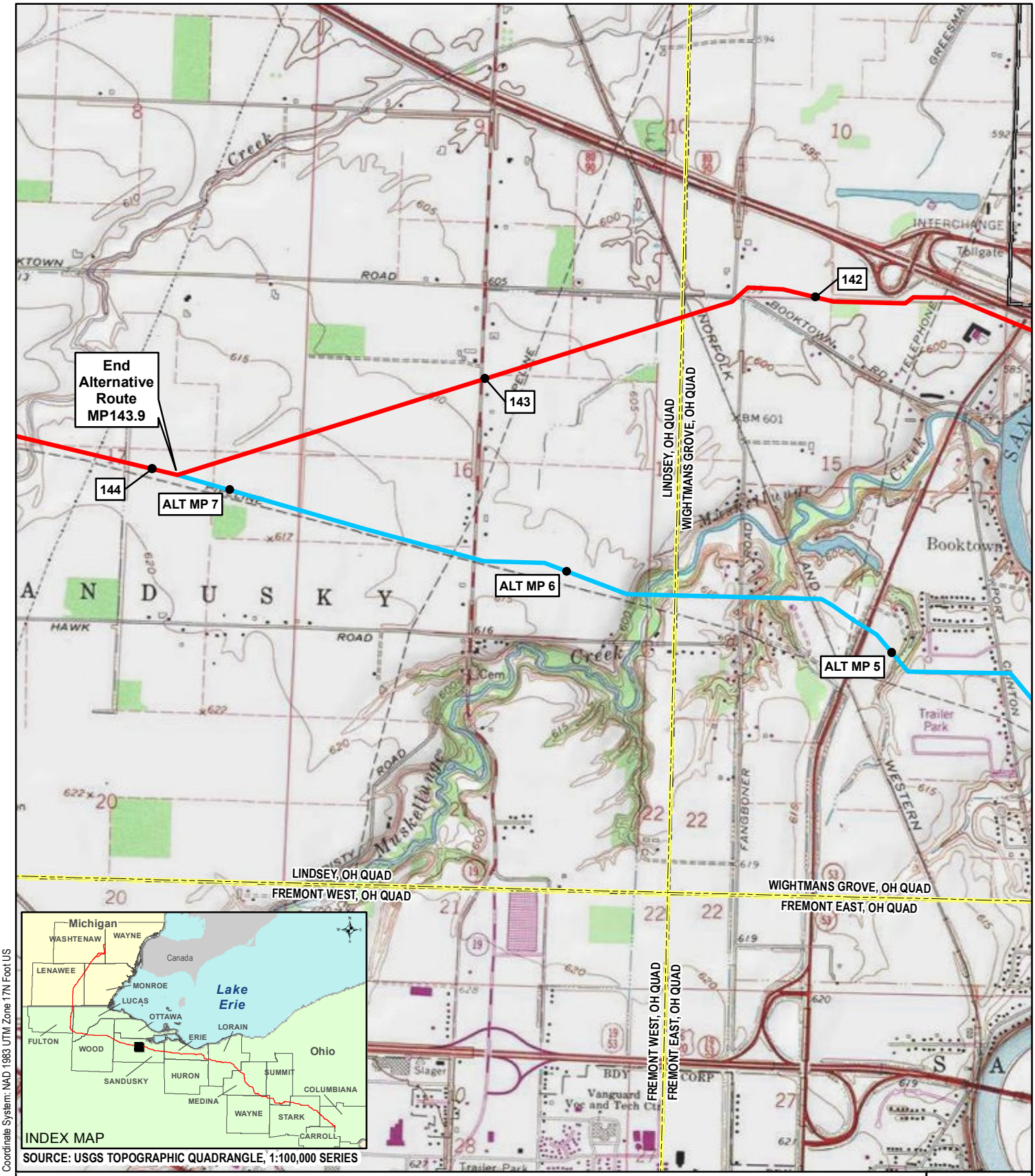
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 136.5 - USGS QUAD MAP

LOC.: SANDUSKY COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-4B	MAP 4B of 6

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:100,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST
PROPOSED MAINLINE PIPELINE
ALTERNATIVE ROUTE
USGS QUADRANGLE BOUNDARY
PUBLIC LANDS
COUNTY BOUNDARY
MUNICIPALITY BOUNDARY
STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

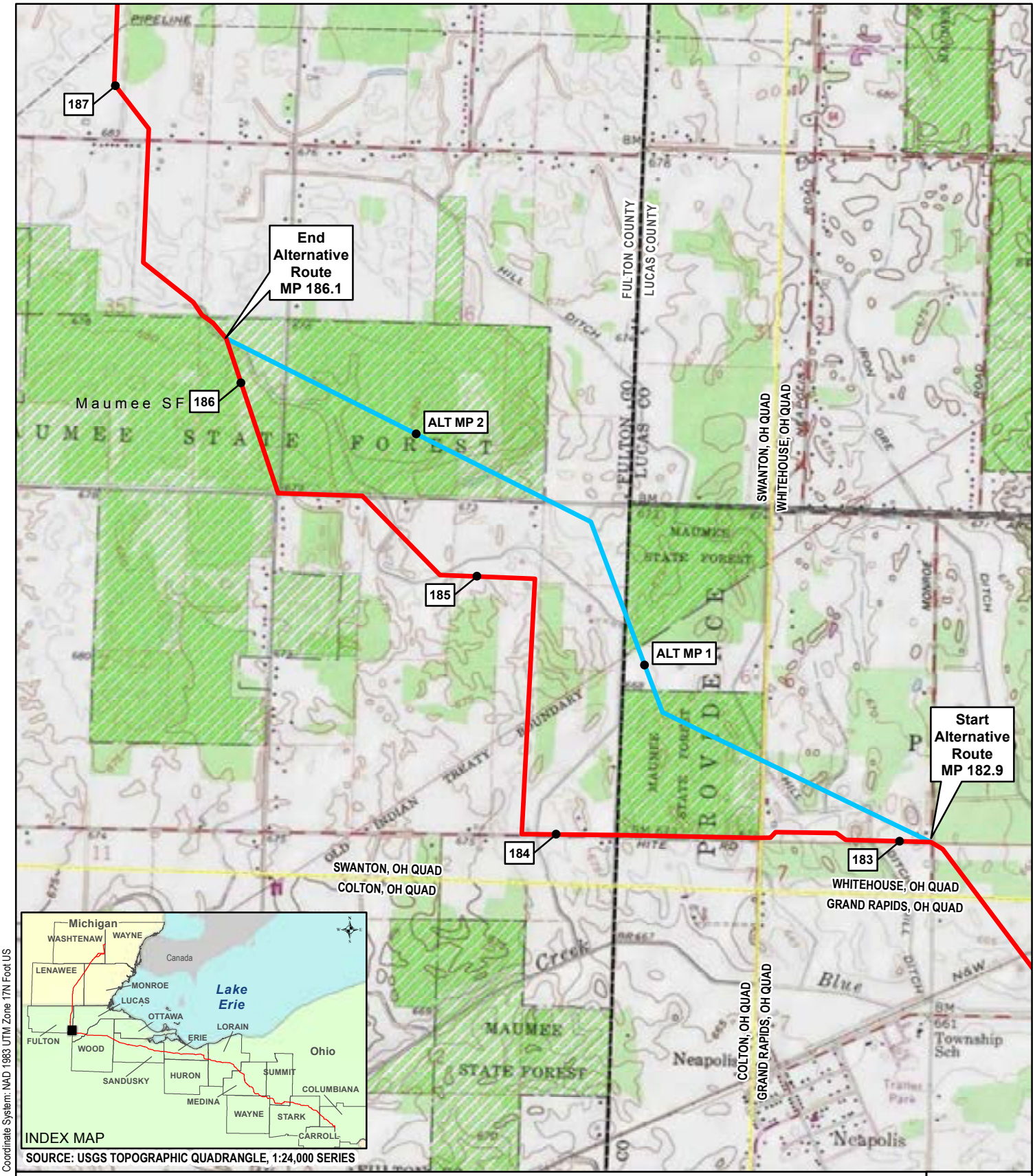
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 136.5 - USGS QUAD MAP

LOC.: SANDUSKY COUNTY, OHIO				
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.	
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-4C		MAP 4C of 6

I.G.

NEXUS GAS TRANSMISSION

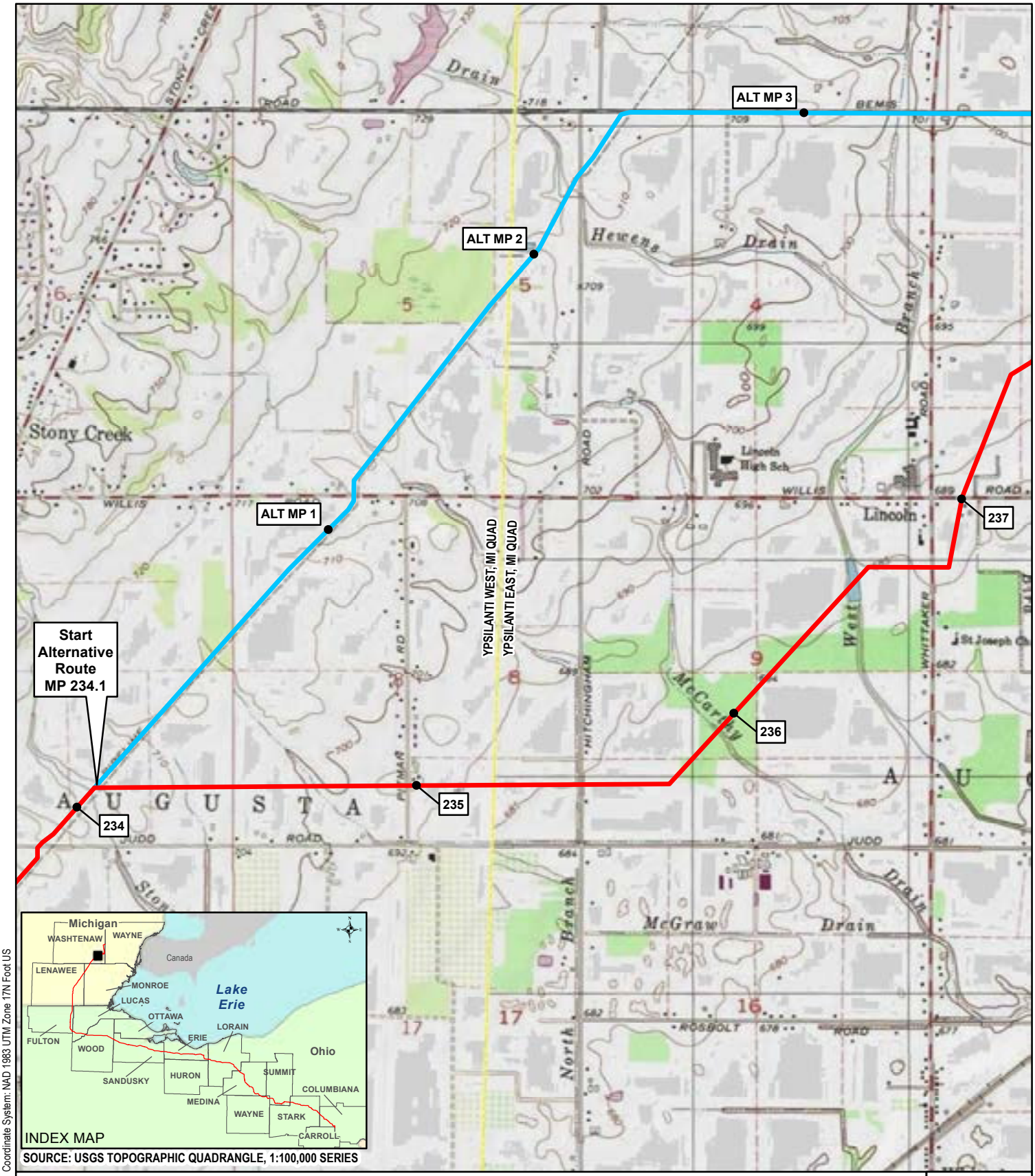


TITLE: **NEXUS GAS TRANSMISSION PROJECT**
ALTERNATIVE ROUTE MP 182.9 - USGS QUAD MAP

LOC.: FULTON COUNTY; LUCAS COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-5	MAP 5 of 6

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:100,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

PUBLIC LANDS

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

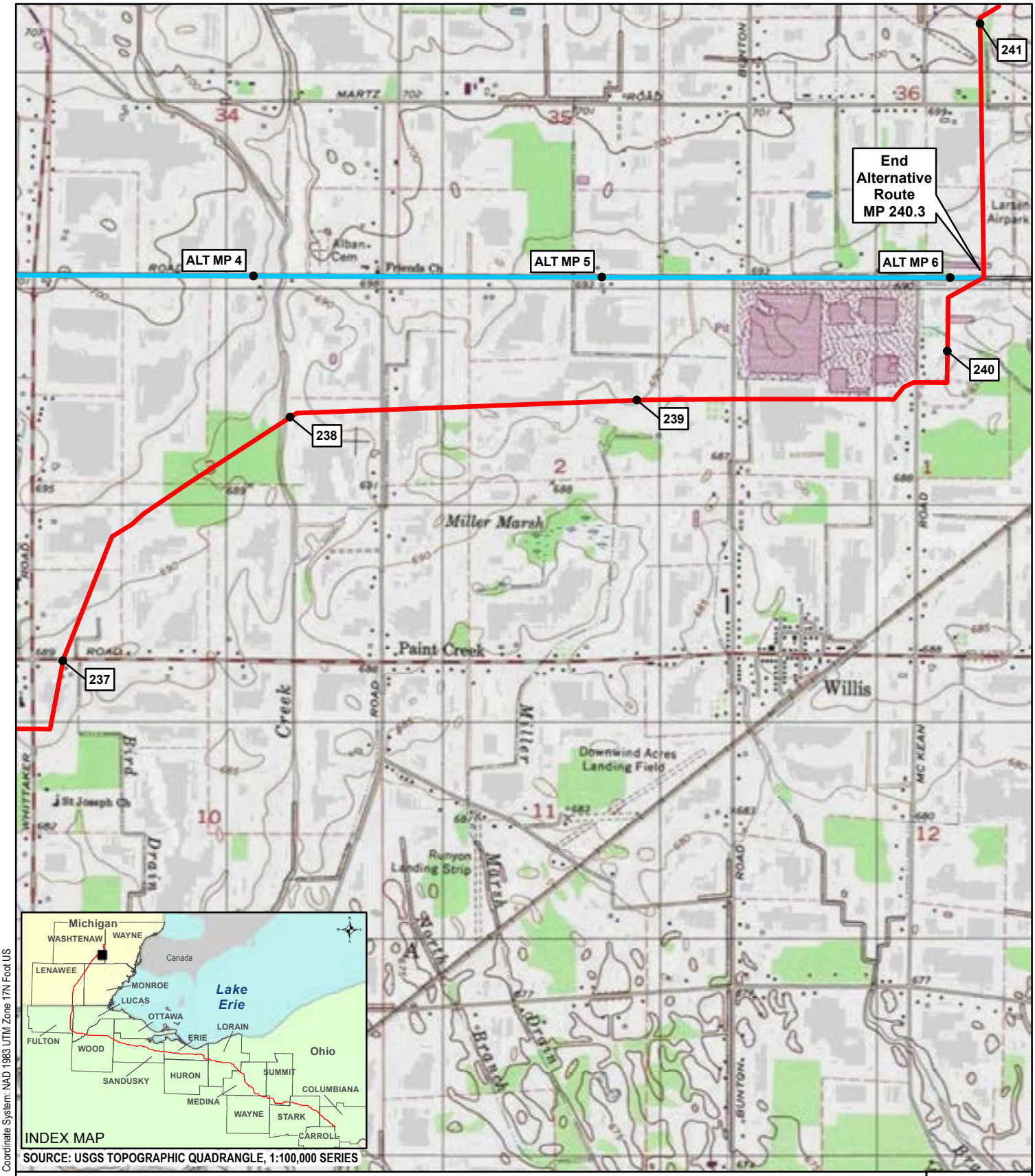
TITLE: **NEXUS GAS TRANSMISSION PROJECT**
ALTERNATIVE ROUTE MP 234.1 - USGS QUAD MAP

LOC.: WASHTENAW COUNTY, MICHIGAN

CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-6A	MAP 6A of 6

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:100,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

PUBLIC LANDS

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

TITLE:

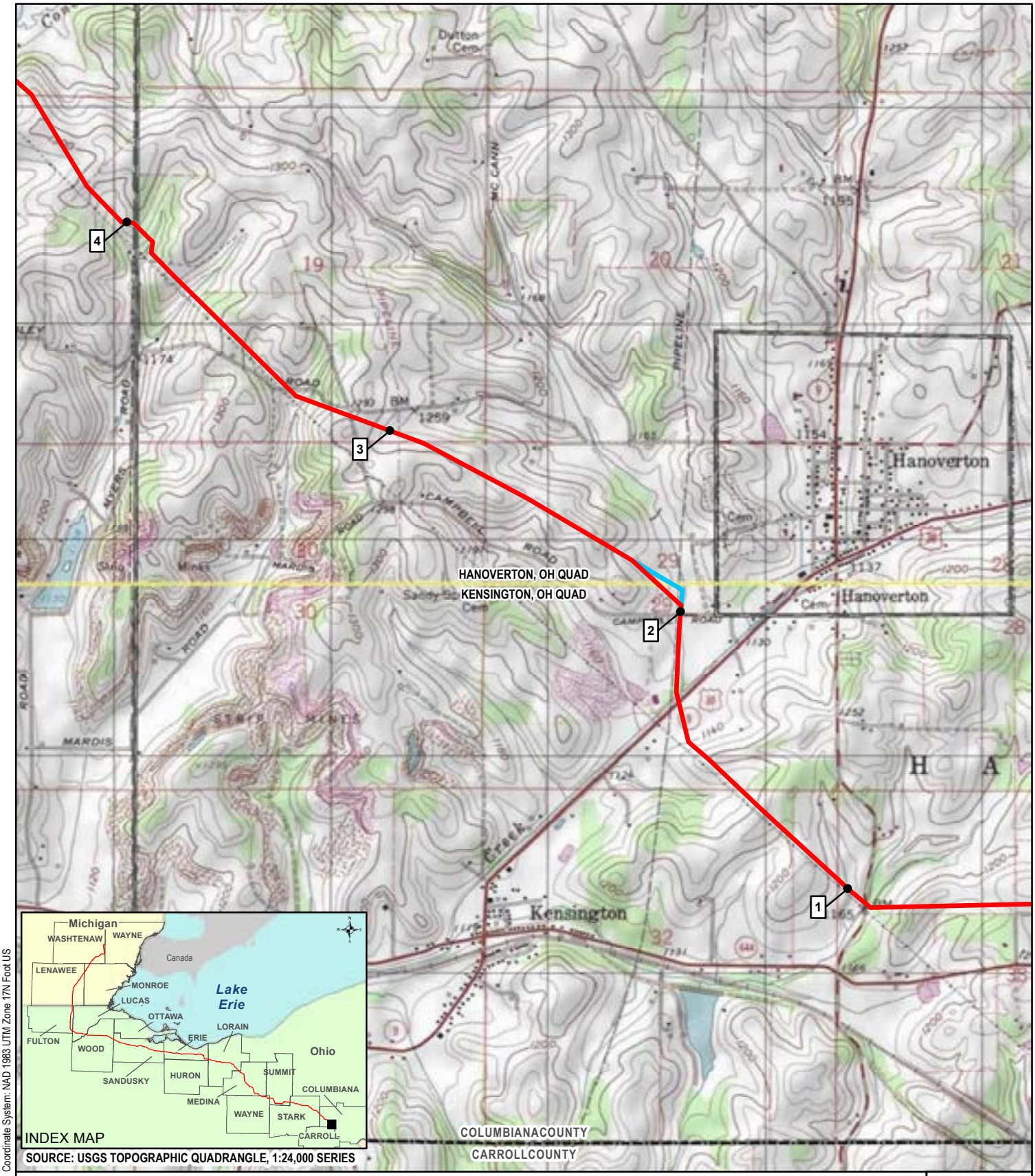
NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 234.1 - USGS QUAD MAP

LOC.: WASHTENAW COUNTY, MICHIGAN

CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.5-6B	MAP 6B of 6

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

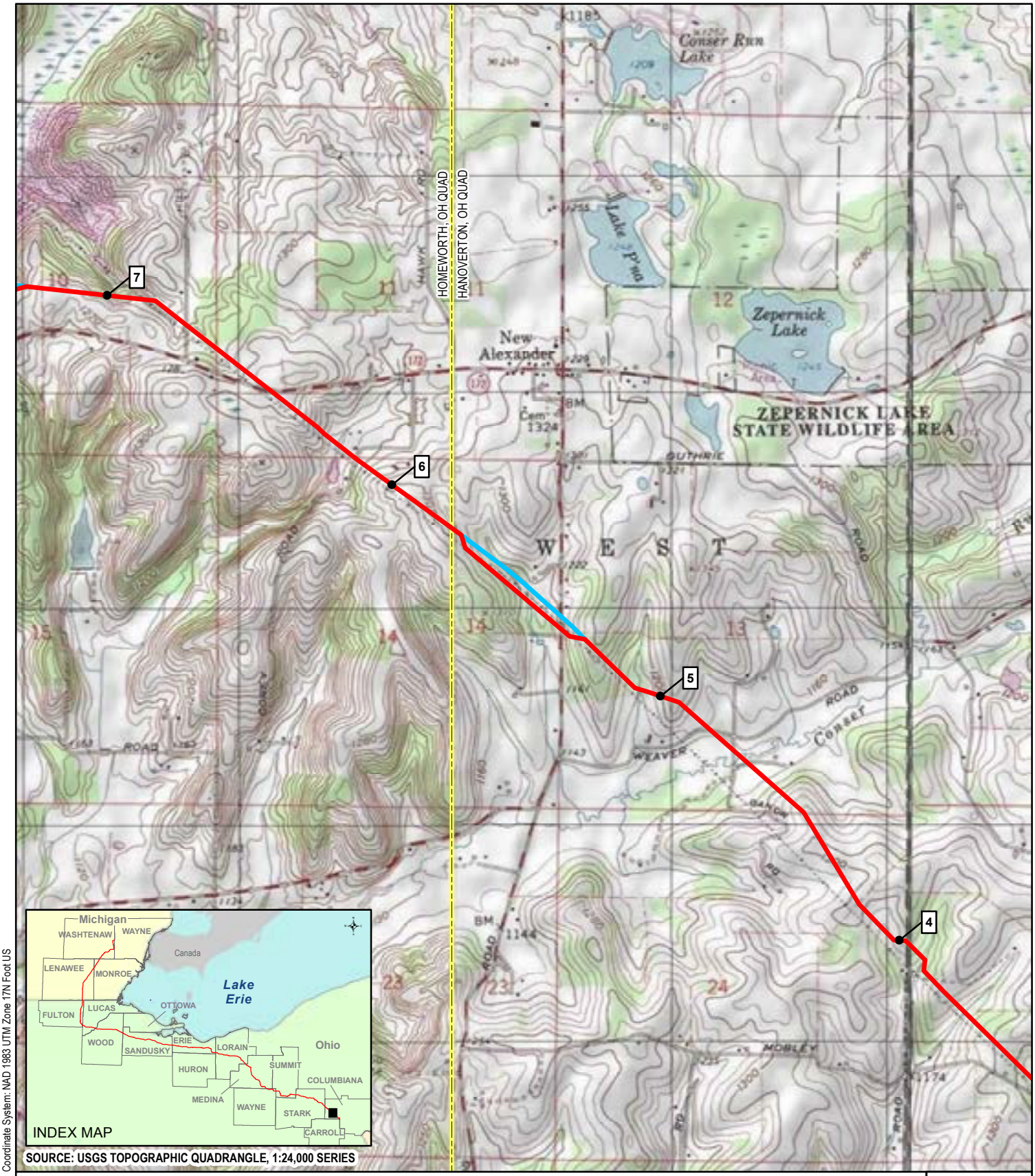
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 2.0 - USGS QUAD MAP

LOC.: COLUMBIANA COUNTY, OHIO				
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.	
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-1		MAP 1 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

TITLE:

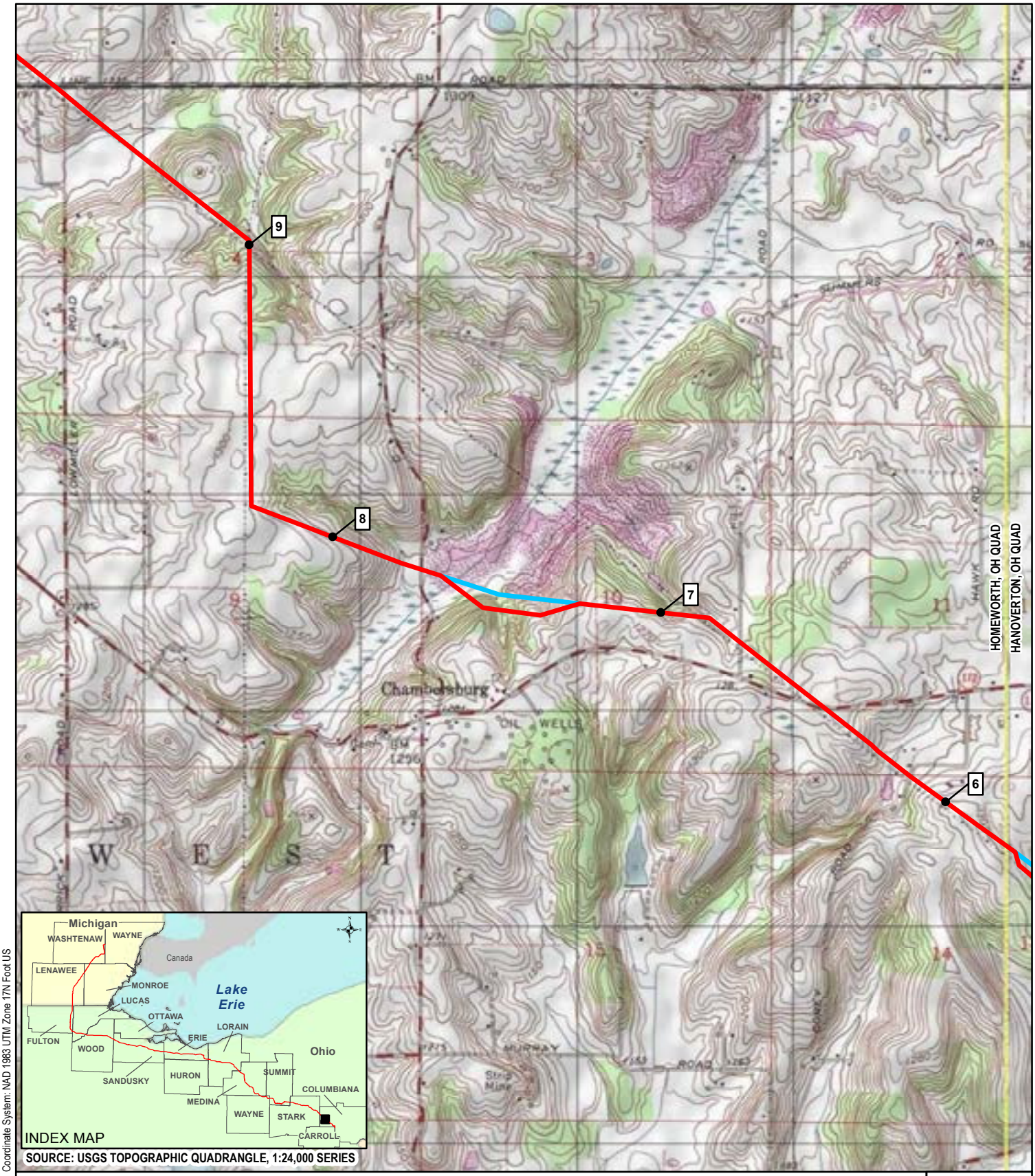
NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 5.3 - USGS QUAD MAP

LOC.: COLUMBIANA COUNTY, OHIO

CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-2	MAP 2 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

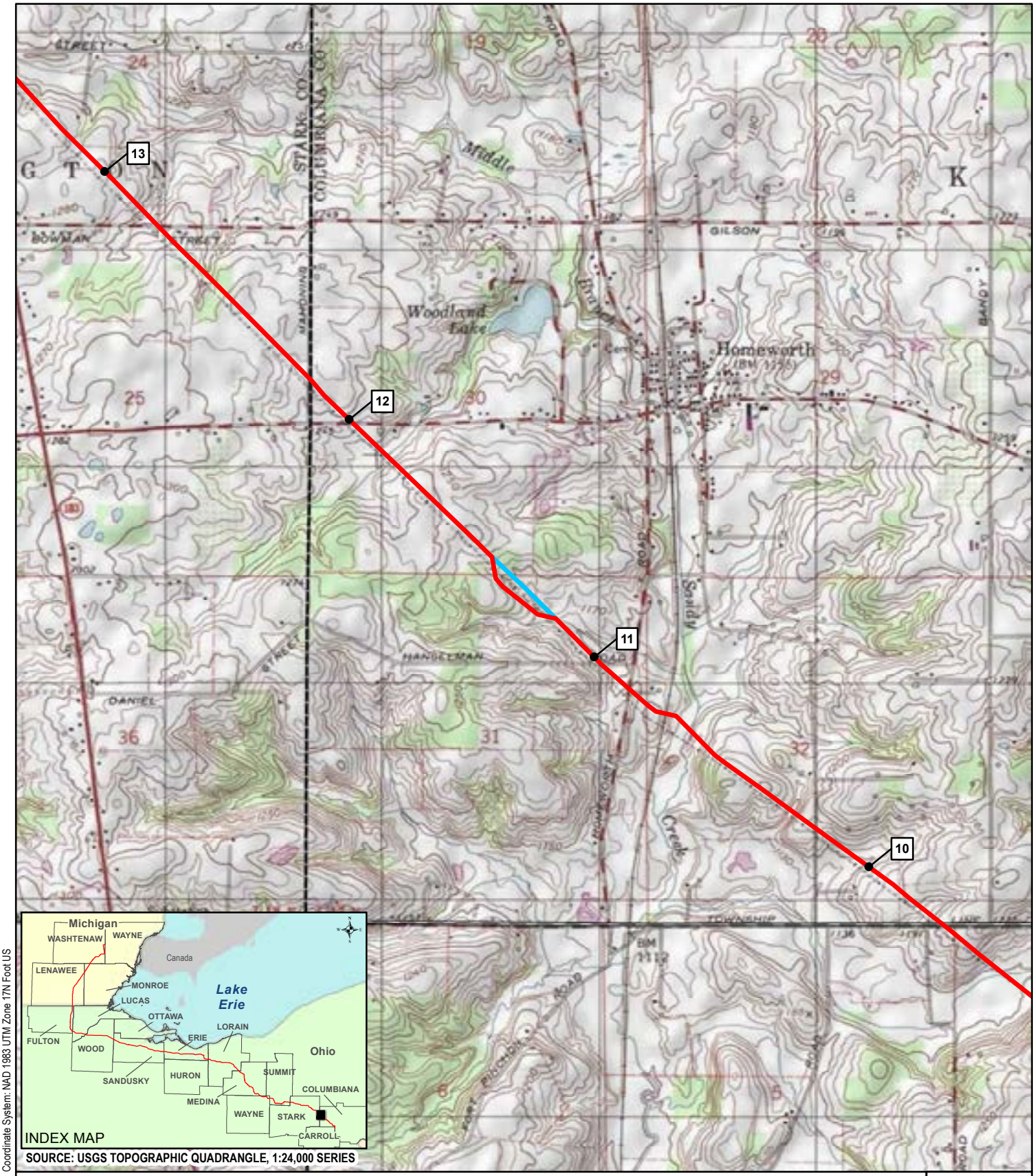
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 7.2 - USGS QUAD MAP

LOC.: COLUMBIANA COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-3	MAP 3 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

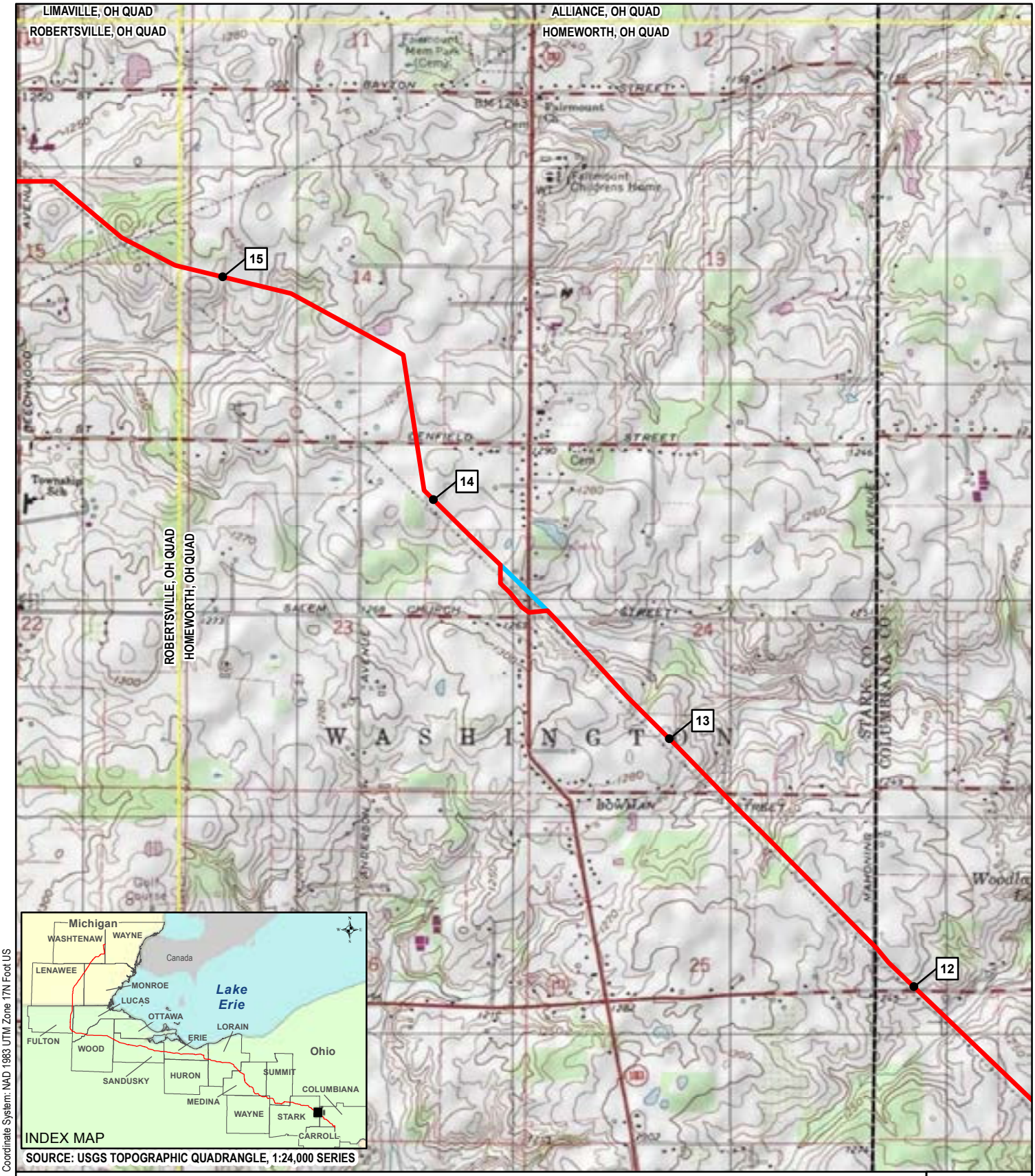
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 11.2 - USGS QUAD MAP

LOC.: COLUMBIANA COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-4	MAP 4 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

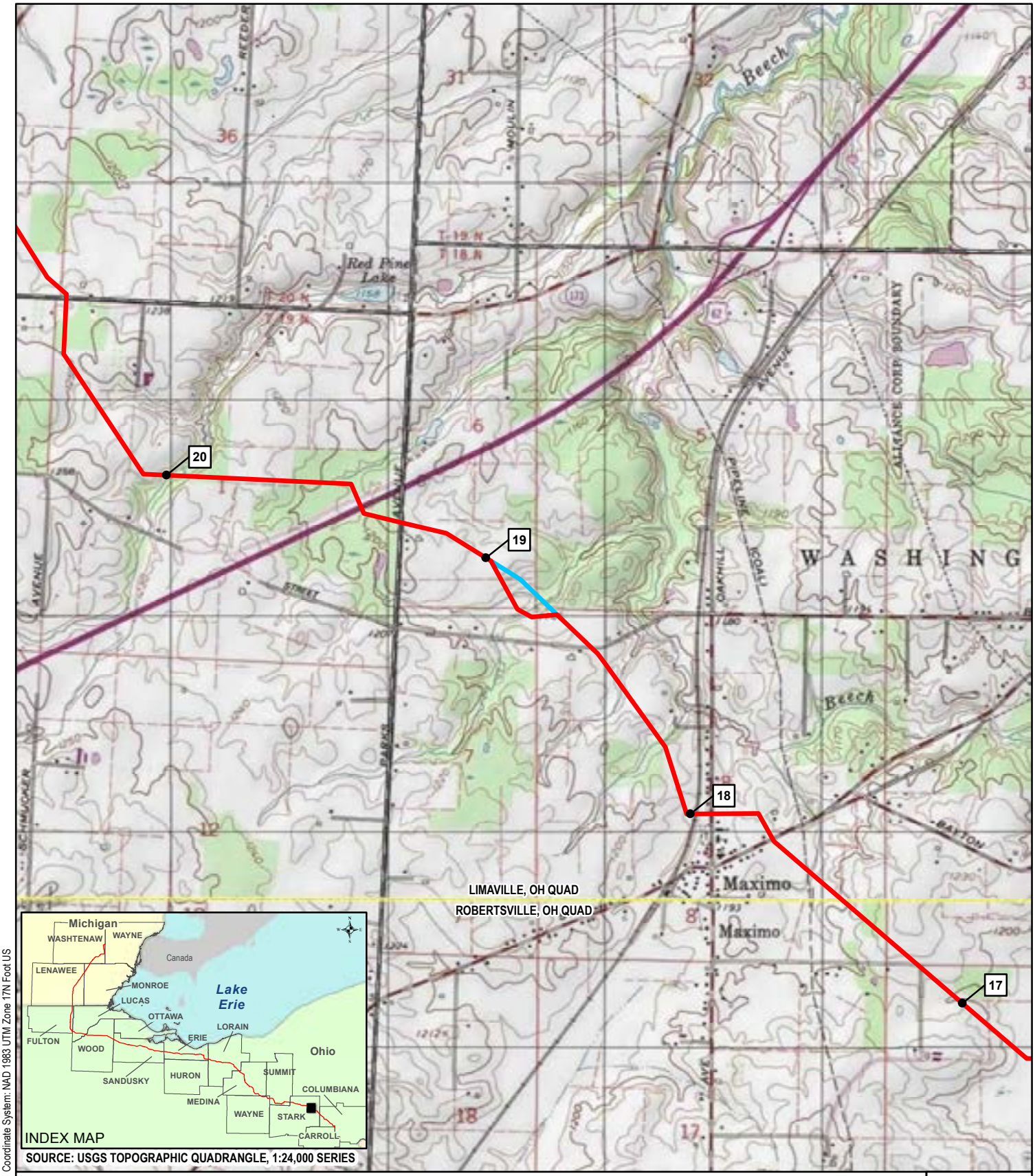
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 13.5 - USGS QUAD MAP

LOC.: STARK COUNTY, OHIO				
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.	
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-5		MAP 5 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

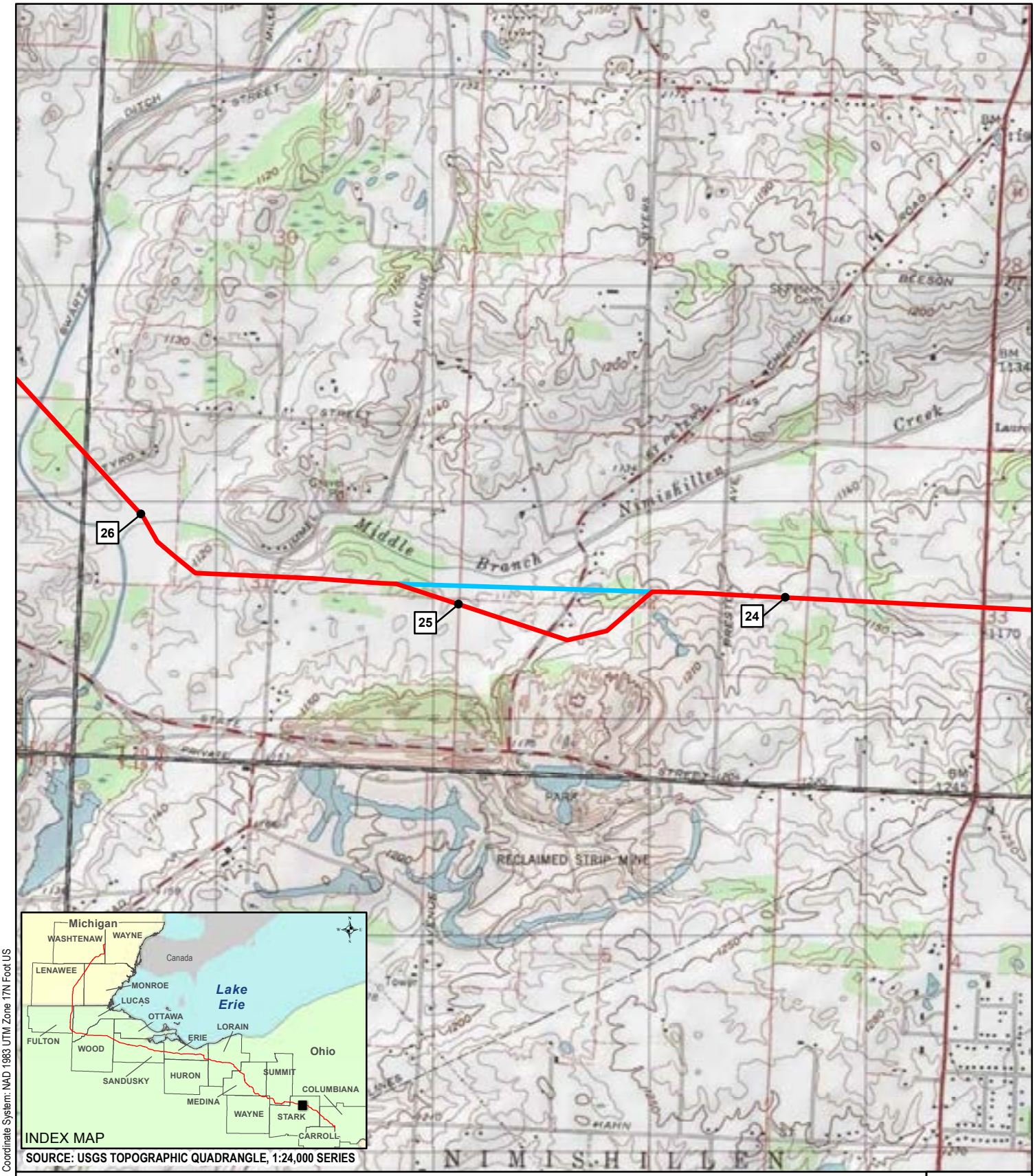
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 18.7 - USGS QUAD MAP

LOC.: STARK COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-6	MAP 6 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

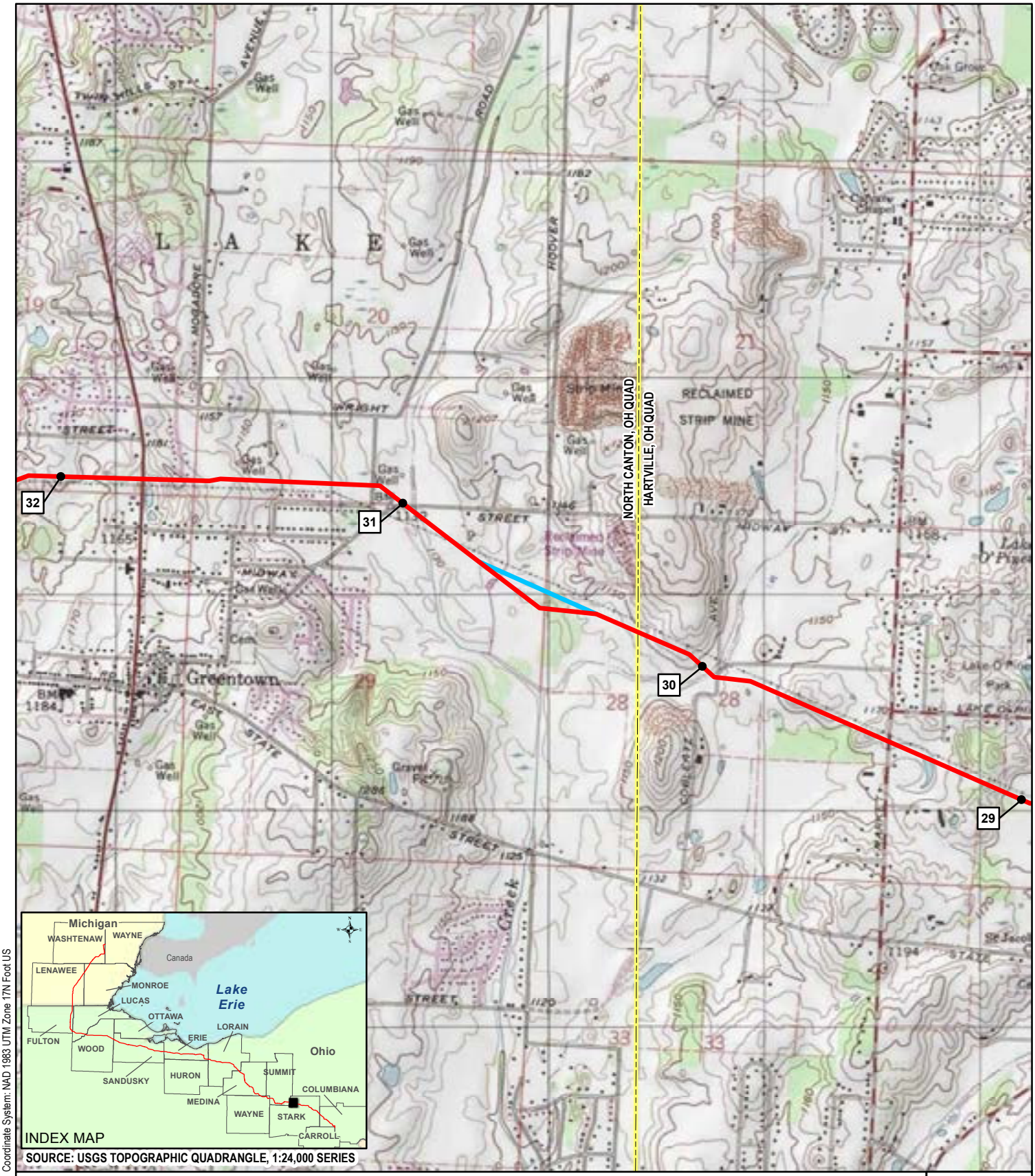
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 24.4 - USGS QUAD MAP

LOC.: STARK COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-7	MAP 7 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 30.3 - USGS QUAD MAP

LOC.: STARK COUNTY, OHIO				
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.	
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-8		MAP 8 of 26

I.G.

NEXUS GAS TRANSMISSION

SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

TITLE:

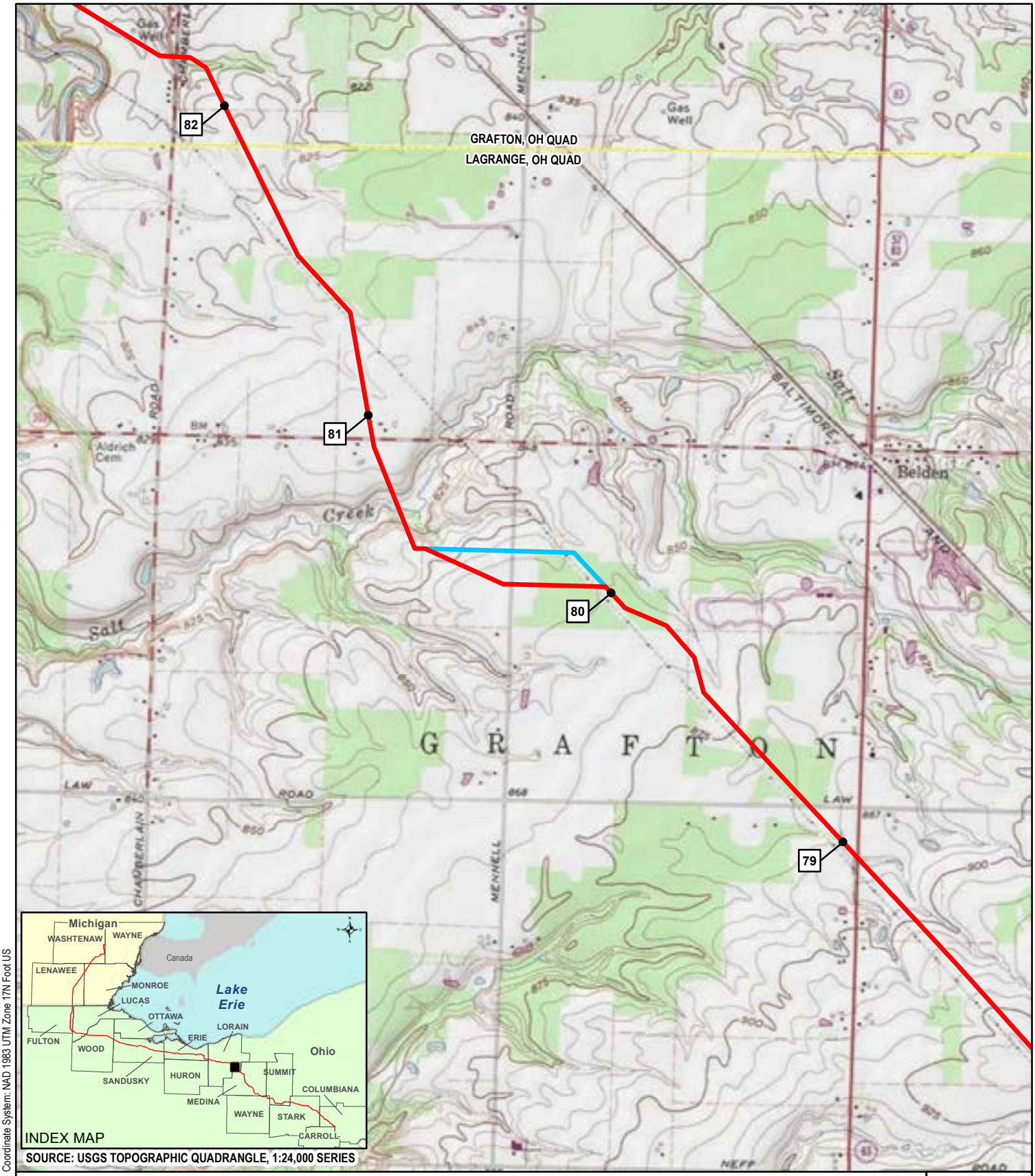
NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 79.6 - USGS QUAD MAP

LOC.: LORAIN COUNTY, OHIO

CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-9	MAP 9 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

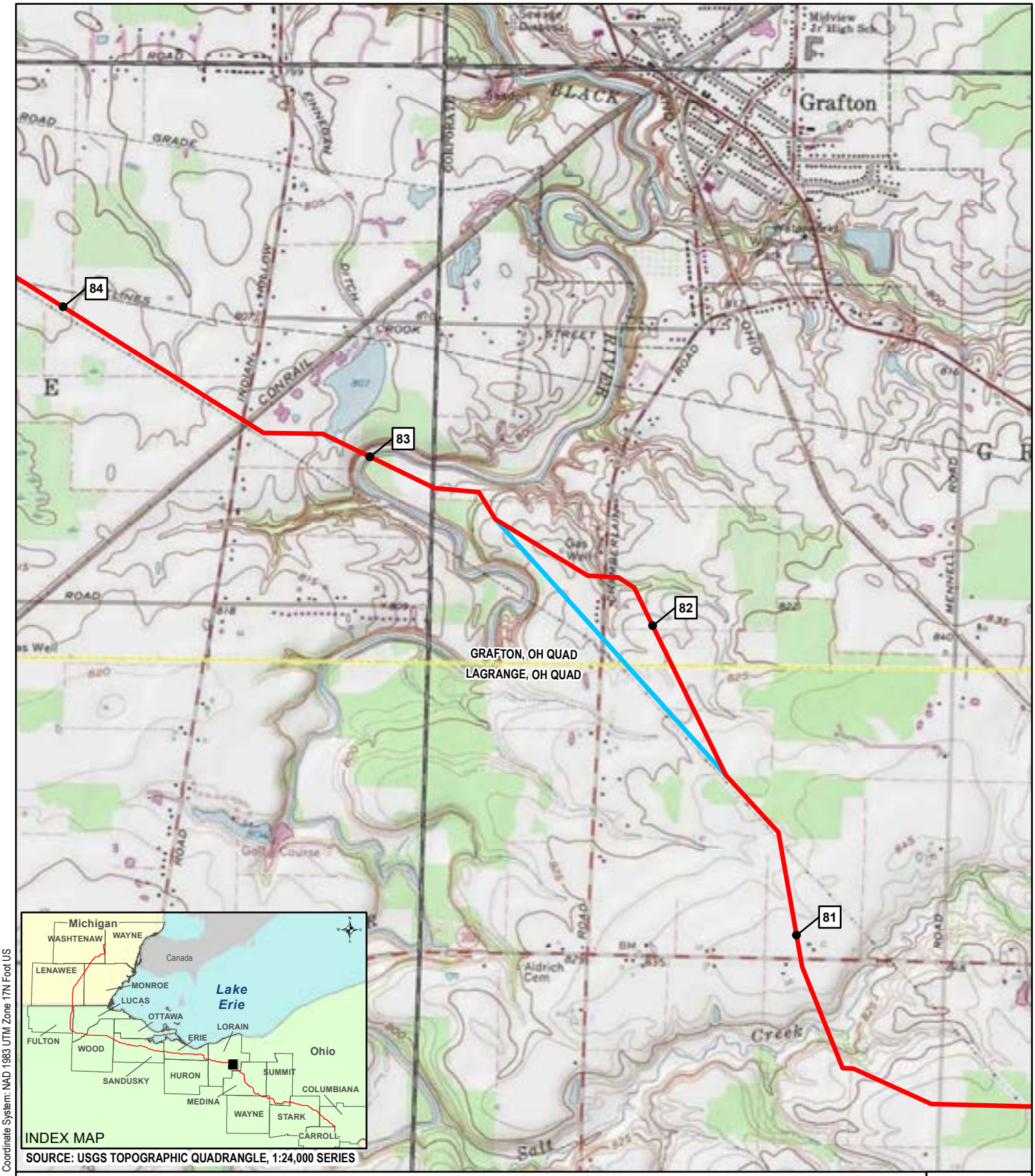
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 80.0 - USGS QUAD MAP

LOC.: LORAIN COUNTY, OHIO				
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.	
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-10		MAP 10 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

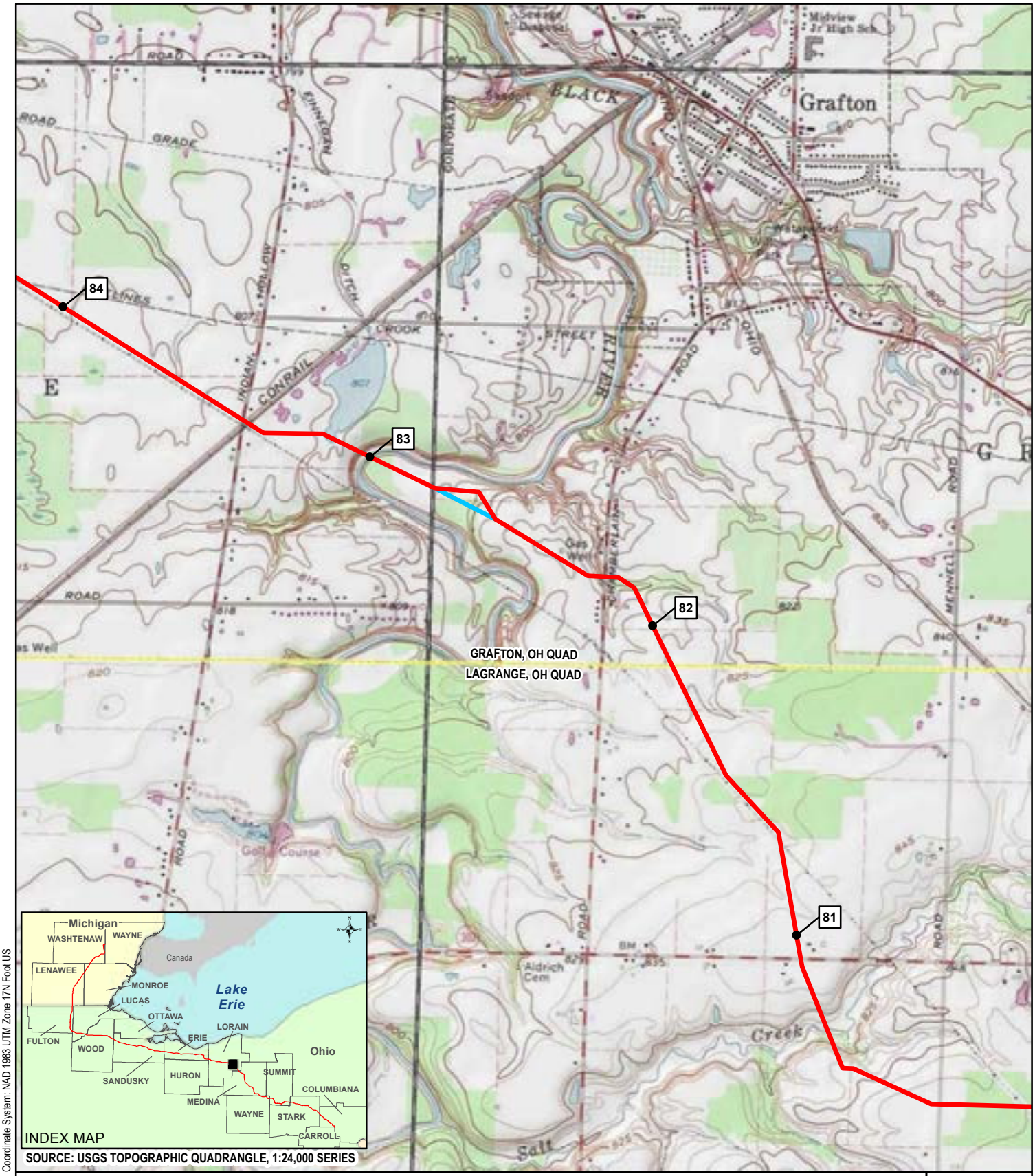
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 81.5 - USGS QUAD MAP

LOC.: LORAIN COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-11	MAP 11 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

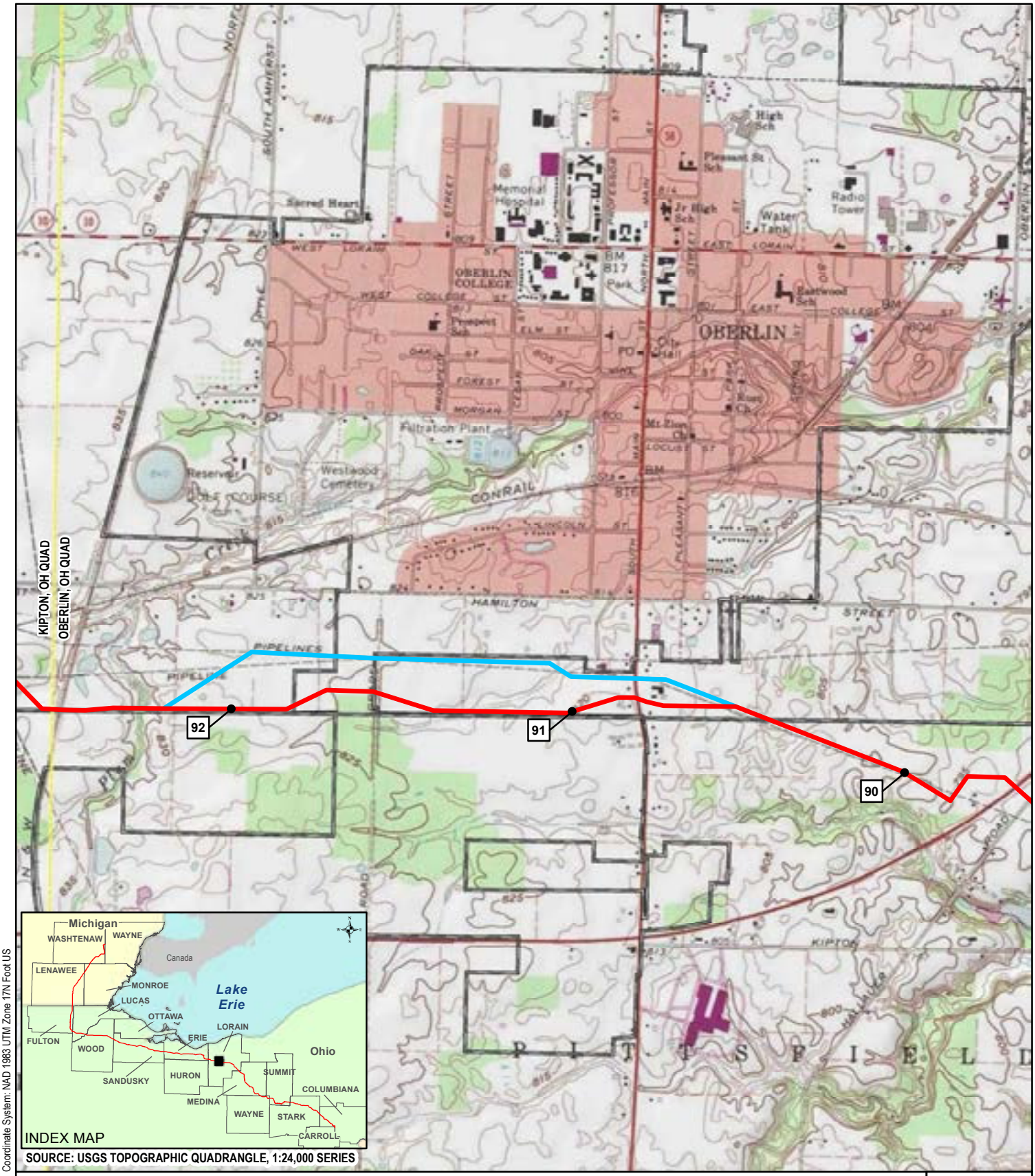
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 82.6 - USGS QUAD MAP

LOC.: LORAIN COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-12	MAP 12 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

TITLE:

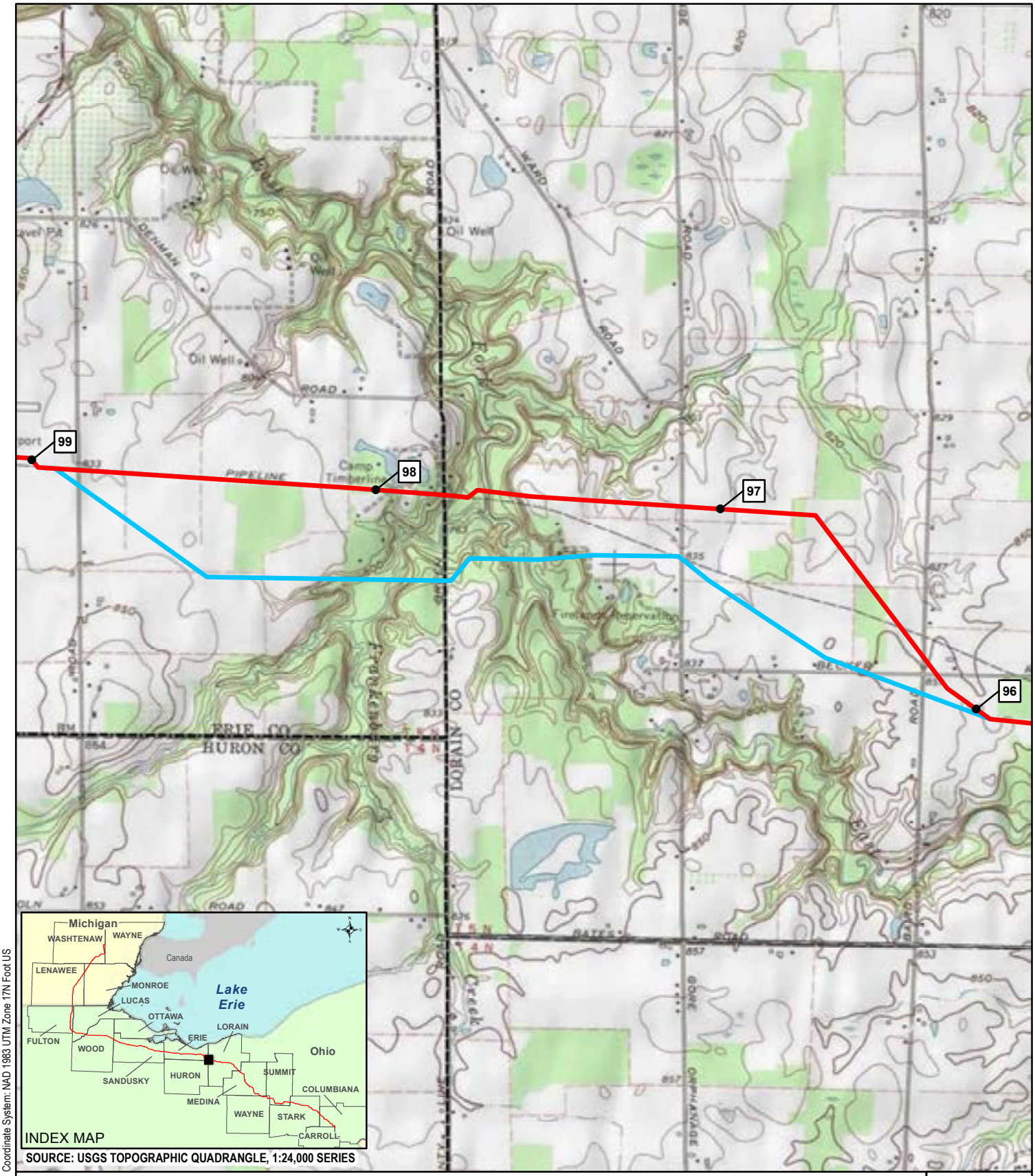
NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 90.5 - USGS QUAD MAP

LOC.: LORAIN COUNTY, OHIO

CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-13	MAP 13 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

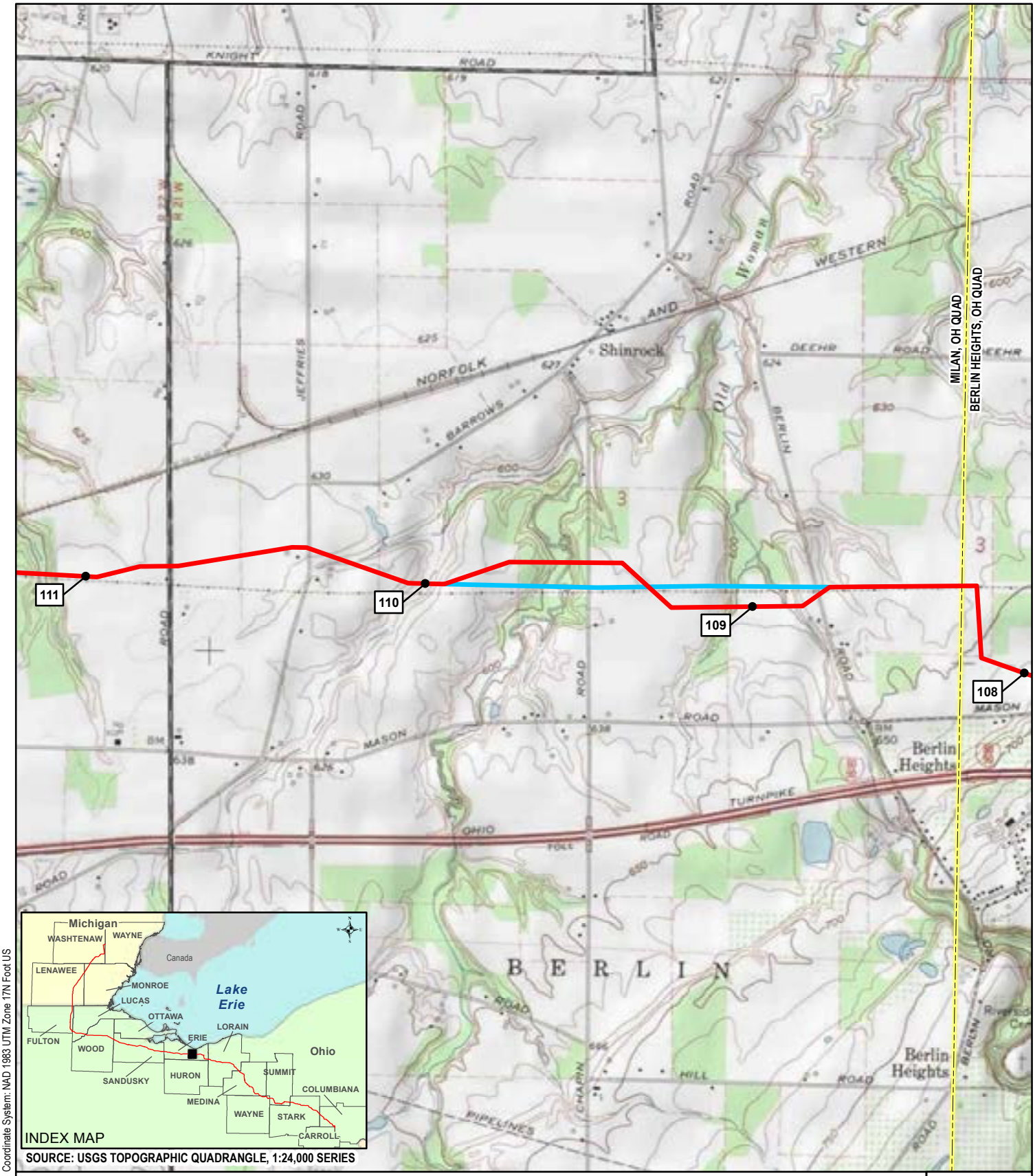
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 96.0 - USGS QUAD MAP

LOC.: LORAIN COUNTY & ERIE COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-14	MAP 14 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

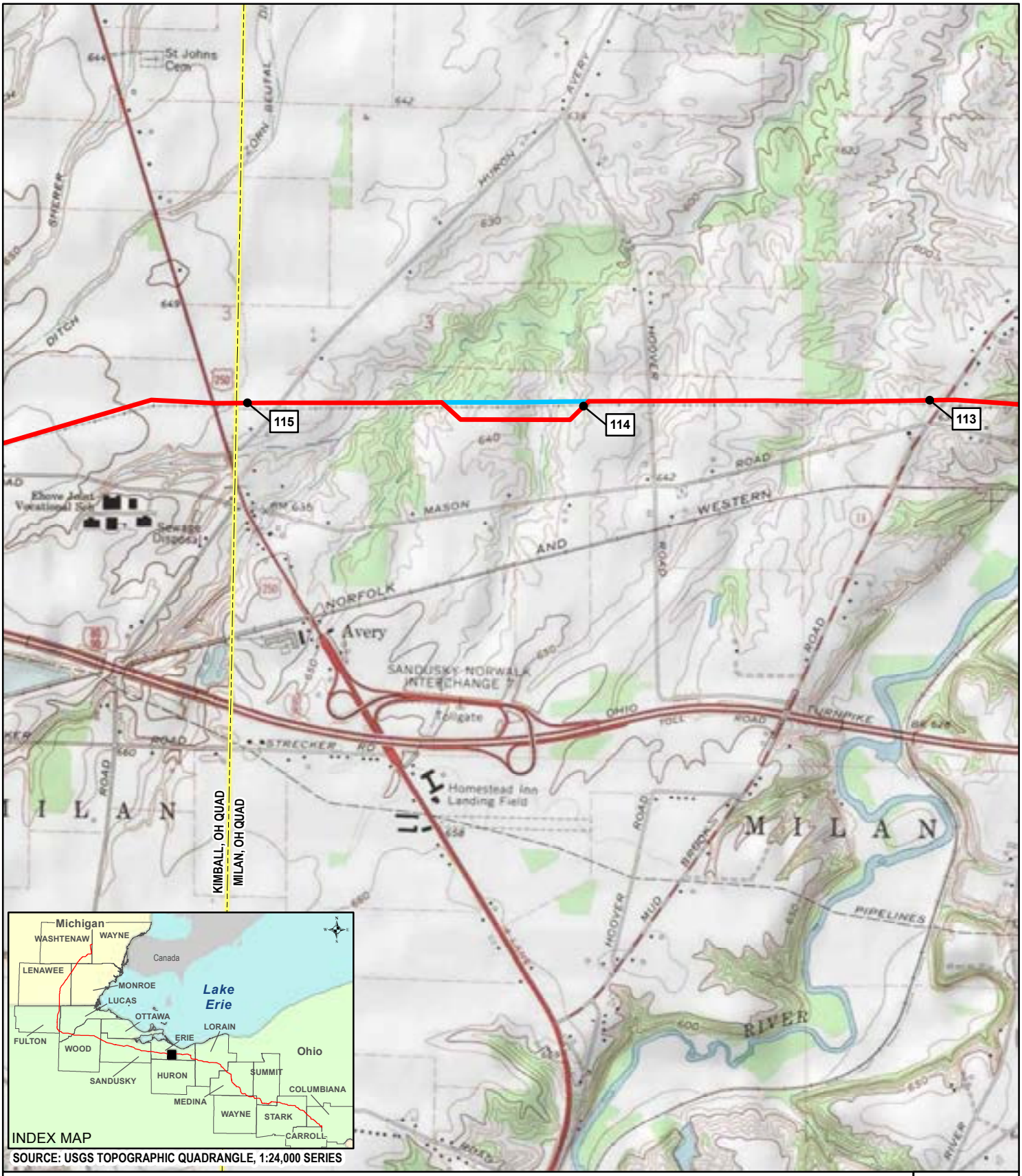
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 108.8 - USGS QUAD MAP

LOC.: ERIE COUNTY, OHIO				
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.	
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-15		MAP 15 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

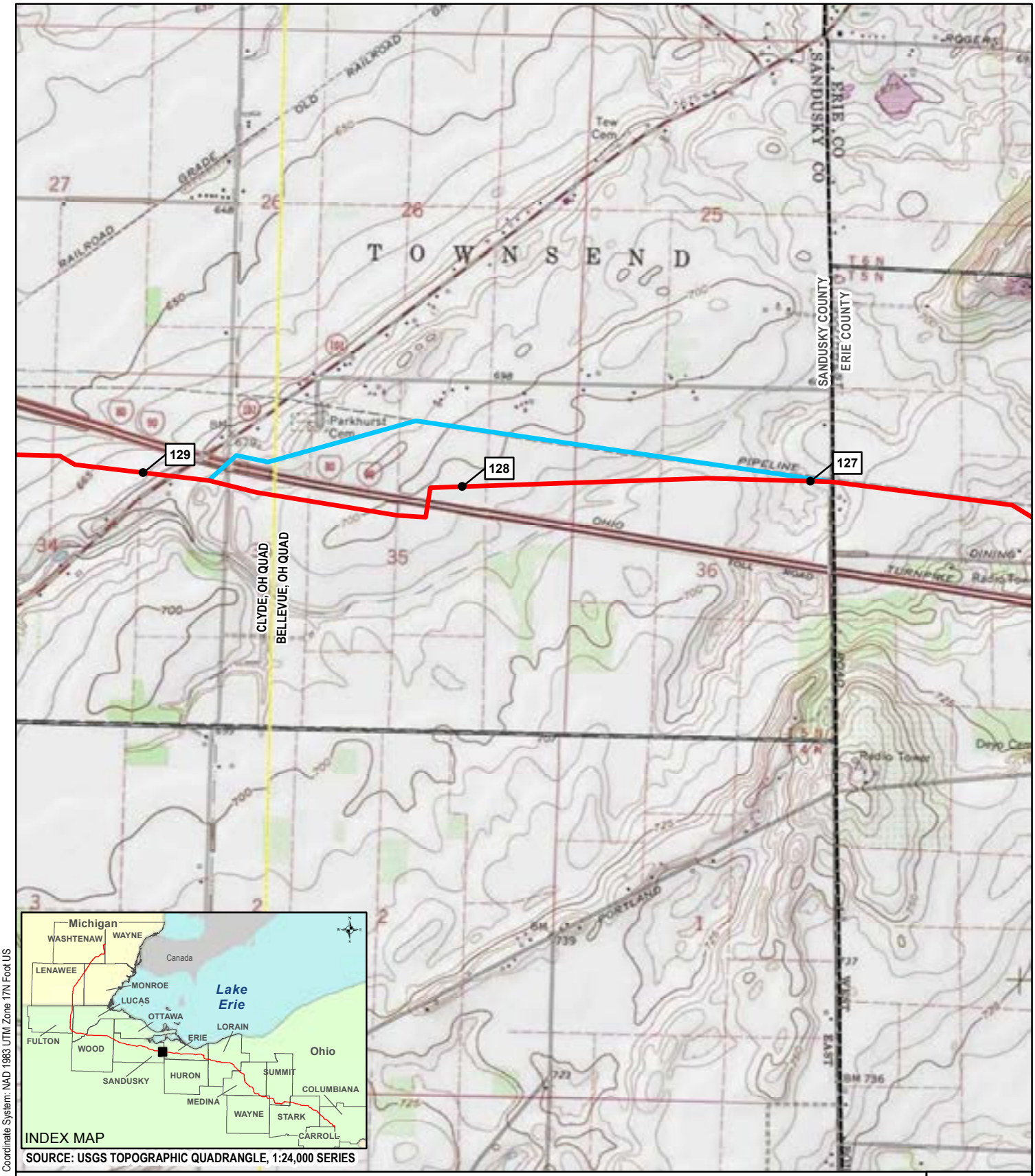
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 114.0 - USGS QUAD MAP

LOC.: ERIE COUNTY, OHIO				
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.	
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-16		MAP 16 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

TITLE:

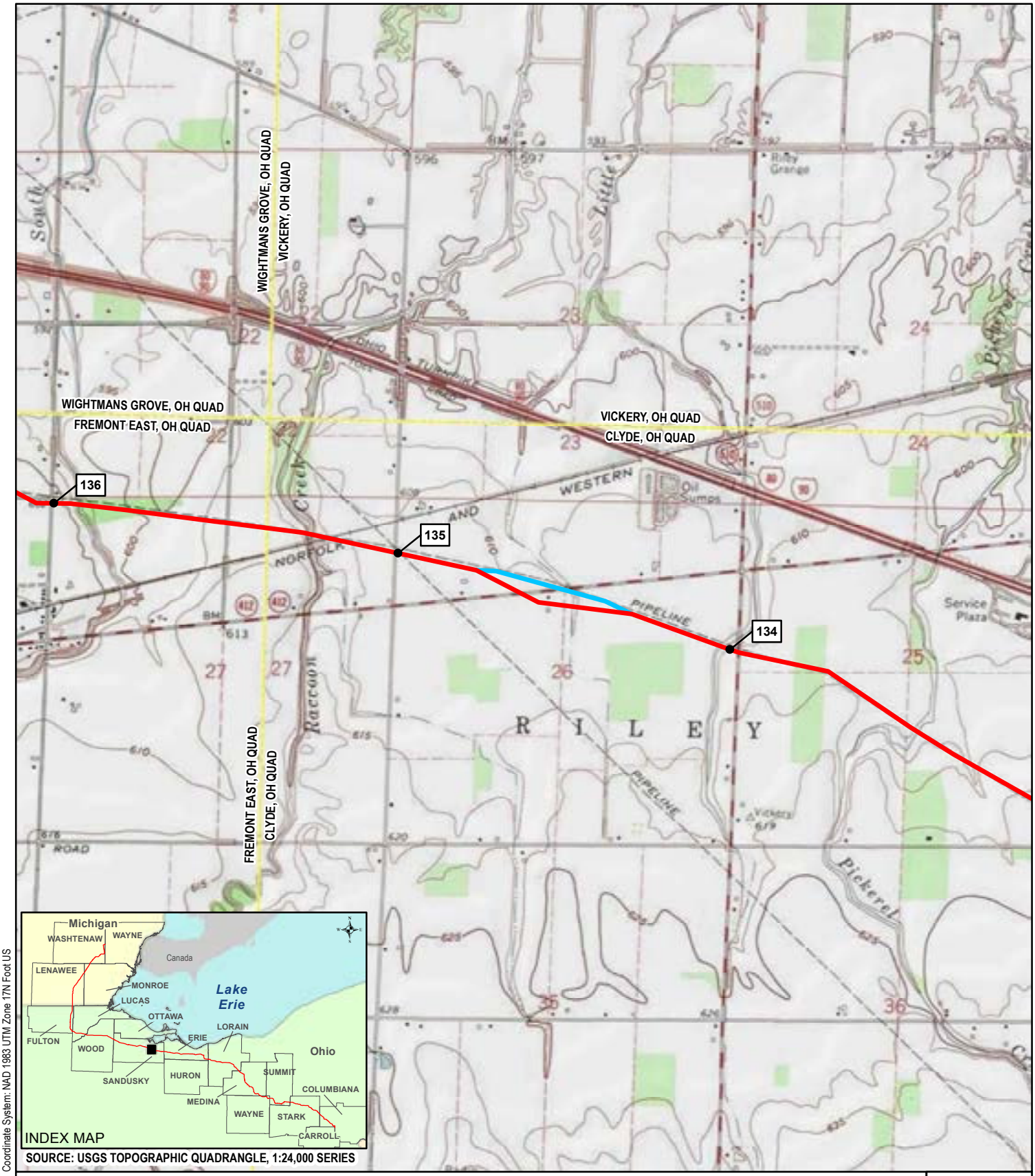
NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 126.9 - USGS QUAD MAP

LOC.: SANDUSKY COUNTY, OHIO

CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-17	MAP 17 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

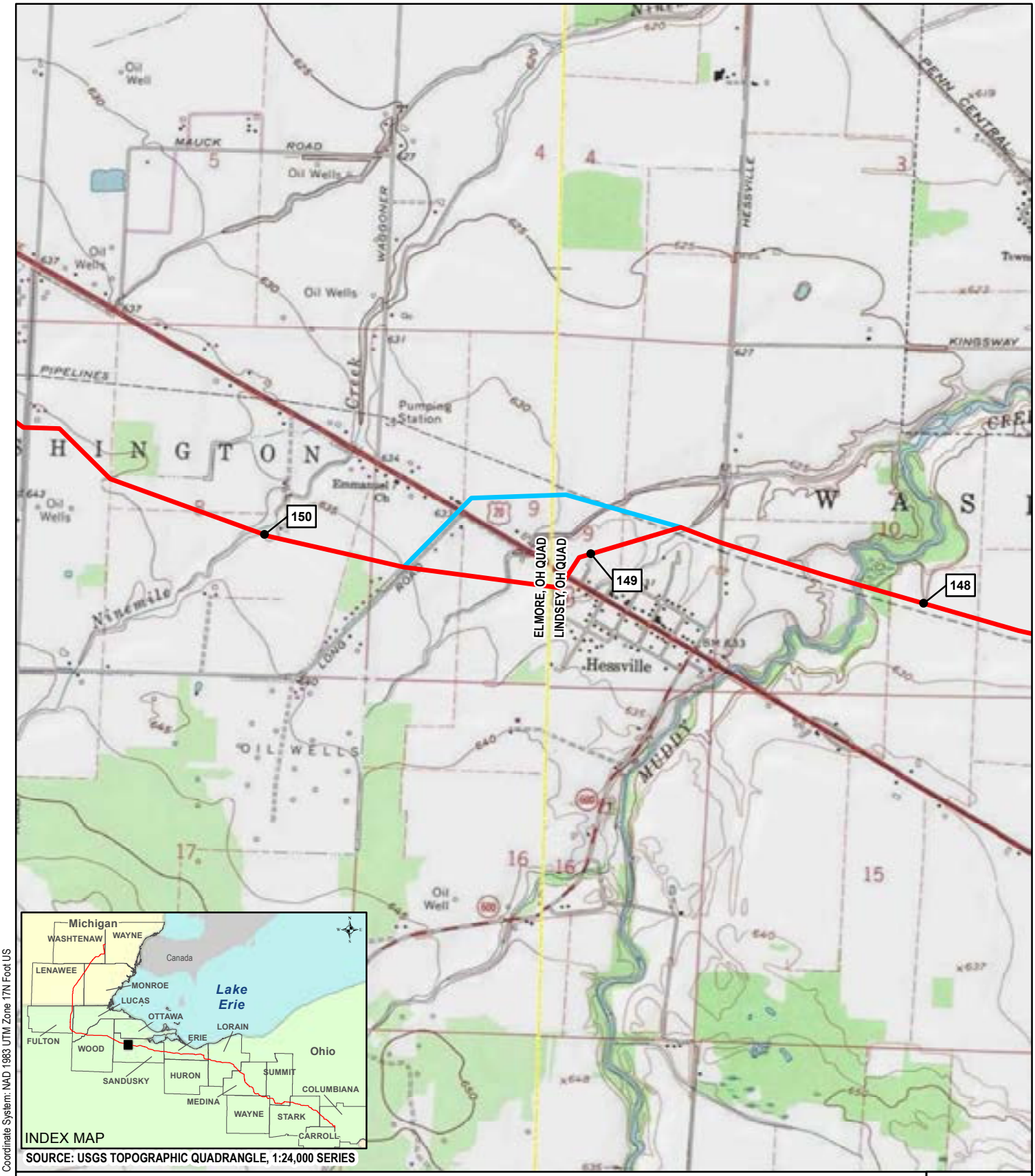
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 134.3 - USGS QUAD MAP

LOC.: SANDUSKY COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-18	MAP 18 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 148.7 - USGS QUAD MAP

LOC.: SANDUSKY COUNTY, OHIO

CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-19	MAP 19 of 26

I.G.

NEXUS GAS TRANSMISSION

SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

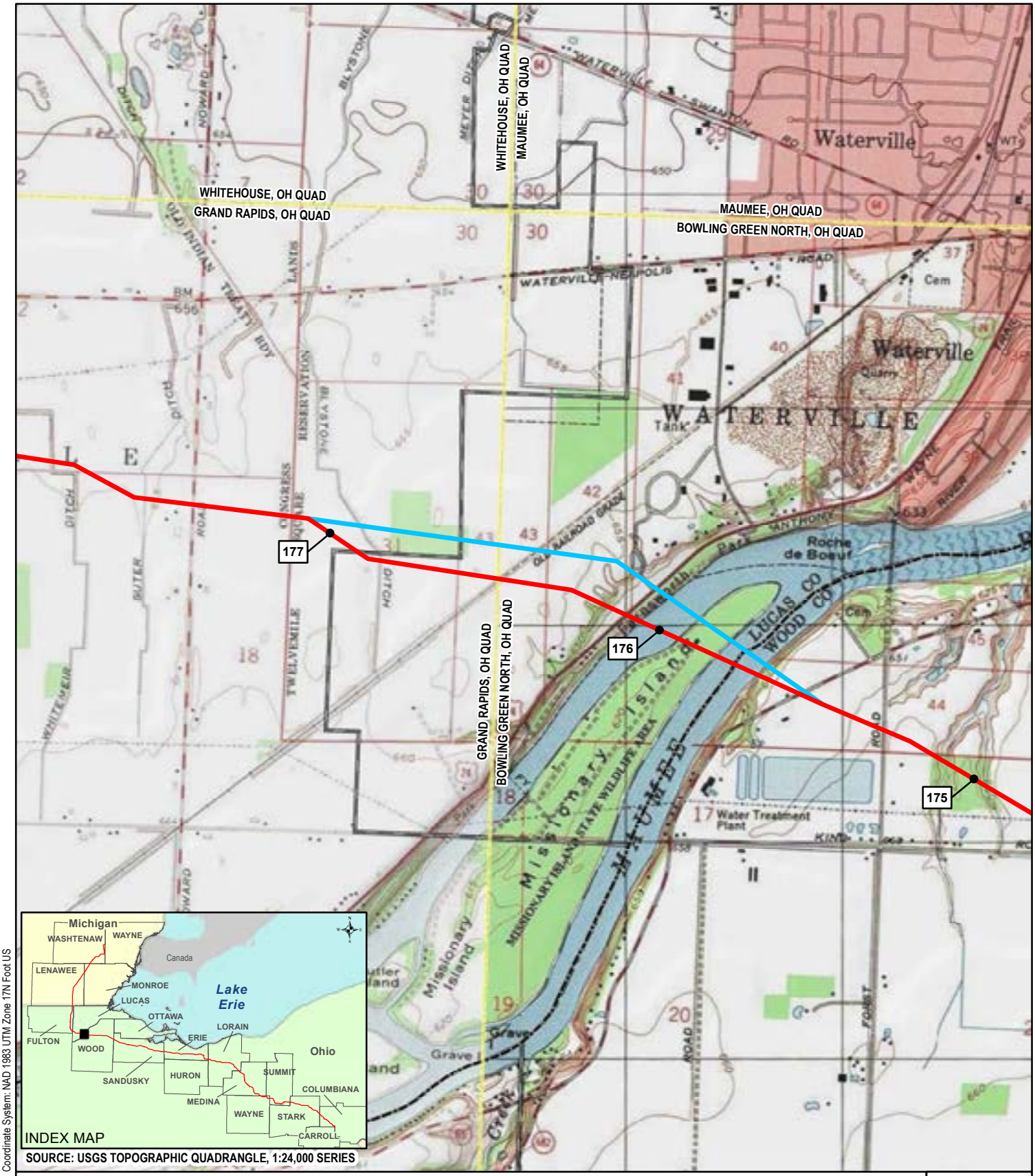
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 150.0 - USGS QUAD MAP

LOC.: SANDUSKY COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-20	MAP 20 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

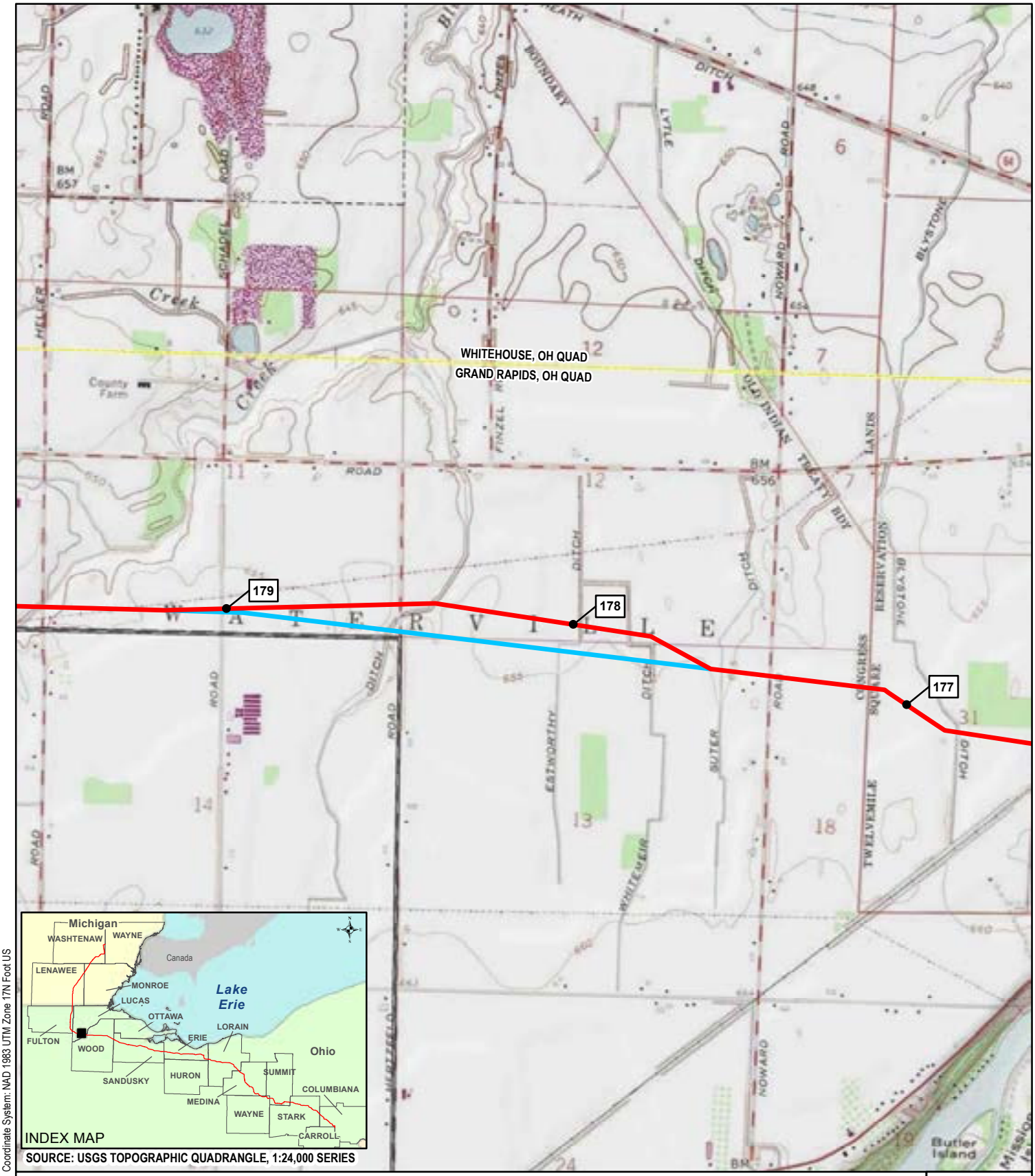
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 175.5 - USGS QUAD MAP

LOC.: LUCAS COUNTY; WOOD COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-21	MAP 21 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

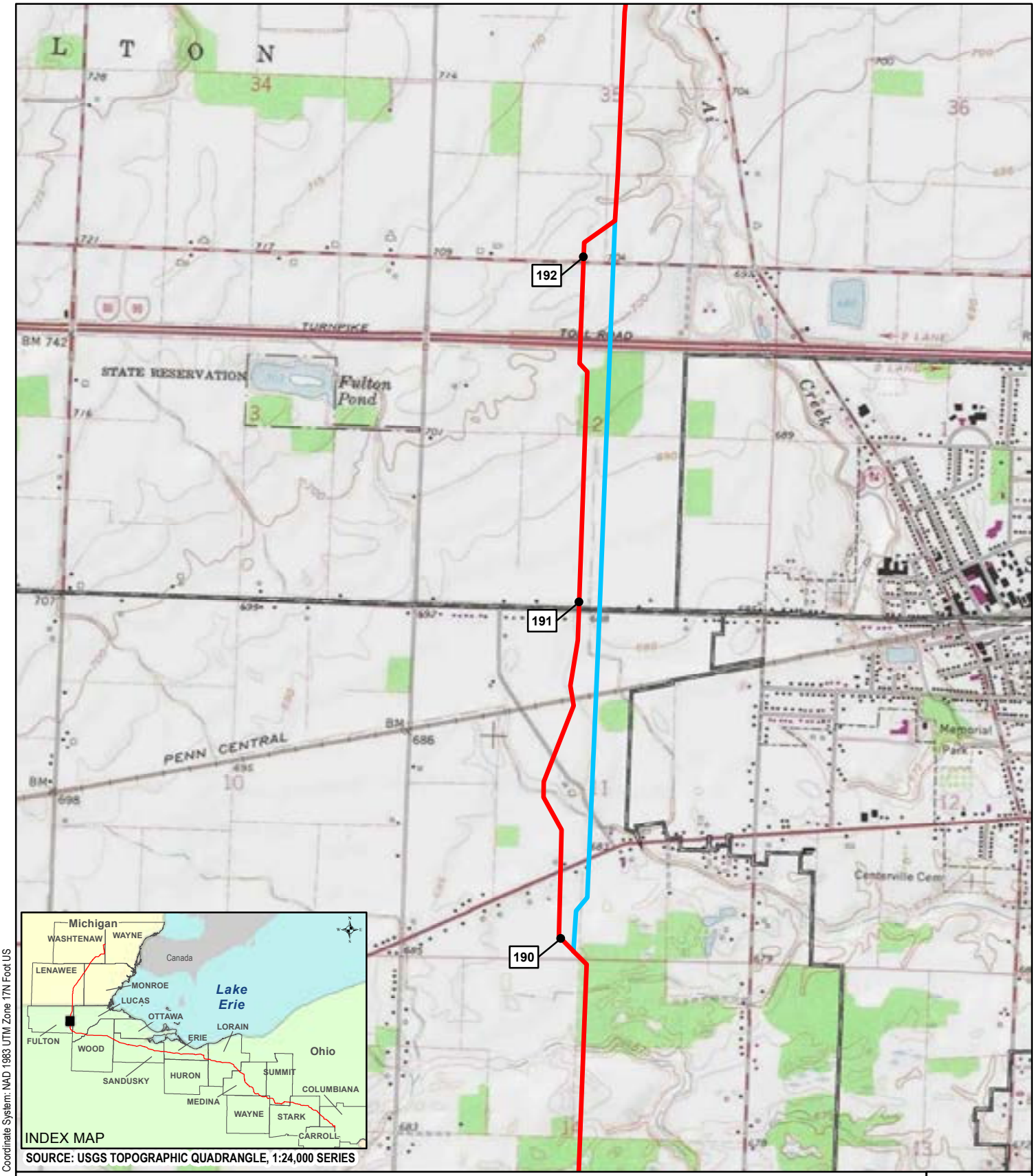
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 177.6 - USGS QUAD MAP

LOC.: LUCAS COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-22	MAP 22 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

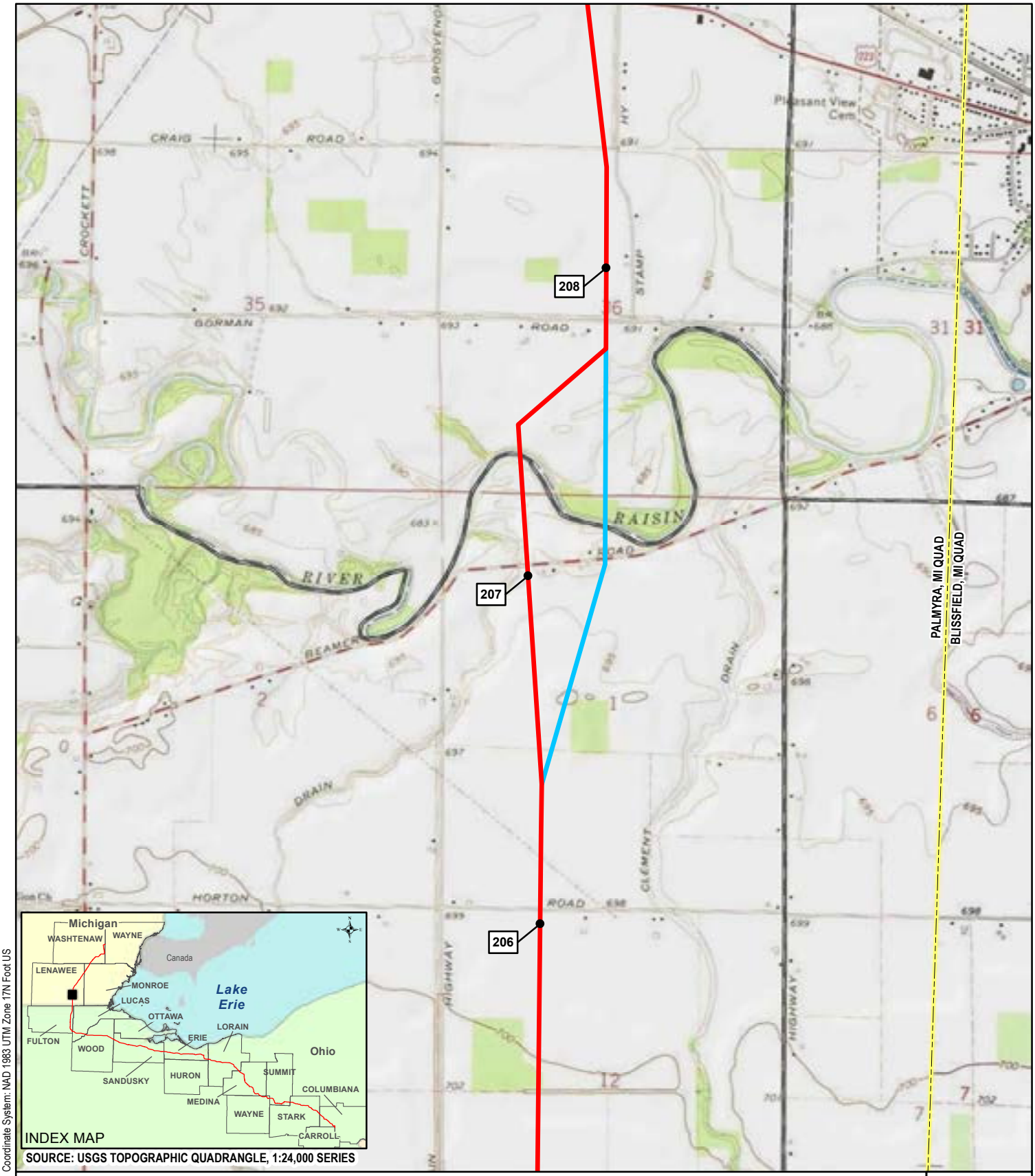
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 189.9 - USGS QUAD MAP

LOC.: FULTON COUNTY, OHIO			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-23	MAP 23 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

TITLE:

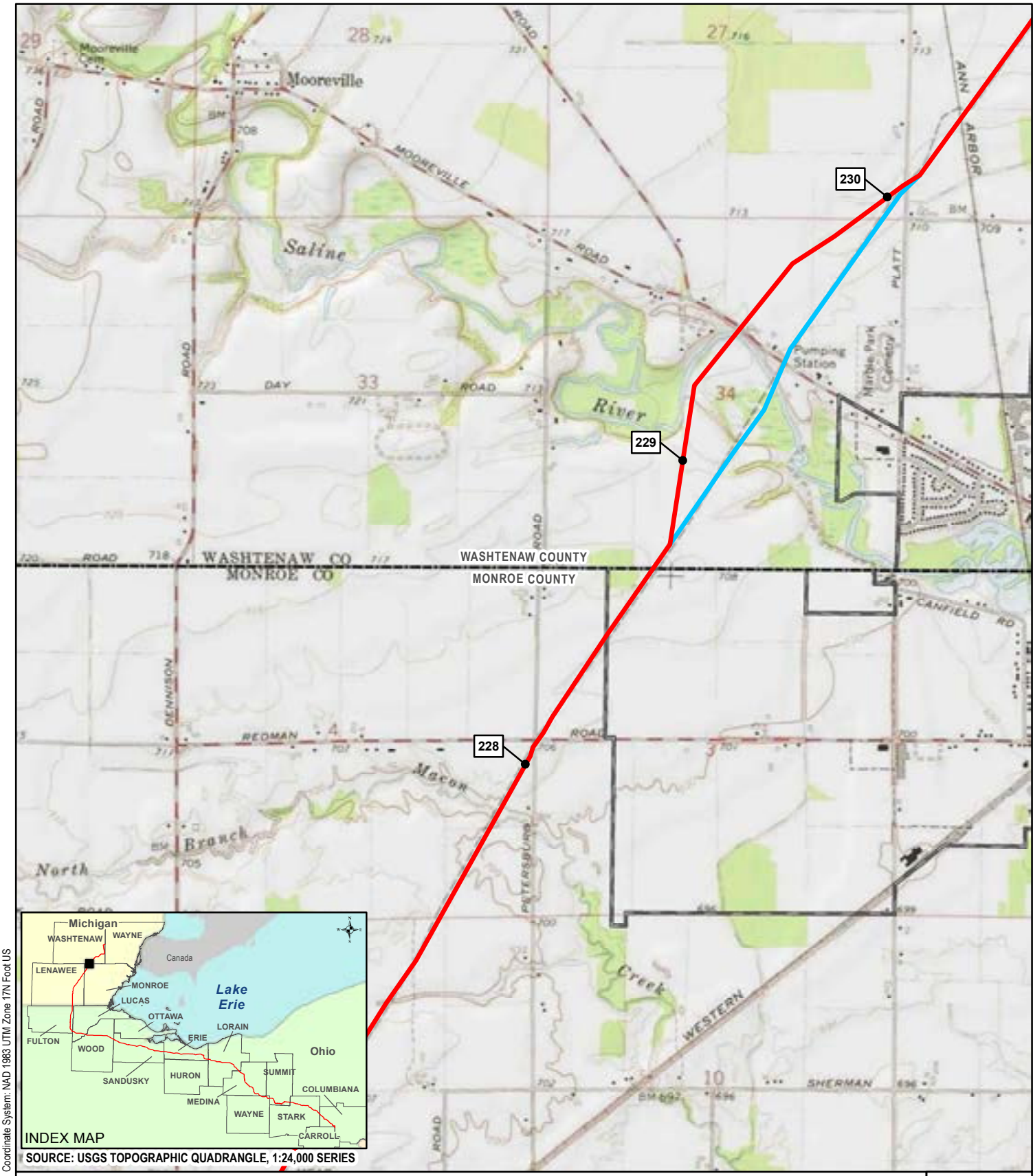
NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 206.4 - USGS QUAD MAP

LOC.: LENAWEE COUNTY, MICHIGAN

CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-24	MAP 24 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

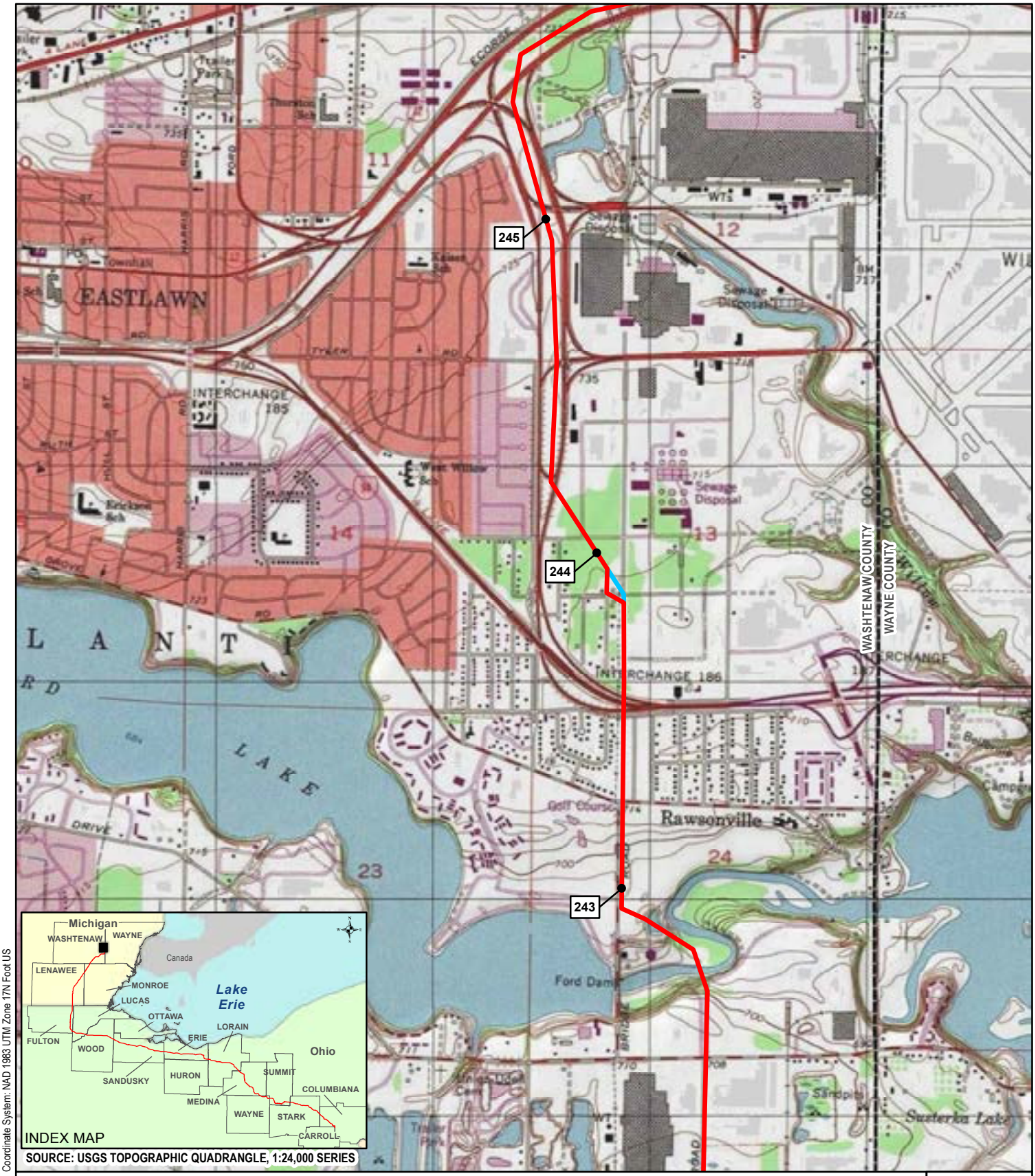
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 228.8 - USGS QUAD MAP

LOC.: WASHTENAW COUNTY, MICHIGAN				
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.	
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-25		MAP 25 of 26

I.G.

NEXUS GAS TRANSMISSION



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES

Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

ALTERNATIVE ROUTE

USGS QUADRANGLE BOUNDARY

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

0 1,000 2,000 Feet

N W E S

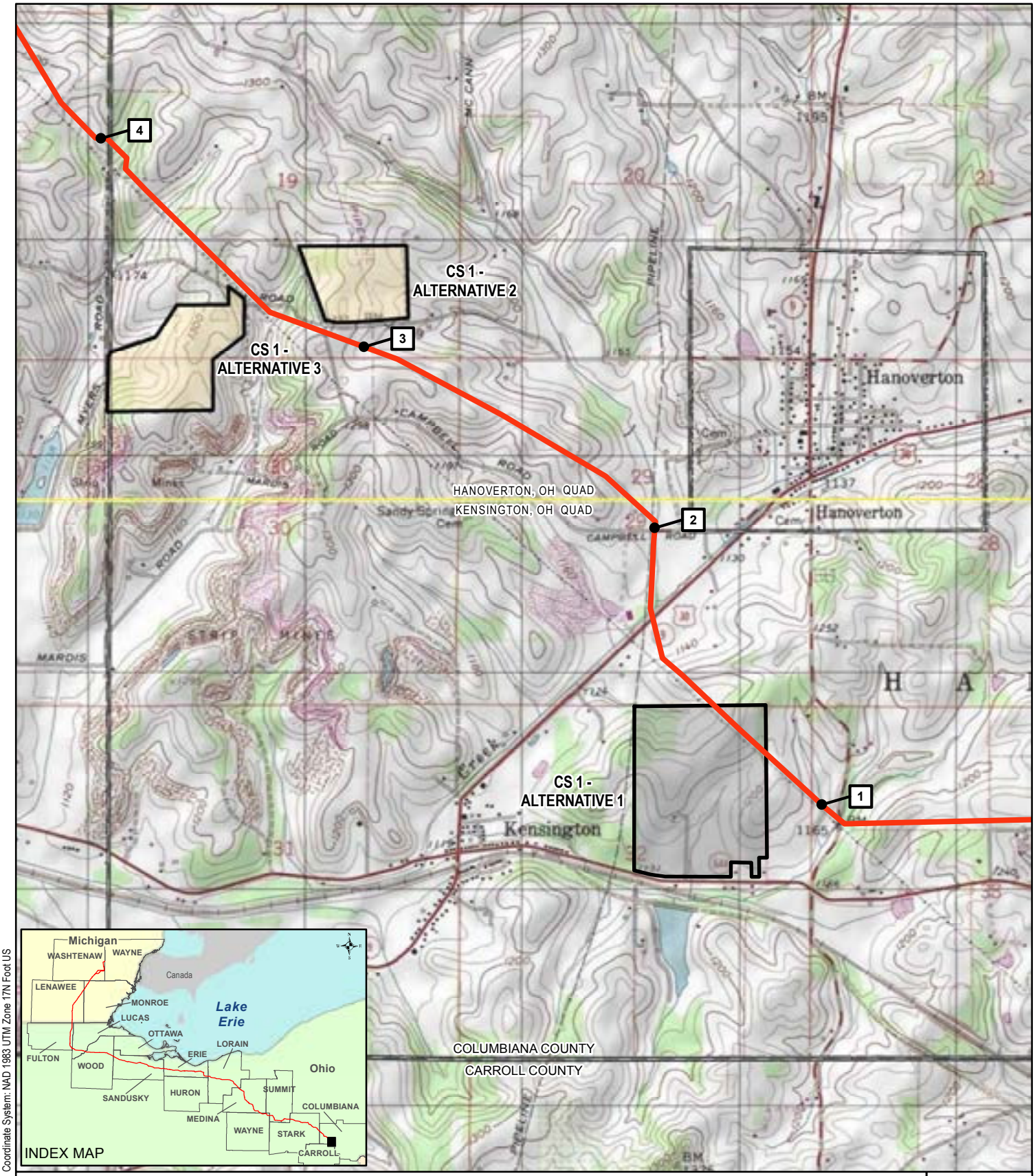
TITLE:

NEXUS GAS TRANSMISSION PROJECT
ALTERNATIVE ROUTE MP 243.8 - USGS QUAD MAP

LOC.: WASHTENAW COUNTY, MICHIGAN			
CKD. BY: OI	ENG.	DATE: 1/19/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE: 10.6-26	MAP 26 of 26

I.G.

NEXUS GAS TRANSMISSION



Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST

PROPOSED MAINLINE PIPELINE

PROPOSED INTERCONNECTING PIPELINE

COMPRESSOR STATION PREFERRED ALTERNATIVE

COMPRESSOR STATION ALTERNATIVE

COUNTY BOUNDARY

MUNICIPALITY BOUNDARY

STATE BOUNDARY

USGS QUADRANGLE BOUNDARY

0 1,000 2,000 Feet

N W E S

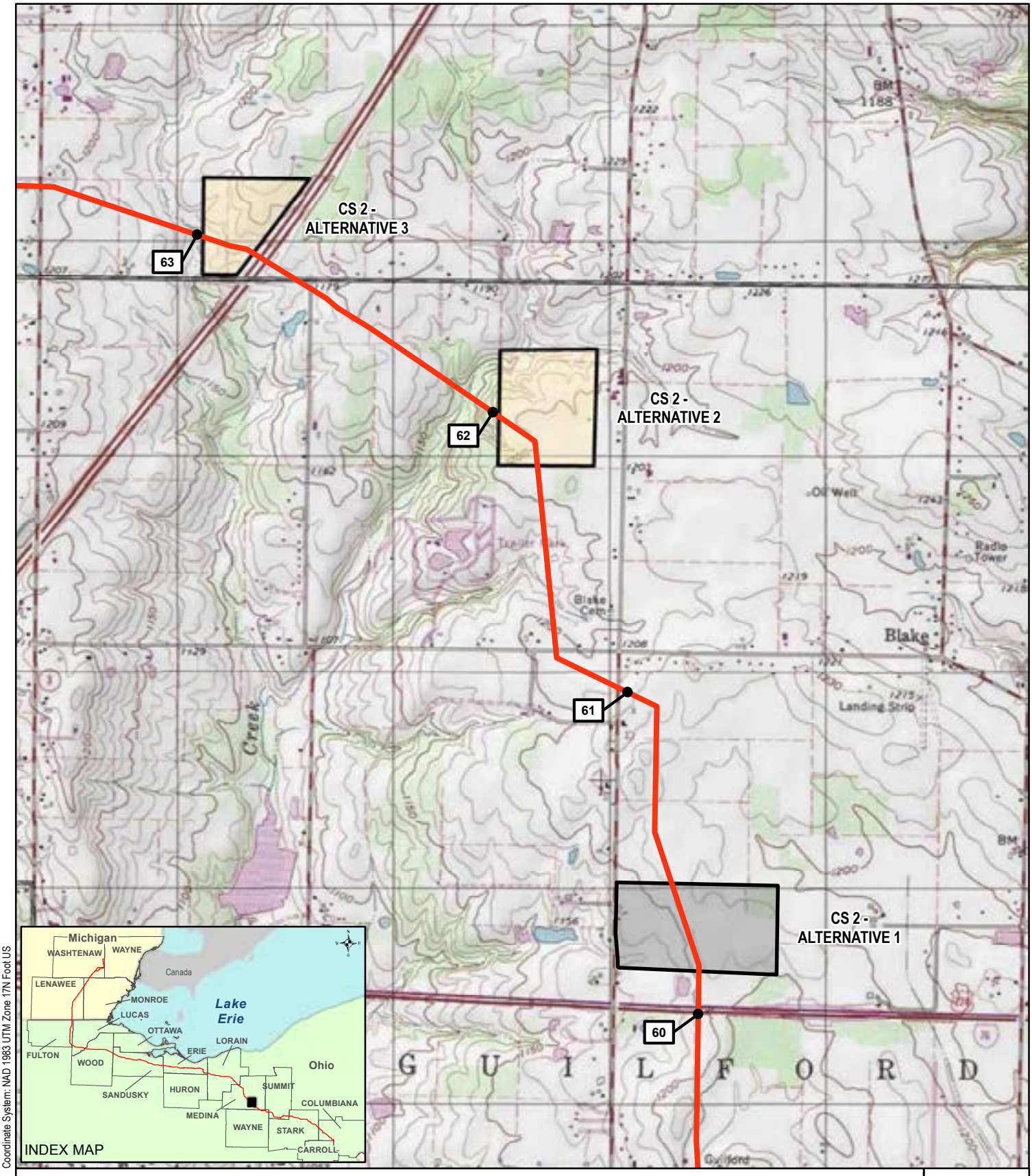
TITLE:

NEXUS GAS TRANSMISSION PROJECT
COMPRESSOR STATION 1 ALTERNATIVES

LOC.: COLUMBIANA COUNTY, OH		SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES	
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE 10.7.1-1	MAP 1 OF 4

I.G.

NEXUS GAS TRANSMISSION

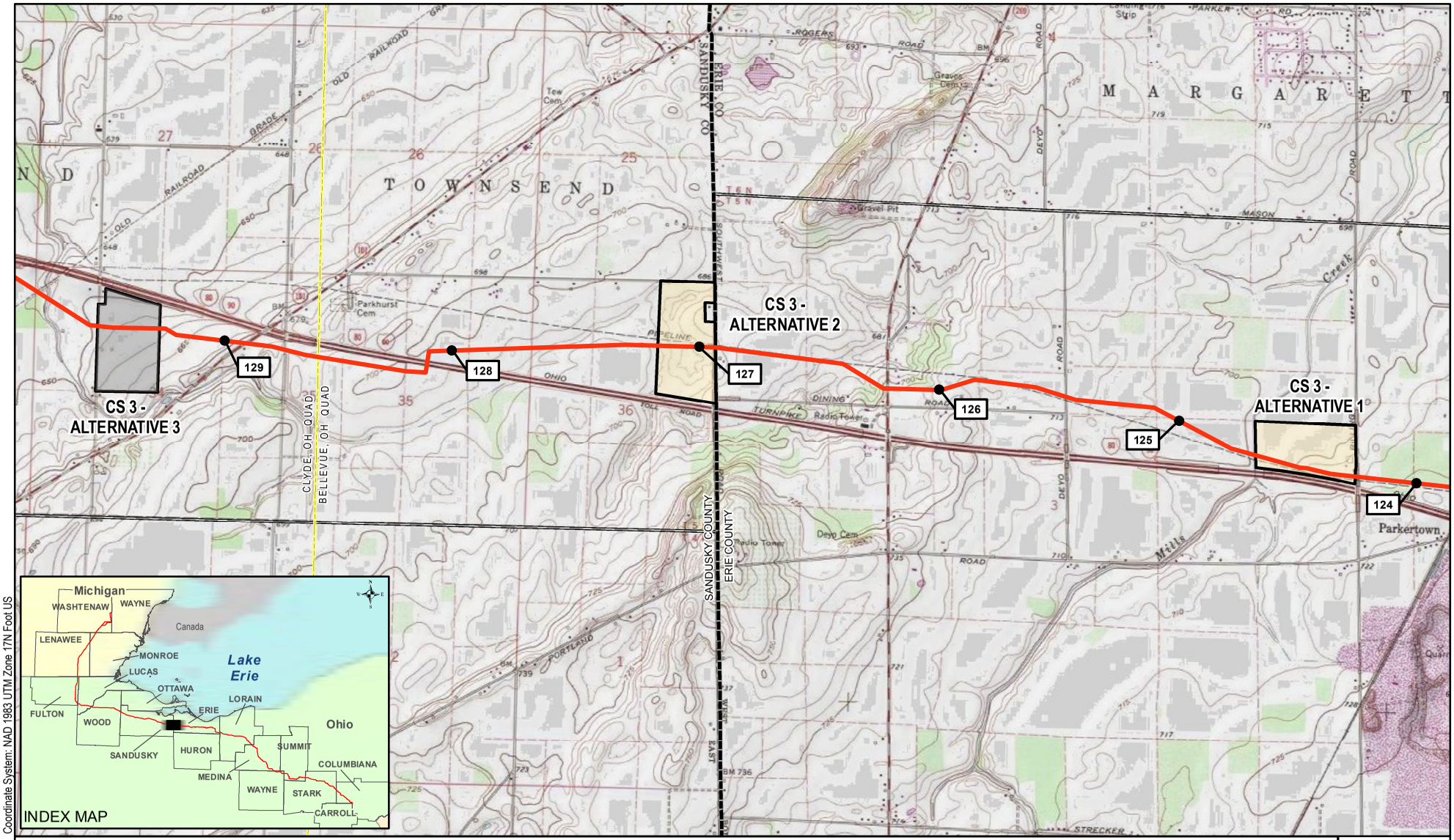


TITLE: **NEXUS GAS TRANSMISSION PROJECT**
COMPRESSOR STATION 2 ALTERNATIVES

LOC.: MEDINA COUNTY, OH		SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES	
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 2,000 '	FIGURE 10.7.1-2	MAP 2 OF 4

I.G.

NEXUS GAS TRANSMISSION



Coordinate System: NAD 1983 UTM Zone 17N Foot US

1 MILEPOST
PROPOSED MAINLINE PIPELINE
PROPOSED INTERCONNECTING PIPELINE
COMPRESSOR STATION PREFERRED ALTERNATIVE
COMPRESSOR STATION ALTERNATIVE
COUNTY BOUNDARY
MUNICIPALITY BOUNDARY
STATE BOUNDARY
USGS QUADRANGLE BOUNDARY

N W E S

0 1,000 2,000 3,000 Feet

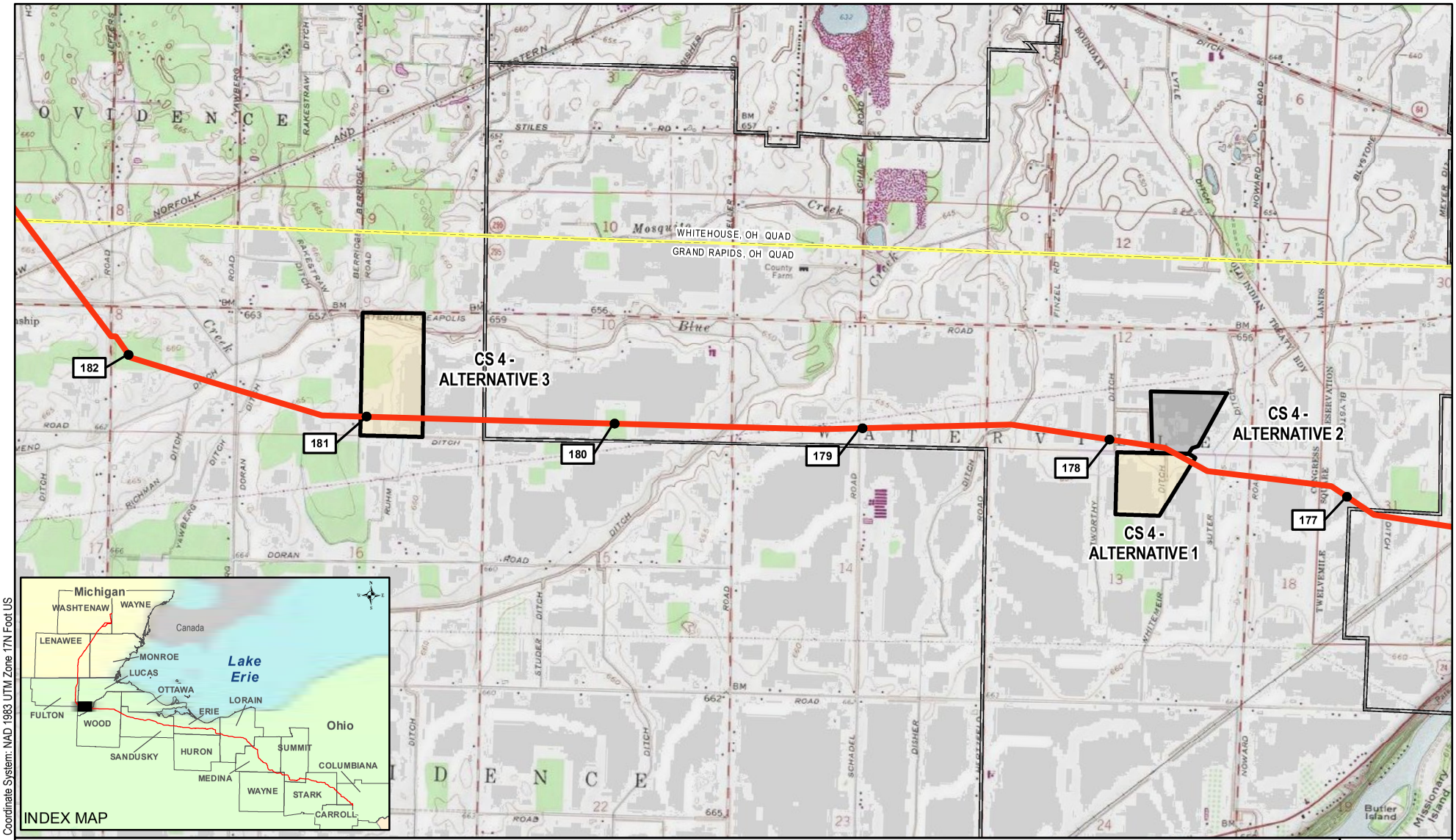
TITLE:

NEXUS GAS TRANSMISSION PROJECT
COMPRESSOR STATION 3 ALTERNATIVES

LOC.: ERIE COUNTY, OH; SANDUSKY COUNTY, OH			SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 3,000 '	FIGURE 10.7.1-3	MAP 3 OF 4

I.G.

NEXUS GAS TRANSMISSION



TITLE:

NEXUS GAS TRANSMISSION PROJECT
COMPRESSOR STATION 4 ALTERNATIVES

LOC.: LUCAS COUNTY, OH			SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 1:24,000 SERIES
CKD. BY: OI	ENG.	DATE: 1/16/2015	W.O.
DRN. BY: JAR	SCALE: 1 " = 3,000 '	FIGURE: 10.7.1-4	MAP 4 OF 4

I.G.

NEXUS GAS TRANSMISSION